A Note on TA ΕΣΧΑΤΑ ΕΙΔΗ at 644a23 in Aristotle’s Part. An. 1.4

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A NOTE ON TA ΕΣΧΑΤΑ ΕΙΔΗ AT 644A23 IN ARISTOTLE’S *PART. AN.* 1.4*

Is Aristotle committed, as a theoretical matter, to fixed species in biology? The answer seems to be a resounding no, if we were to infer his theoretical commitments from the actual practice found in his biological works.1 The answer, however, is far from clear, if we turn to the ‘philosophical discussion of biology’2 found in Book 1 of *Parts of Animals.* In fact, I shall note that its context suggests that, contrary to some recent interpretations put forward,3 the phrase τὰ ἑσχάτα εἴδη at 644a23 is best translated4 and understood as ‘infima species’, and that such a reading implies that Aristotle favours the methodology that reflects his *theoretical commitment*5 to fixed species (at least in Book 1 of *Part. an.*).

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1 As amply shown by the works of some scholars: e.g. D.M. Balme, ‘Γένος and εἴδος in Aristotle’s biology’, *CQ* 12 (1962), 81–9, at 85 shows that there is no evidence to support ‘that Aristotle did actually classify animals into genera and species’; P. Pellegrin, ‘Logical difference and biological difference: the unity of Aristotle’s thought’, in A. Gotthelf and J. Lennox (edd.), *Philosophical Issues in Aristotle’s Biology* (Cambridge, 1987), 313–38, at 324 points out that εἴδος and γένος are relative terms that do not ‘mark a fixed level of generality’ but are applied at various levels, where Aristotle seeks his definition of kinds; and J. Lennox, *Aristotle: On the Parts of Animals I-IV* (Oxford, 2001), 122 states explicitly that he purposefully avoids using ‘the standard Latinate translations “genus”, “species”, and “differentia” which are embedded in modern taxonomic theory and practice’, because he believes that such a theory and practice ‘systematically mislead the modern reader of Aristotle’.

2 This is the description of Book 1 of *Part. an.* by Balme (n. 1), 83.

3 Most notably by Lennox (n. 1), 122–3 and 169–70 (which are discussed in this article).

4 Although, as a principled matter of translation, it is innocuous to render all occurrences of εἴδος as ‘form’ since Aristotle himself does not use separate terms for ‘form’ and ‘species’, as a principled matter of interpretation, it is perspicuous to pin it down by means of a precise term (‘species’ as opposed to ‘form’), as some scholars do (e.g. D. Charles, ‘Aristotle on meaning, natural kinds and natural history’, in D. Devereux and P. Pellegrin [edd.], *Biologie, Logique et Métaphysique chez Aristote* [Paris, 1990], 145–67, at 154). At the end of this article, I shall address how the relative notion of ‘form’ and the fixed notion of ‘form’ (that is, ‘species’) correspond to the two different methods introduced by Aristotle in *Part. an.* 1 and the consequences that result from employing these methods.

5 Although some scholars (see n. 1) may reduce the question of whether Aristotle is committed to fixed species to the question of whether Aristotle is committed to a fixed classification of animals, in this article I shall separate these two questions and focus exclusively on his commitment (at least in theory) to fixed species. In other words, even if Aristotle is committed to fixed species, a number of options are logically possible: (1) he is also committed to fixed classification of animals; (2) he is committed rather to pluralistic classification (as defended most recently by D. Henry, ‘Aristotle’s pluralistic realism’, *The Monist* 94 [2011], 198–222); or (3) Aristotle is not interested in classifying animals at all. I shall briefly mention this issue at the end of this article.
The crucial passage, containing the disputed phrase τὰ ἐσχάτα εἰδή, is the following (644a24–b1; Lennox’s translation with slight modifications):

Since, however, it is τὰ ἐσχάτα εἰδή that are substances (οὐσίαι), and these (ταύτα), for example, Socrates and Coriscus, are undifferentiated in respect of form (τὸ εἴδος ἀδιάφορα), it is necessary either to state what belongs universally (καθόλου) first, or to say the same thing many times. And things that belong universally (καθόλου) are common (κοινά); for things that belong to many we call universal (καθόλου). There is, however, a puzzle about which of those two should be our subject. On the one hand, in so far as what is indivisible in form (τὸ εἰδεῖ ἄτομον) is a substance (οὐσία), it would be best (κράτησον), if one could, to study separately the things that are particular (καθ’ ἕκκαστον) and undivided in form (ἄτομον τὸ εἰδεῖ)—just as one studies mankind, so too bird; for this kind (τὸ γένος) has forms. But the study would be of any one of the indivisible birds (τῶν ἄτομων), for example, sparrow or crane or something of this sort. On the other hand, in so far as this will result in speaking many times about the same affection because it belongs in common to many things, in this respect speaking separately about each one is somewhat silly and tedious.

Lennox notes that the opening sentence of this passage is rather difficult and ‘has been variously translated and interpreted’.6 Traditionally, the phrase τὰ ἐσχάτα εἰδή has been translated and/or understood to mean ‘infima species’.7 But the problem with such a translation is that it is not clear, exactly, to what the word ‘these (ταύτα)’ at a24 is referring. The natural way to read the Greek is that the reference is to εἰδή, but the implication is that Socrates and Coriscus will then turn out to be ‘infima species’, which is not possible. So ‘these’ must instead refer to Socrates and Coriscus (some suggest a slight emendation to reflect this view).8 Others argue that, even if ‘these’ refers to εἰδή, Socrates and Coriscus are mentioned so as to exemplify membership in a species (‘mankind’) and are not meant to be identified as such.9 More recently, however, there has been a shift in strategy. Some10 now suggest that the term εἰδή should no longer be translated or understood as ‘species’ but instead as ‘form’ in Aristotle’s biological works. In this interpretation, the natural reading of the Greek (without identifying Socrates and Coriscus with ‘infima species’) is preserved by understanding the phrase τὰ ἐσχάτα εἰδή to refer to individual forms (rather than species) of substances.11

The context of the passage (which goes back all the way to the first chapter of the first book of Part. an.), however, suggests otherwise. There Aristotle raises a number of questions concerning the nature of zoological investigation. The first of these questions involves a choice between two methods: either to study the specific attributes (τῶν ἰδιῶν) of each substance (ἐκάστην οὐσίαν) separately (Method 1) or to study the common (κοινῆ) attributes belonging to many kinds (Method 2) (639a15–b6). It is

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6 Lennox (n. 1), 169.
7 See e.g. D.M. Balme, Aristotle’s De Partibus Animalium I and De Generatione Animalium I (with Passages from II. I–3) (Oxford, 1972), 121 for his discussion. For his revised view on this issue, see his 1992 version of the translation.
8 See A.L. Peck and E.S. Forster, Aristotle XII: Parts of Animals, Movement of Animals, Progression of Animals (Cambridge, 1937), 92.
10 See n. 1.
instructive to list the examples of the objects of Method 1 that Aristotle gives. They are lion (639a18), ox (639a19), horse (639a25) and dog (639a25) from chapter 1; and mankind (644a32), sparrow (644a34) and crane (644a34) from chapter 4. Note that by ‘each substance’ Aristotle does not mean to pick out each individual animal but rather each species. Had he meant each individual animal, he would have indicated it by explicitly using an indefinite adjective τις in describing each animal he lists, as he does elsewhere. Method 1, then, is supposed to be studying each species of animals separately.

Aristotle’s commitment to fixed species in biology (at least from the methodological standpoint) is revealed by the fact that he considers Method 1 (which studies each infima species) to be the ‘best’ (κράτιστον; 644a30). Some scholars have missed this important point. For example, in an attempt to read Aristotle’s ‘deeper motive’ surrounding the Part. an. 1.4 passage, Balme suggests that in the background Aristotle has in mind An. post. 2.14, where Aristotle showed that often the fundamental generic attributes are especially important because they reveal or are the causes of the specific attributes. For example, we learn in the An. post. passage that cows do not have upper incisor teeth, but they have a third stomach not qua cows but qua horned animals; it is not any particular attributes that are found exclusively in cows that explain their having an additional stomach and lack of incisors; rather, it is because they are horned animals, for the growth of horns diverts material from the teeth and hence requires an additional stomach for mastication.

So to understand the nature of some specific attributes, an expositor must correctly identify the fundamental generic attributes that are causes of these specific attributes, for, ‘without the generic attributes, explanation cannot begin’. But once the correct generic attributes have been identified, there is no point in repeating the explanation for every instance; and here lies the reason for the absurdity of repetition—the expositor who repeats the explanation in every instance has failed to understand the fundamental character of the cause.

Indeed, the appeal to An. post. 2.14 is a plausible way to understand the choice between the two methodologies, given that both Part. an. 1 and the An. post. passage cover similar topics, such as the method of division, the use of common names (such as birds) and the discussion of analogy. In addition, the examples that are illustrated in An. post. 2.14 are all taken exclusively from biology. Lennox, who is sympathetic to Balme, also believes that An. post. 2.14 ‘is in all likelihood in the background’ of Part. an. 1.4, because the question raised in Part. an. 1.1, 639a16–19 ‘is so reminiscent of An. post. 2.14–18 that it is difficult not to see its methodological suggestions in the background’. Furthermore, Lennox declares that the An. post. passage provides us with a ‘powerful reason for seeking to grasp common attributes according to kind, rather than case by case’.

12 Most notably, see Cat. 1b4–5. Use of such an indefinite article to pick out an individual object can also be found in his Metaphysics; see, for example, B.4, 999b19–20.
13 Balme (n. 11), 72.
14 Balme (n. 11), 73.
15 For the method of division, see Part. an. 1.2–3 and An. post. 2.14, 98a1–12; for the use of common names, see Part. an. 1.4, 644b1–7 and An. post. 2.14, 98a13–19; and for the discussion of analogy, see Part. an. 1.4, 644a12–23 and An. post. 2.14, 98a20–3.
17 Lennox (n. 16), 114.
18 Lennox (n. 1), 170.
Despite the plausibility of his suggestion, Balme himself points out its shortcoming: ‘If this is what was in Aristotle’s mind it is admittedly odd that he did not say so.’

Balme then speculates that this apparently trivial reason—the tediousness of repetition—may be ironical, since Aristotle ‘was not ready with evidence’ to support this theory in his zoological enquiry. As mentioned earlier, the fundamental problem with Balme’s explanation is that it does not address why Aristotle describes Method 1 as the ‘best’ as if to favour Method 1 over Method 2. On the contrary, Balme exclusively focusses his attention on what he perceives to be the merit of Method 2 when in fact Aristotle is much more concerned with stressing the merit of Method 1; hence, this discrepancy of the emphasis—Balme on Method 2 and Aristotle on Method 1—can easily account for the oddity noticed by Balme. Before we resort to an ironical reading of the passage in question (even if it may simply be an obiter dictum), we should first provide an account that explains why Aristotle thinks Method 1 is the ‘best’.

Lennox attempts to offer an account that acknowledges the merit of Method 1, but he does so by contrasting it with the merit of Method 2. According to him, Aristotle is explicitly framing the tension between Method 1 and Method 2 in terms of the tension that exists between ‘the greater reality of the particular’ and ‘the greater epistemic value of the universal’ found in Metaphysics Ζ. The nature of this conflict is that the particular (which is more real) cannot be an object of unqualified knowledge, but the universal (which is an object of unqualified knowledge) cannot be a substance. The conflict that is supposedly played out is as follows: metaphysical considerations ‘might incline us to study each indivisible form of a kind … [f]or formally indivisible beings are most real, while what is most universal is furthest from reality’; but ‘from the standpoint of methodological economy, this will be silly and long-winded’.

A close inspection of the passage, however, shows that the distinction between the two methodologies is drawn only in part in terms of the particular (644a31) and the universal (644a28), and it is far from clear that this is the heart of the contrast. The main reason for this is that the objects of both Method 1 and Method 2 are universals and not particulars. According to Lennox, the contrast between Method 1 and Method 2 is ‘not between more particular and more general animal kinds (for example, between lion and quadruped) but between individual animal natures studied independently and common attributes established ‘according to something common’ (639a18) and ‘in common according to kind’ (639b5). But it is difficult to see how studying individual animal natures means studying some particular forms and not something common among individual animals. Surely, when one is studying individual animal natures (such as the natures of lion), even if one is studying them independently from the natures of other quadruped animals, one is still studying common attributes shared by many individual lions. Similarly, when one is studying sparrows or cranes independently from each other, one is still studying common attributes shared by individual cranes or individual sparrows.

In fact, Lennox’s descriptions of the choice between the two methodologies imply that universality is involved in both: ‘whether we may also discuss kinds in common as well, and not just animals of the same form’. As soon as animals are described

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19 Balme (n. 11), 73.
20 Lennox (n. 1), 121.
21 Lennox (n. 1), 170.
22 Lennox (n. 1), 121 (his emphasis).
23 Lennox (n. 1), 120 (his emphasis).
as having ‘the same form’, we leave the realm of particulars and enter into the realm of universals. So these individual animal natures that Lennox speaks of are universals and not really particulars. The two immediate implications of individual animal natures being universals are that: (1) they are also objects of unqualified knowledge; and (2) they are particular only in relation to more universal attributes belonging to many different kinds of animals. Both (1) and (2) do not seem to square with Lennox’s interpretation that we are really dealing primarily with the tension between particulars and universals.

The problem with the interpretations of both Balme and Lennox is that their readings revolve around stressing the philosophical import of Method 2 (as opposed to Method 1). The straightforward reading of the text, however, suggests otherwise; that is, Aristotle does not mention any advantage to Method 2 other than the fact that it avoids the tedious repetition of Method 1. But why did Aristotle believe that Method 1 is the ‘best’? Unfortunately, he does not explicitly tell us. I would like to offer, however, an alternative, original and plausible interpretation that is well supported by the passage and by his texts elsewhere: that Aristotle thinks Method 1 is the ‘best’ because it has both metaphysical and epistemological advantages over Method 2.

The crucial detail of the passage worth noting is that, when Aristotle emphasizes the nature of the last forms as substances, he does so in terms of their being undivided (έκαστον), which is mentioned three times (at 644a30, 644a31 and 644a33), in contrast to their being particular (καθ’ εκαστον), which is mentioned only once (644a31). Aristotle’s emphasis on indivisible or undifferentiated form, rather than on its particularity, implies that he is emphasizing the unity rather than the being of substance or form. In Metaph. Z.8, for example, Aristotle points out that, although Callias and Socrates are said to be distinct in terms of their matter (i.e. in terms of their flesh and bones, etc.), they are nevertheless the same in terms of their form (ταυτό δὲ εἶδος), because the form is indivisible (έκαστον γὰρ τὸ εἶδος) (1034a5–8). A similar point is made about the nature of the ultimate indivisible (τὸ ἐκείνον ἄτομον) in Metaph. I.9: one man may be distinct from another man in terms of their flesh and bones, but they are not distinct in terms of their form (εἰδεῖ δ’ οὐκ ἔκεραν), because there is no contrary in their formula (ὅτι ἐν τῷ λόγῳ οὐκ ἔστιν ἑνοτικόν) (1058b5–10). Since sameness is a kind of unity (Metaph. Δ.9, 1018a7), the contrast is framed in terms of formal unity, that is, one in form (which is indivisible) and one in genus (which is divisible or differentiable in terms of different forms). Furthermore, in contrast to undivided forms, Aristotle indicates the divisibility of genus when he explicitly mentions about ‘bird’ at 644a33 that ἔχει γὰρ εἰδὴ τὸ γένος. Method 1, then, is best primarily because of the nature of the indivisibility of ‘species’ (in contrast to the divisibility of ‘genus’).

The objects of Method 1 (infima species”) do enjoy a metaphysical advantage (although not in the way Lennox explained). Aristotle twice emphasizes the nature of substances at 644a24 and 644a29. Since species are ‘more real’ in the sense that they are closer to individual substances, although both species and genus are universal, the former is more particular in relation to the latter. Explanations based on these forms, then, have an ontological advantage over those at a higher level of generality. That is the reason why Aristotle draws a distinction between particular and universal, but (as we pointed out previously) he does so only to an extent. The metaphysical advantage that is implied by the passage is not the focus of his attention and is only a secondary concern.

The crucial distinction that Aristotle draws in terms of indivisibility (of species) and divisibility (of genus), in fact, implies that the objects of Method 1 (infima species”)
turn out to enjoy an epistemological advantage (contrary to the interpretation of Lennox). First, Aristotle closely relates indivisibility with knowledge. For example, he identifies indivisibility as a prerequisite for knowledge, for without the indivisibles (τὸ ἰδιὸν) it is not possible to know (εἰδέναι). Furthermore, Aristotle explicates what is indivisible (ιδιότης) in form (εἶδει) in terms of indivisibility in knowledge (τὸ τὸ γνωστὸ καὶ τῇ ἐπιστήμῃ). Second, when there is a contrast between two accounts, one based on a distinctive characteristic (ἰδιὸν) (of indivisible species) and the other based on what is common (κοινὸν), Aristotle prefers the former on an epistemological basis. This can be seen not only in the Part. an. 1.4 passage but also in a De Anima passage, where Aristotle states that it is ridiculous (γελοῖον) to seek a common account (τῶν κοινῶν λόγων) whether one is studying figures or souls, if we fail to seek a distinctive account (ἰδίος λόγος) and proper properties belonging to ‘indivisible form’ (ἄτομον εἰδός). Note the contrast Aristotle here is drawing between ἰδίος λόγος and κοινὸς λόγος. The same contrast (which is hinted in the Part. an. 1.4 passage, when he describes the objects of Method 2 as ‘common’ twice at 644a27 and 644a35) is also made explicitly in Part. an. 1.1: ‘… whether one should study things in common (κοινῇ) according to kind first, and then later their distinctive characteristics (τῶν ἰδίων), or whether one should study them one by one straight away’ (639b4–5; Lennox’s translation with my emphasis). The import of this contrast is found in Cat. 5, 2b9–14, where Aristotle declares that species is more knowable (γνωρισμόστερον) than genus, because species identifies what is more distinctive (ἰδιὸν μᾶλλον), while genus only tells us what is more general (κοινότερον), about a given substance.27

So, the upshot is that Aristotle thinks that Method 1 is the ‘best’ because it has both metaphysical and epistemological advantages. But in biology he endorses Method 2 for the most obvious reason that he explicitly tells us: to avoid tedious repetition, because the diversity of living species shares the same affections (πάθη) and dispositions (διοδοθέσεις), such as sleep, respiration, growth, deterioration, death and other attributes (συμβεβηκότα). An implication of my interpretation is that, although Aristotle was theoretically committed to fixed species in biology (and preferred the methodology that reflects this commitment), for practical considerations he selected the alternative method that deviated from it.

26 De An. 2.3, 414b25–8; διὸ γελοῖον ζητεῖν τὸν κοινὸν λόγον καὶ ἐπὶ τούτον καὶ ἐφ’ ἐτέρον, ὡς οὐδενὸς ἔσται τῶν ἄντων ἰδιός λόγος, οὐδὲ κατὰ τὸ σχεδόν καὶ ἄτομον εἰδός, ἀφέντας τῶν τοιοῦτον. Lennox (n. 1), 123 refers to this passage to point out that ‘the converse of the repetition problem’ occurs when one focusses exclusively on a general account that fails to explain specific differences. But Aristotle is not setting up the contrast as Lennox suggests; i.e. Aristotle does not say that he prefers Method 2 over Method 1 in Part. an. 1 (because of the repetition problem) and Method 1 over Method 2 in the De Anima passage (because of the specificity problem). On the contrary, both in Part. an. 1 and in the De Anima passages Aristotle prefers Method 1 (that studies ‘indivisible form’) over Method 2 (that studies something ‘common’).
27 See also 31–3. The appeals to Categories here and elsewhere (see n. 12) may demand further comment since it is well attested that Aristotle’s hylomorphism is absent; however, the points defended here (the epistemological advantage of Method 1) and elsewhere (Aristotle’s use of an indefinite article to pick out individuals) can be made without relying on the passages from Categories and only from the texts where Aristotle’s hylomorphism is prominent (as can be seen from other passages to which I appealed). My reliance on the passages of Categories, though not necessary, strengthens my interpretation.
28 639a18–23.
But what are the consequences of accepting my interpretation? First, because Aristotle employed Method 2 for the most part in his biological works, it would not be surprising to discover (as correctly observed by many contemporary scholars who examined them) that εἶδος as well as γένος are relative terms applied at the different levels of generality, and that Aristotle uses them as if there are no fixed or privileged levels. We could only expect such a fixed use of the term (at least in the case of) εἶδος to refer to fixed species had Aristotle employed Method 1 exclusively in his biological works. Second, it is also not surprising that any kind of essentialism that is based on fixed species is nowhere to be found in his biological works (again for the same reason that for the most part he employed Method 2). Third, the question of whether or not Aristotle was committed to classifying animals (whether the classification was fixed or otherwise) may not be settled, unless we can reconstruct Aristotle’s biological works by employing only Method 1 (or at least until we attempt to imagine what such works will look like). Suppose Aristotle decided to use Method 1 exclusively. He painstakingly and tediously examined each species separately and explained the causes of each of the attributes (such as sleep, respiration, growth, etc.). Assuming that he (or for that matter any human being) can live long enough to be able to accomplish such a mammoth task, the result, of course, would be a compendium of enormous absurd repetition of similar explanation ad nauseam. Would such a work result in any kind of classification of animals at all? Or perhaps the question of classification only arises because Aristotle employed Method 2 at various levels of genera (again fixed or otherwise) such that it appears as though he was interested in classification of animals. It is obviously beyond the scope of this article to adequately deal with resolving this issue here.

For now, the main points I want to drive home are: first, it is premature to give up our traditional understanding of Aristotle’s theoretical commitment to fixed species (and what appears to be the deep metaphysical and epistemological commitment he invested in their existence) in biology found in Book 1 of Part. an. (as indicated by his apparent preference for Method 1—the ‘best’ method); and second, his actual practice found in his other biological writings (as displayed by his predominant employment of Method 2) may not be a reliable source in determining whether or not he held the view of fixed species as a part of his theoretical commitments.

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29 I have exclusively focussed my attention on the term ‘species’ in this article and have set aside whether or not Aristotle is also committed to some kind of fixed level of ‘genera’, such as the greatest kind. For a more recent discussion of this topic, see B. Stoyles, ‘Μέγιστα γένη and division in Aristotle’s Generation of Animals’, Apeiron 46 (2013), 1–25.


31 See n. 5.