

## Prologue to Z12

At the end of chapter 11 Aristotle noted two issues which he postponed for later treatment (37<sup>a</sup>10–20), and one of them was the problem of the unity of a definition. Both Z12 and H6 announce themselves as discussions of this problem, and neither chapter recognizes the existence of the other. (The problem is also treated during H3.) It seems to me most improbable that when Aristotle postponed the issue at the end of Z11, and proceeded to sum up his discussion of essence, he was intending to treat of it immediately afterwards in the very next chapter. For, since the issue clearly does affect our understanding of essence, it would seem much better in that case to include its treatment in the main discussion of essence and postpone the summing up. In any case, it is clear that Z12 is only a partial treatment of its topic. First, it evidently recognizes at 37<sup>b</sup>27 and at 38<sup>a</sup>24 that it has considered only one kind of definition (namely ‘definitions obtained by division’), and it allows for there being other kinds. Second, it explicitly characterizes its own discussion as merely a ‘first statement’ at 38<sup>a</sup>24. Third, this characterization is clearly merited, for as it stands the discussion at 37<sup>b</sup>27–38<sup>a</sup>9 is quite needlessly confused, and overlooks a very simple point of logic. The chapter, then, is unexpected in its present position, only a fragmentary treatment anyway, and in fact one that could quite easily have been improved.

It is overwhelmingly probable that whoever first edited the *Metaphysics* (according to tradition, Eudemus) found amongst Aristotle’s papers what is now Z12, perhaps bundled in with the other papers that are now books Z and H, but not securely attached to any one place. Anxious to fit it in somewhere, so that it should not be lost, he added it after Z11, where its topic had just been explicitly raised. Admittedly there is a mild awkwardness with this hypothesis, for presumably the same account applies too to the papers which are now the later chapters of book H. They also are fragmentary discussions of miscellaneous issues, related to the subject-matter of Z and H, but not worked into any continuous treatment. But in this case our editor added them at the *end* of the continuous treatment, for that is apparently concluded at the end of H2. Why should he not have done the same with Z12? Well, the obvious suggestion is that he wished to preserve at least the superficial *appearance* of a continuous discussion, even though the papers he was dealing with do not form one. But this could hardly be done if Z12 and H6 were placed near to one another, since each announces itself as opening the discussion of the same topic. So he hit upon the present arrangement, which separates them by a wide margin.

Was there, then, any reason for him to choose Z12, rather than H6, to go between Z11 and Z13? The only reason one can suggest is that he might have thought that Z12 provided the more complete treatment.

This is because Z12 distinguishes two kinds of case, the simple case where a definition contains a genus and just one differentia, and the complex case, where there are many differentiae, and most of its discussion then centres on the complex case. By contrast, H6 makes no such distinction, and never discusses the case of several differentiae at all. So H6 might well appear to be even more fragmentary than Z12, and therefore better relegated to the end. Nevertheless, I think it is clear that H6 is in fact the more mature treatment. I return to this point in my epilogue to the chapter.

37<sup>b</sup>8–14

Aristotle begins by referring us to his *Analytics*. One suspects that this itself is a sign of the relatively early composition of Z12, since this is the only place in the *Metaphysics* where a passage from the *Analytics* is named explicitly. (But A30 apparently has in mind *An. Post* 75<sup>a</sup>18–<sup>b</sup>2 when it says at 1025<sup>a</sup>34 that a certain account has been given ‘elsewhere’.) Aristotle did indeed discuss definition at *An. Post* II, 3–10 (with some further advice on how to obtain definitions by division in II, 13), and the requirement that a definition should be a unity was mentioned, but not discussed, at 92<sup>a</sup>29–30. (Also at *Int* 5, 17<sup>a</sup>13–15.) The suggested definition of man as ‘two-footed animal’ is not seriously intended as a complete definition. Further differentiae such as ‘going on foot’ and ‘wingless’ will be suggested as we proceed, and adding these would lead to just the kind of definition that is contemplated in the *Analytics*. But we may note that it is certainly not the kind of definition of man that one would expect after reading Z10–11, with their emphasis upon the point that the essence of a man is his soul.

It is difficult to see quite what this problem is that Aristotle calls the problem of the unity of a definition. One should first observe that where my translation uses such phrases as ‘a unity’, or ‘something unitary’, this is in a sense an over-translation, for Aristotle himself just uses the simple phrase ‘one thing’. (The same applies to *all* occurrences of ‘unity’, ‘unitary’, and so on, throughout the translation.) Thus a more literal translation of Z11, 37<sup>a</sup>18–20, where the problem is first stated, would be:

In the case of definitions, we must consider later in what way the [things] in the formula [are] parts, and why the definition [is] one formula. (For evidently the object [is] one, but by what [is] the object one? At any rate, it has parts.)

Similarly, a more literal translation of the present passage (<sup>b</sup>10–14) would be:

I mean this problem, whichever [that thing], the formula of which we call a definition, is one, for instance the two-footed animal [which is the formula?] of the man; for let this be its formula. Then why is this one and not many, animal and two-footed?

The simple answer to this question, as posed, is that, if we speak in our usual (but loose) way, there is no difficulty at all about the same thing being one *X* but many *Ys*. Thus a series of words may be one formula but [made up of] many words; a property such as being a man, defined by that formula, may equally be one (complex) property but [made up of] several (simpler) properties. But I do not imagine that this answer would satisfy Aristotle at all. He would ask, I think, 'But what is it that *distinguishes* the basic and simple property of being a man from the complex and derivative property of being a pale man?' Thus what is at issue, I think, is actually a problem about simplicity and complexity. Where Aristotle writes 'one', and where I translate 'a unity', I guess that what lies behind his thought is the notion of something simple. How can something be both simple and defined?

But one has to say that although this may perhaps *lie behind* Aristotle's problem, it is not how he formulates it himself. His own way of putting it is more like this. It appears that a definition has several parts, and it therefore appears that these must correspond to parts of the thing defined. But then we are at once faced with the question: 'What is it that holds these parts together, so as to make them parts of some *one* thing?' Roughly, the solution he offers in the present chapter is that, when you look at it closely, you can see that the definition does not have parts at all. But the solutions proposed in *H3* and *H6* are rather different.

37<sup>b</sup>14-27

(In the opening line of this paragraph Aristotle unexpectedly uses the Greek equivalent of quotation marks around 'man' and 'pale', as if he were meaning to talk explicitly of the words rather than what they signify. But there seems to be no significance in this departure from his usual practice.) The general structure of the paragraph is that Aristotle first mentions one way in which two things (or words) may form a unity, but claims that genus and differentia do not form a unity in *this* way (<sup>b</sup>14-21). Then he adds that, even if they did, it would not solve the problem, for it could not explain the case where there are many differentiae (<sup>b</sup>21-4). Then he states his problem once more in general terms (<sup>b</sup>24-7).

<sup>b</sup>14-21: A particular pale man is one thing, and therefore the compound phrase 'a pale man' can signify one thing, i.e. when it is used to describe that man. This is because the attribute of being pale belongs to the man in question. In an exactly similar way, a particular two-footed animal is one thing, and therefore the compound phrase 'a two-footed animal' can signify one thing, i.e. when it is used to describe that animal. This is because the attribute of being two-footed belongs to the animal in question. But Aristotle correctly observes that *this* will not yield a solution to his problem, for in the definition 'man is a two-footed animal'

no *particular* man, or animal, is being described. The ‘unity’ that he wishes to explain is not how a compound phrase ‘two-footed animal’ may be used to describe a single particular, but how it manages to express a single universal. We could explain this ‘unity’ in a similar way, he suggests, only if we could also say that being two-footed belongs to the *genus* animal, not to this or that particular animal; in an alternative locution (cf. Z4, 30<sup>a</sup>14–15), only if we could say that the genus participates in the differentia. But this, it seems, we cannot say (Z4, *ibid.*). For in the natural sense of ‘belonging to’, or ‘participating in’, this would be to construe the genus as itself a particular thing, with the property of being two-footed. But then, since the compound phrase ‘four-footed animal’ must equally express a single universal, on this account the same genus ‘animal’ will also have the property of being four-footed. This apparently leads to a contradiction, since nothing can be both two-footed and four-footed.

Now we do not have to stick to what I have called the ‘natural’ sense of belonging to, or participating in. In fact in the *Topics* the locution ‘*X* participates in *Y*’ has mainly been used not for singular predications at all, but for universal ones, i.e. where *all* instances of *X* are also instances of *Y* (see, e.g., 121<sup>a</sup>10–19, 122<sup>b</sup>18–24, 123<sup>a</sup>20–7, 126<sup>a</sup>17–25, 132<sup>b</sup>35–133<sup>a</sup>11). Clearly, this is of no help here, since it is not true that all animals are two-footed, or that all animals are four-footed. But perhaps it may be suggested that we can count *X* as participating in *Y* (or *Y* as belonging to *X*) so long as it is true that *some* instances of *X* are also instances of *Y*. Then certainly the genus does ‘participate’ in the differentia, but no problem is solved by this. For in exactly the same sense ‘man’ participates in ‘pale’ (i.e. some men are pale), but Aristotle will not be willing to infer that the compound ‘pale man’ does, in the *relevant* sense, express something unitary, i.e. a single universal. His own objection, however, is rather different and very ingenious: even if we do allow that the same genus ‘animal’ can be said to ‘participate’ both in the differentia ‘two-footed’ and in the differentia ‘four-footed’, still our problem has a complexity which shows that this could not provide its solution.

<sup>b</sup>21–4: For consider now a case where there is more than one differentia, e.g. ‘two-footed wingless animal’. If we are to explain how this phrase manages to express a single universal on the same suggested model, i.e. by analogy to the way in which ‘pale artistic man’ may be true of a single object, then the explanation is that the same man may participate both in being pale and in being artistic. Applying the model, then, our account must be that the same genus ‘animal’ participates both in ‘two-footed’ and in ‘wingless’, and *that is why* the whole phrase ‘two-footed wingless animal’ expresses a single universal; it is simply because the same genus participates in both. But clearly this explanation explains too much. For we are granting, for the sake of argument, that the genus ‘animal’ does participate both in ‘two-footed’ and in ‘four-footed’, so it

will now follow that the whole phrase 'two-footed four-footed animal' expresses a single universal. But that is absurd, since it simply expresses a contradiction. That is, it is absurd that 'all the differentiae should form a unity' (<sup>b</sup>24), though that is a result that we cannot avoid if we try to base our explanation on this model.

This is a very nice argument to show that the suggested model is of no help, and it holds however exactly we construe the suggestion that the genus may 'participate in' the differentia (or, in an alternative locution, that the differentia may be 'present in' the genus, <sup>b</sup>23). (I observe, incidentally, that it is because Aristotle is pursuing this model that he considers only the possibility that the genus might participate in the differentia, and pays no attention to the possibility that the differentia might participate in the genus, although he has actually claimed that neither participates in the other (<sup>b</sup>18).)

<sup>b</sup>24-7: This model having proved inadequate, Aristotle restates the problem. The definition defines a substance, and a substance is some *one* thing, but the difficulty is to explain how this can be so. Evidently the substance in question should be taken as substance in the sense of form, essence, and universal, and it is this kind of substance that Aristotle claims to 'signify a this' (as at Z4, 30<sup>a</sup>2-6). Whether he means to include here substances, i.e. essences, from all the categories is not clear. At any rate, the only definitions he explicitly considers in this chapter are definitions of such things as animals.

### 37<sup>b</sup>27-38<sup>a</sup>9

Here Aristotle begins upon his solution, restricting it to definitions 'obtained by division'. To practise such a division, one begins with a suitably wide genus, and divides it by adding a differentia that applies to some, but only some, of its members. Then one divides again by adding a further differentia that applies to some, but only some, of the things characterized so far. And so one continues until only a single species, not further divisible, remains. The result is to form a definition which consists of an initial genus followed by a string of differentiae, and where the initial genus together with *some* of the differentiae following can itself be regarded as a subgenus, differentiated by the remaining differentiae. For present purposes, it is the structure of the definition finally reached that is more important than the method of reaching it. Aristotle evidently concedes that not all definitions have this structure, and indeed that is already obvious from some of the examples offered in Z10 (e.g. a semicircle is defined as half a circle, 35<sup>b</sup>10, and this definition surely does not begin with the bogus genus 'halves'). It is admitted, then, that the positive solution that he is about to offer covers only some of the ground.

The sequence of thought in this paragraph is wholly mysterious. Aristotle first points to the fact just noted, that we can always regard the

initial genus, taken together with some of the differentiae following it, as forming a subgenus. This leads him to say 'it makes no difference whether the constituents are many or few, nor therefore whether they are few or just two' (<sup>a</sup>1–3). The moral of this would appear to be that the complex case of a genus followed by many differentiae can be reduced to the simple case of a genus followed by a single differentia, namely by taking all of the definition except the final differentia as introducing a (narrow) genus. So, if we can solve the simple case, we are done. Then, at the end of the paragraph, Aristotle offers a solution to the simple case: the genus does not exist apart from its species (NB 'form' = 'species'), or perhaps it does exist but if so only 'as matter', and it may therefore be discounted (<sup>a</sup>5–9). But he does *not* conclude that the problem is now resolved. On the contrary, he seems to think that it is only the *initial* genus that may be discounted in this way, and we *still* have to show how a whole string of differentiae can be seen as 'forming a unity'. It is to this latter problem that the whole of the rest of the chapter is devoted. But in that case, what was the relevance of the remark that 'it makes no difference whether the constituents are many or few'? I see no explanation of this problem except one that relies upon the suggestion that Aristotle's stated reasons for discounting the genus are not his real reasons, and that his real reasons apply more convincingly to the initial genus than they would to subgenera formed along the way.

To illustrate this, suppose that we are seeking to define a man, and that we have so far reached 'wingless two-footed animal'. Someone points out that this does not yet distinguish men from all other animals, since some dinosaurs were both wingless and two-footed. He goes on to suggest that a distinguishing mark which would do the trick is that men are warm-blooded, while dinosaurs are not, and this is accepted. Then, on Aristotle's principles, we can treat 'wingless two-footed animal' as a genus, with 'warm-blooded' as its differentia. And for the reason given in <sup>a</sup>5–9 the genus can then be discounted, so that men can simply be defined as 'things which are warm-blooded'. But of course this result is absurd, and the subgenus certainly cannot be discounted. But the *initial* genus 'animal' perhaps can. This is because it is already entailed by each of our positive differentiae, namely 'two-footed' and 'warm-blooded', so that it does not need to be separately stated. In general, the justification that is needed for omitting any original constituent from a definition is that it is already entailed by the remaining constituents. Clearly, Aristotle himself uses this line of thought quite explicitly when he is considering how a string of differentiae might be argued to 'form a unity'. He surely should have used it too as his ground for discounting the genus. Elsewhere he has himself implied that the differentia will entail the genus (*Cat* 3, 1<sup>b</sup>16–20; *Top* VI, 144<sup>b</sup>12–20), and in an ordinary definition by division this is quite likely to be true of the initial genus, though much less likely to be true of the subgenera formed along the way. So one may sympathize with his instincts, though not with what he offers by way of argument.

<sup>a</sup>5–9: We are offered two versions of the argument. The first is that the genus does not ‘in an unqualified sense’ (*haplōs*) exist apart from the species. There is a straightforward sense in which this is fairly uncontroversial, i.e. that every member of the genus must be a member of one of its species. One might suppose that Z13, 38<sup>b</sup>16–34 is arguing for some stronger sense in which the genus has no existence apart from the species. But in either case the reply is that this is irrelevant; it has no tendency to show that the genus need not be mentioned in the definition of the species. And the same reply must be given to the alternative argument, that the genus exists only ‘as matter’ to the species. Whatever truth there might be in this rather obscure suggestion, it would not affect the point at issue. For if the rest of the definition does not entail the genus, then one cannot simply omit the genus without altering the purport of the definition. That, and only that, is what matters.

The suggestion that the genus is the ‘matter’ of the species is found elsewhere in Aristotle only at A28, 1024<sup>b</sup>8–9 and at I8, 1058<sup>a</sup>1–2, <sup>a</sup>23–4. (Some think that it occurs also at H3, 43<sup>b</sup>30–2 and at H6, 45<sup>a</sup>33–5, and that it plays an important part in the argument of H6. I shall argue against that interpretation.) The implication of the present passage seems to be that the point of this suggestion is very much the same as the point that the genus does not exist apart from the species, and it makes little difference which one says. Moreover, the role of the example that Aristotle supplies, namely ‘voiced sound’ (*phōnē*, i.e. the kind of sound one makes when talking), seems to be to supply a case which you could equally well regard either as a genus or as matter. (For example, *phōnē* is called a genus at B3, 998<sup>a</sup>20–5, and is called matter at GA V, 786<sup>b</sup>21.) The idea is that the various kinds of sound—such as ‘vowel’, ‘sibilant’, ‘guttural’, and so on—may be regarded as ‘made of’ sound as well as being species of it. So you could look at things either way, and nothing much will hang on the question. (Similarly at 1058<sup>a</sup>1–2.) But of course the truth is that in most cases it will seem a very strained metaphor. Could one, for example, regard the genus ‘animal’ as something that the various species of animal are *made of*? Or could one think of the genus as something that survives a *change* from first being one species to then being another? The genus is not well suited to either of the two main roles that matter is called upon to fulfil (Z3, prologue). One could say, I suppose, that both genus and matter may be counted as ‘indeterminate’ by comparison with the species-form, but that does not seem to me a very significant point of similarity.

### 38<sup>a</sup>9–35

Aristotle here makes the perfectly correct point that a string of differentiae will reduce just to the last member if each is entailed by its successor. We have only to add (as suggested) that the first differentia should entail the genus, and we can fairly deduce Aristotle’s conclusion:

a properly formulated definition will reduce to its last differentia alone, so there is really no problem over how its parts 'form a unity', for it does not actually have distinct parts at all.

Evidently he recognizes that definitions are not in practice formulated in the way his argument requires, but he apparently supposes that if we tried hard we could conform to his recommendation. There is, however, a point that he appears to overlook at <sup>a</sup>14, namely that each further differentia must be a *positive* determination of its predecessor if the entailment is to hold. Thus, if one divides the footed animals into those that are cloven-footed and those that are *not*, then either 'not cloven-footed' will not entail 'footed' (being equally true of animals without feet at all, e.g. fish), or if it does then 'not cloven-footed' is understood as *meaning* 'footed but not cloven-footed'. But in that case one might well object that 'not cloven-footed' is itself being understood in a way that does not 'signify a unity'. There is also the further objection that a negative differentia cannot have any place in a series of differentiae such as Aristotle is recommending, because one cannot take the differentia *of it* in turn. (E.g. one cannot specify the different kinds of footless animals by specifying the different kinds of feet that they lack; *PA* I, 3, 642<sup>b</sup>21–5.) Thus positive differentiae are required throughout, and ones that are not simply compounds of two independent differentiae. This is well illustrated by the example 'cloven-footed', which certainly cannot be analysed as 'both cloven *and* footed'; it shows very well what Aristotle means by 'taking the differentia of the differentia'.

### Epilogue to Z12

In *PA* I, 2–3 Aristotle himself attacks the kind of definitions described here, i.e. those that are obtained by a division 'properly carried out', as being both useless and impossible. While the details of his argument there can sometimes be obscure, his general moral is, I think, uncontroversial: any useful way of defining a species of animal will need to differentiate it from others by *many different* lines of differentiation. Usually, one cannot define a species at all by using only one such line (e.g. footedness); and even if with some species it can be done, still it is not useful for biological purposes to attempt it. For when it comes to explaining why the parts of animals are as they are, all kinds of *different* groupings need to be considered.

We must, I think, conclude that Z12 was written before *PA* I, 2–3, and I believe we can go further: Z12 must antedate practically all of Aristotle's serious work in comparative biology. For it must have struck him very early on in his biological research, as soon as he began to seek for some order and system in the great wealth of biological data that he was accumulating, that the kind of definition recommended in Z12 simply does not work. But it has been convincingly argued that Aristotle's biological observations took place mainly in his middle period, i.e.

between his two periods of residence at Athens, and that many of them date from the early part of that period. So this suggests a relatively early composition for Z12, perhaps not much after the *Analytics* to which it refers. On the other hand, there is reason to suppose that Aristotle's view of the soul as the form of the body superseded some earlier views, and it is usually counted as his 'late' view. Since it is clear that Z10–11 are entirely familiar with this 'late' view of the soul, one may reasonably conjecture that Z12 antedates Z10–11, and perhaps several other portions of Z, by several years. (For a useful survey of these and other chronological points, see Ross [1957].)

Now Z12 announces itself at 37<sup>b</sup>10 as a contribution to Aristotle's 'discussion of substance' (*hoi peri tēs ousias logoi*), so it was clearly written for the *Metaphysics*. But its basic approach to the problem with which it deals is rejected in the other attack on that problem in H6. For H6 first cites the problem in its usual form ('Why is man not an animal and two-footed?'), but then continues: 'Those who proceed with definitions and explanations in this way, as they usually do, will not be able to give an account that solves the problem' (45<sup>a</sup>21–2). What it proceeds to recommend is a new style of definition, combining matter and form, which—it claims—dissolves the problem at once. This, I shall argue, involves abandoning the idea that we define things by genus and differentia, where neither element of the definition is predicated of the other (45<sup>a</sup>20–33 n.). Z12, then, works with the old conception of a definition, found in the Logical Works and earlier in Z4, especially 30<sup>a</sup>11–14, according to which it is true that neither element 'participates in' the other. (See, e.g., *Top* VI, 144<sup>a</sup>28–<sup>b</sup>3; *An. Post* II, 90<sup>b</sup>34–8.) But in H6 we find Aristotle advocating a new conception, which has gradually emerged from Z17, H2, and H3.

Thus the solution recommended in Z12 is rejected in *PA* I as impossible in practice, and rejected in H6 as mistaken in principle, since it employs an inadequate conception of what a definition is. It is a relatively early attempt, and one that Aristotle himself discarded.