

## From Blood to Flesh: Homonymy, Unity, and Ways of Being in Aristotle

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My topic is the fundamental Aristotelian division between the animate and the inanimate. In particular, I discuss the transformation that occurs when an inanimate body comes to be ensouled. The role Aristotle attributes to blood (αἷμα) in the nutritive and reproductive processes that effect this transition is well-known. Blood is the sole matter from which all of our animate tissues are generated and nourished.<sup>1</sup> But this nutritive role does not exhaust blood's significance. We can appreciate this additional import by reflecting upon blood's unusual status. Blood, I shall argue, occupies a middle ground between two otherwise mutually exclusive domains—it is unique in being, at one and the same time, both animate and inanimate. This is not a trivial claim. For once we understand what it is for blood to occupy this position, we will possess the resources to explain what it is for a soul to inform a body. That is, we will be able to explain what it is for the soul to be both a living organism's cause of being (αἰτιόν τοῦ εἶναι) and the principle (ἀρχή) of its bodily unity.

Aristotle's account of digestion ensures that blood is, at least in part, inanimate. Digestion is a multi-stage process of mechanical division and heat-induced concoction that involves the exercise of active capacities for movement located in numerous organs and tissues. According to Aristotle, the blood that this process yields is not a proper part of an animal; it is simply an advanced phase or form of nutriment (ἡ τελευταῖν τροφή). As the food we eat stands to the mouth that chews it or to the stomach that partially digests it, so blood stands to the vessels in which it resides—as an inanimate, foreign body.<sup>2</sup>

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<sup>1</sup> In nutrition, blood is transformed into flesh (σάρξ) through the exercises of capacities for movement located in an organism's preexisting tissues. These movements alter nearby blood in such a way that it becomes materially indistinguishable from the flesh acting upon it and is thereby assimilated (*GC* i 5.322a5-16; *JVM* 3.468b31-469a9; *PA* ii 3.650a1-36, iii 5.668a4-20; *GA* i 19.726b5-6, and ii 6.743a3-21). The same sort of movements occur in generation with one important difference: the capacities are not located in an organism's preexisting flesh but belong to the progenitor's semen and are exercised upon a female's blood-like, reproductive residue (καταμήνια, *GA* i 19.727a1-4, b31-33). καταμήνια is the matter from which all animate tissues come to be in generation. Here and throughout, I drop the standard rider 'or the analogous part in bloodless animals' and will tend to focus on flesh alone from among the multitude of an organism's living tissues.

<sup>2</sup> Blood is occasionally found on lists of the parts of animals (*PA* i 1.640b18-20, ii 2.647b10-16, and *HA* iii 2.511b1-10). But there are many reasons to take Aristotle's considered view to be that blood is not among an organism's proper parts. E.g., Aristotle (i) takes the insensitivity of blood to count against its being a part (*HA* iii 19.520b14-16; *PA* ii 3.650b4-6, 5.651b4-7, and 7.652b4-7), (ii) often speaks of blood-filled organs and blood vessels as being mere containers (*PA* ii 1.647b2-3, 3.650a32-36, 650b6-7, iii 4.666a16-19, 5.668a14-b1, 667b19-21; *GA* ii 6.743a10-11, and *Spir.* 5.483b19ff.), (iii) includes other residues on these lists, e.g., bile (*PA* ii 2.647b13), that he

But in the following passage, Aristotle clearly maintains that blood is also intimately connected to the animate.

[S]ome say that the like is fed, as well as grows, by like, while others, as we have said, think the reverse, that one thing is fed by its contrary... It makes a difference whether the food is the last thing that is added or the first. But if both are food, but the one undigested and the other digested, it would be possible to speak of food in both ways; insofar as the food is undigested, the opposite is fed by opposite, insofar as it is digested, the like by like. So that it is clear that in a way both speak rightly and not rightly. But since nothing is fed which does not partake of life, that which is fed would be the ensouled body, *qua* ensouled (τὸ ἔμψυχον ἂν εἴη σῶμα τὸ τρεφόμενον, ἢ ἔμψυχον), so that food is relative to that which is ensouled (ὥστε καὶ ἡ τροφή πρὸς ἔμψυχόν ἐστι), and this not accidentally.<sup>3</sup> (*De an.* ii 4.416a29-b10)

In this passage, Aristotle asserts that blood, viz., nutriment ‘insofar as it is digested’, differs from undigested nutriment in that the former, but not the latter, is essentially tied to a living organism’s ‘ensouled body *qua* ensouled’.

That blood’s account of being (λόγος τῆς οὐσίας) is in part determined by the soul of the organism in which it resides is further reflected in its being subject to claims of *organic homonymy* (ὁμωνυμία). Things are homonyms if they differ, either partially or completely, in their essence or account but are nevertheless picked out by a single name. For example, we apply a single name, ‘heart’, to both the organ currently pumping in our chest and the corresponding object before us on the autopsy table. But, claims Aristotle, the latter is called a heart merely homonymously (πλὴν ὁμωνύμως); it is a heart in name only and stands to a pumping, embodied heart as a sharp knife stands to a sharp note, as a man stands to a picture of a man, or as a healthy diet stands to a healthy complexion. Blood is, in this respect, no different from an organism’s proper parts, i.e., its tissues and organs. When blood is separated from a living organism, it no longer shares the same essence or account. Blood bereft of soul (ἔμψυχος) is blood in name only.<sup>4</sup>

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clearly considers not to be parts (iv 2.677a13, a30), and (iv) at one textually controversial point, explicitly denies that blood is a part (ii 10.656b19-22: excised by Peck and Ogle, retained by Düring and Lennox). That Aristotle takes blood to be a stage or phase of nutriment—itself a reason to exclude blood from the proper parts—is quite well supported (*De somno* 3.456a34-35m *JSVM* 3.469a1, 14.474b3-7; *PA* ii 3.650a32-b2, 4.651a12-15, 6.652a6; *GA* i 19.726b2, and *Spir.* 1.481a10-13). This view is not entirely original. Plato, e.g., also claims that blood is a form of nutriment (*Tim.* 80e7, 82c-d; cf. Solmsen 1950 for a general discussion of Aristotle’s predecessors on this topic).

<sup>3</sup> Translations, with some modifications, are taken from Hamlyn trans. 1993, Lennox trans. 2002, and Barnes ed. 1984.

<sup>4</sup> Aristotle discusses the homonymy of organs and tissues at *GC* i 5.321b29-32; *Meteor.* iv 12.390a10-12; *De an.* ii 1.412b12-13, b21-23; *PA* i 1.640b34-641a34; *GA* ii 1.734b24-27; *Meta.* vii

I argue that blood does not just stand in an essential relation to living organisms; blood is, in one manner of being, *already* animate. This is a consequence of Aristotle's claim that blood is living tissue in potentiality (δυνάμει) whereas flesh, sinew, bone, and the other living tissues are such in actuality (ἐνεργεία).<sup>5</sup> The distinction between being in capacity or in potentiality, and being in activity or in actuality, is orthogonal to the classification of things that are (τὰ ὄντα) that Aristotle presents in the *Categories*. My concern is with the category *substance* (οὐσία); there are two ways, in potentiality and in actuality, in which something can be a particular substance. According to Aristotle, blood is, in one manner of being, inanimate: blood is nutriment in actuality. But blood is also, in another manner of being, animate: blood is flesh in potentiality. The transitions from unprocessed nutriment to blood and from blood to flesh are, respectively, transitions from the inanimate to the animate in potentiality and from the animate in potentiality to the animate in actuality—the animate in its fullest and primary sense.

One cannot understand these claims without understanding the principal distinction it employs. Unfortunately, any explication of these two ways or manners of being a substance will be arduous. For Aristotle insists that neither what it is to be something in potentiality nor what it is to be something in actuality can be defined. We must instead consider various cases in which these manners of being are present, appreciate the ways in which these cases are similar and the ways in which they are different, and, as Aristotle puts it, 'be content to grasp the analogy' (*Meta.* ix 6.1048a35-36).

I follow this analogical procedure and consider four cases of being in potentiality and being in actuality. Case 1: What it is for a man to be a house builder; Case 2: What it is for a pile of bricks to be a house; Case 3: What it is to be a mixture of the four simple, terrestrial bodies—earth, water, air, and fire; Case 4: What it is to be a cake.<sup>6</sup> I pause after each of these discussions to bring the devel-

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10.1035b10-26, 11.1036b30-32, 16.1040b5-8, and *Pol.* i 2.1253a19-25. Though never explicitly referred to as a homonym, I treat blood as such. The principal evidence that a body no longer possesses the same account or essence once separated from a living organism is the commencement of rotting or putrefaction upon removal. This certainly holds of blood since, 'if some blood vessel were separate and not continuous with its origin, the blood within it would not be preserved, for the heat from that origin prevents the blood from becoming congealed, which is apparent when the separated blood also putrefies' (*PA* ii 9.654b7-11; cf. *Meteor.* iv 11.389b10-15; *HA* iii 19.521a2, and *PA* ii 3.649b27-35).

<sup>5</sup> Aristotle explicitly describes blood as flesh *dunamei* at *PA* iii 5.668a27-28 and *GC* i 5.322a5-6. I often simply transliterate ἐνεργεία, ἐντελέχεια, δύναμις, and their cognates. When proceeding in English is called for, I use 'capacity'/'ability'/'potentiality' in place of δύναμις and 'actuality'/'activity' for ἐνεργεία. For present purposes, the distinction between ἐνεργεία and ἐντελέχεια will tend to matter little. For 'work (ἔργον) is the end (τέλος), and the ἐνεργεία is the work. And so even the word ἐνεργεία is derived from ἔργον, and points to the ἐντελέχειαν' (*Meta.* ix 8.1050a21-23; cf. 3.1047a30-32). I will occasionally use 'fulfillment', in the sense of being fully or completely active, in place of ἐντελέχεια.

<sup>6</sup> The need to treat cakes and similar objects separately from Aristotle's usual examples of artifacts was first impressed on me by reading Ackrill 1972, 132. This case is also taken up at Gill

oping analogical understanding of being in potentiality and being in actuality to bear on the case that is our preëminent concern. The application of these manners of being to nutriment, blood, and flesh does not mirror that of any of these four cases perfectly. But it is only through an appreciation of these similarities and differences that we can come to understand blood's peculiar status.

This discussion will also put us in a position to explain what it is for a soul to inform a body. Many commentators think Aristotle holds a view of organic hylomorphism according to which an organism's organs and tissues are, at some level of analysis, identical in account to an appropriate class of inanimate, natural bodies. On this view, inanimate, natural bodies retain their identities when they come to be integrated into a living organism, are 'violently constrained' or 'mastered' by the soul while present in the organism, and, upon the organism's death, no longer suffer this check and are free to exercise their inanimate, natural capacities once again. Our examination of blood and flesh supports a very different interpretation of organic hylomorphism according to which ensouled organisms possess a single, unitary nature and are, as a result, naturally *isolated* from the rest of their inanimate environment. I will conclude our examination of blood and flesh by drawing out these consequences for Aristotle's account of organic hylomorphism.

### I. Case 1: Individuals (House Builders)

The building of a house is an enormously complicated endeavor that requires the exercise of many distinct capacities or abilities, e.g., the ability to saw planks and the ability to lay a foundation. But the capacity to build a house is more than a plurality of autonomous constructive abilities. Even if one has mastered them all, one does not thereby possess the capacity to build a house. These relatively simple abilities must, in addition, be appropriately unified. Insofar as the various constructive movements one effects, (i) arise from a single, stable condition or state (ἕξις) that is organized in accordance with the body of knowledge constitutive of the art or craft (τέχνη) of house building, (ii) occur for the sake of (ἐνεκά του) a single end: the form of a house determined by the art of house building, and (iii) when successful, result in this form's exemplification in some appropriate matter, one is engaged in *the* act of house building.

It would not be unreasonable to think that what it is for a man *to be* a house builder manifests itself in only one way, a way that is exhausted by the possession of an appropriately unified capacity to build a house (cf. *Meta.* ix 3.1046b35). To possess the capacity to build a house at a given time in no way depends on what anyone is actively doing at that time. On this picture, whether someone is making an opening for a door or making a sandwich, if he possesses the capacity to build a house, his status as a house builder remains the same.

This is *not*, however, Aristotle's view. According to Aristotle, a man is never a house builder without qualification (ἀπλῶς); a man must be a house builder in

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1989b, 195. Aquinas also distinguishes this class, but his preferred example, for obvious reasons, is bread (*ST* III.75.6 ad 1).

one of two mutually exclusive ways: in potentiality or in actuality.<sup>7</sup> And the manner in which a man is a house builder at a time depends crucially on whether he is at that time engaged in house building. A man is a house builder in potentiality if he possesses the capacity to build a house and is not exercising it. A man is a house builder in actuality if he possesses the capacity to build a house and is exercising it.

When a house builder transitions from being idle to being active, numerous things will be moved, e.g., bricks, a trowel, and his own muscles. A capacity for movement (δυνάμεις κατὰ κίνησιν), when exercised upon an object, changes the object's place, quality, or quantity (*Phys.* v 1.225b5-9). This sort of change consists in replacement: an antecedently possessed feature is destroyed and a contrary or intermediary feature from the same range comes to be in its stead.

But to exercise these capacities for movement, i.e., to be engaged in house building, is, *eo ipso*, to undergo a change that is not a movement. This second change, the transition from being a house builder in potentiality to being a house builder in actuality, does not consist in the replacement of some quality, quantity, or place. The change is rather a *preservation* or *salvation* (σωτηρία) of what was present before, i.e., a 'development (ἐπίδοσις) of the thing into itself and its fulfillment (ἐντελέχεια)'.<sup>8</sup>

So the exercise of the capacity to build a house is a two-dimensional change. To exercise this capacity is (i) to move other bodies and (ii) to become a house builder in a distinctive and more complete manner. The first dimension of change has the logical form of a change of predicate—from '*a* is *F*' to '*a* is *G*'. The second dimension of change has the logical form of a change in the manner of predication—from '*a* is-φλυ *F*' to '*a* is-ψλυ *F*'. For Aristotle, being engaged in house building is not just something a house builder can do; it a different way for a man *to be* a house builder.

Though this first case concerns the attribution of a non-substantial form, being a house builder, to an individual substance, a particular man, it has much in common with the substantial changes, broadly construed, that will occupy us in the

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<sup>7</sup> Being an *F* in potentiality and being an *F* in actuality are mutually exclusive manners of being. Within each of the ten categorical manners of being there is a further binary division resulting in twenty distinct manners of being (*Meta.* ix 10.1051a34-b2 and 1.1045b28-36). One may simultaneously possess a potentiality while exercising it but one cannot simultaneously be an *F* in potentiality and be an *F* in actuality (*Phys.* iii 1.201a20-23, 201b6-15, and *Meta.* viii 6.1048a30-31). If something were simultaneously an *F* in both of these manners, it would be fully *and* incompletely an *F* at one and the same time. The exclusivity that governs these manners of being is analogous to categorical exclusivity, not to the exclusivity that holds for instantiations of contrary properties.

<sup>8</sup> That this second change is not a movement is clear: 'Being affected is not a single thing either; it is first a kind of destruction (φθορά) of something by its contrary, and second it is rather the preservation (σωτηρία) of that which is so δύναμει by that which is so ἐντελέχεια and is like it in the way that a δύναμις may be like an ἐντελέχεια. For that which has knowledge comes to contemplate, and this is either not an alteration (for it is a development [ἐπίδοσις] of the thing into itself and its fulfillment [ἐντελέχεια]) or a different kind of alteration. For this reason it is not right to say that something that understands is altered when it understands any more than a builder when he builds' (*De an.* ii 5.417b2-9, cf. 4.416b1-3 and Burnyeat 2002).

remainder. In fact, we are already in a position to highlight two important features of the transformations of nutriment into blood and of blood into flesh.

First, as the art or craft of house building stands to a builder's numerous constructive activities as a source of unity, so the nutritive part of an organism's soul stands to the numerous, relatively simple, capacities for movement that must be exercised in the processes whereby nutriment comes to be flesh. These nutritive movements, arise from a single, stable condition or state that is organized by the nutritive part of an organism's soul (ἡ θρεπτικὴ ψυχὴ), occur for the sake of a single end: the very soul that comprises this nutritive part, and when successful, result in this soul's continuous (or more thorough) exemplification. In this way, an organism's capacities for nutritive movement constitute a single, unitary capacity for form. First, this capacity has an organism's soul as its principle and is exercised upon nutriment and blood in an order and manner that ultimately yields a specific type of tissue because the coming to be of such a tissue is necessary for the organism to realize its form. Second, blood's transformation into flesh, like the change in a house builder when he shifts from inaction to activity, is not a movement but in development. Blood (flesh in potentiality) and embodied flesh (flesh in actuality) are the same thing, though the latter is such in a more perfect and complete manner.

Much more needs to (and will) be added to this preliminary account, but further elaboration requires that we return to our examination of cases.

## II. Case 2: Artifacts (Houses)

As we have just seen (i) a man must possess various active capacities for movement, capacities that are organized in accordance with the art of house building, to be a house builder in potentiality, (ii) it is the initial exercise of this unified capacity that occasions his progression from being a house builder in potentiality to being a house builder in actuality, and (iii) he will remain a house builder in actuality only so long as he continues to exercise this capacity.

Houses are analogous to house builders in all of these respects. First, a plurality of bricks must possess various passive capacities for movement to be a house in potentiality. That is, a pile of bricks will be a house in potentiality only if it possesses tangible capacities that satisfy the material demands of house building. For example, in order for a house to fulfill its function of providing shelter, it must have walls. The tangible capacities of bricks allow them to be shaped into uniform rectangular prisms and still maintain their hardness. So bricks are well-suited, materially speaking, to be laid upon one another to the height required for walls without toppling. I call this requirement *the condition of material adequacy*.<sup>9</sup>

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<sup>9</sup> Gill 1989a, 150 calls this *the suitable-kind condition*: 'a material belongs to a suitable kind if it possesses the dispositional properties required for the production of a particular product'. Passages like *Meta.* ix 7.1049a15ff. illustrate the condition of material adequacy through examples in which something must undergo a change in kind to be an artifact in potentiality. But (1) it is not generally the case that possessing a class of *dunamis* is sufficient to determine kind membership, and (2) it is

Second, it is the initial exercise of these tangible capacities that occasions the bricks' progression from being a house in potentiality to being a house in actuality. Not just any plurality of bricks with tangible capacities that satisfy the condition of material adequacy is a house in potentiality. Consider a street full of brick houses positioned in such a way that there is, for each house, a single northernmost brick that is farthest from the ground. The plurality of bricks that satisfy this description is not a house in potentiality. These bricks are materially adequate; they possess the tangible capacities bodies need in order to be worked up into a house. But they are not situated in such a way that a craftsman can *immediately engage* them. To be a house in potentiality, the bricks must be situated in such a way that the exercise of the capacity to build a house is *all* that is needed to turn them into a house in actuality.<sup>10</sup> For not only must there be 'nothing in the thing acted on—i.e., the matter—that prevents it from becoming a house' but 'nothing that must be added or taken away or changed' (*Meta.* ix 7.1049a9-11). I call this second requirement *the condition of situational adequacy*.<sup>11</sup>

Third, a house in actuality will persist as such only so long as this plurality of bricks continues to exercise its relevant tangible capacities. In the coming to be of a house the 'first matter is preserved (διασωζομένης)' and this matter 'is not subject to loss of its own capacity (δυνάμεως)' (v 4.1014b26-32). A house builder moves bricks in numerous ways, but none of these changes prevent the bricks in a finished house from being bricks in exactly the same manner, in actuality, they exhibited before the process began. So it is the matter from which a house comes to be, viz., a plurality of bricks, that is a house in actuality.<sup>12</sup> And it

not generally the case that membership in a kind is sufficient to possess a class of *dunameis*. It is the possession of a class of relevant *dunameis*, not kind membership, which is fundamental to being an object in potentiality.

<sup>10</sup> Of course, the exercise of a capacity to build a house on a particular occasion also requires that external conditions be favorable (e.g., the weather must be suitable) and the desire to build must arise in such a way that the builder chooses to do so.

<sup>11</sup> Two points of clarification: (1) It is not essential to this example that the bricks already be artifactually unified with other bricks in a house. If one needs one thousand bricks to build a house and there are one thousand brick factories scattered throughout the world, it would be possible to build a house using the first brick that comes off the assembly line on a given date from each of these factories. This plurality of bricks, however, is not a house in potentiality. None of the individual bricks has been worked up into an artifact; they are not tied to anything else. But a house builder cannot engage these bricks as they are supposedly situated and immediately exercise his *dunamis* to build a house. (2) Facts about which *dunameis* for movement are appropriately unified by the body of knowledge constitutive of the art of house building will determine what has to be the case for a plurality of bricks to be properly situated. If the collecting of materials into a suitable pile and the demolition of homes for the sake of this collecting are governed by the art of house building, then our first example is undermined. In fact, these activities might be so-governed (ix 9.1051a7-11). Nevertheless, it is clear that we must countenance a distinction between the movements required to properly situate some matter with respect to an artistic *dunamis* and the movements that belong to the exercise of this artistic *dunamis* even if it is difficult to determine the precise dividing line between these two classes in a particular case. See Charles 2010, Beere 2006, 314n12, and Frede 1994, 189.

<sup>12</sup> So while no object can be an *F* in potentiality and an *F* in actuality simultaneously, it is possible for an object (a plurality of bricks) to be an *F* (bricks) in actuality *and* a *G* (house) in actuality

is the continuous exercise of these bricks' tangible capacities, the very capacities the initial exercise of which occasions the house's coming to be, and in which the persistence of the house in actuality consists.

Though the importance of this final similarity will not be clear until we consider the next analogical case, the first two similarities are straightforwardly applicable to the case of blood. That is, the nutritive soul determines conditions of material and situational adequacy that nutriment must satisfy if it is to be flesh in potentiality (i.e., blood). For 'it is necessary that all food should be capable of being digested' (*De an.* ii 4.416b26-27) and 'the heat to produce flesh or bone does not work on just any material whatsoever at just any place or at just any time' (*GA* ii 6.743a21-22).

Each of an organism's myriad tissues has its own material needs and if they are not met, i.e., if the nutriment from which they come to be is inadequate or inappropriate, the vital activities that depend upon the tissues will be negatively affected (*PA* ii 2.647b31-648a11). So a variety of 'bloods' with slightly different material constitutions, consistencies, and temperatures will be found within a healthy organism. A given parcel of fully-digested, materially adequate nutriment is situationally adequate only if it has been moved through an organism's veins and put into reciprocal contact with a tissue for which it is well-suited. If this occurs, the exercise of the thermal capacities located in these tissues is all that is needed for successful nutrition. So for blood to be flesh in potentiality, it must stand ready and unimpeded at the threshold of the nexus of nutritive activity whereby flesh in actuality comes to be.

### III. Case 3: Mixtures

According to Aristotle, the inanimate bodies that we encounter in the sublunary sphere are all mixtures (μικτόν) of the four simple, terrestrial bodies (ἀπλᾶ σώματα)—earth, water, air, and fire.<sup>13</sup> There is an effective rule of composition that governs this mixing. That is, a mixture of a given kind will come to be from a collection of simple bodies only if a particular ratio of the four primary, interactive, tangible capacities—hot (θερμός), cold (ψυχρός), wet (ύγρός), and dry (ξηρός)—is present in the collection.

For any given mixture, there exists an incredible number of mereological aggregates of simple bodies with the proper ratio of tangible capacities. But simple bodies scattered throughout the cosmos are not a mixture in potentiality. In order for a materially adequate collection of simple bodies to be a mixture in potentiality, these bodies must be situated in such a way that the unconstrained exercise of their natural capacities is all that is needed for the mixture to come to be. For mixing is a process 'in which the source of the becoming is in the very

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simultaneously. An object can be an *F* in potentiality and a *G* in potentiality at the same time as well. A single pile of bricks is capable of being built into both a house and a barbecue pit (*viii* 4.1044a25-26). Also, several distinct things can be an *F* in potentiality. If the activities of pigs are a reliable guide, a bale of straw, a bundle of sticks, and a pile of bricks can all be a house in potentiality.

<sup>13</sup> For a more thorough account of mixing, see Frey 2007, 187-190 and 194-197.

thing that suffers change' and that which suffers change in the coming to be of a mixture in actuality, viz., a collection of simple bodies, 'is in potentiality whatever things will be, through itself, if nothing external hinders it' (*Meta.* ix 7.1049a12-14).

So what it is to be a mixture in potentiality mirrors closely what it is to be a house in potentiality inasmuch as both are subject to conditions of material and situational adequacy. But the analogy between houses and mixtures breaks down when we consider what it is to be a mixture in actuality.

It is the matter from which a house comes to be, viz., bricks in actuality, that is a house in actuality and the persistence of a house in actuality consists in the continuous exercise of these bricks' tangible capacities. These bricks have their own internal principles of movement and rest. Consequently, a house is an artifactually unified aggregate of natural unities.<sup>14</sup>

In contrast, the simple bodies from which a mixture comes to be do not maintain the same manner of being when the mixing is complete. According to Aristotle,

it is possible for things after they have been mixed to be and not to be. Some other thing that comes to be from them is in actuality, while each of the things that were, before they were mixed, still is, but in potentiality, and has not been destroyed.<sup>15</sup>  
(*GC* i 10.327b23-26)

So while it is bricks that are a house in actuality, it is the mixture itself, not the simple bodies from which the mixture comes to be, that is a mixture in actuality. When a house comes to be, the two manners of being are predicated of a single subject—'*a* is- $\phi$ ly *F*' and then '*a* is- $\psi$ ly *F*'. But when a mixture comes to be, the two manners of being are predicated of distinct subjects—'*a* is- $\phi$ ly *F*' and then '*b* is- $\psi$ ly *F*'.

Also, the persistence of a mixture in actuality cannot consist in the exercise of its ingredients' tangible capacities. A mixture is a homoeomerous body (328a10) and therefore has a single, unitary nature. This unitary nature is the principle of all of its tangible movements. A mixture could not possess its natural capacities if the ingredients from which it came to be were not present in it in potentiality. For a mixture to possess these natural capacities *just is* for these ingredients to be present in this manner of being. But the exercises of a mixture's distinctive tangible capacities are not the result of the compresent, autonomous, and antagonistic exercise of capacities possessed by the simple bodies that continue to be in the mixture. If the simple bodies from which a mixture comes to be were able to

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<sup>14</sup> A house, says Aristotle, is 'a composite unity formed by the synthesis of many things' (*De long.* 2.465a16-18). This is why a bed, when buried, issues wood and not another bed (*Phys.* ii 1.193b9-11).

<sup>15</sup> This is achieved through the mutual modification of the tangible *dunameis* possessed by the simple bodies that enter into the mixing. In mixing, the excesses of these *dunameis* are mollified. The result is a mixture with a unitary nature that comprises tangible *dunameis* that are derived from but not eliminable in favor of the *dunameis* of the simple bodies (328a28-31 and ii 7.334b9-16).

exercise these capacities when present in the mixture, they would be simple bodies in actuality, since the possession of these tangible capacities in such a way that they can be exercised exhausts what it is to be a simple body.<sup>16</sup> It is the continuous exercise of capacities that the mixture itself possesses in which a mixture's persistence consists.

In sum, the tangible movements of a mixture in actuality arise from a single, internal, unitary principle of movement and rest. So whereas houses are natural aggregates, mixtures are *natural unities*.<sup>17</sup>

The principle and cause of an organism's nutritive activities, like that of a mixture's tangible movements, is a single, unitary nature. A living organism's soul is its form and this form is a nature.<sup>18</sup> The soul is the internal principle and cause of those movements and activities that are the manifestation of a living organism being what it is (*De an.* ii 4.415b12-14). But the soul is not just an efficient cause of an organism's vital activities. As it is with most natural unities, the final, formal, and efficient causes of a living organism's vital activities coincide (*Phys.* ii 7.198a24-26). For 'the soul is the cause and first principle of the living body... the soul is the cause as being that from which the movement is itself derived, as that for the sake of which it occurs, and as the essence of bodies that are ensouled' (*De an.* ii 4.415b9-12). So insofar as a soul is a nature, one cannot understand an organism's vital activities without understanding them as occurring for the sake of a form, namely, the soul itself.

This is especially clear in Aristotle's discussion of an organism's nutritive activities. It is 'the same capacity of soul that is nutritive and reproductive' (416a19) and its exercise, which Aristotle calls 'the most natural function in living things' (415a27-28), is an activity of an organism's 'ensouled body, *qua* ensouled' (416b9-10). 'The cause of nutrition and growth...is the soul' says Aristotle, 'for in all things that are naturally constituted there is a limit (πέρας) and a proportion (λόγος) both for size and for growth; and these belong to soul, but not to fire, and to its account (λόγος) rather than to matter' (416a9-18). The activity of the nutritive soul *qua* threptic faculty (τὸ θρεπτικόν) is the exercise

<sup>16</sup> So, e.g., the mixing of commensurate parcels of hot/dry fire and cold/dry earth does not result in a mixture that is (hot/dry + cold/dry). Mere juxtaposition or superimposed compresence does not yield a mixture (i 10.327a34-b2). It does not follow, however, that the resultant mixture is warm/dry, where this indicates the coming to be of a mixture with a new primitive nature. Mixing is not *genesis* (327b2-7). The proper characterization of the resultant mixture is (hot-cold/dry-dry), where this indicates a unitary nature that is *not* primitive (ii 7.334b9-16). So mixtures have a single, unitary principle of movement and rest, but this principle is a principle of movements that it could not undergo without the ingredients from which it came to be being present in it in potentiality.

<sup>17</sup> Elsewhere Aristotle asserts that mixtures are a 'complete fusion' (πάντη μεμίχθαι, *De Sensu* 3.440b1-17) and that their 'nature is one' (*DC* i 7.275b35). This view of mixture conforms to Aristotle's general principle that 'a substance cannot consist of substances present in it in actuality; for things that are thus in actuality two are never in actuality one' (*Meta.* vii 13.1039a4-6).

<sup>18</sup> On the soul as form, see *De an.* ii 1.412a19-20; *PA* i 1.641a17-18; and *Meta.* vii 10.1035b14-16. On the identification of form and nature, see *Phys.* ii 1.193b6-7, 8.199a30-32; *PA* i 1.640b29, and *GC* ii 9.335b35-336a1. I discuss this conception of soul more thoroughly in Frey 2015.

of a ‘capacity such as to maintain its possessor as such’ (416b18-19). It performs this function insofar as it sustains the soul’s continuous exemplification in the same individual organism. The nutritive soul *qua* reproductive faculty (τὸ γεννητικόν) has the same function. However, given that terrestrial organisms are not eternal, it performs it insofar as it sustains the soul’s continuous exemplification in a numerically distinct organism by duplicating the soul as best as it can in that organism.

So the movements whereby nutriment becomes blood and blood becomes flesh have a single, unitary nature as their principle and end, namely, an organism’s soul. And this nature belongs not to the nutriment, but to the organism that is being nourished therefrom. In both digestion and reproduction, nutriment and blood are moved in the order and ratio necessary for an organism to come to be or persist as such and this nutritive activity is irreducibly for the sake of the organism’s continuous formal exemplification.

#### IV. Case 4: Artifacts (Cakes)

Though the choice to treat cakes separately from the typical Aristotelian examples of artifacts such as houses may initially appear peculiar, they are instances of an importantly distinctive class of artifacts: natural unities that arise through artifice. Cakes, as I will understand them, are not complex objects made up of multiple layers and adorned with elaborate decorations. I want to focus instead on quite simple creations—homoeomerous bodies in the shape of, say, a regular, rectangular prism, that come to be from a few simple ingredients, themselves homoeomerous, through the activity of a baker.

In one respect, cakes resemble the class of artifacts we have already discussed, viz., houses, more than they resemble naturally arising mixtures. The principle of the movements whereby a cake in actuality comes to be, like the principle of a house builder’s movements, is *external* (ἐπακτός) to the ingredients that are a cake in potentiality. A baker moves his ingredients in directions that are contrary to the ingredients’ natural motions in order to put them into reciprocal contact. He then beats the ingredients, which divides them into numerous, small, evenly dispersed quantities. Finally, the baker introduces a source of heat to this aggregate of minute, juxtaposed ingredients. The external source of heat initiates a type of concoction (πέψις), in this case ‘roasting’ (ὀπτῆσις), which drives the mixing of the aggregated ingredients resulting, ultimately, in a homoeomerous body (*Meteor.* iv 3.381a23ff.). The baker exercises these capacities for movement in the order and manner prescribed by the body of knowledge constitutive of the art of baking and has, as an explicit end of his activity, the generation of a cake that instantiates an appropriate form.

There are, however, three respects in which cakes resemble naturally arising mixtures more than they resemble houses. First, the movements initiated by the baker are meant to facilitate changes that are, if we prescind from the baker’s influence, entirely natural. Once the ingredients are moved through artifice into a condition and arrangement conducive to mixing, the mixing that occurs is no dif-

ferent *qua* mixing from what would transpire if the ingredients arrived in that condition and arrangement through the natural exercise of their locomotive capacities. Aristotle states explicitly that ‘the process [sc. of concoction] is the same in an artifactual and in a natural instrument, for the cause will be the same in every case’ (381a10-11). Second, the result of baking *qua* homoeomerous body is materially indistinguishable from what would result if those same ingredients were mixed naturally. So a change with an external, artifactual principle can result in a *natural* unity. And third, the matter from which a cake comes to be, unlike the matter from which a house comes to be, does not persist within the cake in the same manner of being it exhibits before the baking begins. The cake’s ingredients, before they are mixed, are the homoeomerous bodies they are in actuality; after the ingredients are mixed, they are those homoeomerous bodies merely in potentiality. It is the cake itself, and not its ingredients, that is a cake in actuality, and it is the continuous exercise of capacities the cake possesses, not its ingredients, in which the persistence of the cake in actuality consists.

As we have seen regarding case 3, the principles whereby an inanimate mixture comes to be are natures and these natures are internal (ἐντός) to the simple bodies that are the mixture in potentiality. The principle of an organism’s nutritive movements, a soul, is also a nature. But unlike the natures involved in inanimate mixing, the principle of an organism’s nutritive movements is, like the principles involved in artifice, *external* (ἐπακτός) or *foreign* (ἄλλοτριος) to the nutriment and blood that is moved. As the baker’s activities facilitate the natural mixing of ingredients from without, so the nutritive soul facilitates the natural processes whereby nutriment becomes flesh. Aristotle often compares nutritive/reproductive activities and artistic activities in just this respect.

[T]he capacity of the nutritive soul makes growth out of the nutriment, using heat and cold as its instruments’ (*GA* ii 4.740b29-31; cf. *De an.* ii 4.416a35-b2)

[T]he shape and the form [of, say, a house] are produced *from* the carpenter *through* the movement *in* the matter. His soul (in which is the form [of the house]) and his knowledge [of the art of carpentry] move his hands, ...the hands move the tools, and the tools move the matter. Similarly the male’s nature, in those that emit seed, uses the seed as a tool containing movement in actuality, just as in the productions of an art the tools are in movement; for the movement of the art is in a way in them. (i 22.730b14-24)

Nutriment does not have within itself the principle of its own concoction and blood does not become flesh in and of itself (αὐτὸ καθ’ αὐτό). The principle of the movements that occasion these changes is *internal* to a living organism, but *external* to nutriment and blood.

This externality has important consequences for blood’s status. The final and most important stage in the processing of nutriment is the conveyance of a novel

capacity for movement, viz., *being hot* (θερμόν), upon nutriment by the heart (cf. *J SVM* 3.469a1-9, 4.469b5-20; *PA* ii 7.652b6-15, and iii 4.666a24-667b29). So blood in a healthy body will be hot. But, in an important sense, blood does not possess this heat essentially. A living organism's blood is an *accidental compound*.

Accidental compounds—e.g. white-man, musical-Coriscus, and Socrates-seated—are not proper substances. But it is still intelligible to treat accidental compounds as if they have an account, and, if we do so, we must include their accidental attributes.<sup>19</sup> So *being seated* belongs in the account of Socrates-seated; if one subtracts from Socrates-seated his particular bodily orientation, the accidental compound ceases to be. The subtraction of this attribute, however, does not destroy any individual substance. In particular, Socrates-in-himself (Socrates καθ' αὐτό) survives his standing up; *being seated* does not belong in Socrates' account.

In the following passages, Aristotle clearly states that embodied blood is an accidental compound.

For what the underlying subject happens at some time to be may not *be* hot, but *be coupled* with heat, as if someone were to give a name to hot-water or hot-iron. In fact it is in this way that blood is hot. (*PA* ii 2.649a16-19)

[B]lood is in a way hot, i.e., insofar as it is what it is for blood to be blood; blood is spoken of just as we would speak of boiling water were we to signify it by a certain term [say, 'boiling-water']. But the underlying subject, i.e., whatever it is that is blood (ὅ ποτε ὄν αἷμά ἐστιν), is not hot; and in itself blood is in one way hot, and in another not. For heat will belong in its account, just as white belongs in the account of white-man; but insofar as blood is hot in virtue of an affection (κατὰ πάθος), it is not hot in itself (καθ' αὐτό). (ii 3.649b21-27; cf. *Meteor.* iv 11.389b8-15 and *Spir.* 5.483b19-21)

So fully processed and embodied blood, insofar as we consider it an accidental compound, is hot essentially; the heat embodied blood possesses by virtue of the heart's thermal activity belongs in its account. If one subtracts its externally-derived heat, it ceases to be. But one does not, through such a subtraction, destroy blood-in-itself (blood καθ' αὐτό). Blood-in-itself is a phase or stage of nutriment; it is nutriment in actuality. And since any given parcel of blood-in-itself is at best contingently related to the heart-mediated activities of the nutritive part of an organism's soul, the heat these activities convey to blood-in-itself will at best be possessed accidentally. Blood-in-itself possesses the thermal capacity it receives from the heart by means of an affection (κατὰ πάθος). The loss of the heart-induced, thermal capacity that blood-in-itself suffers when removed

<sup>19</sup> *Meta.* viii 2.1043a1-11. When used in its primary sense, the term 'account' is restricted to substances (vii 4.1030a2-7). Our extended use of 'account' brings with it an extended use of the term 'essence' since an entity's account is determined by its essence (5.1031a12).

from the organism in which it resides is analogous to the loss of the flame-induced, thermal capacity that water suffers when removed from a stove or to the alteration that occurs when Socrates stands up from his chair.

## V. Summary

There are three distinctions that determine the most significant differences among the cases that we have examined.

- (i) Is the principle of the progression from being an *F* in potentiality to being an *F* in actuality *internal* or *external* to that which is an *F* in potentiality?
- (ii) Is the principle of the progression from being an *F* in potentiality to being an *F* in actuality *natural* or *artifactual*?
- (iii) Is that which is an *F* in actuality a *unity* or not? If so, is it a *natural unity*, an *artifactual unity*, or an altogether different type of unity?

This Table plots the answers to these questions for the three substantial changes already fully considered and for the two nutritive changes that concern us.

Substantial Change	Internal or External principle of Change	Natural or Artifactual Principle of change	Natural or Artifactual Unity
bricks $\Rightarrow$ house	external	artifactual	artifactual
simple bodies $\Rightarrow$ mixture	internal	natural	natural
ingredients $\Rightarrow$ cake	external	artifactual	natural
nutriment $\Rightarrow$ blood	external	natural	?
blood $\Rightarrow$ flesh	external	natural	?

For our purposes, the most important aspect of this analogical explication of being in potentiality and being in actuality is that the principle of the change from unprocessed nutriment to blood and of the change from blood to flesh, viz., the nutritive part of an organism's soul, is unique in being both a *natural* principle and a principle that is *external* to the the nutriment and blood that undergo these changes.

## VI. Two Interpretations

Though I hope this (admittedly lengthy) discussion of being in potentiality and being in actuality is valuable in itself, its presence within the context of our larger project is instrumental. This larger task, recall, is to explain how the soul can be a homonymy-inducing principle of organic unity and, thereby, to illuminate the sort of hylomorphic analysis that is appropriate to living organisms. I will provide these explanations by contrasting two opposed interpretations of Aristotle's organic hylomorphism: a perennially popular, but, I shall argue, ultimately incorrect interpretation that I call *the prison model* and an alternative interpretation, *the natural continuity model*, which our examination supports.<sup>20</sup>

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<sup>20</sup> Though it is only occasionally elaborated in these terms, the prison model is maintained, either explicitly or implicitly, by a great number of interpreters. It is maintained not only by those

The prison model is so-called because it bestows the role of warden upon an organism's soul. According to this model, an organism's blood and tissues are materially indistinguishable from inanimate bodies with identical tangible capacities. That is, an organism's blood and tissues, like inanimate mixtures, possess some determinate natural temperature, some determinate natural level of moisture, and some determinate place towards which their locomotion naturally tends. The ratio in which these tangible capacities are present in a tissue is determined by the soul of its encompassing organism: a tissue comes to be with its particular tangible capacities because only a body with these capacities can execute a job or function (ἔργον) that is needed for the organism to exemplify, or exemplify more thoroughly, its particular form of life (cf. *PA* i 1.640a33-b4 and Gotthelf 1976). But the unfettered exercise of these tangible capacities would disrupt the organization required for the organism's vital activities and, according to the prison model, the nutritive soul effects an organic unity in part by systematically constraining their exercise. '[F]or what is it', asks Aristotle, 'that holds together the [tissues that possess the tangible capacities of] fire and earth, given that they tend in opposite directions? For they will be torn apart, unless there is something to prevent them'. The answer: 'if there is, then this is the soul and the cause of growth and nourishment' (*De an.* ii 4.416a6-9).<sup>21</sup>

The soul's influence is not absolute, and replenishing the matter that has escaped the body is among the nutritive soul's principle duties (*GC* i 5.321b25-26). The effectiveness of the soul's resistance is increasingly diminished with age and, upon an organism's death, its tissues no longer suffer the soul's external check and can exercise their tangible capacities for movement freely. This natural movement manifests itself as putrefaction (σῆψις). Flesh in actuality possesses its hypothetically necessitated role essentially, so when separation from an organism renders it unable to perform this role, it will be flesh in name only.<sup>22</sup> But, according to the prison model, the change in account that grounds this homonymy consists only in the removal of an externally imposed function from what is, in itself, an inanimate mixture. Sokolowski 1970, 275 provides a suc-

who wish to posit a level of matter in living organisms the identity of which is only contingently related to the form or the life-constitutive functions of the hylomorphic composite (e.g., Lewis 1994, Whiting 1992, and Gill 1989a) but also by those who interpret Aristotle's talk of material natures in such a way that an organism's nature is 'a complex of a *material* nature and a *formal* nature' where 'the generation of an organism arises from the interaction between these two natures' (Henry 2008, 70; cf. Lennox 2001 and Leunissen 2010). In fact, the prison model, as I understand it, will be held by anyone who claims that an organism's living tissues possess the same tangible *dunamis* for movement that inanimate bodies possess.

<sup>21</sup> Other passages that may be taken to support the prison model include *Phys.* viii 4.254b17-20; *DC* ii 6.288b15-19; *De an.* i 5.411b5-14; *PA* ii 9.654b29-33; *GA* i 22.730b14-24 and iv 4.770b10-18.

<sup>22</sup> For Aristotle clearly states that, 'all the homoeomerous bodies consist of the elements described, as matter, but their essence is determined by their definition... What a thing is is always determined by its function: a thing really is itself when it can perform its function; an eye, for instance, when it can see. When a thing cannot do so it is that thing only homonymously... The same, then, is true of flesh, except that its function is less clear than that of [e.g.] the tongue' (*Meteor.* iv 12.389b28-390a15; cf. *Meta.* vii 11.1036b30-32).

cinct expression of this view: ‘When a plant is eaten by an animal it ceases to be a plant, but a chemical assumed into an organism remains what it is; it keeps its conditions and capacities, but they are now organized into the teleology and work of a higher being.’<sup>23</sup>

Advocates of the prison model can appeal to an aspect of our analogical explanation of being in potentiality and being in actuality to support their interpretation. They emphasize the *externality* of soul *qua* principle of nutritive activity. In doing so, they take the transitions that occur between nutriment, blood, and flesh to be analogous primarily to the generation of artifacts. As a house builder moves a pile of bricks or a baker moves the ingredients before him, the nutritive soul is an external principle and cause of the movements whereby unprocessed nutriment becomes blood and blood becomes flesh.

Consequently, the prison model’s account of what it is for something to be flesh in potentiality will mirror an account appropriate to artifacts.<sup>24</sup> On this view, blood is flesh in potentiality simply by virtue of satisfying the appropriate conditions of material and situational adequacy. The heart’s thermal activity yields an accidental compound of (i) an externally-imposed, thermal capacity, and (ii) a material body that can exist as the body it is independently of an organism’s soul. It is in this state that blood is flesh in potentiality. A living organism’s vital heat, though necessary for the persistence of blood *qua* flesh in potentiality, is a violent check on the natural activity of blood-in-itself, i.e., blood *qua* nutriment in actuality. The nutritive soul does not incorporate blood into the organic unity that is a living organism’s body; it prevents a natural unity from acting in accordance with its nature.

Isolating blood from the influence of an organism’s nutritive activities undermines blood’s material and situational adequacy.<sup>25</sup> So the stuff we call blood

<sup>23</sup> Consider, also, Lewis 1994, 273: ‘in its natural, proper context, flesh or bone (say) is alive, as blood is hot—but like the heat of the blood, the life of flesh or bone is *externally* driven in a way that is determined by the form of the whole animal, which is an *external* principle relative to them. In addition to the living flesh and bone, then, doing (or at least capable of doing) its proper work within the living animal, and which has the form or soul of the animal as its constitutive form-analogue, there exists also the material basis for the flesh or bone, which comprises all the correct material parts, but which can exist independently of the animal’s form or soul’. Lewis also thinks this is an appropriate way to characterize the soul’s relationship to an organism’s anhomoeomerous parts: ‘Life to the hand or eye, for example, is like heat to blood: in its natural, proper context, the hand or eye is alive, as blood is hot—but like the heat of the blood, the hand’s life or the eye’s is *externally* driven, in a way that is determined by the form of the whole animal’ (266).

<sup>24</sup> Lewis 1994, 265 expresses this view succinctly: ‘blood is still more like an artifact than a natural object, since its behavior as blood is not governed by an internal principle. Unlike that one-time artifact, the human offspring (say), blood never acquires an internal principle, and is more artifact than natural object for all of its existence’.

<sup>25</sup> (i) *Situational Adequacy*: Disembodied blood is no longer positioned in such a way that an organism’s nutritive capacities can immediately be exercised upon it to produce flesh. If a quantity of disembodied blood is to regain its situational adequacy, this typically requires that it first change in such a way that it can be consumed as nutriment and then proceed once more through the organism’s digestive system (*Meta*. viii 5.1045a3-6). I say ‘typically’ because of exceptional cases involving,

that covers a crime scene is blood in name only. But the change in account that grounds this homonymy consists only in the loss of an externally-imposed, thermal capacity from what is, in itself, a relatively cold, inanimate mixture.

Though the prison model is explanatorily fruitful, it is important to point out that it is only with respect to its externality that the principle of the movements involved in the coming to be of blood and flesh is similar to the principle of the movements involved in an artifact's generation. In another respect, these nutritive movements resemble more closely the movements that simple bodies undergo when they mix naturally. That is, the principle of an organism's nutritive movements is a nature. We have already acknowledged that this nature, in contrast to the natures involved in inanimate mixing, is external to what it moves. Nevertheless, recognition of this natural origin supports an account of organic hylomorphism that is quite different from the account that the prison model offers.

I call this alternative interpretation *the natural continuity model*. According to Aristotle, that which is continuous by nature exemplifies a higher degree of unity than does any complex of independent but interrelated elements. In particular, 'the continuous by nature are more one than the continuous by art' (*Meta.* v 6.1016a4). Something is continuous by nature only if it (i) 'has in itself something that is the cause of its continuity' (x 1.1052a25) and (ii) 'has by its own nature one movement and cannot have any other' (v 6.1016a5-6).<sup>26</sup> That is, something is continuous by nature only if its various natural movements arise from a single, unitary, internal principle of movement and rest and only if these movements occur for the sake of a single, formal end.

We established earlier that an organism's nutritive activities are, in this way, an expression of a single, unitary capacity for form. Nutriment and blood are moved in the order and ratio necessary for an organism to come to be or persist as such by a unitary nature, and this nutritive activity is irreducibly for the sake of the organism's continuous formal exemplification. It is this feature of the soul—that it is the single, internal principle of an organism's nutritive movements as well as the single form for the sake of which these movements occur—and not its externality to what it moves, that the natural continuity model considers paramount.

How does the natural continuity model's account of what it is to be flesh in potentiality and what it is to be flesh in actuality differ from that of the prison model? I discuss each of these manners of being in turn.

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e.g., transfusions. (ii) *Material Adequacy*: When blood loses its vital heat, its account will be exhausted by its inanimate, tangible *dunamis* for movement. For 'so long as blood, semen, marrow, rennet and the like keep their proper nature they are hot, but once they perish and lose their proper nature, no longer; for what is left is the matter, which is earth or water. So there are two views about them, and some regard them as cold, some as hot, seeing that as long as they are in the natural organism (ἐν ᾧ φύσει), they are hot, but when they are separated, they solidify' (*Meteor.* iv 11.389b10-15).

<sup>26</sup> Cf. v 4.1014b21-26, vii 16.1040b5-16, and 17.1041b11-16. A similar emphasis on natural continuity is found in Gotthelf 1999, 44-47.

According to the prison model, flesh in potentiality is nothing more than well-positioned, fully-digested, materially adequate (i.e., hot) nutriment; blood is, with respect to its nature, an inanimate mixture that just happens to be affected by an external source of heat. Thus understood, blood's tangible capacities can be characterized exhaustively without having to appeal to an organism's substantial form or nature. Everyone admits that blood's heat has an organism's soul as its principle. But this connection is accidental. If a quantity of nutriment were (somehow) to satisfy a nutritive soul's conditions of material and situational adequacy either by its own natural development or by the external influence of something other than its encompassing organism's soul, this would make no difference to its status as flesh in potentiality. So the prison model views the external conveyance of vital heat to nutriment to be an unnatural imposition of a capacity for movement upon an otherwise autonomous natural unity.

The natural continuity model, in contrast, takes the change that nutriment undergoes when it is heated by the heart to be transformative. The coming to be of blood is the coming to be of something that, in one manner of being, now belongs to the animate, natural unity that is a living organism's body. The principle of blood's heat is its encompassing organism's soul and the exercises of the thermal capacity blood acquires occur for the sake of this soul. So the nutritive soul does not merely impart to nutriment an inanimate, tangible capacity on par with the battery of capacities for movement that it already possesses. The nutritive soul imparts a primitive directiveness upon a determinate form of animate existence.

So according to the natural continuity model, blood's status as flesh in potentiality consists in more than the satisfaction of appropriate conditions of material and situational adequacy. Its movement must also be a partial expression of an organism's '*one movement by nature*'.<sup>27</sup> Not all of blood's capacities are so-unified; blood remains, in one manner of being, nutriment in actuality. But the extent to which blood's movements have an organism's nature as principle and end is the extent to which blood forms a natural unity with that organism.

This connection to the soul provides a more substantive ground for the homonymy that characterizes embodied blood and its disembodied counterpart. The change that occurs upon blood's separation from a living organism is not like the change that occurs when Socrates stands up from his chair; it is more than the removal of an accidental feature from a persisting quantity of nutriment. None of the movements of disembodied blood have an organism's nature as principle or end, and it is this fact that grounds its being a homonym. Blood bereft of soul is blood in name only because none of its movements is in any way a partial realization of a naturally continuous organism's unitary activity for form.

The natural continuity model also differs from the prison model with respect to its account of what it is to be flesh in actuality. According to the prison model, a

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<sup>27</sup> So unlike those reversible processes that involve the destruction of that from which something comes to be, e.g., the coming to be of air from water, flesh comes to be from 'that which is coming to be'—it is a perfection that is irreversible (ii 2.994a22-b3, viii 5.1045a2-3, and *GA* i 18.724a21-35).

tract of living flesh can possess the same tangible capacities as an inanimate mixture and these tangible capacities determine the ‘material basis’ upon which the tissue’s essential, organic function is externally imposed.

In contrast, the natural continuity model holds that there is no level of analysis at which an organism’s living tissues have their own internal principles of movement and rest.<sup>28</sup> Flesh in actuality comes to be with the tangible capacities it does for the sake of the (further) realization or perpetuation of an organism’s soul *qua* form. Moreover, the very soul for the sake of which flesh in actuality comes to be is, once it has come to be, the natural principle and end of all of its vital movements. This requires that we individuate the tangible capacities of the tissues differently than we would in an inanimate context. All of a living tissue’s capacities, including its tangible capacities, are part of an organism’s unitary capacity for form.<sup>29</sup> Hence, the homonymy that characterizes a living organism’s organs and tissues applies to its tissues’ tangible capacities as well.

When an organism dies, a plurality of material bodies is not *freed*. The transition from life to death is a perishing of a single organic unity, viz., an ensouled organism, and the coming to be of a heap of inanimate bodies with proprietary natures, viz., a corpse. And when a tract of flesh is cleaved from a living organism, a material body does not *escape*. In such cases, an inanimate, natural unity comes to be from what was and remains a naturally continuous, organic body. So disembodied flesh is flesh in name only. But the change in account that grounds this homonymy does not arise because a body whose identity is determined solely by its tangible capacities can no longer perform the organic function that was once its charge. For even the tangible movements of flesh in actuality have a naturally continuous organism’s soul as their principle and end.

Given this, the natural continuity model yields an account of organic hylomorphism according to which animate beings are, by nature, isolated from their inanimate environments. Living organisms are not whirlpools or vortices within a plenary sea of Empedoclean matter; they are islands.<sup>30</sup>

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<sup>28</sup> The parts of animals are among those things commonly held to have proprietary natures (*Phys.* ii 1.192b9-14 and *Meta.* vii 2.1028b8-13). But Aristotle proceeds to disabuse common opinion and states explicitly that both an organism’s anhomoeomerous and homoeomerous parts lack their own internal principles of movement and rest (16.1040b5-16 and xii 3.1070a18-20; cf. Waterlow 1982, 53 and 88).

<sup>29</sup> As Aquinas remarks, a living organism’s soul ‘itself alone does whatever the imperfect forms do in other things’ (ST I, 76, iv).

<sup>30</sup> I presented versions at UC Irvine, UCLA, University of Chicago, Loyola Marymount University, and Humboldt Universität Berlin. In addition to the audiences at these talks, I wish to thank Andre Begby, Mark Bullio, Alan Code, David Ebrey, Jennifer Frey, Sean Kelsey, Jim Lennox, Marko Malink, Ronald Polansky, and Gabriel Richardson Lear for their comments, criticisms, and support. Special thanks in this regard are due to Allan Gotthelf.

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