PRIOR ANALYTICS

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BOOK I

24a10-24a15 § 1 · First we must state the subject of the enquiry and what it is about: the subject is demonstration, and it is about demonstrative understanding.[3] Next we must determine what a proposition[4] is, what a term is, and what a deduction[5] is (and what sort of deduction is perfect and what imperfect); and after that, what it is for one thing to be or not be in another as a whole, and what we mean by being predicated of every or of no.

24a16-24b16 A proposition, then, is a statement affirming or denying something of something; and this is either universal or particular or indefinite. By universal I mean a statement that something belongs to all or none of something; by particular that it belongs to some or not to some or not to all; by indefinite that it does or does not belong, without any mark of being universal or particular, e.g. 'contraries are subjects of the same science', or 'pleasure is not good'. A demonstrative proposition differs from a dialectical one, because a demonstrative proposition is the assumption of one of two contradictory statements (the demonstrator does not ask

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[2]TEXT: W. D. Ross, OCT, Oxford, 1964

[3]'Understanding' here, and throughout the *Analytics*, translates *episteme*.

[4]'Proposition' here and hereafter translates *protasis*.

[5]'Deduction' here and hereafter translates *syllogismos*.

for his premiss, but lays it down), whereas a dialectical proposition choice between two contradictories. But this will make no difference to the production of a deduction in either case; for both the demonstrator and the dialectician argue deductively after assuming that something does or does not belong to something. Therefore a deductive proposition without qualification will be an affirmation or denial of something concerning something in the way we have described; it will be demonstrative, if it is true and assumed on the basis of the first principles of its science; it will be dialectical if it asks for a choice between two contradictories (if one is enquiring) or if it assumes what is apparent and reputable, as we said in the Topics[6] (if one is deducing). Thus as to what a proposition is and how deductive, demonstrative and dialectical propositions differ, we have now said enough for our present purposes—we shall discuss the matter with precision later on.[7]

I call a term that into which the proposition is resolved, i.e. both the predicate 24b17-24b18
and that of which it is predicated, 'is' or 'is not' being added.

A deduction is a discourse in which, certain things being stated, something 24b19-24b22
other than what is stated follows of necessity from their being so. I mean by the last phrase that it follows because of them, and by this, that no further term is required from without in order to make the consequence necessary.

I call perfect a deduction which needs nothing other than what has been stated 24b23-24b26
to make the necessity evident; a deduction is imperfect if it needs either one or more things, which are indeed the necessary consequences of the terms set down, but have not been assumed in the propositions.

That one term should be in another as in a whole is the same as for the other 24b27-24b30
to be predicated of all of the first. And we say that one term is predicated of all of another, whenever nothing can be found of which the other term cannot be asserted; 'to be predicated of none' must be understood in the same way.

§ 2 · Every proposition states that something either belongs or must belong or 25a1-25a13
may belong; of these some are affirmative, others negative, in respect of each of the three modes; again some affirmative and negative propositions are universal, others particular, others indefinite. It is necessary then that in universal attribution the terms of the negative proposition should be convertible, e.g. if no pleasure is good, then no good will be pleasure; the terms of the affirmative must be convertible, not however universally, but in part, e.g. if every pleasure is good, some good must be pleasure; the particular affirmative must convert in part (for if some pleasure is good, then some good will be pleasure); but the particular negative

[6] See *Topics* 102a27-30.
[7] See *Posterior Analytics* I 4-12.

need not convert, for if some animal is not man, it does not follow that some man is not animal.

25a14-25a27 First then take a universal negative with the terms *A* and *B.* Now if *A* belongs to no *B*, *B* will not belong to any *A;* for if it does belong to some *B* (say to *C*), it will not be true that *A* belongs to no *B*—for *C* is one of the *B*s. And if *A* belongs to every *B,* then *B* will belong to some *A;* for if it belongs to none, then *A* will belong to no *B*—but it was laid down that it belongs to every *B.* Similarly if the proposition is particular: if *A* belongs to some *B,* it is necessary for *B* to belong to some *A;* for if it belongs to none, *A* will belong to no *B.* But if *A* does not belong to some *B,* it is not necessary that *B* should not belong to some *A:* e.g., if *B* is animal and *A* man; for man does not belong to every animal, but animal belongs to every man.

25a28-25a35 § 3 · The same manner of conversion will hold good also in respect of necessary propositions. The universal negative converts universally; each of the affirmatives converts into a particular. If it is necessary that *A* belongs to no *B*, it is necessary also that *B* belongs to no *A.* For if it is possible that it belongs to some *A*, it would be possible also that *A* belongs to some *B.* If *A* belongs to all or some *B* of necessity, it is necessary also that *B* belongs to some *A;* for if there were no necessity, neither would *A* belong to some *B* of necessity. But the particular negative does not convert, for the same reason which we have already stated.

25a36-25b26 In respect of possible propositions, since possibility is used in several ways (for we say that what is necessary and what is not necessary and what is potential is possible), affirmative statements will all convert in a similar manner. For if it is possible that *A* belongs to all or some *B,* it will be possible that *B* belongs to some *A.* For if it could belong to none, then *A* could belong to no *B.* This has been already proved. But in negative statements the case is different. Whatever is said to be possible, either because it necessarily belongs or because it does not necessarily not belong, admits of conversion like other negative statements, e.g. if one should say, it is possible that the man is not a horse, or that no garment is white. For in the former case the one necessarily does not belong to the other; in the latter there is no necessity that it should: and the proposition converts like other negative statements. For if it is possible for no man to be a horse, it is also admissible for no horse to be a man; and if it is admissible for no garment to be white, it is also admissible for nothing white to be a garment. For if some white thing must be a garment, then some garment will necessarily be white. This has been already proved. The particular negative is similar. But if anything is said to be possible because it is the general rule and natural (and it is in this way we define the possible), the negative propositions can no longer be converted in the same way: the universal negative does not convert, and the particular does. This will be plain when we speak about the possible.[8] At present we may take this much as clear in addition to what has been said: the statements that it is possible that *A* belongs to no *B* or does not belong to some *B* are affirmative in form; for the expression 'is possible' ranks along with 'is', and 'is' makes an affirmative always and in every case, whatever the terms to which it is added in predication, e.g. 'it is not-good' or 'it is not-white' or in a word 'it is not-this'. But this also will be proved in the sequel.[9] In conversion these will behave like the other affirmative propositions.

§ 4 · After these distinctions we now state by what means, when, and how every deduction is produced; subsequently we must speak of demonstration. Deduction should be discussed before demonstration, because deduction is the more general: a demonstration is a sort of deduction, but not every deduction is a demonstration. 25b27-25b31

Whenever three terms are so related to one another that the last is in the middle as in a whole, and the middle is either in, or not in, the first as in a whole, the extremes must be related by a perfect deduction. I call that term middle which both is itself in another and contains another in itself: in position also this comes in the middle. By extremes I mean both that term which is itself in another and that in which another is contained. If *A* is predicated of every *B*, and *B* of every *C*, *A* must be predicated of every *C:* we have already explained what we mean by 'predicated of every'. Similarly also, if *A* is predicated of no *B*, and *B* of every *C*, it is necessary that *A* will belong to no *C*. 25b32-26a2

But if the first term belongs to all the middle, but the middle to none of the last term, there will be no deduction in respect of the extremes; for nothing necessary follows from the terms being so related; for it is possible that the first should belong either to all or to none of the last, so that neither a particular nor a universal conclusion is necessary. But if there is no necessary consequence, there cannot be a deduction by means of these propositions. As an example of a universal affirmative relation between the extremes we may take the terms animal, man, horse; of a universal negative relation, the terms animal, man, stone. Nor again can a deduction be formed when neither the first term belongs to any of the middle, nor the middle to any of the last. As an example of a positive relation between 26a3-26a12

[8] See Chapters 13-17.
[9] See Chapter 46.

the extremes take the terms science, line, medicine: of a negative relation science, line, unit.

26a13-26a15 If then the terms are universally related, it is clear in this figure when a deduction will be possible and when not, and that if a deduction is possible the terms must be related as described, and if they are so related there will be a deduction.

26a16-26a30 But if one term is related universally, the other in part only, to its subject, there must be a perfect deduction whenever universality is posited with reference to the major term either affirmatively or negatively, and particularity with reference to the minor term affirmatively; but whenever the universality is posited in relation to the minor term, or the terms are related in any other way, a deduction is impossible. I call that term the major in which the middle is contained and that term the minor which comes under the middle. Let *A* belong to every *B* and *B* and to some *C.* Then if 'predicated of every' means what was said above, it is necessary that *A* belongs to some *C.* And if *A* belongs to no *B* and *B* to some *C,* it is necessary that *A* does not belong to some *C.* (The meaning of 'predicated of none' has also been defined.) So there will be a perfect deduction. This holds good also if deduction BC should be indefinite, provided that it is affirmative; for we shall have the same deduction whether it is indefinite or particular.

26a31-26a39 But if the universality is posited with respect to the minor term either affirmatively or negatively, a deduction will not be possible, whether the other is affirmative or negative, indefinite or particular: e.g. if *A* belongs or does not belong to some *B,* and *B* belongs to every *C.* As an example of a positive relation between the extremes take the terms good, state, wisdom; of a negative relation, good, state, ignorance. Again if *B* belongs to no *C,* and *A* belongs or does not belong to some *B* (or does not belong to every *B*), there cannot be a deduction. Take the terms white, horse, swan; white, horse, raven. The same terms may be taken also if *BA* is indefinite.

26b1-26b14 Nor when the proposition relating to the major extreme is universal, whether affirmative or negative, and that to the minor is negative and particular, can there be a deduction: e.g. if *A* belongs to every *B,* and *B* does not belong to some *C* or not to every *C.* For the first term may be predictable both of all and of none of the term to some of which the middle does not belong. Suppose the terms are animal, man, white: next take some of the white things of which man is not predicated—swan and snow: animal is predicated of all of the one, but of none of the other. Consequently there cannot be a deduction. Again let *A* belong to no *B,* but let *B* not belong to some *C.* Take the terms inanimate, man, white: then take some white things of which man is not predicated—swan and snow: inanimate is predicated of all of the one, of none of the other.

Further since it is indefinite to say that *B* does not belong to some *C,* and it is true that it does not belong to some *C* both if it belongs to none and if it does not belong to every, and since if terms are assumed such that it belongs to none, no deduction follows (this has already been stated), it is clear that this arrangement of terms will not afford a deduction: otherwise one would have been possible in the other case too. A similar proof may also be given if the universal proposition is negative. 26b15-26b20

Nor can there in any way be a deduction if both the relations are particular, either positively or negatively, or the one positively and the other negatively, or one indefinite and the other definite, or both indefinite. Terms common to all the above are animal, white, horse; animal, white, stone. 26b21-26b25

It is clear then from what has been said that if there is a deduction in this figure with a particular conclusion, the terms must be related as we have stated: if they are related otherwise, no deduction is possible at all. It is evident also that all the deductions in this figure are perfect (for they are all completed by means of what was originally assumed) and that all conclusions are proved by this figure, viz. universal and particular, affirmative and negative. Such a figure I call the first. 26b26-26b33

§ 5 · Whenever the same thing belongs to all of one subject, and to none of another, or to all of each subject or to none of either, I call such a figure the second; by middle term in it I mean that which is predicated by both subjects, by extremes the terms of which this is said, by major extreme that which lies near the middle, by minor that which is further away from the middle. The middle term stands outside the extremes, and is first in position. A deduction cannot ever be perfect in this figure, but it may be potential whether the terms are related universally or not. 26b34-27a2

If then the terms are related universally a deduction will be possible, whenever the middle belongs to all of one subject and to none of another (it does not matter which has the negative relation), but in no other way. Let *M* be predicated of no *N,* but of every *O.* Since, then, the negative is convertible, *N* will belong to no *M;* but *M* was assumed to belong to every *O:* consequently *N* will belong to no *O.* This has already been proved. Again if *M* belongs to every *N,* but to no *O,* then *O* will belong to no *N.* For if *M* belongs to no *O, O* belongs to no *M;* but *M* (as was said) belongs to every *N: O* then will belong to no *N;* for the first figure has again been formed. But since the negative is convertible, *N* will belong to no *O.* Thus it will be the same deduction. 27a3-27a14

It is possible to prove these results also by *reductio ad impossibile.* 27a15-27a15

27a16-27a18 It is clear then that a deduction is formed when the terms are so related, but not a perfect one; for the necessity is not perfectly established merely from the original assumptions; others also are needed.

27a19-27a20 But if M is predicated of every N and O, there will not be a deduction. Terms to illustrate a positive relation between the extremes are substance, animal, man; a negative relation, substance, animal, number—substance being the middle term.

27a21-27a22 Nor is a deduction possible when M is predicated neither of any N nor of any O. Terms to illustrate a positive relation are line, animal, man; a negative relation, line, animal, stone.

27a23-27a25 It is clear then that if a deduction is formed when the terms are universally related, the terms must be related as we stated at the outset; for if they are otherwise related no necessary consequence follows.

27a26-27b8 If the middle term is related universally to one of the extremes, a particular negative deduction must result whenever the middle term is related universally to the major whether positively or negatively, and particularly to the minor and in a manner opposite to that of the universal statement (by 'an opposite manner' I mean, if the universal statement is negative, the particular is affirmative: if the universal is affirmative, the particular is negative). For if M belongs to no N, but to some O, it is necessary that N does not belong to some O. For since the negative is convertible, N will belong to no M; but M was admitted to belong to some O: therefore N will not belong to some O; for a deduction is found by means of the first figure. Again if M belongs to every N, but not to some O, it is necessary that N does not belong to some O; for if N belongs to every O, and M is predicated also of every N, M must belong to every O; but we assumed that M does not belong to some O. And if M belongs to every N but not to every O, we shall conclude that N does not belong to every O: the proof is the same as the above. But if M is predicated of every O, but not of every N, there will be no deduction. Take the terms animal, substance, raven; animal, white raven. Nor will there be a deduction when M is predicated of no O, but of some N. Terms to illustrate a positive relation between the extremes are animal, substance, unit; a negative relation, animal, substance, science.

27b9-27b23 If then the universal statement is opposed to the particular, we have stated when a deduction will be possible and when not; but if the premisses are similar in form, I mean both negative or both affirmative, a deduction will not be possible at all. First let them be negative, and let the universality apply to the major term, i.e. let M belong to no N, and not to some O. It is possible then for N to belong either to every O or to no O. Terms to illustrate the negative relation are black, snow, animal. But it is not possible to find terms of which the extremes are related positively and universally, if *M* belongs to some *O*, and does not belong to some *O*. For if *N* belonged to every *O*, but *M* to no *N*, then *M* would belong to no *O*; but we assumed that it belongs to some *O*. In this way then it is not admissible to take terms: our point must be proved from the indefinite nature of the particular statement. For since it is true that *M* does not belong to some *O*, even if it belongs to no *O*, and since if it belongs to no *O* a deduction is (as we have seen) not possible, clearly it will not be possible now either.

Again let the propositions be affirmative, and let the universality apply as be- 27b24-27b39
fore, i.e. let *M* belong to every *N* and to some *O*. It is possible then for *N* to belong to every *O* or to no *O*. Terms to illustrate the negative relation are white, swan, stone. But it is not possible to take terms to illustrate the universal affirmative relation, for the reason already stated: the point must be proved from the indefinite nature of the particular statement. And if the universality applies to the minor extreme, and *M* belongs to no *O*, and not to some *N*, it is possible for *N* to belong either to every *O* or to no *O*. Terms for the positive relation are white, animal, raven; for the negative relation, white, stone, raven. If the propositions are positive, terms for the negative relation are white, animal, snow; for the positive relation, white, animal, swan. Evidently then, whenever the propositions are similar in form, and one is universal, the other particular, a deduction cannot be formed at all. Nor is one possible if the middle term belongs to some of each of the extremes, or does not belong to some of either, or belongs to some of the one, not to some of the other, or belongs to neither universally, or is related to them indefinitely. Common terms for all the above are white, animal, man; white, animal, inanimate.

It is clear then from what has been said that if the terms are related to one 28a1-28a9
another in the way stated, a deduction results of necessity; and if there is a deduction, the terms must be so related. But it is evident also that all the deductions in this figure are imperfect; for all are made perfect by certain supplementary assumptions, which either are contained in the terms of necessity or are assumed as hypotheses, i.e. when we prove *per impossibile*. And it is evident that an affirmative deduction is not attained by means of this figure, but all are negative, whether universal or particular.

§ 6 · But if one term belongs to all, and another to none, of a third, or if both 28a10-28a17
belong to all, or to none, of it, I call such a figure the third; by middle term in it I mean that of which both are predicated, by extremes I mean the predicates, by the major extreme that which is further from the middle, by the minor that which is nearer to it. The middle term stands outside the extremes, and is last in position.

A deduction cannot be perfect in this figure either, but it may be potential whether the terms are related universally or not to the middle term.

28a18-28a26 If they are universal, whenever both P and R belong to every S, it follows that P will necessarily belong to some R. For, since the affirmative is convertible, S will belong to some R: consequently since P belongs to every S, and S to some R, P must belong to some R; for a deduction in the first figure is produced. It is possible to demonstrate this both *per impossibile* and by exposition. For if both P and R belong to every S, should one of the Ss, e.g. N, be taken, both P and R will belong to this, and thus P will belong to some R.

28a27-28a33 If R belongs to every S, and P to no S, there will be a deduction that P will necessarily not belong to some R. This may be demonstrated in the same way as before by converting the proposition RS. It might be proved also *per impossibile*, as in the former cases. But if R belongs to no S, P to every S, there will be no deduction. Terms for the positive relation are animal, horse, man; for the negative relation animal, inanimate, man.

28a34-28a36 Nor can there be a deduction when both terms are asserted of no S. Terms for the positive relation are animal, horse, inanimate; for the negative relation man, horse, inanimate—inanimate being the middle term.

28a37-28b4 It is clear then in this figure also when a deduction will be possible and when not, if the terms are related universally. For whenever both the terms are affirmative, there will be a deduction that one extreme belongs to some of the other; but when they are negative, no deduction will be possible. But when one is negative, the other affirmative, if the major is negative, the minor affirmative, there will be a deduction that the one extreme does not belong to some of the other; but if the relation is reversed, no deduction will be possible.

28b5-28b15 If one term is related universally to the middle, the other in part only, when both are affirmative there must be a deduction, no matter which is universal. For if R belongs to every S, P to some S, P must belong to some R. For since the affirmative is convertible, S will belong to some P; consequently since R belongs to every S, and S to some P, R must also belong to some P; therefore P must belong to some R. Again if R belongs to some S, and P to every S, P must belong to some R. This may be demonstrated in the same way as the preceding. And it is possible to demonstrate it also *per impossibile* and by exposition, as in the former cases.

28b16-28b21 But if one term is affirmative, the other negative, and if the affirmative is universal, a deduction will be possible whenever the minor term is affirmative. For if R belongs to every S, but P does not belong to some S, it is necessary that P does not belong to some R. For if P belongs to every R, and R belongs to every S, then P will belong to every S; but we assumed that it did not. Proof is possible also without reduction, if one of the *S*s be taken to which *P* does not belong.

But whenever the major is affirmative, no deduction will be possible, e.g. if *P* belongs to every *S,* and *R* does not belong to some *S.* Terms for the universal affirmative relation are animate, man, animal. For the universal negative relation it is not possible to get terms, if *R* belongs to some *S,* and does not belong to some *S.* For if *P* belongs to every *S,* and *R* to some *S,* then *P* will belong to some *R;* but we assumed that it belongs to no *R.* We must put the matter as before. Since its not belonging to some is indefinite, it is true to say of that which belongs to none that it does not belong to some. But if *R* belongs to no *S,* no deduction is possible, as has been shown. Clearly then no deduction will be possible here. 28b22-28b31

But if the negative term is universal, whenever the major is negative and the minor affirmative there will be a deduction. For if *P* belongs to no *S,* and *R* belongs to some *S, P* will not belong to some *R;* for we shall have the first figure again, if the proposition RS is converted. 28b32-28b35

But when the minor is negative, there will be no deduction. Terms for the positive relation are animal, man, wild; for the negative relation, animal, science, wild—the middle in both being the term wild. 28b36-28b38

Nor is a deduction possible when both are stated in the negative, but one is universal, the other particular. When the minor is related universally to the middle, take the terms animal, science, wild; animal, man, wild. When the major is related universally to the middle, take as terms for a negative relation raven, snow, white. For a positive relation terms cannot be found, if *R* belongs to some *S,* and does not belong to some *S.* For if *P* belongs to every *R,* and *R* to some *S,* then *P* belongs to some *S;* but we assumed that it belongs to no *S.* Our point, then, must be proved from the indefinite nature of the particular statement. 28b39-29a6

Nor is a deduction possible at all, if each of the extremes belongs to some of the middle, or does not belong, or one belongs and the other does not, or one belongs to some, the other not to all, or if they are indefinite. Common terms for all are animal, man, white; animal, inanimate, white. 29a7-29a10

It is clear then in this figure also when a deduction will be possible, and when not; and that if the terms are as stated, a deduction results of necessity, and if there is a deduction, the terms must be so related. It is clear also that all the deductions in this figure are imperfect (for all are made perfect by certain supplementary assumptions), and that it will not be possible to deduce a universal conclusion by means of this figure, whether negative or affirmative. 29a11-29a18

§ 7 · It is evident also that in all the figures, whenever a deduction does not result, if both the terms are affirmative or negative nothing necessary follows at 29a19-29a29 all, but if one is affirmative, the other negative, and if the negative is assumed universally, a deduction always results relating the minor to the major term, e.g. if *A* belongs to every or some *B*, and *B* belongs to no *C;* for if the propositions are converted it is necessary that *C* does not belong to some *A.* Similarly also in the other figures; a deduction always results by means of conversion. It is evident also that the substitution of an indefinite for a particular affirmative will effect the same deduction in all the figures.

29a30-29a40 It is clear too that all the imperfect deductions are made perfect by means of the first figure. For all are brought to a conclusion either probatively or *per impossibile,* in both ways the first figure is formed: if they are made perfect probatively, because (as we saw) all are brought to a conclusion by means of conversion, and conversion produces the first figure; if they are proved *per impossibile,* because on the assumption of the false statement the deduction comes about by means of the first figure, e.g. in the last figure, if *A* and *B* belong to every *C,* it follows that *A* belongs to some *B;* for if *A* belonged to no *B,* and *B* belongs to every *C, A* would belong to no *C;* but (as we stated) it belongs to every *C.* Similarly also with the rest.

29b1-29b26 It is possible also to reduce all deductions to the universal deductions in the first figure. Those in the second figure are clearly made perfect by these, though not all in the same way; the universal ones are made perfect by converting the negative premiss, each of the particular by *reductio ad impossibile.* In the first figure particular deductions are indeed made perfect by themselves, but it is possible also to prove them by means of the second figure, reducing them *ad impossibile,* e.g. if *A* belongs to every *B,* and *B* to some *C,* it follows that *A* belongs to some *C.* For if it belonged to no *C,* and belongs to every *B,* then *B* will belong to *C:* this we know by means of the second figure. Similarly also demonstration will be possible in the case of the negative. For if *A* belongs to no *B,* and *B* belongs to some *C, A* will not belong to some *C;* for if it belonged to every *C*, and belongs to *B*, then *B* will belong to no *C;* and this (as we saw) is the middle figure. Consequently, since all deductions in the middle figure can be reduced to universal deductions in the first figure, and since particular deductions in the first figure can be reduced to deductions in the middle figure, it is clear that particular deductions can be reduced to universal deductions in the first figure. Deductions in the third figure, if the terms are universal, are directly made perfect by means of those deductions; but, when one of the propositions is particular, by means of the particular deductions in the first figure and these (we have seen) may be reduced to the universal deductions in the first figure; consequently also the particular deductions in the third figure may be so reduced. It is clear then that all may be reduced to the universal deductions in the first figure.

We have stated then how deductions which prove that something belongs or does not belong to something else are constituted, both how those of the same figure are constituted in themselves, and how those of different figures are related to one another. 29b27-29b28

§ 8 · Since there is a difference according as something belongs, necessarily belongs, or may belong (for many things belong, but not necessarily, others neither necessarily nor indeed at all, but it is possible for them to belong), it is clear that there will be different deductions for each of these, and deductions with differently related terms, one concluding from what is necessary, another from what is, a third from what is possible. 29b29-29b35

In the case of what is necessary, things are pretty much the same as in the case of what belongs; for when the terms are put in the same way, then, whether something belongs or necessarily belongs (or does not belong), a deduction will or will not result alike in both cases, the only difference being the addition of the expression 'necessarily' to the terms. For the negative is convertible alike in both cases, and we should give the same account of the expressions 'to be in something as in a whole' and 'to be predicated of every'. Thus in the other cases, the conclusion will be proved to be necessary by means of conversion, in the same manner as in the case of simple predication. But in the middle figure when the universal is affirmative, and the particular negative, and again in the third figure when the universal is affirmative and the particular negative, the demonstration will not take the same form, but it is necessary by the exposition of a part of the subject, to which in each case the predicate does not belong, to make the deduction in reference to this: with terms so chosen the conclusion will be necessary. But if the relation is necessary in respect of the part exposed, it must hold of some of that term in which this part is included; for the part exposed is just some of that. And each of the resulting deductions is in the appropriate figure. 29b36-30a14

§ 9 · It happens sometimes also that when *one* proposition is necessary the deduction is necessary, not however when either is necessary, but only when the one related to the major is, e.g. if *A* is taken as necessarily belonging or not belonging to *B*, but *B* is taken as simply belonging to *C;* for if the propositions are taken in this way, *A* will necessarily belong or not belong to *C*. For since *A* necessarily belongs, or does not belong, to every *B*, and since *C* is one of the *B*s, it is clear that for *C* also the positive or the negative relation to *A* will hold necessarily. But if *AB* is not necessary, but *BC* is necessary, the conclusion will 30a15-30a33 not be necessary. For if it were, it would result both through the first figure and through the third that *A* belongs necessarily to some *B*. But this is false; for *B* may be such that it is possible that *A* should belong to none of it. Further, an example also makes it clear that the conclusion will not be necessary, e.g. if *A* were movement, *B* animal, *C* man; man is an animal necessarily, but an animal does not move necessarily, nor does man. Similarly also if *AB* is negative; for the proof is the same.

30a34-30b7 In particular deductions, if the universal is necessary, then the conclusion will be necessary; but if the particular, the conclusion will not be necessary, whether the universal proposition is negative or affirmative. First let the universal be necessary, and let *A* belong to every *B* necessarily, but let *B* simply belong to some *C:* it is necessary then that *A* belongs to some *C* necessarily; for *C* falls under *B,* and *A* was assumed to belong necessarily to every *B.* Similarly also if the deduction should be negative; for the proof will be the same. But if the particular is necessary, the conclusion will not be necessary; for from the denial of such a conclusion nothing impossible results, just as it does not in the universal deductions. The same is true of negatives too. Try the terms movement, animal, white.

30b8-30b18 § 10 · In the second figure, if the negative proposition is necessary, then the conclusion will be necessary, but if the affirmative, not necessary. First let the negative be necessary; let *A* be possible of no *B,* and simply belong to *C.* Since then the negative is convertible, *B* is possible of no *A.* But *A* belongs to every *C;* consequently *B* is possible of no *C.* For *C* falls under *A.* The same result would be obtained if the negative refers to *C;* for if *A* is possible of no *C, C* is possible of no *A;* but *A* belongs to every *B,* consequently *C* is possible of no *B;* for again we have obtained the first figure. Neither then is *B* possible of *C;* for conversion is possible as before.

30b19-30b39 But if the affirmative proposition is necessary, the conclusion will not be necessary. Let *A* belong to every *B* necessarily, but to no *C* simply. If then the negative is converted, the first figure results. But it has been proved in the case of the first figure that if the negative related to the major is not necessary the conclusion will not be necessary either. Therefore the same result will obtain here. Further, if the conclusion is necessary, it follows that *C* necessarily does not belong to some *A.* For if *B* necessarily belongs to no *C, C* will necessarily belong to no *B.* But *B* at any rate must belong to some *A,* if it is true (as was assumed) that *A* necessarily belongs to every *B.* Consequently it is necessary that *C* does not belong to some *A.* But nothing prevents such an *A* being taken that it is possible for *C* to belong to all of it. Further one might show by an exposition of terms that the conclusion is not necessary without qualification, though it is necessary given the premisses. For example let *A* be animal, *B* man, *C* white, and let the propositions be assumed in the same way as before: it is possible that animal should belong to nothing white. Man then will not belong to anything white, but not necessarily; for it is possible for a man to become white, not however so long as animal belongs to nothing white. Consequently given these premisses the conclusion will be necessary, but it is not necessary without qualification.

Similar results will obtain also in particular deductions. For whenever the negative proposition is both universal and necessary, then the conclusion will be necessary; but whenever the affirmative is universal and the negative particular, the conclusion will not be necessary. First then let the negative be both universal and necessary: let it be possible for no *B* that *A* should belong to it, and let *A* belong to some *C*. Since the negative is convertible, it will be possible for no *A* that *B* should belong to it; but *A* belongs to some *C;* consequently *B* necessarily does not belong to some *C*. Again let the affirmative be both universal and necessary, and let the affirmative refer to *B*. If then *A* necessarily belongs to every *B*, but does not belong to some *C*, it is clear that *B* will not belong to some *C*, but not necessarily. For the same terms can be used to demonstrate the point, which were used in the universal deductions. Nor again, if the negative is necessary but particular, will the conclusion be necessary. The point can be demonstrated by means of the same terms. 31a1-31a18

§ 11 · In the last figure when the terms are related universally to the middle, and both propositions are affirmative, if one of the two is necessary, then the conclusion will be necessary. But if one is negative, the other affirmative, whenever the negative is necessary the conclusion also will be necessary, but whenever the affirmative is necessary the conclusion will not be necessary. First let both the propositions be affirmative, and let *A* and *B* belong to every *C*, and let *AC* be necessary. Since then *B* belongs to every *C, C* also will belong to some *B*, because the universal is convertible into the particular; consequently if *A* belongs necessarily to every *C*, and *C* belongs to some *B*, it is necessary that *A* should belong to some *B* also. For *B* is under *C*. The first figure then is formed. A similar proof will be given also if *BC* is necessary. For *C* is convertible with some *A;* consequently if *B* belongs necessarily to every *C*, it will belong necessarily also to some A. 31a19-31a33

Again let *AC* be negative, *BC* affirmative, and let the negative be necessary. Since then *C* is convertible with some *B*, but *A* necessarily belongs to no *C, A* will necessarily not belong to some *B* either; for *B* is under *C*. But if the affirmative is necessary, the conclusion will not be necessary. For suppose *BC* is affirmative and 31a34-31b10 necessary, while *AC* is negative and not necessary. Since then the affirmative is convertible, *C* also will belong to some *B* necessarily; consequently if *A* belongs to no *C* while *C* belongs to some *B, A* will not belong to some *B*—but not of necessity; for it has been proved, in the case of the first figure, that if the negative proposition is not necessary, neither will the conclusion be necessary. Further, the point may be made clear by considering the terms. Let *A* be good, *B* animal, *C* horse. It is possible then that good should belong to no horse, and it is necessary that animal should belong to every horse; but it is not necessary that some animal should not be good, since it is possible for every animal to be good. Or if that is not possible, take as the term awake or asleep; for every animal can accept these.

31b11-31b32 If, then, the terms are universal in relation to the middle, we have stated when the conclusion will be necessary. But if one is universal, the other particular, and if both are affirmative, whenever the universal is necessary the conclusion also must be necessary. The demonstration is the same as before; for the particular affirmative also is convertible. If then it is necessary that *B* should belong to every *C,* and *A* falls under *C,* it is necessary that *B* should belong to some *A.* But if *B* must belong to some *A*, then *A* must belong to some *B;* for conversion is possible. Similarly also if *AC* should be necessary and universal; for *B* falls under *C.* But if the particular is necessary, the conclusion will not be necessary. Let *BC* be both particular and necessary, and let *A* belong to every *C,* not however necessarily. If *BC* is converted the first figure is formed, and the universal proposition is not necessary, but the particular is necessary. But when the propositions were thus, the conclusion (as we proved) was not necessary; consequently it is not here either. Further, the point is clear if we look at the terms. Let *A* be waking, *B* biped, and *C* animal. It is necessary that *B* should belong to some *C,* but it is possible for *A* to belong to *C,* and that *A* should belong to *B* is not necessary. For there is no necessity that some biped should be asleep or awake. Similarly and by means of the same terms proof can be made, should *AC* be both particular and necessary.

31b33-32a6 But if one of the terms is affirmative, the other negative, whenever the universal is both negative and necessary the conclusion also will be necessary. For if it is not possible that *A* should belong to any *C,* but *B* belongs to some *C,* it is necessary that *A* should not belong to some *B.* But whenever the affirmative is necessary, whether universal or particular, or the negative is particular, the conclusion will not be necessary. The rest of the proof of this will be the same as before; but if terms are wanted, when the affirmative is universal and necessary, take the terms waking, animal, man, man being middle, and when the affirmative is particular and necessary, take the terms waking, animal, white; for it is necessary that animal should belong to some white thing, but it is possible that waking should belong to none, and it is not necessary that waking should not belong to some animal. But when the negative is particular and necessary, take the terms biped, moving, animal, animal being middle.

§ 12 · It is clear then that a deduction that something belongs is not reached unless both propositions state that something belongs, but a necessary conclusion is possible even if one only of the propositions is necessary. But in both cases, whether the deductions are affirmative or negative, it is necessary that one proposition should be similar to the conclusion. I mean by 'similar', if the conclusion states that something belongs, the proposition must too; if the conclusion is necessary, the proposition must be necessary. Consequently this also is clear, that the conclusion will be neither necessary nor simple unless a necessary or simple proposition is assumed. 32a7-32a14

§ 13 · Perhaps enough has been said about necessity, how it comes about and how it differs from belonging. We proceed to discuss that which is possible, when and how and by what means it can be proved. I use the terms 'to be possible' and 'the possible' of that which is not necessary but, being assumed, results in nothing impossible. We say indeed, homonymously, of the necessary that it is possible. [But that my definition of the possible is correct is clear from the contradictory negations and affirmations. For the expressions 'it is not possible to belong', 'it is impossible to belong', and 'it is necessary not to belong' are either identical or follow from one another; consequently their opposites also, 'it is possible to belong', 'it is not impossible to belong', and 'it is not necessary not to belong', will either be identical or follow from one another. For of everything the affirmation or the denial holds good. That which is possible then will be not necessary and that which is not necessary will be possible.][10] It results that all propositions in the mode of possibility are convertible into one another. I mean not that the affirmative are convertible into the negative, but that those which are affirmative in form admit of conversion by opposition, e.g. 'it is possible to belong' may be converted into 'it is possible not to belong', and 'it is possible to belong to every' into 'it is possible to belong to no' or 'not to every', and 'it is possible to belong to some' into 'it is possible not to belong to some'. And similarly for the others. For since that which is possible is not necessary, and that which is not necessary may possibly not belong, it is clear that if it is possible that *A* should belong to *B*, it is possible also that it should not belong to *B;* and if it is possible that it should belong to every, it is also possible that it should not belong to every. The same 32a15-32b3

[10] Ross excises the passage in brackets.