

4a. The relation between univocal meaning and definition

7 PLATO: Sophist, 552b-c

8 ARISTOTLE: Categories, CH 5 [3a32-b9] 7c-d / Posterior Analytics, BK II, CH 13 [97b37-39] 133c / Topics, BK IV, CH 3 [123a27-29] 171d; CH 6 [127b5-6] 177a; BK VI, CH 2 192c-193b; CH 10 [148a22-b22] 202b-203a; BK VII, CH 4 [154a14-18] 209c; BK VIII, CH 3 [158b8-159a2] 215b-c / Soul, BK I, CH 1 [402b1-8] 631c-d

9 ARISTOTLE: Parts of Animals, BK I, CH 2-3 165d-167d

19 AQUINAS: Summa Theologica, PART I, Q 13, A 1, ANS 62c-63c

23 HOBBS: Leviathan, PART I, 56b; PART IV, 269b-c

33 PASCAL: Geometrical Demonstration, 430b-434a

35 LOCKE: Human Understanding, BK III, CH XI, SECT 12 302d

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43 FEDERALIST: NUMBER 37, 120a-b

49 DARWIN: Descent of Man, 347a-c

53 JAMES: Psychology, 121b-122a

7 PLATO: *Sophist*, 552b-c

Theaet. I do not think that I shall tire, and if I do, I shall get my friend here, young Socrates, the namesake of the elder Socrates, to help; he is about my own age, and my partner at the gymnasium, and is constantly accustomed to work with me.

Str. Very good; you can decide about that for yourself as we proceed. Meanwhile you and I will begin together and enquire into the nature of the Sophist, first of the three: I should like you to make out what he is and bring him to light in a discussion; for at present we are only agreed about the name, but of the thing to which we both apply the name possibly you have one notion and I another; whereas we ought always to come to an understanding about the thing itself in terms of a definition, and not merely about the name minus the definition. Now the tribe of Sophists which we are investigating is not easily caught or defined; and the world has long ago agreed, that if great subjects are to be adequately treated, they must be studied in the lesser and easier instances of them before we proceed to the greatest of all. And as I know that the tribe of Sophists is troublesome and hard to be caught, I should recommend that we practise beforehand the method which is to be applied to him on some simple and smaller thing, unless you can suggest a better way.

Theaet. Indeed I cannot.

Str. Then suppose that we work out some lesser example which will be a pattern of the greater?

Theaet. Good.

Str. What is there which is well known and not great, and is yet as susceptible of definition as any larger thing? Shall I say an angler? He is familiar to all of us, and not a very interesting or important person.

Theaet. He is not.

Str. Yet I suspect that he will furnish us with the sort of definition and line of enquiry which we want.

Theaet. Very good.

Str. Let us begin by asking whether he is a man having art or not having art, but some other power.

Theaet. He is clearly a man of art.

Str. And of arts there are two kinds?

Theaet. What are they?

Str. There is agriculture, and the tending of mortal creatures, and the art of constructing or moulding vessels, and there is the art of imitation—all these may be appropriately called by a single name.

8 ARISTOTLE: *Categories*, CH 5 [3^a32-^b9] 7c-d / *Posterior Analytics*, BK II, CH 13 [97^b37-39] 133c / *Topics*, BK IV, CH 3 [123^a27-29] 171d; CH 6 [127^b5-6] 177a; BK VI, CH 2 192c-193b; CH 10 [148^a22-^b22] 202b-203a; BK VII, CH 4 [154^a14-18] 209c; BK VIII, CH 3 [158^b8-159^a2] 215b-c / *Soul*, BK I, CH 1 [402^b1-8] 631c-d

Categories, CH 5 [3^a32-^b9] 7c-d

It is the mark of substances and of differentiae that, in all propositions of which they form the predicate, they are predicated univocally. For all such propositions have for their subject either the individual or the species. It is true that, inasmuch as primary substance is not predicable of anything, it can never form the predicate of any proposition. But of secondary substances, the species is predicated of the individual, the genus both of the species and of the individual. Similarly 3^b the differentiae are predicated of the species and of the individuals. Moreover, the definition of the species and that of the genus are applicable to the primary substance, and that of the genus to the species. For all that is predicated of the predicate will be predicated also of the subject. Similarly, the definition of the differentiae will be applicable to the species and to the individuals. But it was stated above¹ that the word ‘univocal’ was applied to those things which had both name and definition in common. It is, therefore, established that in every proposition, of which either substance or a differentia forms the predicate, these are predicated univocally.

Posterior Analytics, BK II, CH 13 [97^b37-39] 133c

We may add that if dialectical disputation must not employ metaphors, clearly metaphors and metaphorical expressions are precluded in definition: otherwise dialectic would involve metaphors.

Topics, BK IV, CH 3 [123^a27-29] 171d

You should look and see, also, if the species be a homonym of the genus, and employ as your elementary principles those already stated for dealing with homonymy:² for the genus and the species are synonymous.

Topics, BK IV, CH 6 [127^b5-6] 177a

Look and see also if the genus fails to be synonymous with its species. For the genus is always predicated of its species synonymously.

Topics, BK VI, CH 2 192c-193b

¹ 1^a6.

² 106^a9 ff.

One commonplace rule, then, in regard to obscurity is, See if the meaning intended by the definition involves an ambiguity with any other, e.g. 'Becoming is a passage into being', or 'Health is the balance of hot and cold elements'. Here 'passage' and 'balance' are ambiguous terms: it is accordingly not clear which of the several possible senses of the term he intends to convey. Likewise also, if the term defined be used in different senses and he has spoken without distinguishing between them: for then it is not clear to which of them the definition rendered applies, and one can then bring a captious objection on the ground that the definition does not apply to all the things whose definition he has rendered: and this kind of thing is particularly easy in the case where the definer does not see the ambiguity of his terms. Or, again, the questioner may himself distinguish the various senses of the term rendered in the definition, and then institute his argument against each: for if the expression used be not adequate to the subject in any of its senses, it is clear that he cannot have defined it in any sense aright.

Another rule is, See if he has used a metaphorical expression, as, for instance, if he has defined knowledge as 'unsupplantable', or the earth as a 'nurse', or temperance as a 'harmony'. For a metaphorical expression is always obscure. It is possible, also, to argue sophistically against the user of a metaphorical expression as though he had used it in its literal sense: for the definition stated will not apply to the term defined, e. g. in the case of temperance: for harmony is always found between notes. Moreover, if harmony be the genus of temperance, then the same object will occur in 140^a two genera of which neither contains the other: for harmony does not contain virtue, nor virtue harmony. Again, see if he used terms that are unfamiliar, as when Plato describes the eye as 'brow-shaded', or a certain spider as 'poison-fanged', or the marrow as 'bone-formed'. For an unusual phrase is always obscure.

Sometimes a phrase is used neither ambiguously, nor yet metaphorically, nor yet literally, as when the law is said to be the 'measure' or 'image' of the things that are by nature just. Such phrases are worse than metaphor; for the latter does make its meaning to some extent clear because of the likeness involved; for those who use metaphors do so always in view of some likeness: whereas this kind of phrase makes nothing clear; for there is no likeness to justify the description 'measure' or 'image', as applied to the law, nor is the law ordinarily so called in a literal sense. So then, if a man says that the law is literally a 'measure' or an 'image', he speaks falsely: for an image is something produced by imitation, and this is not found in the case of the law. If, on the other hand, he does not mean the term literally, it is clear that he has used an unclear expression, and one that is worse than any sort of metaphorical expression.

Moreover, see if from the expression used the definition of the contrary be not clear; for definitions that have been correctly rendered also indicate their contraries as well. Or, again, see if, when it is merely stated by itself, it is not evident what it defines: just as in the works of the old painters, unless there were an inscription, the figures used to be unrecognizable.

Topics, BK VI, CH 10 [148^a22-^b22] 202b-203a

In dealing with these people even arguments of this kind are useful. Further, see if he has rendered a single common definition of terms that are used ambiguously. For terms whose definition corresponding to their common name is one and the same, are *synonymous*; if, then, the definition applied in a like manner to the whole range of the *ambiguous* term, it is not true of any one of the objects described by the term. This is, moreover, what happens to Dionysius' definition of 'life' when stated as 'a movement of a creature sustained by nutriment, congenitally present with it': for this is found in plants as much as in animals, whereas 'life' is generally understood to mean not one kind of thing only, but to be one thing in animals and another in plants. It is possible to hold the view that life is a synonymous term and is always used to describe one thing only, and therefore to render the definition in this way on purpose: or it may quite well happen that a man may see the ambiguous character of the word, and wish to render the definition of the one sense only, and yet fail to see that he has rendered a definition common to both senses instead of one peculiar to the sense he intends. In either case, whichever course he pursues, he is equally at fault. Since ambiguous terms sometimes pass unobserved, it is best in questioning 148^b to treat such terms as though they were synonymous (for the definition of the one sense will not apply to the other, so that the answerer will be generally thought not to have defined it correctly, for to a synonymous term the definition should apply in its full range), whereas in answering you should yourself distinguish between the senses. Further, as some answerers call 'ambiguous' what is really synonymous, whenever the definition rendered fails to apply universally, and, vice versa, call synonymous what is really ambiguous supposing their definition applies to both senses of the term, one should secure a preliminary admission on such points, or else prove beforehand that so-and-so is ambiguous or synonymous, as the case may be: for people are more ready to agree when they do not foresee what the consequence will be. If, however, no admission has been made, and the man asserts that what is really synonymous is ambiguous because the definition he has rendered will not apply to the second sense as well, see if the definition of this second meaning applies also to the other meanings: for if so, this meaning must clearly be synonymous with those others. Otherwise, there will be more than one definition of those other meanings,

for there are applicable to them two distinct definitions in explanation of the term, viz. the one previously rendered and also the later one. Again, if any one were to define a term used in several senses, and, finding that his definition does not apply to them all, were to contend not that the term is ambiguous, but that even the term does not properly apply to all those senses, just because his definition will not do so either, then one may retort to such a man that though in some things one must not use the language of the people, yet in a question of terminology one is bound to employ the received and traditional usage and not to upset matters of that sort.

Topics, BK VII, CH 4 [154^a14-18] 209c

Of the rest, too, the most important are those of most general application: for these are the most effective, e.g. that you should examine the individual cases, and then look to see in the case of their various species whether the definition applied. For the species is synonymous with its individuals. This sort of inquiry is of service against those who assume the existence of Ideas, as has been said before.³

Topics, BK VIII, CH 3 [158^b8-159^a2] 215b-c

The hardest, however, of all definitions to treat in argument are those that employ terms about which, in the first place, it is uncertain whether they are used in one sense or several, and, further, whether they are used literally or metaphorically by the definer. For because of their obscurity, it is impossible to argue upon such terms; and because of the impossibility of saying whether this obscurity is due to their being used metaphorically, it is impossible to refute them.

In general, it is safe to suppose that, whenever any problem proves intractable, it either needs definition or else bears either several senses, or a metaphorical sense, or it is not far removed from the first principles; or else the reason is that we have yet to discover in the first place just this—in which of the aforesaid directions the source of our difficulty lies: when we have made this clear, then obviously our business must be either to define or to distinguish, or to supply the intermediate premisses: for it is through these that the final conclusions are shown.

It often happens that a difficulty is found in discussing or arguing a given position because the definition has not been correctly rendered: e.g. ‘Has one thing one contrary or many?’: here when the term ‘contraries’ has been properly defined, it is easy to bring people to see whether it is possible for the same thing to have several contraries or not: in the same way also with other terms requiring definition. It appears also in mathematics that the difficulty in using a figure is sometimes due to a defect in definition; e.g. in

³ 148^a14

proving that the line which cuts the plane parallel to one side divides similarly both the line which it cuts and the area; whereas if the definition be given, the fact asserted becomes immediately clear: for the areas have the same fraction subtracted from them as have the sides: and this is the definition of 'the same ratio'. The most primary of the elementary principles are without exception very easy to show, if the definitions involved, e.g. the nature of a line or of a circle, be laid down; only the arguments that can be brought in regard to each of them are not many, because there are not many intermediate steps. If, on the other hand, the definition of the starting-points be not laid down, to show them is difficult and 159^a may even prove quite impossible. The case of the significance of verbal expressions is like that of these mathematical conceptions.

Soul, BK I, CH 1 [402^b1-8] 631c-d

402^a Holding as we do that, while knowledge of any kind is a thing to be honoured and prized, one kind of it may, either by reason of its greater exactness or of a higher dignity and greater wonderfulness in its objects, be more honourable and precious than another, on both accounts we should naturally be led to place in the front rank the study of the soul. The knowledge of the soul admittedly contributes greatly to the advance of truth in general, and, above all, to our understanding of Nature, for the soul is in some sense the principle of animal life. Our aim is to grasp and understand, first its essential nature, and secondly its properties; of these some are taught to be affections proper to the soul itself, while others are considered to attach to the animal owing to the presence within it of soul.

9 ARISTOTLE: *Parts of Animals*, BK I, CH 2-3 165d-167d

2

Some⁴ writers propose to reach the definitions of the ultimate forms of animal life by bipartite division. But this method is often difficult, and often impracticable.

Sometimes the final differentia of the subdivision is sufficient by itself, and the antecedent differentiae are mere surplusage. Thus in the series Footed, Two-footed, Cleft-footed, the last term is all-expressive by itself, and to append the higher terms is only an idle iteration. Again it is not permissible to break up a natural group, Birds for instance, by putting its members under different bifurcations, as is done in the published dichotomies, where some birds are ranked with animals of the water, and others placed in a different class. The group Birds and the group Fishes happen to be named, while other natural groups have no popular names; for instance, the groups

⁴ Plato, *Sophist*.

that we may call Sanguineous and Bloodless are not known popularly by any designations. If such natural groups are not to be broken up, the method of Dichotomy cannot be employed, for it necessarily involves such breaking up and dislocation. The group of the Many-footed, for instance, would, under this method, have to be dismembered, and some of its kinds distributed among land animals, others among water animals.

3

Again, privative terms inevitably form one branch of dichotomous division, as we see in the proposed dichotomies. But privative terms in their character of privatives admit of no subdivision. For there can be no specific forms of a negation, of Featherless for instance or of Footless, as there are of Feathered and of Footed. Yet a generic differentia must be subdivisible; for otherwise what is there that makes it generic rather than specific? There are to be found generic, that is specifically subdivisible, differentiae; Feathered for instance and Footed. For feathers are divisible into Barbed and Unbarbed, and feet into Manyleft, and Twocleft, like those of animals with bifid hoofs, and Uncleft or Undivided, like those of animals with solid hoofs. Now even with differentiae capable of this specific subdivision it is difficult enough so to make the classification, as that each animal shall be comprehended in some one subdivision and in not more than one; but far more difficult, nay impossible, is it to do this, if we start with a dichotomy into two contradictories. (Suppose for instance we start with the two contradictories, Feathered and Unfeathered; we shall find that the ant, the glow-worm, and some other animals fall under both divisions.) For each differentia must be presented by some species. There must be some species, therefore, under 643^a the privative heading. Now specifically distinct animals cannot present in their essence a common undifferentiated element, but any apparently common element must really be differentiated. (Bird and Man for instance are both Two-footed, but their two-footedness is diverse and differentiated. So any two sanguineous groups must have some difference in their blood, if their blood is part of their essence.) From this it follows that a privative term, being insusceptible of differentiation, cannot be a generic differentia; for, if it were, there would be a common undifferentiated element in two different groups.

Again, if the species are ultimate indivisible groups, that is, are groups with indivisible differentiae, and if no differentia be common to several groups, the number of differentiae must be equal to the number of species. If a differentia though not divisible could yet be common to several groups, then it is plain that in virtue of that common differentia specifically distinct animals would fall into the same division. It is necessary then, if the differentiae, under which are ranged all the ultimate and indivisible groups, are specific characters, that none of them shall be common; for otherwise, as already said, specifically distinct animals will come into one and the

same division. But this would violate one of the requisite conditions, which are as follows. No ultimate group must be included in more than a single division; different groups must not be included in the same division; and every group must be found in some division. It is plain then that we cannot get at the ultimate specific forms of the animal, or any other, kingdom by bifurcate division. If we could, the number of ultimate differentiae would equal the number of ultimate animal forms. For assume an order of beings whose prime differentiae are White and Black. Each of these branches will bifurcate, and their branches again, and so on till we reach the ultimate differentiae, whose number will be four or some other power of two, and will also be the number of the ultimate species comprehended in the order. (A species is constituted by the combination of differentia and matter. For no part of an animal is purely material or purely immaterial; nor can a body, independently of its condition, constitute an animal or any of its parts, as has repeatedly been observed.)⁵

Further, the differentiae must be elements of the essence, and not merely essential attributes. Thus if Figure is the term to be divided, it must not be divided into figures whose angles are equal to two right angles, and figures whose angles are together greater than two right angles. For it is only an attribute of a triangle and not part of its essence that its angles are equal to two right angles.

Again, the bifurcations must be opposites, like White and Black, Straight and Bent; and if we characterize one branch by either term, we must characterize the other by its opposite, and not, for example, characterize one branch by a colour, the other by a mode of progression, swimming for instance.

Furthermore, living beings cannot be divided by the functions common to body and soul, by Flying, for instance, and Walking, as we see them divided in the dichotomies already 643^b referred to. For some groups, Ants for instance, fall under both divisions, some ants flying while others do not. Similarly as regards the division into Wild and Tame; for it also would involve the disruption of a species into different groups. For in almost all species in which some members are tame, there are other members that are wild. Such, for example, is the case with Men, Horses, Oxen, Dogs in India, Pigs, Goats, Sheep; groups which, if double, ought to have what they have not, namely, different appellations; and which, if single, prove that Wildness and Tameness do not amount to specific differences. And whatever single element we take as a basis of division the same difficulty will occur.

The method then that we must adopt is to attempt to recognize the natural groups, following the indications afforded by the instincts of mankind,

⁵ e.g., at 1. 1 (641^a19).

which led them for instance to form the class of Birds and the class of Fishes, each of which groups combines a multitude of differentiae, and is not defined by a single one as in dichotomy. The method of dichotomy is either impossible (for it would put a single group under different divisions or contrary groups under the same division), or it only furnishes a single ultimate differentia for each species, which either alone or with its series of antecedents has to constitute the ultimate species.

If, again, a new differential character be introduced at any stage into the division, the necessary result is that the continuity of the division becomes merely a unity and continuity of agglomeration, like the unity and continuity of a series of sentences coupled together by conjunctive particles. For instance, suppose we have the bifurcation Feathered and Featherless, and then divide Feathered into Wild and Tame, or into White and Black. Tame and White are not a differentiation of Feathered, but are the commencement of an independent bifurcation, and are foreign to the series at the end of which they are introduced.

As we said then, we must define at the outset by a multiplicity of differentiae. If we do so, privative terms will be available, which are unavailable to the dichotomist.

The impossibility of reaching the definition of any of the ultimate forms by dichotomy of the larger group, as some propose, is manifest also from the following considerations. It is impossible that a single differentia, either by itself or with its antecedents, shall express the whole essence of a species. (In saying a single differentia by itself I mean such an isolated differentia as Cleft-footed; in saying a single differentia with antecedent I mean, to give an instance, Many-cleft-footed preceded by Cleft-footed. The very continuity of a series of successive differentiae in a division is intended to show that it is their combination that expresses the character of the resulting unit, or ultimate group.. But one is misled by the usages of language into imagining that it is merely the final term of the series, Many-cleft-footed for instance, that constitutes the whole differentia, and that the antecedent terms, Footed, Cleft-footed, are superfluous. 644^a Now it is evident that such a series cannot consist of many terms. For if one divides and subdivides, one soon reaches the final differential term, but for all that will not have got to the ultimate division, that is, to the species.) No single differentia, I repeat, either by itself or with its antecedents, can possibly express the essence of a species. Suppose, for example, Man to be the animal to be defined; the single differentia will be Cleft-footed, either by itself or with its antecedents, Footed and Two-footed. Now if man was nothing more than a Cleft-footed animal, this single differentia would duly represent his essence. But seeing that this is not the case, more differentiae than this one will necessarily be required to define him; and these cannot come under one division; for each single branch of a

dichotomy ends in a single differentia, and cannot possibly include several differentiae belonging to one and the same animal. It is impossible then to reach any of the ultimate animal forms by dichotomous division.

19 AQUINAS: *Summa Theologica*, PART I, Q 13, A 1, ANS 62c-63c

Article 1. *Whether Any Name Is Suitable to God?*

We proceed thus to the First Article: It seems that no name is suitable to God.

Objection 1. For Dionysius says (*Div. Nom. i*)⁶ that, “Of Him there is neither name, nor can one be found of Him”; and it is written: “*What is His name, and what is the name of His Son, if thou knowest?*” (Prov. 30. 4).

Obj. 2. Further, every name is either abstract or concrete. But concrete names do not belong to God, since He is simple, nor do abstract names belong to Him, since they do not signify any perfect subsisting thing. Therefore no name can be said of God.

Obj. 3. Further, nouns are taken to signify substance with quality; verbs and participles signify substance with time; pronouns the same with demonstration or relation. But none of these can be applied to God, for He has no quality, nor accident, nor time; moreover, He cannot be felt, so as to be pointed out; nor can He be described by relation, since relations serve to recall a thing mentioned before by nouns, participles, or demonstrative pronouns. Therefore God cannot in any way be named by us.

On the contrary, It is written (Exod. 15. 3): “*The Lord is a man of war, Almighty is His name*”.

I answer that, Since according to the Philosopher,⁷ words are signs of ideas, and ideas the likeness of things, it is evident that words relate to the meaning of things signified through the medium of the intellectual conception. It follows therefore that we can give a name to anything in as far as it can be known by our intellect. Now it was shown above (Q. XII, AA. 11, 12) that in this life we cannot see the essence of God; but we know God from creatures as their principle, and also by way of excellence and remotion. In this way therefore He can be named by us from creatures,, yet not so that the name which signifies Kim expresses the divine essence in itself, as for instance the name “man” express by its meaning the essence of man by declaring his essence. For the notion expressed by the name is the definition.

Reply Obj. 1. The reason why God has no name, or is said to be above being named, is because His essence is above all that we understand about God and signify in word.

⁶ Sect. 5 (PG 3, 593).

⁷ Interpretation, 1 (16^a3).

Reply Obj. 2. Because we know and name God from creatures, the names we attribute to God signify what belongs to material creatures, of which the knowledge is natural to us as we have said before (Q. XII, A. 4). And because in creatures of this kind what is perfect and subsistent is composite, whereas their form is not a complete subsisting thing, but rather is that whereby a thing is, hence it follows that all names used by us to signify a complete subsisting thing must have a concrete meaning according as they belong to composite things. But names given to signify simple forms signify a thing not as subsisting, but as that by which a thing is; as, for instance, whiteness signifies that by which a thing is white. And as God is simple, and subsisting, we attribute to Him abstract names to signify His simplicity, and concrete names to signify His subsistence and perfection, although both these kinds of names fail to express His mode of being, since our intellect does not know Him in this life as He is.

Reply Obj. 3. To signify substance with quality is to signify the suppositum with a nature or determined form in which it subsists. Hence, as some things are said of God in a concrete sense to signify His subsistence and perfection, so likewise nouns are applied to God signifying substance with quality. Further, verbs and participles which signify time are applied to Him because His eternity includes all time. For just as we can apprehend and signify simple subsistences only by way of composite things, so we can understand and express simple eternity only by way of temporal things, because our intellect has a natural affinity to composite and temporal things. But demonstrative pronouns are applied to God as pointing out what is understood, not what is sensed. For we can only describe Him as far as we understand Him. Thus, according as nouns, participles and demonstrative pronouns are applicable to God, so far can He be signified by relative pronouns.

23 HOBBS: *Leviathan*, PART I, 56b; PART IV, 269b-c

Leviathan, PART I, 56b

When two names are joined together into a consequence, or affirmation, as thus, *A man is a living creature*; or thus, *If he be a man, he is a living creature*; if the latter name *living creature* signify all that the former name *man* signifieth, then the affirmation, or consequence, is *true*; otherwise *false*. For true and false are attributes of speech, not of things. And where speech is not, there is neither truth nor falsehood. Error there may be, as when we expect that which shall not be, or suspect what has not been; but in neither case can a man be charged with untruth.

Seeing then that truth consisteth in the right ordering of names in our affirmations, a man that seeketh precise truth had need to remember what every name he uses stands for, and to place it accordingly; or else he will

find himself entangled in words, as a bird in lime twigs; the more he struggles, the more belimed. And therefore in geometry (which is the only science that it hath pleased God hitherto to bestow on mankind), men begin at settling the significations of their words; which settling of significations, they call *definitions*, and place them in the beginning of their reckoning.

Leviathan, PART IV, 269b-c

That which is now called a *University* is a joining together, and an incorporation under one government, of many public schools in one and the same town or city, in which the principal schools were ordained for the three professions; that is to say, of the Roman religion, of the Roman law, and of the art of medicine. And for the study of philosophy it hath no otherwise place than as a handmaid to the Roman religion: and since the authority of Aristotle is only current there, that study is not properly philosophy (the nature whereof dependeth not on authors), but *Aristotelicity*. And for geometry, till of very late times it had no place at all, as being subservient to nothing but rigid truth. And if any man by the ingenuity of his own nature had attained to any degree of perfection therein, he was commonly thought a magician, and his art diabolical.

Now to descend to the particular tenets of vain philosophy, derived to the Universities, and thence into the Church, partly from Aristotle, partly from blindness of understanding; I shall first consider their principles. There is a certain *philosophia prima* on which all other philosophy ought to depend; and consisteth principally in right limiting of the significations of such appellations, or names, as are of all others the most universal; which limitations serve to avoid ambiguity and equivocation in reasoning, and are commonly called *definitions*; such as are the definitions of body, time, place, matter, form, essence, subject, substance, accident, power, act, finite, infinite, quantity, quality, motion, action, passion, and diverse others, necessary to the explaining of a man's conceptions concerning the nature and generation of bodies. The explication (that is, the settling of the meaning) of which, and the like terms, is commonly in the Schools called *metaphysics*; as being a part of the philosophy of Aristotle, which hath that for title. But it is in another sense; for there it signifieth as much as "books written or placed after his natural philosophy": but the Schools take them for books of supernatural philosophy: for the word *metaphysics* will bear both these senses. And indeed that which is there written is for the most part so far from the possibility of being understood, and so repugnant to natural reason, that whosoever thinketh there is anything to be understood by it must needs think it supernatural.

33 PASCAL: *Geometrical Demonstration*, 430b-434a

SECTION 1. *Concerning the method of geometrical demonstrations, that is, scientific and perfect demonstrations.*

I can give no clearer idea of the procedure we should follow to make our demonstrations convincing than by expounding the method observed in geometry.

But first I must give the idea of a method still more eminent and complete, but a method to which man could never attain. For what goes beyond geometry goes beyond man. Nevertheless I must say something about it although it is impossible to put it into practice.

This true method, which would produce demonstrations of supreme excellence if it were possible to attain to it, would consist of two main rules: to use no term of which we had not already clearly explained the meaning, and never to put forward any proposition unless demonstrated by truths already known; that is, in a word, to define all the terms and to prove all the propositions. But to follow the very order I am expounding I must state what I understand by definition.

Geometry recognizes only those definitions which logicians call nominal, impositions of a name, that is, on things clearly designated by terms perfectly well known. I speak of such definitions only.

Their usefulness and function is to clarify discourse and to make it more concise by expressing by the name we impose what would otherwise require several terms, in such a way however that the name imposed remains deprived of every other meaning, if it has any, keeping only that one to which it has been uniquely assigned. For example, if we need to distinguish among the numbers those which can be divided into two equal parts from those which cannot, in order to avoid the frequent repetition of this condition we give it a name as follows: I call every number that can be divided into two equal parts an even number.

This is a geometrical definition, because after a thing, in this case every number that can be divided into two equal parts, has been clearly pointed out, it is given a name emptied of all other meaning, if it has any, that it may take the meaning of the thing pointed out.

Whence it is evident that there is great freedom of definition and that definitions are never subject to contradiction, for nothing is more permissible than to give whatever name we please to a thing we have clearly pointed out. Only we must be careful not to take advantage of our freedom to impose names by giving the same name to two different things. Nor that it is inadmissible to do so if we avoid confusion by not extending the consequences of one to the other.

But if we fall into this vice, we can apply to it a most sure and infallible remedy, which is to substitute in the mind the definition in place of the

thing defined and always to have such an awareness of the definition that every time we speak, for example, of an even number, we mean precisely a number that can be divided into two equal parts, and that we understand these two things as being so inseparably joined in thought that as soon as one of them occurs in discourse the mind at once attaches the other to it. For geometers and all those who proceed scientifically impose names on things only for concision of discourse and not to impoverish or alter the idea of the subjects of discourse. And they expect the mind always to supplement with the whole definition the short terms, which they use only to avoid the confusion caused by a multitude of words.

Nothing acts more quickly and more effectively against the surprise attacks of captious sophists than this method, which we must always have ready for use, and which alone suffices to banish every kind of difficulty and equivocation.

With these things well understood, I return to my account of the true order, which consists, as I was saying, in defining everything and in proving everything.

Certainly this method would be beautiful, but it is absolutely impossible. For it is evident that the first terms we wished to define would presuppose others for their explication, and that similarly the first propositions we wished to prove would suppose others that preceded them. And thus it is clear we should never arrive at the first propositions.

Accordingly, as we proceed ever further with our investigations, we come of necessity to primitive words which can no longer be defined and to principles so clear that it is no longer possible to find others more clear for their demonstration. Whence it is apparent that men are naturally and inevitably powerless to deal with any science whatsoever in an absolutely perfect order.

But it does not follow that we should abandon every kind of order. For there is one, the order of geometry, which is indeed inferior in that it is less convincing but one in that it is less certain. It does not define everything and does not prove everything, and in this it yields to the perfect order. But it assumes only things clear and invariant by the natural light, and that is why it is perfectly true, nature supporting it in default of discourse. This order, the most perfect possessed by man, does not consist either in defining everything and proving everything or in defining nothing and proving nothing; but it consists in holding to the mean of not defining things clear and understood by all men and defining all the rest, of not proving all the things known by men and proving all the rest. They sin equally against this order who undertake to define everything and prove everything and who fail to define and prove those things which are not self-evident.

This is perfectly illustrated by geometry. It does not define space, time, motion, number, equality, or their like, which are very numerous, because

these terms point out so naturally the things they signify to those who understand the language that whatever clarification we might want to give would contribute more obscurity than instruction. For nothing is more ineffectual than the discourse of those who try to define these primitive words. What need is there, for example, to explain what we mean by the word *man*? Are we not sufficiently aware of what the thing is we wish to designate by this term? And what help did Plato think he was giving us by saying that man was a two-legged animal without feathers? As if the idea of man I naturally have and cannot express were not clearer and more certain than that given me by his useless and even ridiculous explanation, since a man by losing his two legs does not lose his humanity and a capon by losing his feathers does not take on humanity.

There are even those who go to the absurdity of explaining a word by the word itself. I know of some who have defined light in this way: "Light is a luminary motion of luminous bodies," as if we could understand the words *luminary* and *luminous* without understanding the word *light* [*lumière*].

We cannot undertake to define being without falling into this absurdity, for we cannot define any word without beginning with these words *it is*, either explicitly or implicitly. Therefore to define being we would have to say *it is*, and thus use the word defined in the definition.

It is sufficiently clear from this that there are words incapable of definition. And if nature had not made up for this defect by giving a like idea to all men, all our expressions would be confused; whereas we make use of them with the same assurance and the same certainty we should have if they had been explained in a perfectly unambiguous way, because nature itself has given us, without words, a clearer understanding of them than we gain through art with all our explanations.

Not that all men have the same idea of the essence of those things I say it is impossible and useless to define.

For, to take an example, time is of this kind. Who can define it? And why try, since all men know what we mean when we speak of time, without further designation? There are nonetheless many different opinions as to the essence of time. Some say that it is the motion of a created thing; others, the measure of motion, etc. Therefore it is not the nature of these things that I say is known by all; it is simply the relation between the name and the thing, so that at the expression *time* everyone considers the same object (which is sufficient to make it unnecessary to define this term) although afterwards, looking into the nature of time, we may come to have different opinions when we have set ourselves to thinking about it. For definitions are made only to point out the things named and not to reveal their nature.

Not that we may not call by the name *time* the motion of a created thing, for as I was just saying, in nothing is there more freedom than in

definitions. But as a result of this definition there will be two things called by the name *time*: one is what everybody naturally understands by this word and what all who speak our language name with this term; the other will be the motion of a created thing, for this too will be called by that name in accordance with the new definition. We shall have, therefore, to avoid ambiguity and to keep the consequences separate. For it will not follow that what we naturally understand by the word *time* is in fact the motion of a created thing. We were free to give these two things the same name, but we shall not therefore be free to make them coincide in nature as well as in name.

Thus if the proposition is put forward: "Time is the motion of a created thing," we must ask what is meant by the word *time*, whether, that is, it keeps its usual and commonly accepted meaning or whether it has been emptied of that meaning to receive for this occasion, as its meaning, the motion of a created thing. If it has been deprived of all other meaning, the statement cannot be contradicted, and it will be an arbitrary definition with the result, as I have said, that there will be two things having the same name. But if it has been allowed to keep its usual meaning and nevertheless it is maintained that what this word means is the motion of a created thing, the statement can be contradicted. It is no longer an arbitrary definition; it is a proposition requiring proof unless it is evident of itself, in which case it will be a principle and an axiom but never a definition, because in this statement it is not understood that the word *time* signifies the same thing as the words, the *motion of a created thing*, but it is understood that what is meant by the term *time* is this supposed motion.

If I had not known how necessary it is that this should be perfectly understood and how, in familiar speech as in that of science, occasions like the one I have given as an example constantly arise, I should not have lingered over it. But it seems to me, from my experience of the confusion of disputes, that it is impossible to go too thoroughly into that exactness of mind for the sake of which I am writing this whole treatise more than for the subject I deal with in it.

For how many people are there who think they have defined time when they have said that it is the measure of motion, leaving it meanwhile its usual meaning!

And yet they have made a proposition and not a definition. How many are there likewise who think they have defined motion when they have said:

Motus nec simpliciter actus nec mera potentia est, sed actus entis in potentia! And nevertheless if they let the word *motion* keep its usual meaning, as they do, it is not a definition but a proposition; and in this way confounding the definitions they call nominal, which are the true definitions, arbitrary, permissible, and geometrical, with those they call real,

which are really propositions by no means arbitrary but subject to contradiction, they take the liberty of making the latter as well as the former; and each defining the same things in his own fashion by a freedom which is as forbidden in this kind of definition as it is permitted in the first, they mix up everything, and losing all order and all light, they lose themselves and wander in a maze of difficulties inexplicable.

We shall never get into such trouble if we follow the order of geometry.

That wise science is very far from defining such primitive words as space, time, motion, equality, majority, decrease, all, and those others which the generality of men understand without explanation. But with the exception of these the remaining terms used by geometry are so clarified and defined that we have no need of a dictionary to understand any one of them, so that in a word all these terms are perfectly intelligible either by the natural light or by the definitions given.

This is the way geometry avoids all those vices which may be encountered in connection with the first point, which is to define only those things that need to be defined. It observes the same conduct with respect to the second point, which is to prove those propositions that are not evident. For when geometry has reached the first truths that can be known, it stops there and requires that they be granted since it has nothing clearer to prove them with; so that all the propositions of geometry are perfectly demonstrated either by the natural light or by proofs.

Whence it is that if this science does not define and demonstrate everything, it is only because it is impossible for us to do so. But since nature supplies everything not given by the science, the order of that science, though it does not give a superhuman perfection, has all the perfection men are capable of. It seemed to me fitting at the very beginning of the treatise to give this...

35 LOCKE: *Human Understanding*, BK III, CH XI, SECT 12 302d

12. *Fourth remedy: To declare the meaning in which we use them.* Fourthly, But, because common use has not so visibly annexed any signification to words, as to make men know always certainly what they precisely stand for: and because men, in the improvement of their knowledge, come to have ideas different from the vulgar and ordinary received ones, for which they must either make new words, (which men seldom venture to do, for fear of being though guilty of affectation or novelty), or else must use old ones in a new signification: therefore, after the observation of the foregoing rules, it is sometimes necessary, for the ascertaining the signification of words, to *declare their meaning*; where either common use has left it uncertain and loose, (as it has in most names of very complex ideas); or where the term,

being very material in the discourse, and that upon which it chiefly turns, is liable to any doubtfulness or mistake.

35 BERKELEY: *Human Knowledge*, INTRO, SECT 18 410a-c

18. I come now to consider the *source* of this prevailing notion, and that seems to me to be language. And surely nothing of less extent than reason itself could have been the source of an opinion so universally received. The truth of this appears as from other reasons so also from the plain confession of the ablest patrons of abstract ideas, who acknowledge that they are made in order to naming; from which it is a clear consequence that if there had been no such things as speech or universal signs there never had been any thought of abstraction. See III. vi. 39, and elsewhere of the *Essay on Human Understanding*. Let us examine the manner wherein words have contributed to the origin of that mistake.— First then, it is thought that every name has, or ought to have, one only precise and settled signification, which inclines men to think there are certain abstract, determinate ideas that constitute the true and only immediate signification of each general name; and that it is by the mediation of these abstract ideas that a general name comes to signify any particular thing. Whereas, in truth, there is no such thing as one precise and definite signification annexed to any general name, they all signifying indifferently a great number of particular ideas. All which doth evidently follow from what has been already said, and will clearly appear to anyone by a little reflexion. To this it will be objected that every name that has a definition is thereby restrained to one certain signification. For example, a triangle is defined to be "a plain surface comprehended by three right lines," by which that name is limited to denote one certain idea and no other. To which I answer, that in the definition it is not said whether the surface be great or small, black or white, nor whether the sides are long or short, equal or unequal, nor with what angles they are inclined to each other; in all which there may be great variety, and consequently there is no one settled idea which limits the signification of the word triangle. It is one thing for to keep a name constantly to the same definition, and another to make it stand everywhere for the same idea; the one is necessary, the other useless and impracticable.

43 FEDERALIST: NUMBER 37, 120a-b

All new laws, though penned with the greatest technical skill, and passed on the fullest and most mature deliberation, are considered as more or less obscure and equivocal, until their meaning be liquidated and ascertained by a series of particular discussions and adjudications. Besides the obscurity

arising from the complexity of objects, and the imperfection of the human faculties, the medium through which the conceptions of men are conveyed to each other adds a fresh embarrassment. The use of words is to express ideas. Perspicuity, therefore, requires not only that the ideas should be distinctly formed, but that they should be expressed by words distinctly and exclusively appropriate to them. But no language is so copious as to supply words and phrases for every complex idea, or so correct as not to include many equivocally denoting different ideas. Hence it must happen that however accurately objects may be discriminated in themselves, and however accurately the discrimination may be considered, the definition of them may be rendered inaccurate by the inaccuracy of the terms in which it is delivered. And this unavoidable inaccuracy must be greater or less, according to the complexity and novelty of the objects defined. When the Almighty himself condescends to address mankind in their own language, his meaning, luminous as it must be, is rendered dim and doubtful by the cloudy medium through which it is communicated.

Here, then, are three sources of vague and incorrect definitions: indistinctness of the object, imperfection of the organ of conception, inadequateness of the vehicle of ideas. Any one of these must produce a certain degree of obscurity. The convention, in delineating the boundary between the federal and State jurisdictions, must have experienced the full effect of them all.

To the difficulties already mentioned may be added the interfering pretensions of the larger and smaller States. We cannot err in supposing that the former would contend for a participation in the government, fully proportioned to their superior wealth and importance; and that the latter would not be less tenacious of the equality at present enjoyed by them. We may well suppose that neither side would entirely yield to the other, and consequently that the struggle could be terminated only by compromise.

49 DARWIN: *Descent of Man*, 347a-c

Some naturalists have lately employed the term “sub-species” to designate forms which possess many of the characteristics of true species, but which hardly deserve so high a rank. Now if we reflect on the weighty arguments above given, for raising the races of man to the dignity of species, and the insuperable difficulties on the other side in defining them, it seems that the term “sub-species” might here be used with propriety. But from long habit the term “race” will perhaps always be employed. The choice of terms is only so far important in that it is desirable to use, as far as possible, the same terms for the same degrees of difference. Unfortunately this can rarely be done: for the larger genera generally include closely-allied forms, which can be distinguished only with much difficulty, whilst the smaller

genera within the same family include forms that are perfectly distinct; yet all must be ranked equally as species. So again, species within the same large genus by no means resemble each other to the same degree: on the contrary, some of them can generally be arranged in little groups round other species, like satellites round planets.⁸

The question whether mankind consists of one or several species has of late years been much discussed by anthropologists, who are divided into the two schools of monogenists and polygenists. Those who do not admit the principle of evolution, must look at species as separate creations, or in some manner as distinct entities; and they must decide what forms of man they will consider as species by the analogy of the method commonly pursued in ranking other organic beings as species. But it is a hopeless endeavour to decide this point, until some definition of the term “species” is generally accepted; and the definition must not include an indeterminate element such as an act of creation. We might as well attempt without any definition to decide whether a certain number of houses should be called a village, town, or city. We have a practical illustration of the difficulty in the never-ending doubts whether many closely-allied mammals, birds, insects, and plants, which represent each other respectively in North America and Europe, should be ranked as species or geographical races; and the like holds true of the productions of many islands situated at some little distance from the nearest continent.

53 JAMES: *Psychology*, 121b-122a

Introspective Observation is what we have to rely on first and foremost and always. The word introspection need hardly be defined—it means, of course, the looking into our own minds and reporting what we there discover. *Every one agrees that we there discover states of consciousness.* So far as I know, the existence of such states has never been doubted by any critic, however, sceptical in other respects he may have been. That we have *cogitations* of some sort is the *inconcussum* in a world most of whose other facts have at some time tottered in the breath of philosophic doubt. All people unhesitatingly believe that they feel themselves thinking, and that they distinguish the mental state as an inward activity or passion, from all the objects with which it may cognitively deal. *I regard this belief as the most fundamental of all the postulates of Psychology*, and shall discard all curious inquiries about its certainty as too metaphysical for the scope of this book.

A Question of Nomenclature. We ought to have some general term by which to designate all states of consciousness merely as such, and apart from their particular quality or cognitive function. Unfortunately most of the

⁸ *Origin of Species*, this ed., p. 29.

terms in use have grave objections. "Mental state," "state of consciousness," "conscious modification," are cumbersome and have no kindred verbs. The same is true of "subjective condition." "Feeling" has the verb "to feel," both active and neuter, and such derivatives as "feelingly," "felt," "feltness," etc., which make it extremely convenient. But on the other hand it has specific meanings as well as its generic one, sometimes standing for pleasure and pain, and being sometimes a synonym of "*sensation*" as opposed to *thought*; whereas we wish a term to cover sensation and thought indifferently. Moreover, "feeling" has acquired in the hearts of platonizing thinkers a very opprobrious set of implications; and since one of the great obstacles to mutual understanding in philosophy is the use of words eulogistically and disparagingly, impartial terms ought always, if possible, to be preferred. The word *psychosis* has been proposed by Mr. Huxley. It has the advantage of being correlative to *neurosis* (the name applied by the same author to the corresponding nerve-process), and is moreover technical and devoid of partial implications. But it has no verb or other grammatical form allied to it. The expressions "affection of the soul," "modification of the ego," are clumsy, like "state of consciousness," and they implicitly assert theories which it is not well to embody in terminology before they have been openly discussed and approved. "Idea" is a good vague neutral word, and was by Locke employed in the broadest generic way; but notwithstanding his authority it has not domesticated itself in the language so as to cover bodily sensations, and it moreover has no verb. "Thought" would be by far the best word to use if it could be made to cover sensations. It has no opprobrious connotation such as "feeling" has, and it immediately suggests the omnipresence of cognition (or reference to an object other than the mental state itself), which we shall soon see to be of the mental life's essence. But can the expression "thought of a toothache" ever suggest to the reader the actual present pain itself? It is hardly possible; and we thus seem about to be forced back on some *pair* of terms like Hume's "impression and idea," or Hamilton's "presentation and representation," or the ordinary "feeling and thought," if we wish to cover the whole ground.

In this quandary we can make no definitive choice, but must, according to the convenience of the context, use sometimes one, sometimes another of the synonyms that have been mentioned. *My own partiality is for either FEELING or THOUGHT.* I shall probably often use both words in a wider sense than usual, and alternately startle two classes of readers by their unusual sound; but if the connection makes it clear that mental states at large, irrespective of their kind, are meant, this will do no harm, and may even do some good.⁹

⁹ Compare some remarks in Mill's *Logic*, bk. I, chap. III, §§ 2, 3.