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Daniel W. Graham  
*Brigham Young University*

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# POTENTIALITY-ACTUALITY AND MATTER-FORM

Daniel W. Graham

It is an Aristotelian commonplace that the potentiality-actuality and the matter-form schemes are interchangeable and equivalent:

Matter is potentiality and form actuality (*entelecheia*) . . . (DA II 1, 412a9ff.)

[To use the privation-matter-form scheme] then is one way to explain these things; it is possible to account for these same facts by using the potentiality-actuality scheme. (*Ph* I 8, 191b27-29)

If, as we claim, the one part is matter, the other part form, i.e. the one exists potentially, the other actually, the problem is no longer insoluble. (*Met* VIII 6, 1045a23-25)

Such statements encourage the view that potentiality-actuality and matter-form are two alternative schemes that do the same work in Aristotle's metaphysics. Attempts to distinguish the schemes have focused largely on the difference of intension rather than any difference in function. Thus Zeller described matter and form as components (*Bestandteile*) while potentiality and actuality were states (*Zustände*).<sup>1</sup> While Zeller's characterization is correct as far as it goes, it does not go nearly far enough: it does not explain why two distinct schemes are needed. Yet no significant progress has been made in understanding the relation of the two schemes since Zeller.

In this paper I shall argue that the two schemes and the respective theories in which they are imbedded are not equivalent in any important sense. Rather they are complementary schemes which, though individually insufficient to explain the problem of change as Aristotle recognized it, are jointly sufficient. I shall maintain that (I) hylomorphism is prior to actuality as an explanatory scheme, but (II) it fails to explain important data concerning change which actuality theory accounts for; finally (III) I shall briefly indicate how this account of the structural relations between hylomorphism and actuality theory meets certain objections and accords with certain facts about the historical development of Aristotle's theories.

## I

Although there is a wide range of applications of hylomorphism (hereafter: *H*) and of actuality theory (thereafter: *A*), it is plausible to believe that their primary domain of explanation is the problem of change. Phenomena of change had been considered problematic in the Greek tradition since Parmenides. In *Ph* I Aristotle develops the matter-form scheme as the basis of a general account of change which he asserts is adequate to provide a reply to the Eleatics (ch. 8). The Eleatics claim that if there is coming-to-be, what is must come to be either from what-is or from what-is-not: but it cannot come from what-is, because it already is, and it cannot come from what-is-not because what-is-not is not.

Aristotle's reply to the Eleatics can be construed to consist of a negative dialectic

1. What-is came to be from what-is-not  
does not require the analysis

2. Something came to be from nothing.

The failure of analysis can be exhibited with a sentence like

3. The man who was not musical came to be musical.

Here the coming-to-be was not a coming-to-be of a substance S out of nothing, but of a feature F in a substance S which came to be from being not-F. Thus:

4. The not-F S came to be F.

Aristotle accepts the gambit of allowing what-is-not to enter the analysans, but he shows that the not-being in question is not *nothing*.

This exercise shows that not every case of coming to be is a case of coming to be from nothing. This is not all that Aristotle requires, however. For he also must explain what are for him (and indeed the whole tradition) the most problematic cases of change: substantial change. The post-Eleatic pluralists had simply thrown in the towel on this kind of change: they posited eternal substances (in a broad sense of 'substance') which did not themselves change but which supported qualitative or locomotive change. They reasoned that a substantial substratum would provide a foundation for continued existence. To be true to the phenomena, however, Aristotle is committed to accommodating substantial change. Thus he must provide a positive account of substantial change. If the scheme embodied in (4) above is to be generalized to substantial change, he must have a candidate for the substratum S and the feature F.

At this point, by invoking a craft analogy, Aristotle is able to provide *matter* as a substratum and *form* as a feature: as the shape of a statue is to the bronze, so in nature a biological form is to a biological matter. Aristotle's general strategy is in many respects similar to that of the pluralists (although he does not acknowledge the similarities), since it involves finding a substance at a deeper and more basic level than that of middle-sized discrete objects, and making that the substratum for change. Of course Aristotle's scheme is more flexible, since it does not posit a single stuff but rather allows for hierarchies of matter from prime matter up to proximate matter like bronze to serve in a given context; and it does not require that the substratum for a given change be eternal. But in the broad sense Aristotle's scheme is a more abstract continuation of Presocratics' strategies to save the phenomena of change: he provides a model within which change is intelligible and the canons of Eleatic being are not transgressed. To use Zeller's terminology, the components of substance, matter and form, provide the metaphysical basis for a justification of substantial change.

Now, can the potentiality-actuality scheme similarly explain the possibility of change and in particular substantial change (as Aristotle claims, *Ph* I 8, 191b27-29, quoted above)? That is, can A by itself do the work of H? Take for example the growth of an acorn into an oak tree. According to A we can explain the process as follows: the acorn was *potentially* an oak tree, and it gradually realized its potential, finally becoming an *actual* oak tree. Now does this explain anything? It looks suspiciously like the parody explanation of opium in Molière: opium causes sleep because it has

a dormitive power. The acorn grew to be an oak because it had the potentiality—i.e. the power—to become an oak. The proffered explanation looks like a mere reiteration of the phenomenon in technical language.

There is one way in which the appearance of tautology can be eliminated. The modern approach to tendencies which Aristotle expresses as potentialities is to describe them in terms of dispositions to act in a certain way in certain situations. For instance, salt has a disposition to dissolve in water. The dispositional property is a fact of salt. But science does not stop with the disposition. It uses the property as a starting point for examining why the substance has the disposition. At this point molecular chemistry and atomic physics can provide an explanation for the phenomenon. Salt has a molecular structure of NaCl; the bonding between atoms is ionic; water has a structure of H<sub>2</sub>O; in it ionic bonds are dissolved, etc. Modern science is not guilty of tautology because it uses dispositional statements as a starting point of explanation, not as a substitute. The recognition of potentiality is preliminary to scientific explanation; it does not constitute that explanation.<sup>2</sup>

This strategy is open to Aristotle if he treats the actuality scheme as *preliminary* to the hylomorphic scheme. That is, if he should construe the potentiality account of the acorn as an initial scientific characterization of the phenomenon in question preliminary to an explanation. We need an initial scientific characterization in order to locate the point to be explained. In this case by attributing potentiality to the acorn, we are recognizing that the explanation should focus on this feature. Subsequently we can invoke a deeper account which will serve as a genuine explanation of the phenomenon. Presumably this deeper explanation will be in the form of a statement that the matter is this and the form is that and the form becomes exemplified in such-and-such a way. But this then brings back *H* as an essential element in the account. Hence *A* does not provide an independent explanation.

In general, any statement of potentiality invites a further explanation of the ground of that potentiality, which then requires the matter-form scheme. If this analysis is correct, *A* and *H* are not equivalent or interchangeable schemes, but *A* is subordinate to *H*, which is the prior scheme.

## II

If *H* is prior to *A*, is *A* then expendable? In other words, could every statement using *A* be translated into a statement that did not introduce *A*, without any consequent loss to the explanatory power of the scheme? Or alternatively, is *A* merely a corollary of *H*, such that actuality theory follows from hylomorphism? In this case we could not abandon *A*, since it is entailed by *H*, but we would not be adding anything to *H* by adding *A*; we would merely be making explicit an implicit consequence of hylomorphism.

I shall argue that *A* is logically independent of *H* and also indispensable as an ancillary theory to hylomorphism.

Consider a philosophical theory like Aristotle's which has every principle and sub-theory of Aristotle's except *A*. Now suppose we are to explain how an acorn becomes an oak tree, given that we have an acorn at time  $t_1$  and an oak tree at time  $t_n$ . *H* gives us the ingredients we need for an explanation: there is a material substrate that persists from  $t_1$  to  $t_n$ . It is not too clear what the substrate in question is; it is clearly not the acorn, since this does not persist. It is plausible to think, however, that, some

stuff remains from the beginning to the end of the process. Perhaps it is protoplasm. Furthermore, there is a form which characterizes the mature oak tree. Again it may be difficult to characterize the component, but it seems plausible enough that there should be some structural and functional elements which the mature tree exhibits.

All of this seems standard and unexceptionable. We clearly have the ingredients of explanation. There is matter, and the matter is such-and-such; there is form, and the form is such-and-such. The matter gets the form of oak tree and hence becomes an oak. One may press the issue of why this kind of matter gets this kind of form. Clearly Aristotle is aware of constraints the matter makes on the kind of form it can have (e.g. *Met IX 7*). But the case can be examined in terms of the kind of considerations Aristotle introduces in connection with the definition of soul: only certain kinds of bodies can have soul. Aristotle's account of those bodies involves potentiality. Only certain bodies have the potentiality to receive soul, namely those that have organs, i.e., a functional differentiation of parts.

Can the reference to potentiality in an analysis of the natural body be eliminated by translation? Aristotle gives several equivalent definitions of soul, some of which lack a reference to potentiality, some of which lack a reference to actuality:

1. Soul is the form of a natural body potentially having life. (412a20f).
2. Soul is the first actuality of a natural body potentially having life. (a27f)
3. Soul is the first actuality of a natural body having organs. (b5f)

Here through a series of equivalences, we get from one definition to another. 'Form' is replaced by 'first actuality' and 'potentially having life' is replaced by 'having organs'. Now although the predicates of potentiality and actuality are prominent here, we can use the equivalences not only to introduce them but to eliminate them. Thus, it seems perfectly consistent with Aristotle's method to infer

4. Soul is the form of a natural body having organs.

Thus for someone skeptical of actuality, it appears that references to the theory in the present context are not indispensable.

We might object that (4) does not capture the distinction between first and second actuality and hence between the more rudimentary but general function of living and the higher but limited function of being active. However, it seems the skeptic can account for the difference in terms of *H* without appealing to *A*. For he could claim that to be active is merely to instantiate the form of an *informed* natural body having organs. In other words, a second actuality is a form of a form. Although Aristotle might be reluctant to acknowledge that there could be a form of form, he clearly accommodates relationships that can be analyzed in this manner into his theories. For instance the differentia is to the genus of a definition as form is to matter (e.g. *Met. VII 12*, 1038a5–9). The active intellect is to the passive intellect as form is to matter (*DA III 5*). Both the essence and the intellect are forms, and hence the analogies in question give us a form of form. Thus despite Aristotle's fastidiousness, there is no reason in principle to block the skeptic's move.

Is there any other sense in which *A* is indispensable to Aristotle's metaphysics? I believe there is. To return to the acorn example: we have the ingredients of an explanation, namely matter and form, an initial condition and a final state. But there is something missing in this list for an adequate account of change. For we lack the ability to say what has happened between  $t_1$  and  $t_n$ . At  $t_1$  the form was not in the matter; at  $t_n$  the form was in the matter. At  $t_1$  we had an acorn but not an oak;

at  $t_n$ , we have an oak. But there is a serious gap here: it looks as if the form appears suddenly at  $t_n$  without being present at any  $t_i$  prior to  $t_n$ . Indeed, Aristotle's doctrine of form seems to entail this account. For he claims that form is simple and discrete. Form and other simple entities either are or are not without coming to be gradually.<sup>3</sup> Thus it appears that while we can account for the change from being an acorn to being an oak, we cannot account for the *gradual* development. The world that a theory containing  $H$  but not  $A$  would be adequate to explain would be a world in which all changes were sudden and abrupt.

But that is not the kind of world we live in, as Aristotle is well aware. Not only must we explain change *contra* the Eleatic; we must explain the *continuity* of change. And this is precisely the reason for positing a new theory in addition to  $H$ . We must provide the metaphysical ground for a gradual development of form. Since form is simple and discrete, a gradual development of form per se is ruled out. We must think in terms of a continuum of instantiation, such that the matter has more of the form at time  $t_2$  than at  $t_1$ , and more at  $t_3$  than at  $t_2$ . Let us then take our hypothetical theory that has only  $H$  and add to it a scale of instantiation. We might think of the new scale graphically as running along a vertical axis in contrast with a horizontal time line. The growth of the oak tree can then be represented as a continuous ascending line.

We now need a name to represent the scale of instantiation. In Aristotle's terms a continuous scale partakes of the More and the Less since it provides relative determination of location. We thus need a term to describe a position of lesser instantiation and a position of greater instantiation. Here the terms Potentiality and Actuality seem perfectly apt. They are correlative terms to describe relative positioning along the continuum. We also would profit from a term which describes the final state of complete instantiation which is the goal of a process. Let us call this final state the state of Realization or Complete Reality. I take it that these three terms approximate to the terms *dynamis*, *energeia* and *entelecheia*, respectively. Given our construction of a scale of instantiation, the terminology is motivated by the situation.

The story I have told of a scale of instantiation provides a theoretical motivation for a theory of actuality. In fact  $A$  seems to meet the needs required by a hylomorphic theory that attempts to explain the continuity of change as well as change itself. The terminology of actuality theory seems to grow out of the nature of the solution to the metaphysical problem. In fact it is well known that Aristotle conflates his terms *energeia* and *entelecheia*, using them interchangeably.<sup>4</sup> However, he also recognizes a pregnant sense of the terms in which they differ in connotation.<sup>5</sup> Thus despite his usual laxness of usage, Aristotle acknowledges a conceptual difference lying behind the terminology.

Clearly  $H$  does not entail  $A$  since without the latter  $H$  is insufficient to explain continuity of change.  $A$  does not entail  $H$  but rather presupposes it as supplying the givens for an account of continuity. Thus  $A$  is logically independent of  $H$ . It is not an alternative to  $A$  because it has a different domain of explanation:  $H$  explains change,  $A$  explains the continuity of change. In a sense,  $H$  answers Parmenides,  $A$  answers Zeno.  $A$  is thus a supplementary theory to  $H$ , but one that is necessary to explain the world of nature as we know it, and especially as Aristotle conceives it.

The argument I have presented gives philosophical reasons for thinking that Aristotle's two theories of potentiality–actuality and matter-form are independent theories. Yet there are some challenges that can be raised to my account. I shall deal briefly with several problems.

First, how can a development take place at all in a subject if the form is not already present?<sup>6</sup> The orthodox Aristotelian answer is that it is already present—but potentially. But the objector replies that this begs the question, for what we really want to know is how the form is present when it is not present. Here another distinction is necessary. There must be some indwelling source of change—often a nature, in Aristotle's terms, which presumably manifests itself as a structure of the matter which will change. Today we would identify DNA as the relevant structural feature of developing biological organisms. Some such structural determinant must be there for an *x* to be potentially an *F*, for not every state of relatively unformed matter is potentially an *F* (*Met* VII 7). But the structural feature is not the form in the sense in which an *x* is an *F* when it reaches the form of an *F*. An acorn is not an oak tree because it does not have branches, trunk and root system, nor does it produce leaves and acorns of its own, photosynthesize, etc. Thus the substantial form is not fully present until the final stage (*Met* VII 8, 1050a4–7); nevertheless some nature which governs the development and produces the form is present from the outset.

But if we try to explain how the form is present at an intermediate stage another problem arises.<sup>7</sup> If the form of a living thing is its soul, what is present before the organism is fully grown? Part of a soul? In a way, the answer is yes, strange as it may seem. To be more precise, the soul is not so much a whole of parts as a hierarchy of functions. But clearly not all functions are present in the developing human; for instance, the child is not yet fully rational, and accordingly is not psychologically differentiated from other animals (*HA* VIII 1, 558a31–b3). Thus the full range of psychological functions is not present in an organism *ab initio*, and hence there is no conflict in allowing that form supervenes only gradually on a living organism and in admitting that soul is form.

This last point may be generalized to explicate the role of *A* in explaining change. Previously I noted that *A* provides only a preliminary explanation of change, while a structural account based on *H* must do the real explaining. It may seem then that *A* is really otiose. Not so: what it does is to offer a mapping of an infinite series of potential states of affairs onto an infinite series of actual states of affairs. Thus at any time *t<sub>i</sub>* for *x* to be potentially *F* is for it to be actually *F<sub>i</sub>*; to be potentially a human is to be actually an immature human; to have a potentially rational soul is to have a soul with actual functions that fall short of a rational soul but which will develop rationality if nothing impedes. The actual states of affairs must ultimately be explicated in terms of structures in matter, but *A* determines a general framework for explanation.

It appears then that the mechanical and philosophical problems of distinguishing *A* from *H* can be met. Yet what can be said of the lack of textual support from Aristotle himself? For the author of the theories does not recognize their independence. Is there then any evidence that we might draw from the text to support the present revisionary thesis in the face of Aristotle's silence or even disagreement? There is, I believe, one important piece of circumstantial evidence that tends to confirm the

present thesis. Unfortunately, I can no more than allude to that evidence here.<sup>8</sup> A study of the temporal development of the concepts of potentiality-actuality and of matter-form shows an interesting correlation: the latter scheme does not appear in Aristotle's early works at all, the former scheme appears only in the context of logical and particularly ethical discussions. But almost as soon as Aristotle introduces a hylomorphic metaphysics, he begins to apply actuality theory to substantial changes.

Furthermore, soon after introducing hylomorphism, Aristotle coins his new word in actuality theory, *entelecheia*.<sup>9</sup> This suggests that at this point he felt a need to distinguish between the terminus of a process (*entelecheia*) and the exercise of a capacity (*energeia*). In Aristotle's early theory the sense of actuality as the exercise of a capacity suffices to deal with all the problems of ethics, value theory, and logic which he considers. The need for a new sense would arise naturally when he tried to correlate potentiality and actuality with matter and form, with the informed substance appearing as the terminus of a process of change. The substance is not a mere state of activity of a capacity, but the state of completion (*entelōs echein*) of an end-directed process.<sup>10</sup> Thus we find that *A* undergoes a fundamental theoretical and terminological development at about the time *H* appears.

Although Aristotle himself gives an account of *H* and of *A* which makes them equivalent and interchangeable, there are philosophical and philological reasons for thinking that they are not. And although his own interpretation of the theories conflates them, we have found indirect evidence that they are distinct; for the development of *A* seems to follow the development of the theory of substance: when Aristotle lacks a theory of hylomorphism, he lacks a notion of substantial actuality; when he introduces the notion of hylomorphism, he introduces substantial actuality. Perhaps Aristotle's comparisons of the concepts of actuality and of realization show more clearly than anything that at one time Aristotle distinguished a new concept of complete reality from a concept of activity; but custom and sloppy semantics blurred the distinctions until his terms *energeia* and *entelecheia* were indistinguishable except biographically. Indeed, not only did Aristotle conflate his concepts but he ran together his related theories of hylomorphism and of actuality until their structural relationship was no longer visible.<sup>11</sup>

Department of Philosophy  
Brigham Young University  
and  
Clare Hall, Cambridge



- <sup>1</sup> Eduard Zeller, *Die Philosophie der Griechen*, 3rd edn., vol. 2, pt. 2 (Leipzig, 1879), 318 n. 4.
- <sup>2</sup> Cf. Robert Cummins, *The Nature of Psychological Explanation*, (Cambridge, Mass., 1983), 18 ff.
- <sup>3</sup> *Met.* VIII 5, 1044b21–24, VII 8, 1033a28–b7.
- <sup>4</sup> Hermann Bonitz, *Aristotelis Metaphysica* (Bonn, 1849; repr. Hildesheim, 1960), vol. 1, 387 f.; Chung-Hwan Chen, "The Relation Between the Terms *Energeia* and *Entelecheia* in the Philosophy of Aristotle," *Classical Quarterly* 52 (1958): 12–17; George Blair, "The Meaning of 'Energeia' and 'Entelecheia' in Aristotle," *International Philosophical Quarterly* 7 (1967): 101–117. See also Giovanni Reale, "La dottrina aristotelica della potenza, dell' atto e dell' entelechia nella 'Metafisica,'" in *Scritti di filosofia e di storia della filosofia in onore di Francesco Olgiati* (Milan, 1962), pp. 145–207.
- <sup>5</sup> *Met.* IX 1, 1045b34–6a4; 3, 1047a30–32; 8, 1050a21–23.
- <sup>6</sup> The problem is from Jerome Schiller.
- <sup>7</sup> The problem was suggested to me by Alan Silberman, the solution by Ronald Polansky.
- <sup>8</sup> See my discussion in *Aristotle's Two Systems* (Oxford, 1987), esp. ch. 7.
- <sup>9</sup> One can determine when Aristotle introduced the term *entelecheia* by noting the earliest works in which it appeared; see table of occurrences in Blair, *op. cit.*
- <sup>10</sup> I reject as philologically unsound the etymology that derives *entelecheia* from *en [heautōi] telos echein* and as unlikely the derivation from *to enteles echein*. See my "The Etymology of *Entelecheia*," *American Journal of Philology*, forthcoming.
- <sup>11</sup> I am grateful to the participants at the conference on Aristotle's Ethics and Metaphysics at the University of Dayton for stimulating discussion of my ideas pro and con, and in particular I thank my commentator Jerome Schiller for his searching queries.