

Aristotle on the Relations between Genera, Species and Differentia

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A. Characteristics of a genus itself

The following are the characteristics of a genus:

1. Those to which the same figure of predication applies are one in genus. (Met.¹, Δ, 1016b32-35)
2. Things that are one in genus are all one by analogy while things that are one by analogy are not all one in genus. (Met, Δ, 1016b35-1017a3)
3. A genus includes contraries. (Met., Δ, 1018a25-31)
4. All the intermediates are in the same genus as one another and as the things they stand between. (Met., I, 1057a18-30; 1057b31-34)
5. Not every predicate is a genus of what it is predicated on; for this would equate a genus with one of its own species. (PsA., A, 22, 83b7-10)
6. The opposite of the genus should always be the genus of the opposite. (To., Δ, 4, ^125a27-29)
7. A genus divides the object from other things. (To., Z, 3, 140a^24)
8. None of unity and being is a genus. (Met., B, 998b22-27; Met., K, 1059b31-34; PsA., B, 7, 92b12-14)

¹ Abbreviations used in this paper:

Cat.	<i>Categories</i>
Met.	<i>Metaphysics</i>
OI.	<i>On Interpretation</i>
PrA.	<i>Prior Analytics</i>
PsA.	<i>Posterior Analytics</i>
To.	<i>Topics</i>

9. There is no necessity or even no possibility that things that are the same specifically or generically should be numerically the same. (To., H, I, 152b30-)
10. To be called one due to having one genus is in a way similar to be one due to having the same matter. (Met., Δ, 1016a24-28)
11. The substance of a thing involves its genus, and thereby all the higher genera are predicated of the lower. (To., Z, 5, 143a²⁰-)
12. Being falls immediately into genera. (Met., Γ, 1004a4-6)

B. Characteristics of relations between genera

The characteristics of relations between genera, the relations between genera and species excluded, are as follows:

1. Genus is not an element in the composition of things. (Met., I, 1057b20-22)
2. Things resulting from the same division of the same genus are simultaneous by nature. (Cat., 13, 15a3-4)
3. Processes of proof cannot pass from one genus to another. (PsA., A, 23, 84b14-18)
4. It is not necessary for subordinate genera to have different accounts. (To., I, 15, ^{107a19}-) E.g. when we say a raven is a bird, we also say it is a certain kind of animal.
5. It is necessary for genera that are not subordinate one to the other to have different accounts. (To., I, 15, ^{107a27-30}) E.g. whenever we call a thing an engine, we do not call it an animal, nor vice versa.
6. If one of the genera is predicated in what it is, all of them, both higher and lower than this one, if predicated at all of the species, will be predicated of it in what it is; so that what has been given as genus is also predicated in what it is. (To., Δ, 2, ^{122a10})
7. The same object cannot occur in two genera of which neither contains the other. (To., Z, 139b32-140a2)

8. Those to which the same figure (σχῆμα) of predication applies, are the same in genus. (Met., Δ, 1016b32-35)
9. Attributes that inhere always in each several things can be divided to two groups: those that are wider in extent but not wider than its genus and those wider than its genus. (PsA., B, 13, 96a24-27)
10. The relation between A and B must be extendable in respect of all the genera of A. Thus, if A is double of B, it must also be in excess, the genus of double, to B. Aristotle accepts, however, that this may be objectable in some cases: while knowledge is called knowledge of an object of knowledge, it cannot be called a state and disposition (which is the genus of knowledge) of an object of knowledge. In fact, it is a state and disposition of the soul. (To., Δ, 4, 124b28-34)

C. Characteristics of species

The following are the characteristics of species:

1. Things are said to be other in species if they are of the same genus but are not subordinate the one to the other. (Met., Δ, 1018a38-b2; Met., I, 1057b35-37)
2. Contraries are other than one another in species. (Met., Δ, 1018b5-7; Met., I, 1058b26-)
3. It is not sufficient for a difference to be the basis of distinguishing species in a genus because it belongs to the genus in virtue of its nature as, e.g., the difference between men and women belongs to animal in virtue of its nature. It must also be a modification peculiar to the genus (οἰκεῖα πάθη τοῦ γένους) in the strongest sense. (Met., I, 1058a29-37) Thus, contraries which are in the formula (ἐν τῷ λόγῳ) make a difference in species, but those which are in the compound material thing do not make one as e.g. being male and female is a difference in matter. (Met., I, 1058a37-b23)
4. Some things are peculiar to the species as distinct from genus: there are attributes peculiar to each distinct species. (PrA., A, 27, 43b27-29)

5. There is no necessity or even no possibility that things that are the same specifically should be the same numerically. (To., H, I, 155b30-)

D. Characteristics of relations between genera and species

The following are the characteristics of relations between genera and their species:

1. Although species predicated of individuals seem to be principles rather than the genera, it is hard to say, Aristotle asserts, in what sense species are to be taken as principles. (Met., B, 999a14-21)
2. Things that are one in species are all one in genus, while things that are one in genus are not all one in species. (Met., Δ, 1016b35a1)
3. The relation of a species to its genus is like the relation of primary substance to all others: the species is a subject for the genus (ὑπόκειται γὰρ τὸ εἶδος τῷ γένει) and the genera are predicated of the species but the species are not predicated of them. (Cat., 5, 2b17-22)
4. Of the species themselves- those which are not genera- one is no more a substance than another: a certain horse is no more a substance than another horse. (Cat., 5, 2b22-26)
5. Genera are prior to species since they do not reciprocate as to implication of existence (κατὰ τὴν τοῦ εἶναι ἀκολούθησιν). For example, if there is a fish there is an animal, but if there is an animal there is not necessarily a fish. (Cat., 13, 15a4-7)
6. What belongs both to a species and to its genus, it belongs to the species more properly indeed than to the genus. (PrA., A, 27, 43b29-32)
7. A predicate drawn from the genus is never ascribed to the species in a derived form and as its genus. Thus, e.g. coloured cannot be a genus of 'white' when we say 'white is coloured.' (To., B, I, ^109b1-5)
8. Genera are predicated of their species synonymously because the species take on both the name and the account of their genera. (To., B, I, ^109b3-6)

9. All the attributes that belong to the species belong to the genus as well but there is no necessity that all the attributes that belong to the genus should belong also to the species. (To., B, 4, 111a20-32)
10. Those things of which the genus is predicated must also of necessity have one of its species predicated of them. (To., B, 4, 111a33-)
11. The higher genus should be predicated of the species in what it is. (To., Δ, 2, ^122a6)
12. The species, or any of the things which are under the species, is not predicated of the genus because the genus is the term with the widest range of all. (To., Z, 6, 144a27f.)
13. The same species cannot be in two genera neither of which contains the other. (To., Z, 6, 144b14f.)
14. None of the species of a genus is prior or posterior to other species but they are thought to be simultaneous by nature. (Cat., 13, 14b38-15a1)
15. Daniel W. Graham² points that sometimes Aristotle speaks of species as classes (Cat., 5, 2a14-17) and sometimes as properties or a certain character (ποιόν τι) of substances, which is difficult to be distinguished from the category of quality. (Cat., 3b13-22)

E. Characteristics of differentia

1. The last differentia will be the substance, the definition and the form of the thing. (Met., Z, 1038a18-28)
2. If we divide according to accidental qualities, there will be as many differentiae as there are processes of division. (Met., Z, 1038a25-28)
3. The differentia divides the object from any of the things contained in the same genus. (To., Z, 3, 140a24-)
4. A. C. Lloyd³ argues that Aristotle's logic of classification contains a vicious circle because: 'For a genus to be predicated unequivocally and essentially of a species

² Graham, Daniel W., *Aristotle's Two Systems*, 1987, Oxford University Press, pp. 31-32

³ Lloyd, A.C., *Genus, Species and Ordered Series in Aristotle*, *Phronesis*, Vol. 7, No. 1, 1962, p. 86

the specific differentiae have to be ‘appropriate’; but in order to know whether a proposed differentia is appropriate we have to know whether the genus is predicable essentially of the species thus defined.’

The predication of differentia on primary substance seems to make difficulties in Aristotle’s system, as Terence Irwin⁴ points out. It seems to violate the distinction of strong predication and inherence, a distinction between predication of count-nouns and predication of characterizing adjectives. Irwin says that this violation is only apparent because although the differentia-term is an adjective, its gender agrees with the gender of the understood genus-term and not with that of the subject term. ‘Man is biped’ is indeed ‘Man is a biped animal.’ This shows, Irwin asserts, ‘why Aristotle can still mention that strong predication is nominal and inherence is adjectival.’ Differentiae are not, however, secondary substances, as Aristotle himself insists. A differentia does not say what the thing is, as secondary substances do, but only what it is like or what sort it is. (ποιον: To., 122b12-17; 128a20-29; 139a28-31; 142b25-29) Nonetheless, differentiae are not qualities because they are not inherent. Thus, they cannot be regarded in any of the ten categories. Irwin thinks that this anomaly is unnecessary because Aristotle could give good reasons for taking differentiae to be second substances.

F. Characteristics of relations between differentia and genera or species

1. It is not possible for the genus to be predicated of the differentia taken apart from the species. (Met., B, 998b23-25; Met., K, 1059b31-33; To., VI, 6, 144a32-b1)
2. It is not possible for the species of the genus to be predicated of the proper differentiae of the genus. (Met., B, 998b24-26)
3. Where the differentia is present, the genus accompanies it, but where the genus is, the differentia is not always present. (Met., Δ, 1014b12-14)

⁴ Irwin, Terence, Aristotle’s First principles, Oxford, 1988. Pp. 64-66

4. The number of species are equal to the number of differentiae. (Met., Z, 1038a15-18)
5. The differentiae of genera which are different and not subordinate one to the other are themselves different in kind. (Cat., 3, 1b16-20; To., I, 15, ^107b19-)
6. There is nothing to prevent genera subordinate one to the other from having the same differentia. (Cat., 3, 1b20-22)
7. Since the higher genera are predicated of the genera below them, all differentiae of the predicated genus will be differentia of the subject also. (Cat., 3, 1b21-24)
8. The definition of the differentia is predicated of that of which the differentia is said. (Cat., 5, 3a25-28)
9. In giving what a thing is it is more fitting to state the genus than the differentia. For example, anyone who says that man is an animal shows what man is better than who describes him as terrestrial. (To., Δ, 6, ^128a24-27)
10. The differentia always signifies a quality of the genus, but the genus does not do this of the differentia. (To., Δ, 6, 128a27-29; To., Z, 6, 144a20-23)
11. A specific differentia, along with the genus, always makes a species. (To., Z, 6, 143b^1-)
12. A genus is always divided by the differentiae that are co-ordinate with it in a division and the differentiae that are co-ordinate in a division are all true of the genus. (To., Z, 6, 143b^1-)
13. Differentia cannot be predicated of the genus because genus is the term with the wider range. (To., Z, 6, 144a27-) In fact, genus is predicated, not of the differentia, but of the object of which the differentia is predicated. (To., Z, 6, 144a^31-b3)
14. Neither species nor the objects under it can be predicated of the differentia because the differentia is a term with a wider range than the species. (To., Z, 6, 144b4-)
15. The differentia is posterior to genus but prior to the species. (To., Z, 6, 144b^9-)
16. The same differentia cannot be used of two genera neither of which contains the other and if they do not both fall under the same genus. Otherwise, the same species

will be in two genera neither of which contains the other, which is impossible. (To., Z, 6, 144b14-)

17. Genus and differentia are prior to and more familiar than the species: 'For annul the genus and the differentia; and the species too is annulled, so that they are prior to the species. They are also more familiar; for if the species is known, the genus and differentia must of necessity be known as well (for anyone who knows what a man is knows also what animal and terrestrial are), whereas if the genus or the differentia is known it does not follow of necessity that the species is known as well; thus the species is less intelligible.' (To., Z, 4, 141b15-)

G. Characteristics of relations in series of classes

1. **Mutually exclusive series.** If no term in the series ACD... is predicable of any term in the series BEF..., and if G- a term in the former series- is the genus of A, clearly G will not be the genus of B; since, if it were, the series would not be mutually exclusive. (PsA., A, 15, 79b6-11)
2. **Atomic disconnection of series.** Of two mutually exclusive series ACD and BEF, if neither A nor B has a genus and A does not inhere in B, this disconnection must be atomic. (PsA., A, 15, 79b6-14)

H. Characteristics of relations of individuals

1. No individual in a species is more substance than another individual in another species. (Cat., 5, 2b26-28) An individual man, for instance, is no more a substance than an individual ox.
2. Each attribute is wider than every individual it is predicated on, though several attributes, collectively considered, might not be wider but exactly the substance of a thing. (PsA., B, 13, 96a32-b1)

3. **Not distinguishing between class membership and class inclusion?** Some commentators like Vlastos⁵ and Ackrill (1963, 76) criticized Aristotle because he, they believe, did not distinguish between class membership (between species and particulars) and class inclusion (between genera and their species). Having accepted this point, Daniel W. Graham believes it is ‘question-begging in a curious way.’⁶ Phil Corkum⁷ thinks that Aristotle employs mereological notions. (This criticism seems so strange because all the Aristotle’s point in distinguishing species 2 from genera is strictly the distinction of class membership and class inclusion as they call them so.

⁵ *Platonic studies*, Princeton, 1973, 333f. and n.21

⁶ Graham, Daniel W., *Aristotle’s Two Systems*, 1987, Oxford University Press, p. 32

⁷ Corkum, Phil, *Aristotle on Predication*, *European Journal of Philosophy*, 2013, John Wiley & Sons Ltd, p. 7