

The Influence of the Nominalist Movement
on the Scientific Thought of Bacon, Boyle, and Locke

by

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Abstract

This thesis is an investigation of the influence of the nominalist philosophy of the later Middle Ages on the natural philosophy (including metaphysics) and epistemology of Francis Bacon, Robert Boyle and John Locke.

Because of the general reluctance of any of these thinkers to quote or make other references to any medieval or modern authors it is impossible to establish with any useful degree of probability which nominalist philosophers they had read. It can, however, be shown that Bacon, Boyle and Locke all accepted the kind of basic nominalist principles which William of Ockham and his successors had enunciated, and moreover that their acceptance of these principles influenced many of their other philosophical and scientific beliefs.

Chapter 1 contains a general discussion of the traditional problem of universals and its philosophical implications. Chapter 2 is concerned with ancient and medieval nominalist theories and with their subsequent influence. Chapters 3 and 4 deal respectively with Bacon and Boyle; the former shows the connection between Bacon's inductive theory of method and his nominalist metaphysics; the latter discusses the influence of nominalist and voluntarist ideas on Boyle's conception of nature. Chapter 5 discusses nominalist influences in Locke's early work, up to and including the Drafts for the Essay written in 1671. Chapter 6 is concerned with the development of Locke's thought between 1671 and 1690, and with the general question of Locke's sources. Chapters 7 and 8 are concerned with the metaphysics and epistemology of the Essay, and show how Locke's nominalist rejection of real universals influenced his belief that we cannot acquire real certain universal knowledge. The final two chapters contain a detailed analysis of Locke's criticisms of three of his realist contemporaries: Malebranche, Norris and Stillingfleet.

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A Note on Dates

All dates mentioned are Old Style, unless the contrary is specifically indicated.

Abbreviations

I have used the following abbreviations for books and journals frequently quoted:

Bacon, <u>Works</u>	<u>The Works of Francis Bacon</u> , ed. J. Spedding, R.L. Ellis and D.D. Heath.
Boyle, <u>Works</u>	<u>The Works of the Honourable Robert Boyle</u> (London, 1772).
<u>Correspondence</u>	<u>The Correspondence of John Locke</u> , ed. E.S. De Beer.
<u>Essay</u>	<u>An Essay concerning Human Understanding</u> .
<u>First Letter</u>	<u>A Letter to the Right Reverend Edward, Lord Bishop of Worcester</u> .
<u>First Reply</u>	<u>Mr Locke's Reply to the Right Reverend the Lord Bishop of Worcester's Answer to his Letter</u> .
<u>JHI</u>	<u>Journal for the History of Ideas</u> .
Locke, <u>Works</u>	<u>The Works of John Locke</u> (London, 1812).
<u>Second Reply</u>	<u>Mr Locke's Reply to the Right Reverend the Lord Bishop of Worcester's Answer to his Second Letter</u> .
Stewart	M.A. Stewart (ed.), <u>Selected Philosophical Writings of Robert Boyle</u> .

The catalogue numbers of books in Locke's library are those given in J. Harrison and P. Laslett, The Library of John Locke.

There are no reliable modern editions of a number of Locke's works, notably the Examination of Malebranche, the Remarks upon some of Mr Norris's Books, The Reasonableness of Christianity, the First Letter, the First Reply and the Second Reply. When quoting from these works I have given the readings of the first editions, including (where necessary) the appropriate page numbers. Since copies of these books are rare I have also given page references to the 1812 edition of Locke's Works, the pagination of which appears to be the same as that in the 1823 and 1824 editions.

Chapter 1

The Historical Significance of
the Problem of Universals

I

The philosophical problems which arise in connection with the existence and nature of universals have a long history. Since the time of Plato an immense quantity of material has been written about universals — both about the philosophical problems which they have generated and about the treatment which these problems have received in the past. The result of all this activity has been a body of writing which could perhaps be mastered in a lifetime, but scarcely in anything less. Any survey made much more briefly must therefore necessarily be either limited in scope or more-or-less superficial or both. The present dissertation is intended to be an investigation of one of the less well-understood parts of the history of this subject, namely the influence of nominalist ideas on English philosophy from the early fourteenth to the late seventeenth century. It is not intended to be a full history of nominalist thought in England during this period. Such a history is badly needed, but much of the groundwork necessary for it has scarcely been commenced. The history of scholastic philosophy in the English universities from 1400 until its demise in the early eighteenth century is still almost entirely unknown. The map of learning contains in this region a large terra incognita, and the generally accepted reports about its nature have not been

such as to encourage widespread attempts at investigation. One aim of this present study is to suggest the probable value of such investigations by demonstrating the important continuities which exist between philosophical thought in the fourteenth and in the seventeenth centuries. English philosophy in the seventeenth century cannot adequately be understood if it is considered without reference to what preceded it.

The various problems relating to universals have not always been at or near the centre of philosophical discussion in the way that they were in the fourth century BC or during much of the Middle Ages. At other times fashion has changed, the focus of discussion has shifted, and all the problems involving universals have moved towards the margin of debate, or have even been ignored altogether. It would be unwise to assume that the problems of universals have at such times become irrelevant in reality as well as in appearance. When any philosophical controversy has proceeded without any open discussion of some topic, then on closer enquiry it will often be found that the contending parties have explicitly or implicitly concurred in accepting one particular account of the topic in question. One example may illustrate this. The problem of induction in its modern form presupposes the non-existence of the kind of universal natures or essences postulated by realists in the Aristotelian tradition. If real universals exist and are capable of being the objects of some kind of intellectual intuition, then in principle universal truths can become known with certainty. Aristotle's account of induction is founded on a realistic theory of universals; it is the coming to rest in the soul of a universal in its entirety that provides

the starting point for scientific (i.e. universal) knowledge.¹ Without a realist theory of universals the transition in the final chapter of the Posterior Analytics between the acquisition of universal concepts and the acquisition of universal knowledge would be wholly inexplicable, and Aristotle would be guilty of the most elementary kind of confusion. In fact Aristotle's confusions, though not infrequent, are seldom if ever elementary. The connection between the formation of general concepts and the establishment of general truths is to be found in the theory of real universals. Knowledge of such universals provides simultaneously an ability to use general words and a knowledge of primary general truths — the propositions stating the essences of things which serve as the premises for demonstration.²

II

There are a number of different views among present-day philosophers as to the nature of the problem of universals. In post-war Oxford it was fashionable to suppose that the traditional problem of universals was a pseudo-problem resulting from a misguided attempt to produce a general answer to a question for which no general answer can exist. On this view, advocated most forcefully by J.L. Austin and D.F. Pears, philosophers have allowed themselves to be seduced into attempting to answer such questions as "Why do we call different things by the same name?"³ or "Why are we able to name things as we do?"⁴ even though in reality such questions are no more capable of being given single general answers than are such questions as "Why are things as they are?" or "Why do things behave as they do?". No-one in his right mind would

attempt to provide universally applicable answers to questions of this second kind. They are not the kind of questions to which any general answer can be given. In the same way no-one ought to waste time attempting to devise answers to the apparently more respectable but in fact equally spurious questions raised by philosophers about general words.

Proponents of this view usually therefore claim that all the traditional solutions for the problem of universals are similarly mistaken, albeit in different ways. In practice however they invariably incline towards a nominalist position, the reason being that they agree with the nominalists in their rejection of the arguments used by the realists to prove the existence of universals.

This agreement with the traditional nominalists about the non-existence of universals is not destroyed even if it is proposed that the traditional distinction between individuals and universals is misconceived. No-one who might propose to abandon this distinction would deny the existence of what nominalists had called individuals or admit the existence of what realists had called universals. The situation is not unlike that faced by the logical positivists in connection with the existence of God. Anyone who claims that all religious statements are meaningless is not in practice at all likely to regard the disagreements between theists and atheists in the same way that Gulliver regarded the dispute between Big-Endians and Little-Endians. He will probably consider himself as an atheist, and he will certainly be so considered by everyone else.

Although the dismissal by Austin and Pears of the traditional problem of universals has been widely accepted as correct, there have remained many philosophers who would certainly dissent from it. H.H. Price for example retained the older view that the dispute between what he called the Philosophy of Universals and the Philosophy of Ultimate Resemblances was a real and intelligible dispute and not one founded on an attempt to answer a question which should never have been asked. Even Price however did not consider the two contending parties to be disagreeing about matters of fact of any kind:

Our discussion has been long and complicated. What conclusion shall we draw from it? It would seem that there is nothing to choose between these two philosophies, the Philosophy of Universals or characteristics (universalia in rebus) on the one hand, and the Philosophy of Ultimate Resemblances on the other. At any rate, it would seem that there is nothing to choose between them so long as they are considered as purely ontological doctrines, which is the way we have been considering them in this chapter. Both seem to cover the facts, though only when both are stated with sufficient care. Moreover, they both cover the same facts. This strongly suggests that they are two different (systematically different) terminologies, two systematically different ways of saying the same thing.⁵

On this analysis the problem of universals can hardly be considered as one of the most important problems of philosophy. If Price is correct then nothing much hangs on whichever solution we recommend, and the continued discussion of the problem would appear to owe more to its traditional status as one of the Problems of Philosophy than to its own intrinsic importance.

A few modern philosophers have taken the problem of universals

more seriously. D.M. Armstrong has described the theory of universals as "arguably the central problem of ontology"⁶ and has treated his own realist theory as a hypothesis of an extremely general kind.⁷ Even for Armstrong however philosophical enquiries about universals are quite separate from scientific enquiries about why things happen as they do. In this respect his kind of realism differs completely from the kind of theory put forward by Plato or Aristotle, or by the medieval Aristotelians. Few modern philosophers would seriously dispute that the problems associated with universals have lost the central place which they had in the early Academy or in medieval Paris and Oxford. The main reason for this is that the scope of the problem has been reduced. It is now seen primarily as a problem about general words, and about what kinds of things there must be if the use of general words is to be possible. Interest in such problems is certainly not a new development in this century; but in the past the discussion of universals was also associated with other issues which are now usually treated quite separately. It is for this reason that the degree of importance attributed to the problem has so markedly declined. In the twentieth century the problem of universals has for the most part been regarded (in accordance with changing philosophical fashion) either as a problem about general words or as a problem about general thinking.⁸ In Antiquity and in the Middle Ages the problem was seen primarily (though not solely) in connection with the possibility of universal knowledge.

There is of course no reason why philosophers should be compelled to think about problems in any of the ways in which

these problems had been discussed in the past. The fact that Plato and Aristotle had addressed themselves to some questions does not bind us either to agree or to disagree if we have reason to think that these questions should have been stated in some quite different way or perhaps not at all. The problem for the historian of philosophy is that changes in philosophical fashion may (even if they are genuine advances) have the unintended and undesired consequences of making the problems which had perplexed philosophers in the past seem remote and even incomprehensible. In this situation it is easy to underestimate the extent to which past philosophy is unlike present philosophy and hence to attribute anachronistic preoccupations to those who in the nature of things can make no reply.

The worst disservices of analytic philosophy towards misunderstanding the past are fortunately behind us. No-one now supposes that Plato was led into the theory of Ideas by his failure to realise that general words and abstract words are not proper names. Nevertheless a more subtle and elusive influence still persists. Every age reads the writings of the past in the light of its own preconceptions and interests. This can never be avoided, and indeed in particular cases it may be beneficial. Things unnoticed or wrongly understood or dismissed as incomprehensible by previous generations may in the course of time become understood because of shifts in philosophical fashion. Leibniz's work on logic, for example, only became properly appreciated when philosophers such as Couturat and Russell again became interested in the questions which had interested Leibniz. In this way genuine advances may be made

in the understanding of particular aspects of a philosopher's work. What seldom results is a balanced understanding either of anyone's thought as a whole or of the complex changes in thought which are all the more elusive because they cannot be associated with any one major thinker.

There are three main reasons why the history of the problem of universals has so often been misunderstood. One is a preoccupation with contemporary problems and a consequent projection of these onto the past. A second is ignorance of substantial areas of the history of philosophy, knowledge of which might have helped correct at least some of the misconceptions resulting from the first cause. The third is the generally accepted system by which answers to the problem of universals are classified.

The classification of possible solutions to the problem of universals into realism, conceptualism and nominalism dates back to the end of the Middle Ages, to the time when the contending philosophical parties had formed themselves into schools devoted to elaborating and defending the positions formulated in an earlier and more creative period. The fact that this system of classification has survived for so long suggests that it is not wholly inappropriate, but it is certainly not ideal. The question "What are universals?" on which it is based may appear to provide an entirely natural starting point, but in practice it suffers from a number of considerable disadvantages. If we ask what universals are then there seem to be three possible types of answer: universals are things of some kind; universals

are concepts (or ideas, or thoughts); and universals are names (or words). In this way we can distinguish realist, conceptualist and nominalist solutions.

The disadvantages of this approach are two-fold. In the first place it suggests that there are three fundamentally distinct theories of universals. In the second place it makes an unfortunate connection between nominalism and names. Etymologically of course this is perfectly natural: names are nomina, and "nominalism" appears therefore as an entirely suitable label for the view that the only universals are names. Unfortunately what is etymologically correct is historically misleading. Very few people have been nominalists in this sense: in the twelfth century Roscellin, according to his opponents;⁹ in the seventeenth century Hobbes.¹⁰ The great majority of anti-realist philosophers on the other hand were not nominalists, according to this definition. Ockham did not believe that only names are universals, and neither did Locke or Berkeley. Ockham held that there are general concepts, Locke and Berkeley that there are general ideas. In this case, it may well be asked, what possible objection could there be to describing Ockham, Locke and Berkeley as conceptualists? The answer is that such a classification makes something appear central which is in fact peripheral and makes a distinction of secondary importance appear fundamental. What really is fundamental is something which united both "nominalists" such as Hobbes and "conceptualists" such as Locke, namely the strictly metaphysical thesis that everything which exists is an individual. This is the basic thesis which Ockham argued for and which Hobbes and Locke

held as an axiom. The fundamental division in the discussion of the problem of universals lies not between Platonists and Aristotelians or between the advocates and opponents of Lockean abstract general ideas, but between those philosophers who maintain and those who deny that everything which exists is an individual. The dispute about whether and in what sense there are universal concepts or ideas is secondary. Ockham, Locke and Berkeley all maintained that there are universal concepts or general ideas, in the sense that there exist mental particulars which can be used as universal signs.¹¹ Hobbes apparently did not. All of them agreed that everything which exists is itself a particular, whether it exists inside or outside the mind.

If the above analysis is correct it appears that both "conceptualism" and "nominalism" are names with potentially misleading implications. If the fundamental division lies between those philosophers who maintain and those who deny that everything is an individual, then either "particularism" or "individualism" would seem more appropriate names for the position held by the former group. Both terms are already in use, but not in a context which might cause any confusion. In my opinion a change to either of these names would be desirable in theory but inadvisable in practice. The old terminology is too well established, and any attempt to introduce a change would either fail totally or else merely induce a further element of confusion into a situation already muddled enough. Since the term "nominalism" has already become firmly established I shall continue to use it, but solely as a name for the metaphysical

position that everything which exists is an individual. The denial of this will continue to be called realism.

The full justification for adopting this approach will only become apparent in due course. At this stage however two supplementary points are worth noting. One is that we ought to reject as misleading all such classifications as "ultra-nominalism" or "extreme nominalism". Nominalism as defined above is not a position which is capable of being held in stronger or weaker forms. What has usually passed under the names "extreme nominalism" or "ultra-nominalism" is either the view that the only universals are names or else the view that general names are used in an arbitrary manner. The former view is certainly one variety of nominalism (as defined above), but it is not an extreme variant of a position which might also be held in more moderate forms. The latter view is better described as conventionalism. It is of course a common realist claim that any form of nominalism ultimately entails conventionalism, but such a claim requires (and deserves) to be justified by argument and not merely advanced by a misleading use of names.

The other point concerns the varieties of realism. Given that realism is defined negatively, as anti-nominalism, it is to be expected that realist theories may form quite a disparate group lacking any obvious unity. Various systems of classification have therefore been introduced. One is the distinction between universalia ante res and universalia in rebus theories, of which something will be said in due course. Another is the distinction between extreme realist theories which suppose that there are

actually existing universals, and moderate realist theories which do not. These two distinctions do not coincide. A theory of actual but immanent universals such as has often been attributed to Aristotle and which was certainly held by some of the less sophisticated medievals would be a form both of extreme realism and of the universalia in rebus theory.

So-called "moderate realist" theories deny that there exist any real universals in particular things, and they cannot therefore be fairly described as universalia in rebus theories. As a result they are likely to cause perplexity in the mind of a modern reader unfamiliar with the development of scholastic Aristotelianism. According to Aquinas and Scotus there are no real universals existing in individual things: the only things which are actually universal exist in some intellect, either human, angelic or divine. This appears at first sight not to differ significantly from the view maintained by Ockham and Locke that the only universals (apart from words) are universal concepts or ideas. In fact however the difference between the two views is quite fundamental. Moderate realists such as Aquinas and Scotus were in agreement with Ockham and Locke that individuals alone have actual existence in the world; however they also held, as Ockham and Locke certainly did not, that these individuals are in some sense compounded out of principles (the Aristotelian archai) which are themselves not individual. Both Aquinas and Scotus held that there are some metaphysical entities which need to be made individual so that they can exist in the individual substances out of which the world is made. For Aquinas forms which can exist combined with matter are not in themselves individuals,

unlike purely self-subsistent forms such as the separated angelic intellects. Forms which can be received by matter need to be individuated by matter.¹²

Many philosophers have in recent years been much preoccupied with enquiries about individuation, but the problems which they have discussed have been very different in character from the problem which occupied the attention of Aquinas. The twentieth-century problem of individuation is fundamentally a problem of how we identify and re-identify particulars. In the words of R.M. Chisholm, "To be in a position to individuate, or identify, an individual thing is to know some individuating fact about that thing, something that is true of that thing and of nothing else".¹³ On this view individuation is an activity which we perform in making identifying reference to things in the world. It is not a process by which individuals are made out of universals. Aquinas and the other medieval realists were concerned with this latter problem. Aquinas believed that forms which exist as individuals in material substances are not individual by nature and therefore need to be made individual through the agency of some principle of individuation.

In Aquinas' philosophy there are two opposite processes of individuation and abstraction. Forms are not intrinsically individual and therefore need to be individuated when they are made to exist in individual substances. Conversely our knowledge begins with our perception of sensible individuals, and the individualized forms in these sensible individuals have therefore to be abstracted from matter before they can exist as universals in the intellect. Aquinas accepted Aristotle's basic premise that

there is a kind of identity between the knower and what is known.¹⁴ The forms of things known, freed from their individuating matter and thereby restored to universality, exist in the intellect. The forms impressed by external objects on the sense-organs and hence on the imagination are still individuated by matter and are therefore not as yet intelligible; the technical term for such a form is a sensible species — species being the exact equivalent in scholastic Latin of the Greek eidōs. Sensible species are then abstracted and made to exist in the intellect (as intelligible species) by the agent intellect, the nous poiētikos of De Anima, III.5.

The principle of individuation and the agent intellect belong with each other as integral parts of a realist philosophy. On nominalist premises neither is needed. The principle of individuation is unnecessary because everything is individual and nothing needs to be made individual. The agent intellect is unnecessary because singular things are already intelligible, and the supposed agency by means of which they are made intelligible is accordingly superfluous. Ockham explicitly rejected the search for the principle of individuation as being entirely mistaken; and though he did retain the name of the agent intellect (probably because it was Aristotelian) he used it rarely, and it plays little part in his philosophy.

Of the technical terms used in these problems, some survived the downfall of scholastic philosophy, while others perished with it. The agent intellect and the distinction between sensible and intelligible species disappeared, though something of the latter survived in the Cartesian distinction between images and ideas. The word "abstraction" survived, though greatly

changed in meaning: how great the change was may be seen by comparing Locke's discussion of abstract general ideas with Aquinas' account of abstraction in the Summa Theologiae.¹⁵

The phrase principium individuationis also survived, though attached to a quite different problem, the problem of providing criteria of identity for reidentifying things as they change with time.¹⁶

III

In the past the problem of universals was thought to be more central to philosophy because it was connected with the most fundamental problems of explanation. When this connection was broken (by a gradual change rather than by a sudden transition) the problem of universals lost most of its importance and acquired its present position near the margin of philosophical debate.

The philosophers of the seventeenth and eighteenth centuries wrote during the period of transition from the ancient and medieval to the modern approach towards the problem of universals. Their work cannot adequately be understood without an understanding of the philosophy of their predecessors; without this they can appear merely as providing the first rather crude discussions of the problems as they are presently conceived. The remainder of this chapter will therefore be devoted to a survey of the beginnings of the realist tradition.

Almost every aspect of Plato's theory of Ideas has been the subject of scholarly controversy. There is no general agreement either as to when the theory first appeared or as to the attitude

which Plato adopted towards it in his later years. Although there is a fair consensus on the ordering of most of the dialogues, there remain a good number of unsettled questions, and the authenticity and reliability of one key work — the Seventh Letter — is still a matter of dispute. Despite all these disagreements there are fortunately some matters which are beyond serious controversy. One is the intimate connection between the theory of Ideas and Plato's account of knowledge. This connection can be seen most clearly in Books V-VII of the Republic, especially in the analogies of the Cave and the Divided Line, but it can be found in most of the dialogues from the Phaedo onwards. It is the existence of the Ideas which makes knowledge possible.¹⁷ Plato's philosophical career began with the kinds of questions asked by Socrates in the early dialogues: what is courage, or piety, or justice? These dialogues leave such questions unsolved. The function of the theory of Ideas was to provide a guarantee that answers did exist and that they could be found.

The theory of Ideas was not developed in order to explain how we are able to use general words. Plato was concerned with such questions as what justice is, and not with the question of how such words as "justice" acquire their meanings. If we are to think of the theory of Ideas as a transcendental theory (in the Kantian sense), then we should think of it as explaining how it is that universal knowledge is possible, and not merely how it is that we are able to acquire universal concepts or use universal words.¹⁸

Plato intended the theory of Ideas to be an explanatory theory. It is the existence of the Ideas which prevents the

sensible world from being an incomprehensible chaos.¹⁹ In the Phaedo Plato seems to have thought of the Ideas as efficient causes of some kind,²⁰ and in the Republic he described the Idea of the Good as the cause of what is right and beautiful and true.²¹ Subsequently the difficulties inherent in this kind of approach caused Plato to abandon it, and in the Timaeus it is the divine craftsman, the Demiurge, who is the efficient cause of the order in the world. Nevertheless the Ideas retain their explanatory function. The order which exists in the world is an imperfect copy of the eternal order of the Ideas, and the former is to be explained in terms of the latter.

It is this explanatory character of the theory of Ideas which separates it clearly from all the "realist" theories of universals put forward by twentieth-century philosophers. No modern advocate of real universals imagines that he is supplying an explanation of the similarity of colour in a lump of marble and a lump of salt by saying that they both have the common quality of whiteness. Explanations of this similarity of colour are the province of chemists and physicists, not of metaphysicians. For Plato and for all the ancient and medieval realists on the other hand explanations couched in terms of universals were intended as ultimate explanations. It was this that gave the problem of universals its importance. A modern writer on the history of philosophy can state that "it is clear that any answers that the Forms offer to causal questions are spurious: these questions must be investigated in a quite different, scientific way".²² This is undeniably clear to us now, but it was certainly not clear to Plato or Aristotle or

Aquinas. If we take as intrinsically obvious something which was once certainly not obvious at all then we are in danger of obscuring the important historical questions of when and how and why these changes in thinking came about.

For Plato the distinction between knowledge and belief is founded upon a distinction between things which exist eternally and things which come into existence and pass away again. "That which is apprehensible by thought with a rational account is the thing that is unchangeably real; whereas that which is the object of belief together with unreasoning sensation is the thing that becomes and passes away but never has real being."²³ It is the eternal existence of the Ideas that makes it possible for there to be this sharp distinction between knowledge and true belief:

If intelligence and true belief are two kinds, then these things — Forms we cannot perceive but only think of — certainly exist in themselves; but if, as it appears to some, true belief in no way differs from intelligence, then all the things we perceive through our bodily senses must be taken as the most certain reality.²⁴

The existence of the Ideas is necessary if we are to possess certain knowledge and not merely accidentally and transiently true beliefs.

Aristotle rejected the theory of Ideas, but he did not abandon the theory of knowledge and belief which had led Plato to introduce the Ideas in the first place. His clearest account of scientific knowledge occurs in the discussion of the intellectual virtues in Nicomachean Ethics VI:

Now what scientific knowledge is, if we are to speak exactly and not follow mere similarities, is plain from what follows.

We all suppose that what we know is not even capable of being otherwise; of things capable of being otherwise we do not know, when they have passed outside our observation, whether they exist or not. Therefore the object of scientific knowledge is of necessity. Therefore it is eternal; for things that are of necessity in the unqualified sense are all eternal; and things that are eternal are ungenerated and imperishable.²⁵

Similar though briefer passages occur elsewhere in several of Aristotle's works.²⁶ Scientific knowledge is concerned with truths which are universal, necessary and eternal. According to Plato such knowledge can only be possible if there exist things which have all these properties. Aristotle wished to deny the existence of such transcendent objects without abandoning the conception of knowledge which they had been introduced to justify.

This project of disengaging the Platonic account of knowledge and belief from the theory of Ideas is clearly by no means simple to execute, and Aristotle was under no illusions about its difficulty. In the list of philosophical problems which has come down to us as Metaphysics B he describes the problem of how we can have knowledge if there exists nothing apart from individual things as the hardest of all and the most necessary to examine. It is not difficult to see why this is so. "If there is nothing apart from individuals, there will be no object of thought, but all things will be objects of sense, and there will not be knowledge of anything, unless we say that sensation is knowledge."²⁷ This is precisely the argument used by Plato.

A similar difficulty is raised towards the end of Metaphysics B, in connection with the question of whether first principles are individual or universal. Neither choice is

attractive: if the first principles are universal then they cannot be substances (and hence non-substance will be prior to substances); if they are individual then they will not be knowable because knowledge of anything is universal.²⁸

The generally accepted interpretation of Aristotle's philosophy is that he held a theory of immanent universals, in opposition to the Platonic theory of transcendent universals. In the terms of the scholastic classification, he held a theory of universalia in rebus, whereas Plato held a theory of universalia ante res. The attraction of this interpretation is that it ascribes to Aristotle a position which is realist, anti-Platonic and yet still relatively easily comprehensible. Plato and Aristotle both believed in universal forms: Plato made them transcendent; Aristotle, aware of the objections against transcendent forms and interested more in biology than in mathematics, therefore chose the remaining alternative and made them immanent.

The disadvantages of this interpretation are that the theory of immanent universals is quite as vulnerable to the kind of destructive arguments that Aristotle used as the Platonic theory had been, that Aristotle appears to have been well aware of this, and that the theory of universals which he did attempt to construct was not a theory of universals existing immanently in particulars.

In the course of the polemics against the Ideas in Metaphysics A and M Aristotle mentioned in passing the view (which he attributed to Anaxagoras, Eudoxus and certain others) that Forms exist in particulars "in the way that whiteness is mixed

into white things".²⁹ Aristotle considered this view to be superior to the Platonic theory of Ideas in that it did at least explain how forms could be causes (as Plato's theory did not). Nevertheless he was not inclined to treat it as a serious alternative to Platonism. Whatever its incidental merits, it was a view against which a large number of insuperable objections could be easily raised.³⁰

What these insuperable objections were Aristotle does not say, either in Metaphysics A or M. The reason is almost certainly that Aristotle was merely passing quickly over material which he had already covered in the lectures On Ideas and with which he assumed his audience to have been familiar. On Ideas, a substantial work in four books, has now been lost, but quite lengthy extracts or summaries from it have been preserved in Alexander of Aphrodisias's Commentary on the Metaphysics. Fortunately Alexander chose to include a summary of the insuperable objections, and these enable us to form a clearer picture of the theory ascribed to Eudoxus.³¹

Of these objections some seem to depend so heavily on a literal interpretation of the notion of mixture as not to apply to any more refined theory. Others are of more general application. For example, if the Form exists in individuals it exists either as a whole in each individual or part exists in one individual and part in another. Each of these alternatives is impossible. Again, if Forms exist in individuals then if all the individuals were to cease to exist the Form would be destroyed also, in which case the Form would no longer be eternal and unchangeable.

Arguments such as these appear to have a general application against universalialia in rebus theories. They already appear briefly in the Parmenides³² and in the Philebus,³³ and they reappear in greatly extended and refined forms in the arguments used by Ockham and others against the scholastic realists. The received interpretation of Aristotle is that he did hold a universalialia in rebus theory and that these passages are directed against some cruder and inferior alternative. The problem with this interpretation is that the view which Aristotle was attacking appears dangerously close to the view which he is supposed to have held. As Sir David Ross remarked with some puzzlement, Eudoxus' theory is "not so very different" from Aristotle's own theory.³⁴ This difficulty can be resolved if we do not suppose that Aristotle held any kind of universalialia in rebus theory.³⁵

If Aristotle did not hold any type of universalialia in rebus theory, then the question arises as to what kind of theory he did hold. Various answers have been given, none of which have become generally accepted. My own opinion is that Aristotle was never able to produce a satisfactory theory, despite the most strenuous attempts to do so, and that much of the extreme difficulty of the central books of the Metaphysics, especially Z, is a consequence of this. It is also difficult to see how the attempted resolution in Metaphysics M.10 of the difficulties about knowledge stated in Metaphysics B can be made compatible with the remainder of Aristotle's theory of knowledge.³⁶

IV

Nothing in the remainder of this dissertation is logically

dependent on the analysis of Aristotle's position outlined above, and nothing would therefore require any modification if this analysis were shown to be entirely mistaken. The justification for including it is that it draws attention to the open character of the Aristotelian tradition. Aristotle handed down to his successors not a definite theory of universals but rather a group of problems for solution and an associated series of discussions, inconclusive but sometimes of the highest quality. The medieval philosophers have frequently and sometimes justly been accused of uncritical acceptance of what Aristotle had said, and it is true that they tended to accept his views when they were clearly expressed and not obviously in conflict either with experience or with Catholic theology. Fortunately one or other of these conditions was frequently unfulfilled. Aristotle's philosophy though systematic in intention is rarely so in fact. The medieval philosophers were inevitably led to resume discussion of the problems which Aristotle had left unsolved; in doing so they established a philosophical vocabulary of which a good part has survived in use until the present day. None of the great seventeenth-century philosophers, apart from Leibniz, acknowledged any debts to their scholastic predecessors, even (or perhaps especially) where those debts are most apparent. One consequence of this is that it has been conveniently assumed that these debts are insignificant. One recent book on universals has justified an abrupt transition from Aristotle to Locke in its historical discussion by the claim that the influence of medieval philosophy on modern philosophy is "relatively slight".³⁷ Other books have said a little more, but not much. Aaron for example

reserved a chapter of The Theory of Universals for the Middle Ages, but his discussion is superficial and he shows little awareness of the importance and high intellectual quality of the medieval debates. Aaron's claim that "in spite of centuries of concentration upon the problem of universals the Scholastics made...little advance on Aristotle"³⁸ is perhaps even less well-grounded than the once familiar but now generally abandoned opinion that the medieval logicians added nothing significant to their Aristotelian inheritance.

The development of logic in the twentieth century has brought much of the work of the medieval logicians out of its former obscurity, and a belief that the logicians of the medieval universities deserve to be taken seriously has become widely diffused. In some other respects twentieth-century philosophers are often less aware of the long-term historical significance of medieval philosophy than their nineteenth-century predecessors had been. Neither J.S. Mill nor C.S. Peirce were professional historians of philosophy, but they both recognised that the post-medieval philosophers had been deeply influenced by their predecessors, and especially by the nominalists. Their agreement is all the more significant in that they held very different views of how beneficent the influence of the nominalists had been. Mill himself recognized his own adherence to the nominalist tradition. He believed that the outlook of the nominalists had deeply affected subsequent philosophy, and he regarded this state of affairs with approval.³⁹ A System of Logic is indeed the last major work in a tradition of logic writing inaugurated by Ockham's Summa Logicae. Peirce on the other hand deplored the influence

of nominalism:

Under the head of the Ockhamists I mean to include, first, Hobbes, more extreme than Ockham himself; then Berkeley, Hume, the Mills, etc.; then Locke, and many others less decidedly of this turn of thought. But the truth is that all modern philosophy is more or less tainted with this malady.⁴⁰

Peirce regarded himself as a realist in the tradition of Duns Scotus,⁴¹ and he attempted, though with limited success, to revive a broadly Scotist kind of philosophy as a corrective to what he saw as the inadequacies of the dominant nominalist tradition. His disapproval of nominalism, however, did not lead him to underestimate its historical importance.⁴² Peirce believed that nominalist ideas had powerfully influenced the character of British philosophy from the time of Ockham until his own day.

The insight shown by Mill and by Peirce into the historical significance of nominalism has few twentieth-century parallels. The main reason for this has been the dominance in England and (to a slightly lesser extent) in America of a philosophical outlook which postulates a sharp distinction between scientific and philosophical problems, and which treats the study of the history of philosophy as being effectively irrelevant to serious philosophical enquiry. The problem of universals has consequently been seen as a purely philosophical problem. Disputes about the existence of universals have of course been treated as ontological disputes, but ontology as it is now usually conceived is a discipline whose questions bear little resemblance to the kind of questions about existence that a plain man or even a

scientist might ask. Questions asked by philosophers about the existence of facts or propositions are very unlike the apparently similar questions which might be asked about black holes or the Loch Ness Monster. In the past however the division between philosophical and scientific questions was very much less clearly drawn. Questions which may now appear purely philosophical were not once so regarded. The dispute between nominalists and realists was an ontological dispute in a strong sense: it was a dispute about what kinds of things there are in the world, about what kinds of things could and what kinds of things could not find a place in scientific explanations. A nominalist saw himself as inhabiting a simpler world than the realists supposed, and it was this simplicity that gave the nominalist philosophy much of its appeal.

Notes to Chapter 1

1. Posterior Analytics, 100a6-9.
2. For a further discussion of this point see ch.3 below. One of the few modern philosophers to see the connection between the problem of universals and the problem of induction has been Popper: see for example his remarks in P.A. Schilpp (ed.), The Philosophy of Sir Karl Popper, p.13.
3. J.L. Austin, "The Meaning of a Word", in Philosophical Papers, p.69.
4. D.F. Pears, "Universals", in A. Flew (ed.), Logic and Language (Second Series), p.52.
5. H.H. Price, Thinking and Experience, p.30.
6. D.M. Armstrong, Nominalism and Realism, p.xv.
7. *Ibid.*, p.126.
8. R.I. Aaron, The Theory of Universals, pp.vii, 231,243.
9. John of Salisbury, Metalogicon, ii.17.
10. In De Corpore, ch.5 Hobbes explicitly asserts that the word "universal" can be coherently applied only to names, and that absurdity results if the name of a name is applied to any other kind of entity (§2). This means that "they err, that say the idea of anything is universal" (§8). Only names can be universal. Cf. Leviathan, ch.4 (ed. Oakeshott, p.19).
11. The dispute between Locke and Berkeley over the existence of abstract general ideas is a dispute within the nominalist party. It is fundamentally a disagreement about how the human mind works; both Locke and Berkeley assume without question the nominalist axiom that only individuals exist.
12. Summa Theologiae, I^a q.3 a.2ad3.
13. R.M. Chisholm, "Individuation per se" in G. Ryle (ed.), Contemporary Aspects of Philosophy, p.122. Cf. P.F. Strawson, Individuals, p.23.
14. Summa Theologiae, I^a q.79 a.4ad2, q.84 a.2.
15. *Ibid.*, I^a q.85 aa.1-2.
16. Hobbes uses the phrase principium individuationis in this sense in De Corpore, xi.7. This usage later became standard among

the British Empiricists — see for example Berkeley, Alciphron, vii.8; Hume, A Treatise of Human Nature, I.iv.2 (ed. Selby-Bigge, pp.200-1).

17. Cratylus, 440A-B.
18. I am not claiming that Plato was either unaware or uninterested in these latter problems, merely that they were not the central problems which the theory of Ideas was devised to solve. In Republic 596A Plato does claim that we postulate an Idea in every case in which we apply the same name to a plurality of things. This passage is however rather unusual in many respects (e.g. the statement in 597C-D that the Ideas are made by God), and it may well represent a line of thought which Plato declined to pursue. See J. Annas, An Introduction to Plato's Republic, pp.227-34.
19. On this controversial point, the arguments produced by W.K.C. Guthrie, A History of Greek Philosophy, vol.V, pp. 80-82, appear conclusive.
20. Phaedo, 100B-C.
21. Republic, 508E, 517B-C.
22. J.L. Mackie, Problems from Locke, p.126.
23. Timaeus, 28A, trans. Cornford.
24. Ibid., 51D-E, trans. Cornford.
25. Nicomachean Ethics, 1139b18-24, trans. Ross.
26. De Caelo, 298b22-25; Posterior Analytics, 73a21-23, 88b30-35.
27. Metaphysics, 999b1-4, trans. Ross.
28. Ibid., 1003a5-17.
29. Ibid., 991a15-16, 1079b19.
30. Ibid., 991a8-19, 1079b12-23.
31. Alexander of Aphrodisias, In Aristotelis Metaphysica Commentaria, pp.97-98. Translation in Sir David Ross, The Works of Aristotle, vol.XII, pp.132-33.
32. Parmenides, 131A-C.
33. Philebus, 15A-C.
34. Sir David Ross, Aristotle's Metaphysics, vol.I, p.198.
35. G.E.M. Anscombe (Three Philosophers, pp.31-32) and A.C. Lloyd (Form and Universal in Aristotle, pp.1-48) have very cogently argued against the traditional interpretation of Aristotle.

36. Sir David Ross rightly remarks on this contradiction in his comments on the former passage: Aristotle's Metaphysics, vol.II, p.466. There is an interesting discussion of the more general question of whether there are basic contradictions in Aristotle's philosophy in R.D. Sykes, "Form in Aristotle: Universal or Particular", Philosophy, 50 (1975), pp.311-31.
37. Hilary Staniland, Universals, p.26.
38. R.I. Aaron, The Theory of Universals, p.13.
39. "The spirit of modern metaphysics, until a recent period, has been on the whole a Nominalist spirit..." A System of Logic, I.viii.5, p.142; cf. II.ii.2, pp.175-76.
40. C.S. Peirce, Selected Writings (ed. P.P. Wiener), p.297.
41. C.S. Peirce, Collected Papers, 4.50; cf. 1.6, 5.470.
42. Ibid., 1.19, 2.166-68, 5.61, 6.348, 8.11-37.

Chapter 2

Nominalism

I

The nominalist movement of the fourteenth century arose among philosophers who regarded themselves as Aristotelians. As far as we can discover from the limited range of material which has survived, no comparable movement appeared in the ancient world. It is certainly possible that some ancient Aristotelians might have developed the anti-Platonic side of Aristotle's metaphysics to the point of denying the existence of any kind of real universal, but it does seem almost certain that there was no large-scale movement of this kind. Especially in later Antiquity the drift was in the opposite direction: towards the reconciliation of Plato and Aristotle and the synthesis of a new type of Platonism which would incorporate a substantial number of Aristotelian and Stoic ideas.¹

Nevertheless nominalist ideas were by no means unknown in the ancient world. Among the exponents of the new philosophies of the Hellenistic period they appear indeed to have been widely accepted. There is however one important difference between the nominalism of the Hellenistic philosophers and the Aristotelian nominalism which flourished in the later Middle Ages. The former was for the most part implicit rather than explicit, and it reveals itself more through what is not said than through what is. For example, Epicurus, in his surviving writings at least, appears never to have explicitly denied the existence

of real universals. He merely ignored the possibility of their existence and proceeded to work out his philosophy without any reference to entities other than individuals.

Some of the early Cynics expressed a hostility to Plato's theory of Ideas which appears at least to have been broadly nominalist in spirit. Unfortunately our sources are patchy and in some cases very late. According to Simplicius, Antisthenes replied to Plato, "I see the horse, but I do not see horseness".² Diogenes Laertius tells a similar story about Diogenes of Sinope, this time about tables and cups.³ It may be however that these remarks involve nothing beyond a rejection of the theory of Ideas. Some further evidence for Antisthenes' views appears from some remarks made by Aristotle in Metaphysics H.⁴ Antisthenes (or his pupils) held that definitions of things are impossible. We cannot say what a thing is, only what it is like. This may well be connected with a rejection of any kind of real universals, for one of the functions for which real universals had been posited was to explain how real definitions are possible.⁵ It is certainly quite plausible a priori that some of Plato's contemporary critics could have inclined towards a nominalist position; unfortunately our fragmentary knowledge of Antisthenes' thought makes any more definite verdict on it more or less impossible. The same is true of the apparently similar objections raised by Stilpo of Megara against the possibility of predicating anything of anything different: according to Stilpo we can say that a man is a man, but not that a man is good.⁶ Many of the later medieval nominalists and some of their successors (notably Hobbes) held a two-name theory of predication which can, if mishandled, lead to this kind of conclusion.⁷ If the subject and the

predicate of a proposition are names then the proposition will be true if they are names of the same object(s) and false if they are not. (The advantage of such a theory is that it does not suppose that universal predicates refer to universal entities of any kind.) Ockham was skilful enough to avoid the danger of making only identical propositions true, but earlier and cruder versions of the theory might have been less successful.

The Sceptics ought perhaps not to count as nominalists, in that they would have considered a firm denial of the existence of universals as one more form of dogmatism. Nevertheless they did use arguments similar to those used by later nominalists against the various realist theories.⁸ Sextus Empiricus rejected not only the Aristotelian and Platonic theories of universals but also the Stoic theory that genera and species are concepts (ennoēmata).⁹ As a Pyrrhonist he considered himself under no obligation to produce any theory more satisfactory than those which he had criticised.

The influence of any of these types of ancient nominalism on Ockham and his contemporaries is certainly non-existent. The question of their influence on sixteenth and seventeenth-century nominalists is less easy to answer. Francisco Sanchez (1552-1623), who was deeply influenced by Academic Scepticism, submitted the Aristotelian account of knowledge to destructive criticism and thereby (according to R.H. Popkin) "worked out a thorough-going nominalism".¹⁰ Mersenne's nominalism may also have sceptical origins, at least in part.¹¹ Gassendi's explicit and self-proclaimed nominalism may owe as much to Epicurean as to scholastic sources.¹² Atomism in physics combines very well with

nominalism in metaphysics: individuum is after all a literal translation of atomos, and Aristotle even used the latter word on a few occasions for individuals.¹³ Boyle in turn learned much about the possibilities of atomism from Gassendi, and it is quite possible that the nominalist elements in his thought were derived more from this source than from the scholastic nominalists.

II

The nominalist philosophy which came into prominence in Oxford and in Paris during the first half of the fourteenth century owed nothing to Hellenistic thought. It arose from debates within the Aristotelian tradition; and the causes of its rise, insofar as they can be determined, have no adequate parallel within the history of Greek philosophy.

The disputes about the nature and existence of universals which so strongly characterised medieval philosophy appear to have had their origin in the questions raised but left unanswered by Plotinus' pupil Porphyry in his Isagoge, an introduction to Aristotle's Categories written from a Neoplatonic point of view. The Isagoge is one of those not uncommon works which have had an influence on subsequent thought in excess of their intrinsic merits. The reason in this case was that the Isagoge was translated into Latin by Boethius, and this translation, together with translations of the Categories and the De Interpretatione, survived and continued to be read at a time when almost the whole of Greek philosophy had been lost from sight. The questions which Porphyry declined to answer¹⁴ were not left unanswered by his

early medieval readers, and it was in the disputes which followed that Roscellin expressed the view that universals are no more than spoken words, flatus vocis,¹⁵ and Abelard first exhibited his remarkable dialectical skill and his no less well-developed ability for making enemies.¹⁶

The gradual reception of nearly the whole body of Aristotle's surviving writings in the late twelfth and early thirteenth centuries changed the whole character of philosophical debate. Aristotle's philosophy acquired a dominant position which it was not to lose until the seventeenth century. It is foolish and unreasonable to deplore or regret this. Even today there is a fair case for regarding Aristotle's thought as the most remarkable intellectual achievement ever produced by a single human mind. In the thirteenth century there was nothing with which it might even be compared. Aristotle was the philosopher; indeed in the writings of the schoolmen he is often referred to as such. It was his views and his concepts which provided the indispensable framework for all serious discussion of philosophical problems.

A situation like this is evidently not without severe dangers. Under such circumstances philosophy can very easily degenerate into scholasticism, in the worst sense of that frequently misused word: the fabrication and defence of unnecessary and futile distinctions in order to safeguard the authority of texts which can neither be criticised nor abandoned. This danger was always present during the Middle Ages and it was by no means always avoided. Fortunately there were other aspects of the situation which encouraged, for a time at least, the production of original philosophical thought.

In the first place Aristotle's writings did not describe a closed system of thought in which all the questions raised were supplied with clear and definite answers. Aristotle's Metaphysics is not a finished treatise but a collection of incomplete and at times inconclusive investigations of a series of philosophical problems. On the question of the existence and nature of universals it was clear what Aristotle was not — a believer in transcendent Platonic Ideas — but it was much less clear what he was. All the medieval philosophers were necessarily faced with the need to make definite matters which Aristotle had left vague and to answer questions which Aristotle had left unanswered, or indeed unasked.

The other factor which encouraged original philosophical thinking in the thirteenth and fourteenth centuries was Christianity. As an inevitable consequence of their acceptance of the doctrines of the Catholic Church, medieval philosophers were presented with a vast range of problems and enquiries which Aristotle could never have imagined, much less answered. Certain questions — the existence of God, for example — could hardly be treated as being genuinely open, but such restrictions had little adverse effect on philosophy. No authority decided that any particular arguments were or were not valid, and while this state of affairs continued genuine philosophical debate remained possible. Medieval philosophy became largely sterile after the end of the fourteenth century for the same reason that Greek philosophy became increasingly sterile after the third century BC: schools were formed and philosophers saw their task as the defence of the doctrines of their school against the doctrines propagated by their rivals.

Catholic theology does not appear on the face of it to dictate or even to favour any particular theory of universals. The problem looks like a purely philosophical one, to be settled by purely philosophical arguments. In fact however there were theological considerations which assisted the rise of the nominalist movement in the early fourteenth century. One of the chief ways in which Christianity diverged from any of the pagan philosophies lay in its assertions that God had made the world from nothing and that the world was therefore wholly dependent on God for its existence. All the Greek philosophers, whatever their other disagreements, were united in denying this. Even Plato, who approached closest to the Christian doctrine of creation, held that the Demiurge, the divine craftsman, imposed order on an uncreated chaos. For Plato there are two irreducibly different kinds of causes; the necessary and the divine.¹⁷ The Demiurge orders matter, but only by what Plato metaphorically describes as "wise persuasion";¹⁸ there is no notion of a sovereign creator bringing everything into existence by a mere act of will.

Aristotle was even further removed from the Christian position than Plato had been. God, as the unmoved mover, is the final cause of the motion of the heavens, but the world as a whole is eternal and uncreated and is in no way dependent on God for its existence. Aristotle never made clear the extent to which the structure of the world exists by necessity, but there is in his writings no suggestion whatever of the view that there might have existed other possible worlds utterly unlike the one in which we live. The deduction of the basic features of the

cosmos in De Caelo I proceeds in a manner closer to that used by Hegel than to anything in modern science: the distinction of the three kinds of simple motion — up, down, and around the centre — is necessary in the way that the existence of three spatial dimensions is necessary.¹⁹

This kind of necessitarian philosophy is not easily combined with any doctrine of divine omnipotence. From the beginning Christian theologians insisted that what is impossible by nature is not impossible to God. Augustine insisted on this in opposition to those who doubted the possibility of miracles:

But since God is the author of all natures, why do they object to our supplying a stronger reason? For when they refuse to believe something, alleging its impossibility, and demand that we supply a rational explanation, we reply that the explanation is the will of Almighty God. For God is certainly called "Almighty" for one reason only; that he has the power to do whatever he wills...²⁰

As he put it elsewhere, Creatoris voluntas rerum necessitas est — the will of the Creator is the necessity of things.²¹ We do not have to stop saying that some things are naturally impossible, but there are no natural necessities which God does not have the power to abolish if he should so choose.

This belief in the freedom and omnipotence of God has remained a part of Christian theology. It has however been interpreted in different ways. At the one extreme there is the position maintained by Descartes. When asked by Burman whether the ideas of possible things are prior to God's will, Descartes replied:

These too depend on God, like everything else. His will is the cause not only of what is actual and to come, but also

of what is possible and of the simple natures. There is nothing we can think of or ought to think of that should not be said to depend on God.²²

At the other extreme is the kind of Christian Platonism put forward by Cudworth:

And since a Thing cannot be made any thing by meer Will without a Being or Nature, every Thing must be necessarily and immutably determined by its own Nature, and the Nature of things be that which it is, and nothing else. For though the Will and Power of God have an Absolute, Infinite and Unlimited Command upon the existences of all Created things to make them to be, or not to be, at pleasure; yet when things exist, they are what they are, This or That, Absolutely or Relatively, not by Will or Arbitrary Command, but by the Necessity of their own Nature.²³

The recovery of very nearly the full corpus of Aristotle's surviving writings from the late twelfth century onwards reintroduced in an acute form the conflict between Greek necessitarianism and Christian voluntarism. The arrival of these unfamiliar, difficult but clearly intellectually subversive works caused a major problem which periodic attempts to prohibit their use in teaching did little to solve.²⁴ Naturally enough not everyone responded in the same way to the challenge presented by Aristotle's writings. Some theologians advocated the suppression of at least some of Aristotle's views: Bonaventure held that it was more prudent to say that Aristotle did not think that the world was eternal.²⁵ Others, of whom Aquinas was the most notable, believed that a successful synthesis could be achieved. There were admittedly some things which Aristotle had himself believed which were incompatible with Christianity, such as the eternity of the world. Nevertheless no valid proof of the

eternity of the world had been or could be given, and Christians were justified in appealing to revelation to settle a question which philosophy could not decide.²⁶

Some features of Aquinas' approach were a little disturbing to some of his contemporaries, but his good intentions and strict theological orthodoxy were never seriously in doubt. Far more uneasiness was produced by the approach of some of the philosophers who had undertaken no higher studies in theology and who had remained teaching in the faculty of Arts. Siger of Brabant and his associates were far more rigid Aristotelians than Aquinas ever was. Moreover their difficulty in reconciling Aristotle with Catholic Christianity was increased by their reliance on the commentaries produced by Averroës, who had argued for a theory of the human intellect which effectively destroyed the possibility of any kind of survival after death. Such a view was evidently incompatible with Christianity in any form. Later Averroists — Pomponazzi for example²⁷ — held a theory of double truth, according to which a proposition might be simultaneously true in philosophy and false in theology, or vice-versa. Siger and his associates appear not to have gone quite as far as this, but it can reasonably be held that a double-truth theory was the logical outcome of their approach. Such a position was hardly satisfactory in itself, and there was moreover as far as the ecclesiastical authorities were concerned an additional danger that the philosophical kind of truth might be taken more seriously than the theological. It was this possibility that led the Bishop of Paris, Etienne Tempier, to condemn in 1277 a list of 291 propositions which had apparently found proponents in the University of Paris and elsewhere.

Among the propositions condemned in 1277 there are a number which place restrictions on the power of God: for example, that God cannot move anything irregularly;²⁸ that God cannot make more than one world;²⁹ that God is a necessary cause of the celestial intelligences;³⁰ that God is a necessary cause of the movements of the heavenly bodies;³¹ that God could not move the heavens in a straight line;³² and that God could not make a plurality of numerically distinct souls.³³ All of these are particular versions of one basic error, that whatever is impossible, impossibile simpliciter, cannot be done by God. This Tempier describes as being erroneous if by it we mean that God cannot do what is impossible secundum naturam.³⁴

The precise definition of divine omnipotence is by no means as straightforward as one might initially suppose. The suggestion that God can do anything which does not involve a self-contradiction, though satisfactory on the surface, in fact leaves a large number of problems unsolved.³⁵ Fortunately these do not for the most part concern God's relation to his creation. The most difficult questions about God's power arise when God appears to be limited by his own nature: God cannot for example (to choose two uncontroversial examples) either annihilate himself or create another being equal to himself in power.³⁶ What limits, if any, exist on God's freedom in ordaining moral laws became a subject of controversy, but one thing which was not in dispute was that God's power was not limited by anything which he had made.

This attention given to the doctrine of divine omnipotence had very important consequences for philosophy. It introduced

new conceptions of necessity and possibility. For Aristotle absolute necessity is a characteristic of things which are eternal and unchanging.³⁷ There is nothing conceptual about this kind of necessity: there are things, the heavens for example, which exist by necessity. The schoolmen and their successors on the other hand ascribed necessary existence only to God. Propositions about creatures can be necessarily true, in an absolute sense, only if their contradictories are self-contradictory.³⁸ God himself cannot make such propositions false, not because anything can resist his power, but because the truth of these propositions is guaranteed by the meanings of the words in which they are expressed, no matter what states of affairs may obtain in the world.

It is therefore in the medieval debates about the limits of divine omnipotence that we can find the origins of the distinction between conceptual and factual truths which has had so great an influence on modern philosophy. The full implications of this distinction were only gradually understood, but even in the fourteenth century some philosophers discerned that the Aristotelian account of necessary propositions needed to be reconsidered. If God alone is eternal and necessary and incorruptible, how can any demonstrations be possible in sciences such as physics which are concerned with things that only contingently exist? Ockham attempted to solve the problem by distinguishing two senses in which something can be necessary:

In one way something is said to be necessary, perpetual and incorruptible because there is no power that can make it begin or cease to exist; and in this way only God is necessary, perpetual and incorruptible. In another way a

proposition is said to be necessary, perpetual and incorruptible if it cannot be false.... And in this way demonstration is of the necessary, the perpetual and the incorruptible, that is of propositions which cannot be false but can only be true. From this it is clear that although it contradicts what Aristotle says yet in truth no affirmative, categorical present-tense proposition about corruptible things can be a premise or a conclusion of a demonstration, for all such propositions are contingent.³⁹

Ockham never abandoned the Aristotelian theory of demonstration, but his belief in God's omnipotence caused him to limit severely the class of propositions which could be demonstrated. In the seventeenth century the same argument was taken even further: nothing about the world could be demonstrated a priori; everything had to be discovered a posteriori, by means of observation and experiment.

III

The first and most important of the later medieval nominalists was the English Franciscan William of Ockham (c.1280 - 1349). After Ockham's time the nominalist tradition was maintained, especially in France and in Germany, by a series of able if lesser thinkers: Jean Buridan, Pierre D'Ailly, Albert of Saxony, and in the fifteenth century, Jean Gerson and Gabriel Biel. The nominalists acquired, largely by accident, a reputation for superior theological orthodoxy, mainly because John Wyclif and John Hus held strongly realist opinions. This theological respectability was destroyed by the advent of Luther, who vigorously maintained the nominalist view of universals and who (partly) excluded Ockham from his general condemnation of

scholastic philosophy.⁴⁰ Ockham was consequently not a thinker who won much approval from the scholastic philosophers of the Counter-Reformation; and despite the labours of some modern Franciscans to rehabilitate him he has continued to be regarded with some disapproval in Catholic circles.

Ockham's philosophical outlook can be most adequately summed up by describing it as a strictly nominalist form of Aristotelianism. Such a brief description inevitably fails to cover much that Ockham did in such diverse fields as logic, physics and theology — not to mention the writings on politics which he produced in the last twenty years of his life, after he had abandoned his career as a university teacher. Nevertheless the categorization of Ockham as a Nominalist Aristotelian does grasp what appears to be the central idea of Ockham's philosophy. In all Ockham's enquiries, whether in logic, epistemology, physics, metaphysics or theology, one unchanging assumption is that only individuals exist and that so-called universals are no more than individual signs which possess a capacity to signify more than one individual thing. Words can be considered as universals because by convention they can be made to serve as signs for many things. Mental concepts can also be universals because they naturally serve as signs for the things of which they are the concepts. Ockham's terminology is different from Locke's; but his fundamental thesis, that words and ideas can be universal but things cannot, is exactly the same.

Ockham's clearest explanation of the way in which words and concepts⁴¹ can be considered as universals appears in the Summa Logicae:

But first we must speak of the general term "universal", which is predicated of every universal, and of the term "singular", which is opposed to it. First we must realise that "singular" is taken in two senses. In one sense the name "singular" signifies whatever is one thing and not several. If it is so understood, then those who hold that a universal is a certain quality of the mind predicable of many things (but standing for these many things, not for itself) have to say that every universal is truly and really a singular. For just as every word, no matter how common it may be by convention, is truly and really singular and numerically one, since it is one thing and not many, so likewise the mental content that signifies several things outside is truly and really singular and numerically one, since it is one thing and not many things, though it signifies several things.⁴²

This account of universals was, as Ockham knew very well, utterly unacceptable to large numbers of his contemporaries. There was no possibility of it being accepted without argument. Ockham had therefore to consider in detail the theories of his realist opponents and to produce arguments that would tell against their positions and in favour of his own. These arguments, which appear in the first book of Ockham's Commentary on the Sentences of Peter Lombard are long and intricate, and are as a result almost impossible to sum up at all briefly.⁴³ (Ockham's own restatement of them in the Summa Logicae⁴⁴ is little more than a bald summary, and does scant justice to the complexity of the original arguments.) Fortunately no full analysis is required for our present purposes. I have discovered no sign that any of the seventeenth-century nominalists had the slightest knowledge of the Commentary on the Sentences, a work which had last been printed in 1495. What knowledge there was of Ockham's views about universals would

have come through the Summa Logicae, a book which certainly had readers in seventeenth-century Oxford.⁴⁵

Ockham's arguments for nominalism are of little relevance for understanding the subsequent history of nominalism in the seventeenth century, not only because they were almost entirely unknown, but also because the seventeenth-century nominalists hardly ever thought it necessary to argue for the correctness of their views. Berkeley belongs chronologically to the early eighteenth century rather than to the seventeenth, but he spoke for the tradition which he inherited when he described the principle that everything which exists is particular as a universally received maxim.⁴⁶ It was a matter on which it was assumed that all right-minded philosophers would be in agreement.

When Locke was eventually provoked by Stillingfleet into arguing for (as opposed to merely restating) his view that only individuals exist, the arguments he produced resembled (in a cruder form) those already devised by Ockham. There is however no reason to suppose that Locke had any knowledge of what had been achieved four centuries before. What the seventeenth century took over from the fourteenth century was a metaphysical and theological outlook, not a treasury of arguments. Ockham had been a scholastic Aristotelian, and much of his time was spent on revising (or from Ockham's own point of view, purifying) the system of Aristotelian philosophy on strictly nominalist lines. The results of this activity obviously had a greatly reduced value for those philosophers who no longer considered themselves to be Aristotelians of any kind. What survived of Ockham's work was not his detailed criticism of Scotus' theory of the formal distinction and its

application to the theory of common natures and individuating differentiae. What survived was the conviction that the only things which exist or which can exist are individuals, and that universals are no more than individual signs which are given a universal signification.

IV

No reliable and detailed history of the nominalist movement has ever been written, and very little work of any kind has been produced on the transmission of nominalist ideas in the period between the end of the Middle Ages and the seventeenth century. Scholastic philosophy continued to be taught in the universities of Western Europe until the second half of the seventeenth century, or even later, but it does not appear that the nominalist tradition was particularly prominent. Leibniz, writing in 1670, described the sect of nominalists as having once been prosperous but as now being extinct, at least among the scholastics.⁴⁷ Leibniz was presumably thinking of Germany, but even in England the scholastic nominalist tradition was in decline within the universities. As we shall see in a later chapter, there is evidence of some degree of interest in Ockham's and Buridan's writings in seventeenth-century Oxford, but even there the great majority of the textbooks used were written from a realist standpoint.

Within the universities the nominalist tradition dwindled in importance; outside them it attracted some humanistically minded thinkers who saw in nominalism the elements of a simpler and less metaphysically extravagant kind of philosophy. One philosopher

who exemplified this line of thought was the Italian Mario Nizzoli (in Latin, Marius Nizolius). Nizzoli published in 1553 a work, De Veris Principiis et Vera Ratione Philosophandi contra Pseudophilosophos. Among the views denounced in vigorous and indeed intemperate terms in the course of this work is the realist view that universal entities have any kind of existence. Nizzoli's approach is well indicated by the title of one of his chapters: "That in fact real universals cannot exist in reality and therefore do not exist, as the nominalists rightly say, against the foolish view of real universals held by the realists, all of whose more than empty reasons are destroyed".⁴⁸ Nizzoli saw himself as a follower of Ockham, but unlike Ockham he also saw himself as an anti-Aristotelian:

This Ockhamist opinion of universals we also shall follow and defend against the realist dialecticians throughout this work, not indeed as being Aristotelian or Peripatetic (for Aristotle without any doubt maintained the existence of real universals) but as the true and agreed opinion of all the Greeks and Latins who spoke correctly in ordinary discourse.⁴⁹

Nizzoli held, in the words of his most recent editor, that "since the fourth century BC philosophy had been vitiated by a jargon of esoteric transcendental terminology to which nothing corresponds in the nature of things".⁵⁰ The metaphysical problems which had grown up about the relations between universals and individuals were a conspicuous example of this, and the nominalist denial of the existence of universals represented a valuable start in the enterprise of reforming philosophy by banishing jargon and meaningless obscurity. This was a call to which an increasing number of people were prepared to listen and respond, as the subsequent history of philosophy was to show.

Notes to Chapter 2

1. See Cicero, Academica Priora, 15 for the judgement that the Academics and Peripatetics are "nominibus differentes, re congruentes", and that the Stoics differed from both "verbis magis quam sententiis". Cicero's basic unoriginality makes him all the more valuable a witness for this growing trend.
2. Antisthenes, fr.50A (Caizzi); cf. fr.50C.
3. Lives and Opinions of Eminent Philosophers, vi.53.
4. Metaphysics, 1043b23-32.
5. Ibid., 1036a2-8,27-29.
6. Plutarch, Adversus Colotem, 1119C-E.
7. On the problems of the two-name theory, see P.T. Geach, "Nominalism" in Logic Matters, pp.289-301.
8. Sextus Empiricus, The Outlines of Pyrrhonism, ii.219-27.
9. Ibid., ii.219.
10. R.H. Popkin, The History of Scepticism from Erasmus to Spinoza, p.37.
11. On Mersenne's nominalist outlook, see R. Lenoble, Mersenne ou la naissance du mécanisme, pp.275-79,321,325. On Mersenne's "mitigated scepticism" see Popkin, op. cit., pp.130-41.
12. Gassendi, Exercitationes Paradoxicae adversus Aristoteleos, II.ii.3,5. English translation in C.B. Brush (ed.), The Selected Works of Pierre Gassendi, pp.42-46.
13. Metaphysics, 995b29, 999a12.
14. Porphyry's three unanswered questions are: (1) whether genera or species exist in themselves or reside in mere concepts alone; (2) whether, if they exist, they are corporeal or incorporeal; and (3) whether they exist apart or in sensible things and in dependence on them. For a translation of this passage see the translation of the Isagoge by E.W. Warren, pp.27-28. The Greek text is in Commentaria in Aristotelem Graeca, vol.IV (ed. W. Busse), p.1.
15. John of Salisbury, Metalogicon, ii.17, trans. D.D. McGarry, p.112.
16. On Abelard's views on universals see M. Tweedale, Abailard on Universals, chs.4-5.

17. Timaeus, 68E.
18. Timaeus, 48A.
19. De Caelo, 268b17-27.
20. De Civitate Dei, xxi.7. The difference between the traditional Greek view and the Judaeo-Christian view had already been noted by Galen: see the passage from De Usu Partium (xi.14) quoted by R. Walzer, Galen on Jews and Christians, pp.11-12. Traditional Greek views on the limits of God's power are described in R.M. Grant, Miracle and Natural Law in Graeco-Roman and Early Christian Thought, pp. 127-32.
21. De Genesi ad Litteram, vi.15. Quoted by Calvin, Institutes of the Christian Religion, III.xxiii.8.
22. J. Cottingham (ed.), Descartes' Conversation with Burman, §33 (p.22).
23. R. Cudworth, A Treatise concerning Eternal and Immutable Morality, I.ii.2.
24. On the history of Aristotelianism at Paris during the thirteenth century, see G. Leff, Paris and Oxford Universities during the Thirteenth and Fourteenth Centuries, pp.188-240; F. van Steenberghen, Aristotle in the West, chs.4-5,7-9.
25. E. Gilson, A History of Christian Philosophy in the Middle Ages, pp.726-27.
26. Summa contra Gentiles, ii.32-38.
27. P.O. Kristeller, Eight Philosophers of the Italian Renaissance, pp.84-86.
28. R. Hissette, Enquête sur les 219 articles condamnés à Paris le 7 mars 1277, article 23, p.56.
29. Ibid., article 27, p.56.
30. Ibid., article 34, p.72.
31. Ibid., article 64, p.117.
32. Ibid., article 66, p.118.
33. Ibid., article 115, p.187.
34. Ibid., article 17, p.45.
35. See P.T. Geach, Providence and Evil, ch.1 for some illustrations of this.

36. Aquinas, Summa contra Gentiles, ii.25; Ockham, Ordinatio, d.20 q.1, d.42 q.1, Opera Theologica, vol.IV, pp.36,610.
37. Metaphysics, 1015b9-15, 1026b27-29, 1072b11-13; De Partibus Animalium, 639b24-27.
38. Ockham, Quodlibetae Septem, VI, q.2, Opera Theologica, vol.IX, p.590.
39. Ockham, Summa Logicae, III.ii.5, Opera Philosophica, vol.I, pp.512-13.
40. On Luther's debt to the nominalists in general and to Ockham in particular see B.A. Gerrish, Grace and Reason, pp.43-56.
41. Ockham had some difficulty in deciding the exact nature of these mental signs, and the terminology he used for them changed more than once. A full discussion of the evolution of Ockham's views on this topic can be found in G. Leff, William of Ockham: The Metamorphosis of Scholastic Discourse, pp.78-102.
42. Summa Logicae, I.14, Opera Philosophica, vol.I, p.48. Translation by P. Boehner in Ockham: Philosophical Writings, pp.32-33.
43. These arguments are to be found in Ordinatio, d.2 qq.4-9, Opera Theologica, vol.II, pp.99-336.
44. Summa Logicae, I.14-17, Opera Philosophica, vol.I, pp.47-62.
45. On the degree of interest in nominalist ideas in seventeenth-century Oxford, see pp.144-45 below.
46. Three Dialogues between Hylas and Philonous, in Works, (ed. Luce and Jessop), vol.II, p.192.
47. G.W. Leibniz, Preface to M. Nizolius, De Veris Principiis et Vera Ratione Philosophandi in Philosophical Papers and Letters, (ed. L.E. Loemker), p.127.
48. M. Nizolius, De Veris Principiis et Vera Ratione Philosophandi, (ed. Q. Breen), p.89.
49. *Ibid.*, p.65.
50. *Ibid.*, p.lxvi.

Chapter 3

Francis Bacon

I

One of the numerous attitudes common to the thinkers of both the Middle Ages and the Renaissance was a desire to disclaim novelty as such and to recommend changes not as pure innovations but as restorations of some better state of affairs which had existed at some more or less remote time in the past. Thus the nominalists of the fourteenth century appear to have been quite sincere in representing their philosophy as a return to the true but hitherto misunderstood meaning of Aristotle. The same approach is characteristic of all the major reforming movements in the sixteenth century. Protestants, humanists and hermeticists all saw themselves as leading a return to a purer and less corrupted past, whether this be the worship and discipline of the primitive church, Ciceronian Latin, or the Prisca Theologia of Hermes Trismegistus.

In all these movements the periods of the past chosen for emulation were without exception remote — in the case of the hermeticists to the point of being entirely fabulous — and the intervening periods were regarded with disapproval and frequently with contempt. In Francis Bacon this movement towards an uncorrupted past reached its effective limit. Among all his predecessors Bacon found himself unable to give more than occasional commendation to any thinker or school later than the Presocratics. Men like Empedocles, Anaxagoras, and above all Democritus had addressed themselves to nature, as had those

earlier anonymous thinkers whose opinions could be recovered only by interpreting myths and fables.¹ In the collapse of the ancient world all but a few fragments of these philosophies had perished, while the lighter and shallower systems of Plato and Aristotle survived to mislead posterity.² The fourth century was not in Bacon's eyes a philosophical golden age.

The near universality of Bacon's condemnation of all philosophy since Socrates does however (somewhat paradoxically) leave open the question of his sources. Bacon unquestionably had a genuinely original mind, but no-one can ever free himself wholly from the influence of his predecessors and hope to resume the discussion at the point it had reached two thousand years before. Scholars have therefore been able to trace and establish the numerous intellectual debts Bacon owed to his Renaissance predecessors, most notably to Ramus, Telesius and the whole magical tradition.³ In contrast his relation to the scholastics, and in particular to the nominalists, has received very little attention.

Unlike many of his contemporaries, Bacon did not reserve his severest expressions of condemnation for the philosophy of the schoolmen. Indeed he sometimes speaks of them with a definite (though certainly limited) respect, which contrasts notably with the unvaried contempt displayed by Hobbes and by Locke. Bacon saw clearly the virtues of the great schoolmen, their acuteness and strength of intellect,⁴ and he was able to compare them favourably with such fashionable moderns as Peter Ramus. To twentieth-century logicians Ramus has often appeared as one of the most tedious writers in the whole history of philosophy,⁵ but within the powerful and fashionable Puritan

circles in Cambridge at the time that Bacon was an undergraduate he had all the charm of novelty, as well as the spiritual prestige of a Protestant martyr.⁶ For Bacon, Ramus was a mere bookworm, a begetter of compendia, and inferior to the older schoolmen: "Aquinas, Scotus, and their followers out of their unrealities created a varied world; Ramus out of the real world made a desert."⁷

Bacon was therefore sufficiently open-minded to see the strengths of the schoolmen, and (as so often) it is this open-mindedness that makes his final verdict all the more effective. All the vast labours of the schoolmen had in the end led to nothing because they had cut themselves off from the world and relied on the resources of their own minds: they had been intellectual spiders, spinning "cobwebs of learning, admirable for the fineness of thread and work, but of no substance or profit."⁸

As this passage suggests, Bacon was commendably free of the kind of vanity that traces the mistakes of earlier thinkers to incompetence or stupidity. The fruitlessness of scholastic philosophy was not a symptom of lack of wit but of lack of method; it followed that there was no reason to suppose that any modern philosopher who joined in the scholastic debates would be likely to produce any conclusions better than those of the schoolmen. The only solid hope lay not in triumphing in these disputes but in avoiding them altogether. The same was true of the noisy, intricate and apparently endless polemics of the humanists which had replaced scholastic disputations as the fashionable form of learned activity, but which had contributed equally little to human knowledge and power.

This impatience with the characteristic intellectual activities of his age determined Bacon's style and method:

First then, away with antiquities, and citations or testimonies of authors; and also with disputes and controversies and differing opinions; everything in short, which is philological. Never cite an author except in a matter of doubtful credit; never introduce a controversy unless in a matter of great moment.⁹

Bacon intended this advice for his readers, but he did his best to follow it himself. It is therefore hardly surprising that he only made one passing reference to the apparently interminable and by then very unfashionable dispute between the realists and the nominalists; and it is perhaps significant that even this is in a passage concerned not with the schoolmen but with Aristotle. Bacon thought of the Platonists and the Aristotelians as the great corrupters of philosophy: the Platonists by misusing theology, the Aristotelians by misusing logic. The thoughts of Plato's predecessors had been crude and generally mistaken, but at least they had been directed towards things, "whereas in the physics of Aristotle you hear hardly anything but the words of logic; which in his metaphysics also, under a more imposing name, and more forsooth as a realist than a nominalist, he has handled over again."¹⁰ There is nothing in this remark that directly reveals Bacon's own position, but the fact that he chose to describe the approach he disliked so much as that of a realist is at least prima facie evidence that he was inclined to the opposite view.

Prima facie evidence of this kind does however need to be augmented, and it is not at first sight apparent from whence any further evidence might be forthcoming. The passage just quoted is as far as I am aware the only place in which Bacon referred

explicitly to either realism or nominalism, and in isolation it clearly offers only the slenderest basis for describing Bacon as a nominalist. An alternative interpretation, which would appear to be at least as plausible, would be that Bacon regarded the traditional problem of universals as an outstanding example of the kind of dispute he wished to guide men away from, and that he regarded the nominalists with (at best) the kind of tepid approbation that Gibbon felt for the less extravagant party in a theological dispute.

Bacon's general silence about universals also appears to support this latter interpretation. If we think of the dispute between nominalists and realists as being primarily about the nature of universal entities then the historian of that dispute has little reason to devote very much space to Bacon. The evidence for describing Bacon as a nominalist would be nothing more than his failure to discuss the nature of universals, together with the extremely dubious argument that he must have denied the existence of anything that he chose not to write about.

The superficiality of this characterisation of the problem of universals as a problem solely about the status of universal entities has been argued in the previous chapters. The thesis that lies at the heart of all nominalism, medieval and post-medieval, is that everything that exists is an individual. Bacon was on the whole averse to discussing purely metaphysical problems, but there is one passage in the Novum Organum which indicates clearly what his opinions were about the Forms of the Platonists, and by implication about real universals generally:

Nor have I forgotten that in a former passage I noted and corrected as an error of the human mind the opinion that

Forms give existence. For though in nature nothing really exists besides individual bodies, performing pure individual acts according to law, yet in philosophy this very law, and the investigation, discovery and explanation of it, is the foundation as well of knowledge as of operation.¹¹

Bacon held that only individuals exist in nature. He was moreover hostile, just as the earlier nominalists such as Ockham had been, not only to the specifically Platonic and Aristotelian forms of realism but also to all types of philosophical system that treat individuals as metaphysical composites of non-actual or non-independent principles. It was indeed Aristotle's predilection for doing just this that Bacon regarded as one of the most objectionable features of his whole philosophy. Aristotle had chosen matter and form as his fundamental physical principles; the fact that neither was considered to be capable of existence in the absence of the other was quite clearly not something that he regarded as a disqualification. In Bacon's eyes, on the other hand, the Aristotelian matter and form are entirely inappropriate and worthless as physical principles precisely because they are incapable of independent existence:

For the enquiry is not how we may most conveniently embrace and distinguish the nature of entities in our thoughts, but what are really the first and most simple entities from which the rest are derived. Now, the first entity must exist no less than the things derived from it; and in a certain way more. For it is self-subsisting, and other things subsist by it. But the things that are said of this abstract matter are not much better than if a man were to assert that the world and all things are made of categories and suchlike logical notions, as principles.¹²

On these fundamental questions of what kinds of things exist and what kinds of principles are admissible for physical

explanations, Bacon's position is the same as Ockham's. For both men the only things that really exist are those that are capable of separate existence — the kind of things Ockham called res absolutae. All the other kind of entities that have been proposed, whether universal essences or matter existing merely potentially, are nothing more than the imaginings of philosophers.¹³ The only things that really exist are actually existing individuals.

If we take nominalism to be the thesis that only individuals exist then there can I think be little doubt that Bacon was a nominalist. His silence about universals is no evidence to the contrary. For a nominalist the only universals are signs — either words or ideas — and Bacon was fundamentally uninterested in the kind of semantic problems that had been so important to Ockham and were to be so important to Locke.

What little he did have to say about psychology does however provide further evidence for considering him as a nominalist. Bacon followed Telesius in thinking of the irrational souls of men and other animals as material, but he regarded the rational human soul as something created directly by God and therefore as something not capable of being understood by the methods of human philosophy.¹⁴ Its origin notwithstanding, there is nothing supernatural (in any sense of that badly-abused word) in his account of its operations:

For the images of individuals are received by the sense and fixed in the memory. They pass into the memory whole, just as they present themselves. Then the mind recalls and reviews them, and (which is its proper office) compounds and divides the parts of which they consist. For the several individuals have something in common one with another, and again something different and manifold. Now this composition and division is either according to the pleasure of the mind,

or according to the nature of things as it exists in fact. If it be according to the pleasure of the mind, and these parts are arbitrarily transposed into the likeness of some individual, it is the work of the imagination.... If on the other hand these same parts of individuals are compounded and divided according to the evidence of things, and as they really show themselves in nature, or at least appear to each man's comprehension to show themselves, this is the office of reason; and all business of this kind is assigned to reason.¹⁵

There is in all this no trace of the distinctive psychology of the scholastic realists: nothing at all about the agent intellect and the possible intellect or the distinction between sensible and intelligible species. There is also nothing in any way comparable to Descartes's fundamental distinction between material images and purely intellectual ideas. For Bacon, the function of the intellect is simply to compound and divide the material supplied by the senses, not to abstract and intuit universal intelligible natures, freed from material individuating conditions.

Bacon's description of the operations of the human mind is very close to the account given by Locke. The reason for this is not a shared commitment to "empiricism" but a shared ontology. Neither Bacon nor Locke had any place for the distinction, used by Platonists and Aristotelians alike, between the sensible and the intelligible. There is no trace of the idea that some things (forms or universals) are intelligible, while other things (matter and individuals) are not. The distinction between the intelligible and the sensible worlds disappears, and all the associated apparatus of the agent intellect and the principles of individuation with it. This radical metaphysical simplification results in old problems disappearing and new problems taking their place. Bacon

was not much inclined to discuss purely metaphysical topics at any length, but it is clear both from his few explicit remarks and from his choice of problems that he silently aligned himself with nominalist critics of traditional philosophy.

It is, of course, in no way necessary to my argument to show that Bacon was conscious of siding with the scholastic nominalists against the realists — though he may have been, as Gassendi certainly was.¹⁶ It is sufficient that his outlook and approach were those of a nominalist.

This conception of Bacon as a nominalist is not altogether new. Among his Victorian editors, both Ellis¹⁷ and Fowler¹⁸ interpreted him in this way, though neither developed the theme to any extent. Subsequent writers have neglected the question entirely. This is unfortunate, because the interpretation of Bacon as a nominalist provides a neglected key to understanding some of the most important (and perplexing) aspects of his theory of scientific method.

II

Bacon was one of the earliest writers to refer frequently and regularly to laws of nature, but that he did so ought not to be interpreted too quickly as a sign of precocious modernity. Even quite a brief survey of what he wrote is enough to show the difference between his conceptions and those habitual to the learned world since the time of Newton. Partly this is a matter of differing intellectual backgrounds. Bacon made his career in the Law, and legal patterns of thought invade even his most strictly philosophical work. Indeed on one occasion he applied

what was perhaps in his own mind scarcely a metaphor, and spoke of all the many laws we discover as paragraphs of one great summary law of nature.¹⁹

In Bacon's writings two different conceptions of the law or laws of nature may be distinguished. In some places he refers to one single, summary or positive law of nature,²⁰ which is enacted by God for the whole of creation and which may ultimately lie for ever beyond the limits of human comprehension.²¹ In other places he refers to "laws" in the plural,²² or to this or that particular law — as for example the laws that matter cannot be separated from matter,²³ or that the total quantity of matter in the world is always the same.²⁴

Both these conceptions, of a single Law of Nature and of a plurality of particular laws, can be found in Bacon's predecessors, for example in Richard Hooker.²⁵ There are however other things that he says which have no obvious parallel, either among his predecessors, contemporaries or successors. In the Novum Organum there are references to "the Forms or true differences of things (which are in fact Laws of pure act)";²⁶ "the fundamental and universal Laws which constitute Forms",²⁷ and "the Form or Law which governs heat, redness and death".²⁸ This is certainly not the usual language of philosophy at any period. Bacon's general remarks about the law or laws of nature are broadly traditional, and would have been recognised as such by his contemporaries, but his apparent identification of laws and forms has puzzled his commentators ever since he first wrote.

One solution that might be suggested is that Bacon was really concerned purely and simply with laws, and that he used the more traditional and familiar word form only because it was no part of

his purpose to unsettle his readers with innovations in terminology. In support of this there may be cited Bacon's deliberate decision "to retain the ancient terms, though I sometimes alter the uses and definitions; according to the moderate proceeding in civil government, where although there be some alteration, yet that holdeth which Tacitus wisely noteth, eadem magistratum vocabula."²⁹ Bacon, like Augustus, saw the advantages of keeping a façade intact.

The suggestion that whenever Bacon wrote "form" he meant "law" does however raise at least as many problems as it solves. If two words are synonymous then they can replace one another without this affecting the truth or falsity of the propositions in which they occur; but if this is done in Bacon, large numbers of passages become entirely incomprehensible, for example the following from Novum Organum, ii.24: "For since every body contains in itself many Forms of natures united together in a concrete state, the result is that they severally crush, depress, break, and enthrall one another, and thus the individual Forms are obscured." If we replace "form" by "law" the passage instantly becomes wholly nonsensical. Obviously it could be restored to intelligibility by being completely re-written, but in that case it would be a very fair question just how much of Bacon's original meaning would have been preserved.

Although we cannot treat the words "form" and "law" as having the same meaning within Bacon's philosophy, there are nevertheless numerous passages in which he spoke of forms and laws as being one and the same:

For when I speak of Forms, I mean nothing other than those Laws and determinations of pure act which govern and constitute any simple nature, such as heat, light, weight, in every kind of matter and subject that is susceptible of them. Therefore the Form of Heat or the Form of Light is the same thing as the Law of Heat or the Law of Light.³⁰

Taken by itself, this passage certainly suggests that Bacon considered the two words "form" and "law" to be synonymous; and yet, as we have just seen, to do this would make nonsense of other passages only a few pages away in the same book.³¹ One simple explanation of all this is of course that Bacon was merely hopelessly muddled. It is certainly true that Bacon was a forceful rather than a delicate writer, and that he did not use his technical terms with the precision of, say, Frege. Nevertheless he does not give the impression of a writer floundering in confusion; the hypothesis of sheer muddle ought to be employed only as a final resort.

We may therefore begin the task of interpretation with Bacon's use of the word "form". According to Ellis, "It is at any rate certain, that in using the word 'Form' he did not intend to adopt the scholastic mode of employing it."³² This is an unjustified and thoroughly misleading generalisation. There is certainly no such thing as one single scholastic conception of form. On the contrary there are many, just as in the seventeenth century there were many different conceptions of matter, and between these conceptions of form and Bacon's own there are inevitably numerous different resemblances and dissimilarities. There is nothing to be gained by the essentially fraudulent activity of contrasting Bacon with an anonymous and indistinct "scholasticism". It would be much better to start by considering

Bacon's relation to the originator of the concepts of form and matter: Aristotle.

Bacon believed Aristotle to have been a thinker of very great ability,³³ but he regarded his method of enquiry as radically vicious and as a great step backwards from that of his predecessors. Thinkers like Empedocles and Democritus and Anaxagoras certainly made mistakes, but at least they set about their business like physicists — that is, by thinking about matter and the way it changes.³⁴ Aristotle's approach on the other hand is essentially that of a dialectician:

[He] left nature herself untouched and inviolate, and dissipated his energies in comparing, contrasting and analysing popular notions about her. How could anything solid be expected of a man who created a universe out of categories? What difference does it make whether one chooses as the first principles of things either Matter, Form and Privation or Substance, Quality and Relation? These are but words, and what is needed is to put something better in their place.³⁵

The characteristic of Aristotle's thought that Bacon found particularly objectionable was his habit of taking as his starting point for physical enquiries not only genuinely observed facts but also endoxa — that is, opinions deserving to be taken seriously because everyone holds them, or most people do, or at least the wise minority does.³⁶ Thus Aristotle grounds his distinction between four irreducibly different kinds of change on his system of categories: generation and corruption being changes in the category of substance, alteration change in the category of quality, and so on.³⁷ For Bacon this is merely popular, in the sense that it involves moulding nature by the forms of common speech, and

not adapting speech to nature.³⁸ It is difficult not to regard the criticism as entirely justified; it is only fair to add that Bacon's own distinction of nineteen different kinds of motion is open to very similar objections.³⁹

This practice of basing physics on ordinary language was in Bacon's opinion one of the worst of Aristotle's faults. Another, closely related and equally deleterious, was his practice of deriving his principles of explanation by abstracting from nature.⁴⁰ The dissection of nature, even if carried out wrongly, does at least have the merit of producing genuinely physical principles, such as Democritus' atoms. The principles generated by abstraction on the other hand are mere logical principles of the kind exemplified by the Aristotelian form and matter, incapable of independent existence and useless for physical explanation. Bacon regarded prime matter, "that despoiled and passive matter" as he called it, as nothing more than a fabrication of the human mind.⁴¹ The inevitable consequence of its adoption was a shift in emphasis from matter to form. Forms were conceived as entities conferring intelligibility and actuality and therefore as the appropriate objects of science, and the idea of physics as an enquiry into the nature and arrangement of matter fell into disuse. Nature, in Bacon's vivid phrase, was conceived as "a reign of forms and ideas in essences, with the addition of a kind of fantastical matter."⁴²

The chief expositions of Bacon's own theory of matter are to be found among his interpretations of the ancient myths in De Principiis atque Originibus and De Sapientia Veterum. His main concern was to outline a middle way between what he regarded

as two distinct and opposing errors, that of supposing matter to be incapable of separate existence and that of supposing it to be possessed of a native and irremovable form.⁴³ In the representation of the allegory, Cupid (matter) is a person, but is also naked. Bacon agreed with the ancient atomists that matter is capable of independent existence, but he declined to follow them in thinking of it as eternal; we know, by revelation at least, that God has made it,⁴⁴ and that he (alone, and in virtue of his omnipotence) has the power to annihilate it again.⁴⁵ In the ordered world in which we live it never occurs without form, but it could do so, and indeed once did (since Bacon interpreted Genesis i.1ff as meaning that God first created formless matter and only then proceeded to construct the heavens and the earth).⁴⁶

There is therefore a distinct and unquestionable similarity between what Bacon said about matter and what Ockham had said three centuries earlier. Both men conceived of matter as an actually existing, extended substratum, capable of independent existence. This much is clear; what is less so is its significance. There have been after all considerably more philosophers than there have been theories of matter (at least in broad outline), and inevitably there must be numerous more-or-less fortuitous resemblances of little or no historical significance. Is there any good reason for not dismissing the resemblance of Bacon's and Ockham's theories of matter as one of these?

The only way to answer this kind of question is to consider the philosophical considerations that have determined (or at

least influenced) the choice of theory. The common feature of Bacon's and Ockham's thought which largely determined their conceptions of matter was their refusal to allow the existence in the world of any kind of entity not capable of actual and independent existence. If matter exists it must be an actual independent substance.

The consequence of adopting this very un-Aristotelian conception of matter was, for both philosophers, a series of intractable problems with the correlative concept of form. There was no way in which this could be avoided. Form and matter are introduced together into Aristotle's philosophy by means of a kind of analogy,⁴⁷ and this ties them together so closely that any change in the way in which one is conceived automatically involves a corresponding change in the conception of the other. It is of course quite possible that the conception of matter should be changed in such a way as to make the conception of form useless and even meaningless, and this indeed is very largely what happened in the seventeenth century. Everyone still talked about matter without any very obvious unease, whereas the substantial and accidental forms of the schoolmen were generally seen as suitable subjects for ridicule and derision. Neither Ockham nor Bacon went as far as this. Both were concerned, in different ways, to develop a useful concept of form to go with the changed concept of matter.

There are broadly speaking two possible ways in which forms may be conceived by anyone who thinks of matter as a substance capable of separate existence. The first is that forms may likewise be thought of as separate substances, akin to souls,

existing within material substances and acting as the organising principles of their activity. This conception of the soul as a form was widespread in the sixteenth and seventeenth centuries. Gilbert followed a tradition as old as Thales in accounting for the strange properties of a magnet by means of a form or soul,⁴⁸ and as late as 1671 Locke could refer to "the forme, soul or effluvioms of a loadstone".⁴⁹ It would be wrong to say that Bacon rejected this approach completely. He quite clearly believed that all tangible bodies contain enclosed within themselves a quantity of invisible and intangible spirit, which "gives them shape, produces limbs, assimilates, digests, ejects, organises and the like".⁵⁰ Despite being invisible and intangible this spirit is material; and the souls of irrational animals, which are composed of spirit, are therefore material substances and not immaterial functions.⁵¹ This theory of a material soul is not, it should be said, a consequence of any general commitment to materialism. Quite apart from his belief that the rational human soul is an immaterial substance created directly by God,⁵² Bacon also regarded the ability of a magnet to attract at a distance as "a proof furnished by merely human philosophy of the existence of essences and substances separate from matter and incorporeal".⁵³ If therefore Bacon preferred not to speak of substantial forms in the scholastic manner, it was certainly not because he denied either the existence of imperceptible entities existing within bodies and causing their perceptible qualities or the usefulness of constructing explanations in such terms. His careful avoidance of using the word "form" in this context must be explained on other grounds.

The second way of conceiving of forms is not as separate substances but as the ways in which matter can be arranged or ordered. For a mechanist the usual approach is to think of the form not as the gross outward shape of a body (which after all is what the word morphē meant before Aristotle made it a technical term), but rather as the order and configuration of its internal parts. This, as we shall see in the next chapter, is what Boyle meant by the word; it was indeed one of the commonest ideas of the new mechanical philosophy. Bacon is perhaps best described as a proto-mechanist, but he was certainly prepared upon some occasions at least to attempt wholly mechanical explanations for such phenomenal qualities as colours by appealing to the configurations of the hidden parts of the coloured body.⁵⁴ But though he frequently referred to such configurations, he hardly spoke of them as forms; and when he did it was with a disclaiming phrase, such as ut loquuntur.⁵⁵ Quite clearly he did not wish the reader to think that this was his own terminology. The expression Bacon himself preferred was the latent schematism,⁵⁶ schēmatismos being the Greek equivalent of the Latin configuratio. By itself however knowledge of the latent schematism is not enough, as Bacon clearly saw. If we are to explain what happens when a mineral is formed or a seed germinates and grows, we need to know not only the configuration of the minute parts, but also the hidden changes taking place within the mineral or the seed.⁵⁷ These Bacon referred to as latent processes.⁵⁸

Bacon therefore used the word "form" neither for an internal organising principle of a body nor for the hidden configuration of its parts, despite the fact that both of these

modes of expression would have been quite comprehensible to his contemporaries. Instead, as we have seen, he spoke of forms as equivalent to laws. The best hope of understanding this is not, I think, to ask how the words "form" and "law" might be supposed, either by Bacon or by anyone else, to be identical in meaning, but rather to ask what common function both forms and laws might be expected to perform. The answer to this is that both forms and laws can serve as principles of explanation. One of the most distinctive characteristics of Aristotle's philosophy is that it is systematic, in the sense that certain key notions appear again and again in what appear to us to be quite disparate fields. Forms, for example, appear not only in Aristotle's physics, but also in his discussions of psychology and epistemology. The processes of perception and thought are explained by the reception of forms, first in the sense-organs and then in the intellect,⁵⁹ and it is these forms existing in the intellect, freed from matter and therefore universal, that serve as the objects of knowledge in the strict sense — knowledge that is universal, necessary and unchangeable.⁶⁰ When the medieval nominalists rejected real universals of any kind, they perhaps unintentionally removed the foundations of the entire Aristotelian theory of knowledge. This did not, at the time, lead to any general abandonment of the whole world-picture with which it was so intimately involved. The fabric of Aristotle's system remained largely intact but somehow precariously, rather in the manner of a building that has been undermined and is ready to fall. Substantial forms, which had been conceived by Aquinas as the principles which make sensible substances potentially intelligible, came increasingly to be regarded as wholly occult and unintelligible.

Creation began to be conceived not in terms of God imposing forms on matter in the manner of the demiurge in the Timaeus, but in terms of God ordaining the laws which govern the motions of bodies. The result of this was that the terminus of explanation came to be placed in the logically contingent laws which God had freely chosen to impose.

The origins of this new philosophy of nature can be traced back to the fourteenth century, but it finally appeared in a clear and explicit form only in Descartes.⁶¹ In Descartes's thought all traces of the theory of substantial forms have been eliminated, and the new explanatory theory of laws of nature appears in a pure form. Bacon was in contrast a transitional thinker in whom the terminologies of the old and the new theories appear together, often in the same passages. The reasons for Descartes's clarity and Bacon's apparently complacent imprecision are not hard to discover. Bacon did not share and would not have approved of Descartes's programme of attaining certain knowledge by making intuitively necessary deductions from propositions involving only clear and distinct ideas. Bacon held that we can only refine and improve our notions slowly as our knowledge increases. Any attempt to reach perfect clarity on abstract metaphysical issues at the outset of our investigations would be premature and futile.⁶² Bacon had no wish to found a school of Baconians to compete with the Platonists and the Aristotelians and any of the other philosophical schools already established:

First, then, I must request men not to suppose that after the fashion of the ancient Greeks, and of certain moderns, as Telesius, Patricius, Severinus, I wish to found a new sect in philosophy. For this is not what I

am about; nor do I think it matters much to the fortunes of men what abstract notions one may entertain concerning nature and the principles of things...⁶³

Bacon's lack of clarity in his discussions of the metaphysical foundations of his theory of explanations is deliberate, at least to the extent that he regarded perfect clarity as unattainable in the initial stages of any enquiry.

Bacon was therefore unlike Descartes in that he was prepared to employ both the older conception of God imposing forms on matter and the new conception of God ordaining laws:

He [God] created heavens and earth, and all their armies and generations, and gave unto them constant and everlasting laws, which we call Nature, which is nothing but the laws of the creation; which laws have had nevertheless three changes or times, and are to have a fourth and last. The first was when the matter of heaven and earth was created without forms...⁶⁴

A comparable yoking together of laws and forms is to be found in Hooker;⁶⁵ indeed in this area Bacon was closer to Hooker than to Descartes.

Descartes's employment of the notion of a law of nature arose from his voluntaristic emphasis on the complete freedom and omnipotence of God in creation. This emphasis is largely absent from Bacon's thought, but there is nevertheless a connection between the mechanistic nominalism which is to be found in Bacon and the idea of a law of nature. The latent schematism and the latent process are replacements for the abandoned substantial forms, but even when taken together they do not provide a sufficient basis for scientific explanation. The behaviour of a mechanical system cannot be explained purely from a knowledge of the dispositions of its parts and their motions.

We also need to know the laws of nature which govern the motions of the bodies and their parts. To the latent schematism and the latent process, Bacon therefore added a third object of research, the laws of nature.

The development of the physical sciences since the seventeenth century has provided illustrations of the necessity of introducing laws of nature beyond anything that Bacon could have imagined. We now know for example that gold is composed of atoms whose nuclei contain seventy-nine protons together with a variable number of neutrons; but this knowledge is by itself insufficient even to allow us to take one step towards explaining the chemistry of gold. We need to know the laws of electromagnetism and quantum mechanics before we can begin constructing explanations which take as their basis the structure of the gold atom. By itself a knowledge of the latent schematism and the latent process can be of no more use than a list of initial or boundary conditions would be without the knowledge of a differential equation to which they could be applied.

Explanations in terms of laws of nature are characteristically two-part explanations, and are therefore radically unlike the kind of explanations that Aristotle proposed. For Aristotle the ultimate aim of enquiry is the universal form or essence: if we know what a thing is we can explain its properties by syllogistic deduction. The one ultimate aim of research is therefore to discover the real definitions that say what things really are. For Bacon on the other hand two quite separate things need to be known: the structure of the substance under investigation and the relevant laws of nature. The laws of nature, the latent processes and the latent schematisms therefore jointly take over the functions

that universal forms had for Aristotle and for the scholastic realists.

III

Bacon's perception of himself inhabiting a world of individuals provides the usually implicit but ever-present background for his method of induction. If universal entities of the kind the realists had imagined were indeed to exist, then they could determine directly the truth or falsity of universal propositions. Thus the proposition that all men are rational would be made true by the relation holding between the universals rationality and humanity. It would be this relation that would make the universal proposition true; the fact that all the individual men that there are turn out to be rational would be of secondary importance. The realist and the nominalist are not, of course, in any disagreement as to whether the universal proposition entails all the singular propositions. The dispute is about causation: for the nominalist the universal proposition is true because all the singular propositions are true; for the realist the singular propositions are true because the universal proposition is true.

These two accounts of universal truth lead quite naturally to two very distinct conceptions of induction. A realist's ultimate aim must be the intuition of universals, the investigation of individuals being valuable only as a preliminary to this end. What this means can perhaps be best explained by an analogy. Anyone who has taught logic knows how much easier many beginners find it to think about syllogisms involving concrete terms rather than schematic letters. This however is a preliminary stage which

can and should be left behind. Once the validity of a general form has been grasped an appeal to further concrete examples is unnecessary; indeed any general attempt to show the validity of a syllogistic form by examining all its substitution-instances would be both wrong-headed and futile.

This is the conception of induction which the post-Aristotelian realists elaborated on the basis of the extremely obscure account in the final chapter of the Posterior Analytics. It was expressed with notable clarity and brevity by Zabarella:

Therefore in induction we do not make use of all the particulars, for when we have considered a certain number, our mind immediately discerns the essential connection and thereupon draws up the universal, discarding the remaining particulars; for it knows how things must be with the remainder.⁶⁶

This conception of induction clearly supposes the existence of essential connections between universals, and this is precisely what the nominalist is concerned to deny. The only universal essences that a nominalist could consistently admit are Lockean nominal essences, and these can provide a basis only for purely conceptual truths. Universal propositions concerned with the real world can be true only because all the singular propositions that they entail are true, and the total number of these in any given case may well be very large, or even infinite. If this is so then it appears that the truth-value of the universal proposition can only be known (as opposed to being merely conjectured) if the truth-values of all the singular propositions which it entails are known first. It is the apparent impossibility of ever acquiring this latter knowledge when the set of relevant individuals is infinite, or even very

large, that constitutes the sceptical problem of induction.

This problem is associated above all with Hume, but at least in its basic form it is certainly very much older. The ancient Sceptics were undoubtedly aware of it. Sextus Empiricus was not a man who declined to use what he thought a good argument for fear of tiring his readers, but in the middle of all his arguments against the claims of the dogmatists, he was content to dismiss induction in a single paragraph:

It is also easy, I consider, to set aside the method of induction. For, when they propose to establish the universal from the particulars by means of induction, they will effect this by a review either of all or of some of the particular instances. But if they review some, the induction will be insecure, since some of the particulars omitted in the induction may contravene the universal; while if they are to review all, they will be toiling at the impossible, since the particulars are infinite and indefinite. Thus on both grounds, as I think, the consequence is that induction is invalidated.⁶⁷

The fact that he describes induction as "easily disposed of" suggests that he was expounding something that was considered within the Pyrrhonist school as a standard (and decisive) argument. Whether it really is decisive is of course another matter altogether, but it can hardly be denied that it shows the existence of a serious problem. For realists — and this was one of the main attractions of a realist theory of universals — there was the possibility of avoiding the difficulty altogether. For nominalists it was something that had to be faced squarely — or ignored.

Bacon agreed entirely with the sceptics in their rejection of the traditional method of induction:

But the greatest change I introduce is in the form itself of induction and the judgement made thereby. For the induction of which the logicians speak, which proceeds by simple enumeration, is a puerile thing; concludes at a hazard; is always liable to be upset by a contradictory instance; takes into account only what is known and ordinary; and leads to no result.⁶⁸

The great difficulty which embarrasses induction by simple enumeration is that the number of individuals needing examination is usually either infinite or else at least too large for more than a tiny proportion to be examined. Bacon proposed therefore to draw the teeth of this problem by making use of two principles; both were to have a considerable future in the subsequent career of inductive logic. We may conveniently refer to them as the principle of strict causality and the principle of limited variety.

Bacon's principle of limited variety is an assertion that though the number of individuals existing in the world may well be very large, the number of simple forms ultimately responsible for causing their properties is quite small, indeed very small — angusta et tanquam paupercula.⁶⁹ Although few in number, these simple forms can be combined to produce the endless variety of individuals that we see, in something like the way that a small stock of letters can be arranged so as to form all the words in a language.⁷⁰

In isolation a principle of limited variety of this kind is not enough to underpin a workable method of induction. There would be no point in introducing simple forms that would be as remote from scientific investigation as the atomic facts of Wittgenstein's Tractatus. Some reasonably direct connection between forms and observable characteristics is necessary for

practice, and for Bacon practice was of the highest importance.

Bacon's principle of causation is formulated in terms of his rather idiosyncratic conceptions of form and nature. The problems involved in understanding what he meant by forms have already been discussed; in the present context, "form" is perhaps best understood as meaning something like ultimate cause, rather than law. The use of the word "nature" is more straightforward, though a little unusual. A nature is an observable property: simple natures include colour, weight, malleability, solubility in certain solvents and such-like.⁷¹ The connection between these simple natures and the forms that cause them is simple and direct:

For the Form of a nature is such, that given the Form the nature infallibly follows. Therefore it is always present when the nature is present, and universally implies it, and is to be found in every instance of it. Again, the Form is such, that if it be taken away, the nature infallibly vanishes. Therefore it is always absent when that nature is absent, and always implies its absence, and is to be found only in its instances.⁷²

In other words the observable nature occurs if and only if the corresponding form is present.

The limited variety of simple forms and their invariable connection with the simple natures together provide the basis for the method of exclusion:

The first work therefore of true induction (as far as regards the discovery of Forms) is the rejection or exclusion of the several natures which are not found in some instance where the given nature is present, or are found in some instance where the given nature is absent, or are found to increase in some instance where the given nature decreases, or to decrease where the given nature increases.⁷³

This description gives, as Bacon admitted, little indication of the difficulties involved in using the method in practice, but he never wavered in his conviction that by following it one would in time arrive at simple forms, "affirmative, solid, true and well-defined".⁷⁴

Bacon's method of induction and Descartes's method of doubt are in themselves quite dissimilar, but one feature they share is that both aim at certainty. Popper's "conjectural knowledge" would have seemed to Bacon (and to Descartes, for that matter) to be at best an outrageous paradox, and more probably a flat self-contradiction. The whole purpose of the Novum Organum was to describe a method that would produce "not pretty and probable opinions but certain and demonstrative knowledge",⁷⁵ and in order for this to be possible the method of exclusion had necessarily to set out procedures that could be completed and be seen to be completed within a reasonably short time. Bacon at least had no doubts about this: in a passage that can hardly now be read without a smile he announced that once an adequate catalogue of facts had been compiled, the discovery of all causes and sciences would be the work of only a few years.⁷⁶

It is clear therefore that the two principles of strict causality and limited variety are quite indispensable to Bacon's method of induction. The obvious question is how they are to be justified.

Bacon never tried to argue for the existence of simple forms, and any attempt to work out what he would have said if pressed must inevitably be more than a little speculative. The first kind of answer that he could have given is that the complex

necessarily implies the simple, and therefore that the process of analysis must inevitably terminate somewhere. It is possible that Bacon would have reasoned in this way, but I am inclined to doubt whether he would have placed very much stress on any argument as abstract and metaphysical as this. I suspect that he would have reserved his judgement on the a priori question of whether such an infinite regress is possible, and would have argued instead that we can show a posteriori that God has in fact chosen to make the world out of simple natures.⁷⁷ One of Bacon's favourite texts was Proverbs xxxv.2: "The glory of God is to conceal a thing; the glory of the king is to search it out."⁷⁸ Part of its appeal lay no doubt in its usefulness in flattering the British Solomon, but it also reflected one of Bacon's most deeply held beliefs, that God had constructed the world in such a way that it could be understood by men, provided only that they were prepared to abandon their pride and their disdain for the labour involved.

Bacon's method is therefore in many respects that of a codebreaker.⁷⁹ Like Galileo, he was guided by the powerful metaphor of nature as a great book written by God;⁸⁰ unlike Galileo he had no belief that its language was mathematics, for the use of which in natural philosophy he had a thoroughly Aristotelian distrust. The reason why the book had remained unread was that men had been too proud and too impatient and had therefore preferred to exercise their wit in anticipating nature by reaching for conclusions on the basis of a hopelessly inadequate range of facts. The method Bacon preferred was the interpretation of nature, the humble patient methodical

decipherment of the Divine Code. It is for this reason that he was so concerned to gather into his natural histories as wide a range of material as possible, and so little bothered about the possibility — indeed inevitability — of error and superstition creeping in.⁸¹ The thing that a decoder needs above all is a large body of material to work on; errors and mistakes of all kinds are a nuisance, but they can be eliminated in the process of solution, at least if they do not predominate in the original text.⁸²

It seems likely therefore that Bacon's ultimate justification of his assumptions would have been pragmatic. He repeatedly described his concern as being not to trouble himself with speculative matter but to "lay more firmly the foundations, and extend more widely the limits, of the power and greatness of man."⁸³ Bacon consistently took practical effectiveness to be the best guide to truth. His inductive method presupposed both the existence of simple forms and their direct and invariable connection with simple natures; Bacon regarded this ontological commitment not as a weakness but as a strength.⁸⁴ The best justification of the assumption would be the eventual success of the method, and about this Bacon had no doubts. For us, with hindsight, the converse inference seems more relevant: the failure of the method leaves the justification of its assumptions an open question.

Notes to Chapter 3

In order to save space in the following notes I have given full page-references to the Ellis, Spedding and Heath edition of Bacon's Works only for those writings which are not internally divided into small sub-divisions.

1. On the merits of these ancient thinkers, see the Preface to De Sapientia Veterum, Works, vol.VI, p.627 (Latin), pp.697-98 (English).
2. Novum Organum, i.71,77.
3. On Bacon and magic see P. Rossi, Francis Bacon: from Magic to Science, pp.10-35. On the contemporary efflorescence of magic, see L. Thorndike, A History of Magic and Experimental Science, vol.VI, ch.43, vol.VII, ch.10.
4. Redargutio Philosophiarum, Works, vol.III, p.572; English translation in B. Farrington, The Philosophy of Francis Bacon, p.118.
5. For adverse modern verdicts, see W. Kneale and M. Kneale, The Development of Logic, p.302; C.L. Hamblin, Fallacies, pp.137-39.
6. Ramus died in the St. Bartholomew's Day Massacre, in 1572. His prestige in Bacon's own college, Trinity, was however less than elsewhere in Cambridge, thanks to the influence of the Master, John Whitgift. See H.F. Kearney, Scholars and Gentlemen, p.61.
7. Temporis Partus Masculus, Works, vol.III, p.530. Translation (slightly altered) from B. Farrington, The Philosophy of Francis Bacon, p.64. For a slightly more favourable, though scarcely enthusiastic, appraisal of Ramus, see The Advancement of Learning, Works, vol.III, p.407. For Bacon's reasons for disliking compendia, see *ibid.*, pp.483-84.
8. The Advancement of Learning, Works, vol.III, p.286.
9. Parasceve ad Historiam Naturalem et Experimentalem, §iii.
10. Novum Organum, i.63.
11. *Ibid.*, ii.2. Translation modified slightly. The earlier passage which Bacon mentioned is i.51.
12. De Principiis atque Originibus, Works, vol.III, p.85 (Latin), vol.V, p.467 (English).

13. De Principiis atque Originibus, Works, vol.III, p.84 (Latin), vol.V, p.466 (English).
14. De Dignitate et Augmentis Scientiarum, iv.3.
15. Descriptio Globi Intellectualis, ch.1.
16. P. Gassendi, Opera Omnia (Lyon, 1658), vol.III, p.159a.
17. R.L. Ellis, "General Preface to the Philosophical Works" in Francis Bacon, Works, vol.I, p.31.
18. T. Fowler (ed.), Bacon's Novum Organum, p.340n.
19. Novum Organum, ii.2.
20. The Advancement of Learning, Works, vol.III, p.265; Descriptio Globi Intellectualis, ch.2; De Principiis atque Originibus, Works, vol.III, p.81 (Latin), vol.V, p.463 (English).
21. Valerius Terminus, ch.1, Works, vol.III, p.220.
22. The Advancement of Learning, Works, vol.III, p.143; Novum Organum, ii.5,9,17.
23. De Principiis atque Originibus, Works, vol.III, p.115 (Latin), vol.V, p.496 (English).
24. Novum Organum, ii.4; cf. ii.40 where the same rule is stated, though without being described as a law.
25. Of the Laws of Ecclesiastical Polity, I.ii.1-I.iii.5.
26. Novum Organum, i.75.
27. Ibid., ii.5.
28. Ibid., ii.17.
29. The Advancement of Learning, Works, vol.III, p.353.
30. Novum Organum, ii.17. Translation modified slightly.
31. E.g. Novum Organum, ii.24, quoted above; also ibid., ii.1 and ii.13: "Cum enim forma rei sit ipsissima res; neque differat res a forma, aliter quam differunt apparens et existens, aut exterius et interius, aut in ordine ad hominem et in ordine ad universum ." As Fowler remarks in his note to this passage (op. cit. p.374), "there is, perhaps, no passage in the Novum Organum in which we could less appropriately replace the word 'Form' by 'Law' or 'Cause'."
32. R.L. Ellis, "General Preface to the Philosophical Works" in Francis Bacon, Works, vol.I, p.28.
33. Bacon's attitude to Aristotle was ambivalent: he acknowledged his greatness, but deplored his influence. "Does the fact that Aristotle drew to himself both earlier and later ages

prove him truly great? Oh, great without a doubt; but no greater than the greatest of imposters." Redargutio Philosophiarum, trans. B. Farrington, The Philosophy of Francis Bacon, p.113; Latin text, Works, vol.III, p.567. A slightly more favourable opinion can be found in De Dignitate et Augmentis Scientiarum, iii.4.

34. For Bacon's views on the Presocratic philosophers, see Novum Organum, i.63,71. Bacon's generally high opinion of Democritus did not lead him to accept Democritus' atomic theory. For two rather different accounts of Bacon's views on atomism see R.H. Kargon, Atomism in England from Hariot to Newton, ch.5, and G. Rees, "Atomism and 'Subtlety' in Francis Bacon's Philosophy", Annals of Science, 37 (1980), pp.549-71.
35. Cogitata et Visa, trans. B. Farrington, The Philosophy of Francis Bacon, p.83; Latin text, Works, vol.III, p.601.
36. Topics, 100b21-23.
37. For Aristotle's theory of the four changes, see De Generatione et Corruptione, I. passim. The underlying principle is enunciated at Physics, 201a8-9: there are as many kinds of change as there are kinds of entity (onta). (The Oxford translation is very misleading here.) In the light of Bacon's criticism, it is interesting that Aristotle also praises those who, like Democritus, proceed phusikōs, as opposed to those that proceed logikōs — such as Plato in the Timaeus (De Generatione et Corruptione, 316a5-14).
38. Novum Organum, i.66. Cf. the rejection of the popular notion of heat in Novum Organum, ii.20.
39. Ibid., ii.48.
40. Ibid., i.51, ii.43; De Principiis atque Originibus, Works, vol.III, p.86 (Latin), vol.V, p.468 (English).
41. De Principiis atque Originibus, Works, vol.III, p.84 (Latin), vol.V, pp.466-67 (English).
42. Ibid.
43. De Principiis atque Originibus, Works, vol.III, pp.86,91 (Latin), vol.V, pp.468,473 (English).
44. De Principiis atque Originibus, Works, vol.III, p.110 (Latin), vol.V, p.491 (English).

45. De Sapientia Veterum, xiii (Proteus). Cogitationes de Natura Rerum, ch.5.
46. De Sapientia Veterum, xii (Coelum); The Advancement of Learning, Works, vol.III, pp.295-96.
47. Physics, 191a7-12.
48. De Magnete, v.12.
49. Draft A, §38, fol.79.
50. Novum Organum, ii.40. Cf. De Sapientia Veterum, xxix (Proserpina).
51. De Dignitate et Augmentis Scientiarum, iv.3.
52. Ibid.
53. Novum Organum, ii.37. It is difficult to see how the materialist interpretation of Bacon's thought advanced by F.H. Anderson (The Philosophy of Francis Bacon, pp.48-79) can be reconciled with this passage.
54. See for example Novum Organum, ii.22, where the varied colours of marble are explained not in terms of the intrinsic nature of marble, but only "in positura partium crassiori et quasi mechanica." See also Valerius Terminus, ch.11, Works, vol.III, pp.236-39 for further explanations of this type.
55. Novum Organum, ii.48, Works, vol.I, p.332.
56. Novum Organum, ii.1,7,9,39,40,50. The word "latent" contains a reference to the hidden parts. The schematism of a body is simply its outward shape (ibid.,ii.35).
57. Novum Organum, ii.5.
58. Novum Organum, ii.1,5,6,50. In i.50,51 he uses the word "meta-schematismus" with apparently the same sense.
59. De Anima, 424a17-23; 429a14-17, 27-28; 431b26-29.
60. Ibid., 417b21-23.
61. I have discussed the history of this idea in J.R. Milton, "The origin and development of the concept of the 'laws of nature'", Archives européennes de sociologie, 22 (1981), pp.173-95.
62. Novum Organum, i.121. Cf. i.14,40.
63. Ibid., i.116.
64. A Confession of Faith, Works, vol.VII, pp.220-21.
65. Of the Laws of Ecclesiastical Polity, I.iii.4.

66. J. Zabarella, De Regressu, ch.4, (quoted by J.H. Randall, The School of Padua and the Emergence of Modern Science, p.56).
"Ideo in ea [inductione] non omnia sumuntur particularia quoniam mens nostra quibusdam inspectis statim essentialem connexum animadvertit, ideoque spretis reliquis singularibus statim colligit universale; cognoscit enim necessarium ut ita res se habeat in reliquis."
67. Outlines of Pyrrhonism, ii.204 (trans. R.G. Bury).
68. Magna Instaurationis, "Distributio Operis", Works, vol.I, p.137 (Latin), vol.IV, p.25 (English). Cf. Novum Organum, i.69, 105.
69. Abecedarium Naturae, Works, vol.II, p.86.
70. The Advancement of Learning, Works, vol.III, pp.355-56; Novum Organum, i.121; Valerius Terminus, ch.13, Works, vol.III, p.243.
71. Novum Organum, ii.5.
72. Ibid., ii.4. Translation modified slightly.
73. Ibid., ii.16.
74. Ibid.
75. Ibid., Preface.
76. Ibid., i.112.
77. In De Principiis atque Originibus Bacon remarks that when we enquire into the nature of God, the method of exclusions does not terminate, Works, vol.III, p.83 (Latin), vol.V, p.465 (English).
78. Novum Organum, Preface; also i.129.
79. For some remarks on ciphers, see The Advancement of Learning, Works, vol.III, p.402. Descartes used the same metaphor in Principia Philosophiae, iv.205. See L. Laudan, Science and Hypothesis, pp.39,53.
80. The Advancement of Learning, Works, vol.III, pp.268,292,301.
81. Novum Organum, i.118; Parasceve ad Historiam Naturalem et Experimentalem, §viii.
82. Hence Bacon was concerned to exclude all "superstitious stories and experiments of ceremonial magic", Parasceve ad Historiam Naturalem et Experimentalem, §iii.
83. Novum Organum, i.116.
84. Novum Organum, i.127.

Chapter 4

Robert Boyle

I

In certain respects Robert Boyle stands a little apart from the other thinkers with whom this study is concerned. He emerges from his writings primarily as a professional scientist and amateur theologian who intermittently found himself writing philosophy. Both Locke and Bacon were by contrast philosophers with strong if at times slightly amateurish interests in the natural sciences. Boyle's writings suggest that he lacked the rather specialised and not always entirely valuable habit of mind required for the single-minded investigation of philosophical problems. In this respect, as in many others, he resembled Newton. Nevertheless, in the seventeenth century no-one of Boyle's strength of mind and breadth of interests could easily have avoided philosophical problems altogether, and there are in fact scattered through his works sufficiently many philosophical discussions to make him one of the most interesting English philosophers in the generation between Hobbes and Locke.

The main philosophical influences on Boyle are, as we shall see, Descartes and Bacon, in that order. The question of any indebtedness to Hobbes can be dealt with fairly briefly. Boyle was quite unlike Locke in being not at all reluctant to refer to Hobbes; indeed he wrote no less than three treatises specifically against him.¹ This lack of inhibition in displaying a knowledge of Hobbes's writings is not difficult to understand. Locke,

despite his precautions, was attacked as a Hobbist;² it is difficult to imagine anyone directing such a charge against someone as openly, almost oppressively pious as Boyle.³

Boyle's references to Hobbes are never approving and are usually noticeably hostile, both in content and (frequently) in tone. A fair example is his description of the first two men who wrote replies to his works as "the learned Linus and Mr. Hobbes".⁴ Boyle seldom declined an opportunity to draw attention to what he and many of his fellow scientists in the Royal Society saw as welcome evidence of Hobbes's incompetence in physics and mathematics.⁵ It is easy to understand Boyle's readiness to do this. Materialists have at most times been inclined to promote their philosophy as a peculiarly appropriate accompaniment to the scientific approach; and Boyle quite naturally saw that one of the most promising and effective ways of diminishing Hobbes's standing as a philosopher would be by exposing his incompetence as a physicist.

It is therefore certain that Boyle had read quite thoroughly at least some of Hobbes's more technical works on physics, with the aim of finding weak spots to attack. There is evidence that Boyle had read at least some parts of Leviathan and De Corpore,⁶ but it is likely that he read Hobbes's works solely for polemical purposes. It is difficult to believe that he had any wish to be indebted or to appear to be indebted to so disreputable a source.

Bacon was for Boyle a far more congenial thinker than Hobbes could ever have been. Boyle was indeed the sole seventeenth-century English scientist or philosopher of the first rank for whom Bacon was a really major intellectual

influence. His early writings, especially Certain Physiological Essays and The Usefulness of Experimental Natural Philosophy are crowded with Baconian examples, allusions and sequences of thought. Nevertheless there were a number of very significant differences between the thought of the two men. For Bacon the thing that mattered more than anything else was method; for Boyle it was the use of the mechanical or corpuscularian hypothesis. Boyle's discussions of method are few and brief. He apparently intended to write a treatise on the use of hypotheses, but though he sometimes spoke of it as a completed work, nothing was ever published, and nothing survives beyond some brief manuscript notes.⁷ Bacon, on the other hand, though he proposed mechanical explanations for particular phenomena, never regarded such explanations as being universally applicable to the exclusion of all others. By the end of his life he had come to distrust all the available versions of the atomic hypothesis, and had placed his hopes in the compilation of natural histories and the application of the method of eliminative induction. Boyle intended some of his first scientific work to be a continuation of Bacon's Sylva Sylvarum,⁸ but his conception of scientific procedure soon changed, as he came under the influence of Descartes.

Boyle's experimental method stands midway between the deliberately atheoretical "contrived experiences" of Bacon and Newton's procedure of quantitatively testing precisely formulated hypotheses. Most of Boyle's scientific work was linked to his central mechanical hypothesis, in a way that Bacon would never have approved, and he did on occasions use lower-level hypotheses as well, especially in pneumatics; nevertheless there survives

in his work more than a little of the deliberately undirected investigation characteristic of the Baconian approach. The difference between Boyle and Newton can be seen very clearly if we compare Newton's Opticks or his optical papers of 1672⁹ with Boyle's Experiments and Considerations touching Colours. Boyle described his book on its title page as the beginning of an experimental history of colours. It consists in fact of fifty experiments, some quite complex, linked together by nothing more than a common connection with colour. Newton's original paper of 1672 contains the reports of only a short sequence of experiments designed specifically to test a precisely formulated hypothesis.

If we look at Boyle's scientific and philosophical writings we can distinguish three distinct but closely related aims:

1. To establish the corpuscularian or mechanical hypothesis as the most intelligible and most fruitful basis for the explanation of (inanimate) nature.¹⁰
2. To purify the mechanical philosophy in general and atomism in particular from the atheistic and irreligious associations which they had acquired.
3. To develop the mechanical philosophy so as to provide the foundation for a rational science of chemistry, and thereby make chemistry a recognised part of natural philosophy.

The first of these aims requires little comment. The mechanical philosopher holds, in Boyle's words "that one part of matter can act upon another but by virtue of local motion or the effects and consequences of local motion".¹¹ Since such action can only take place if matter is variegated and divided into small bodies, the mechanical philosophy may equally appropriately be called the

corpuscularian philosophy. Boyle preferred to speak of the mechanical philosophy when discussing Descartes, but in expounding his own views he used the two terms interchangeably.

That there was a connection of some kind between atheism and atomism was believed by many of Boyle's educated contemporaries. According to John Redwood there were in this period "few tracts against atheism that did not rebut the Epicurean premises concerning chance and the formation of the world, the eternity of matter, or the non-existence of Providence."¹² That Epicurus and Lucretius had denied divine creation and divine providence was incontestable. The doubtful question was how far the connection of such views with atomism was necessary and how far it was merely fortuitous.

For someone wishing to separate atomism from its irreligious associations there were therefore available two quite distinct but wholly compatible strategies. One was to argue on philosophical grounds that atomism, far from having any logical connection with atheism, was in fact theologically neutral or even favourable to Christian theism. The other involved providing atomism with an alternative and more theologically respectable ancestry, in addition to and earlier than Leucippus, Democritus, Epicurus and Lucretius.

The key to this latter approach lay in a statement by Posidonius (preserved by Strabo and Sextus Empiricus) that the inventor of the atomic philosophy was a certain Phoenician philosopher named Moschus.¹³ It was suggested by several people, including Comenius, Henry More and Cudworth, that this Moschus could be identified with an even more shadowy Phoenician, Mochus, mentioned by Athenaeus and Iamblichus; and it was further

proposed that both Moschus and Mochus were in fact Moses. This would provide atomism with about the best theological pedigree imaginable. To twentieth-century minds the whole episode is likely to appear more than a little bizarre, but Boyle seems to have taken at any rate the attribution to Moschus the Phoenician seriously enough.¹⁴ Even without the addition of Moses this had the advantage of attributing the origins of atomic philosophy to someone whose religious opinions were safely unknown.

It is difficult for us now to take the identification of Moses and Moschus very seriously. On the other hand, purely philosophical arguments against Epicurean atheism deserve serious respect. Bacon expressed the essential features of the argument in his essay "Of Atheism":

It is true, that a little philosophy inclineth man's mind to atheism; but depth in philosophy bringeth men's minds about to religion. For while the mind of man looketh upon second causes scattered, it may sometimes rest in them, and go no further; but when it beholdeth the chain of them, confederate and linked together, it must needs fly to Providence and Deity. Nay, even the school which is most accused of atheism doth most demonstrate religion; that is, the school of Leucippus and Democritus and Epicurus. For it is a thousand times more credible, that four mutable elements, and one immutable fifth essence, duly and eternally placed, need no God, than that an army of infinite small portions or seeds unplaced, should have produced this order and beauty without a divine marshall.

In other words an atheistic system founded on a materialistic version of Aristotelianism, as in Strato of Lampsacus, is intrinsically far more plausible than the Epicurean belief that the world and all its inhabitants came into being as a result of atoms knocking into each other at random in the void.¹⁵

This is certainly a shrewd argument, characteristically shrewd, but it is difficult to say just how good it is. There are problems inescapably involved in trying to evaluate all arguments of this kind. No-one, whether living in Epicurus' time, Boyle's or our own, could really hope to be believed if he were to claim to be capable of viewing the problems of religious belief and unbelief in a purely detached and dispassionate manner. This difficulty complicates the consideration of quite a number of Boyle's arguments. Everyone's judgement is affected by considerations which can be acknowledged and to some extent allowed for but which cannot be eliminated.

It must however be recognised that Boyle's objections to Epicurus' procedures were as much scientific as religious. Epicurus was not trying to put forward explanations that would satisfy the requirements now generally considered necessary for a genuinely scientific explanation, and to blame him for this would involve judging him by standards which he would not himself have accepted. Epicurus was interested above all in the means by which human beings could live a pleasurable and tranquil life. What mattered more than anything else, even in physical enquiries, was ataraxia, peace of mind.¹⁶ This meant that any explanation which broadly fitted the observed facts would be acceptable if it was capable of producing subjective conviction and if it excluded muthos¹⁷ — in modern terms, if it was purely naturalistic. There was therefore nothing very much to gain and a great deal to lose by trying to seek a unique explanation through testing and eliminating alternatives. Such critical activity might easily go too far and destroy all the available explanations, leaving a void in which the carefully expelled

religious terrors could return and make miserable the life of mankind. Such modern desiderata as simplicity, independent falsifiability and heuristic power were utterly alien to Epicurus and his followers. In this respect Boyle is far closer to modern methodologists like Popper and Lakatos than he was to Epicurus and Lucretius.¹⁸

If there were religious problems with atomism, the other main development of the mechanical philosophy was not without difficulties of its own. No intelligent critic accused Descartes of atheism, but it was only too clear that while God has a quite essential role in Descartes's theory of knowledge, he is in many respects peripheral to Descartes's system of the world. It is true that Descartes himself insisted repeatedly that the distinction between creation and conservation is one of reason only, and that God is just as necessary to keep the world in existence as he had been to create it.¹⁹ The problem is that these are purely metaphysical arguments and are therefore likely to influence only a certain type of mind. As Pascal is said to have remarked, as far as the Cartesian system of physics is concerned God is needed only to set the world in motion; after that there is nothing left for him to do.²⁰

As a man Boyle was very unlike Pascal — the contrast in prose style could hardly be greater — but he shared to the full Pascal's disapproval of the deistic tendencies implicit in the Cartesian account of how the world was formed. Descartes's tepid and less than obviously sincere acquiescence in the doctrines of the Church was equally alien to both men. Boyle saw his scientific work and his religious beliefs as complementary, and

it is clear that he was personally untroubled by even the remotest fear of ever having to choose between them. Even so, he must have been aware that not everyone shared his confidence. The Cambridge Platonists and many other less metaphysically inclined churchmen saw in the mechanical philosophy a potential enemy of any spiritual view of the world — as indeed, from a very different point of view, did Hobbes. Boyle was deeply concerned that all his work and that of his contemporaries in advancing the mechanical philosophy should not lead men to think of the universe as a gigantic self-sufficient machine in which there would be no need and no room for God to act. This determination to avoid giving any encouragement to the incipient deist movement is perhaps the most important single factor guiding the course of Boyle's thought.

If Christianity had become a subject for disdain in some fashionable circles, chemistry was regarded by many mechanical philosophers with something very close to contempt, as an art "cultivated", as Boyle put it, "but by illiterate operators or whimsical fanaticks in philosophy, and useful only to make medicines or disguise metals."²¹ As the language of this passage indicates, the reputation of the subject had not been improved by the advocacy of some of the would-be reformers of the universities during the Interregnum. Boyle's decision to spend so much of his time and money on chemical researches had clearly disconcerted people whose opinions he valued and respected:

There are many learned men, who being acquainted with chymistry but by report, have from the illiterateness, the arrogance and the impostures of too many of those, that pretend skill in it, taken occasion to entertain so

ill an opinion, as well of the art, as of those that profess it, that they are apt to repine, when they see any person, capable of succeeding in the study of solid philosophy, addict himself to an art they judge so much below a philosopher, and so unserviceable to him: nay, there are some, that are troubled when they see a man, acquainted with other learning, countenance by his example sooty empirics, and a study, which they scarce think fit for any but such, as are unfit for the rational and useful parts of physiology.²²

As M.B. Hall says, this has the bitterness of personal experience.²³

One part of the reason why chemistry had a low status was that it was not one of the traditionally accepted branches of natural philosophy. Boyle's intention was to make it one by refounding it on the clear and intelligible principles supplied by the mechanical philosophy.

Boyle wanted the kind of mechanical philosophy he advocated to have as broad an appeal as possible. He preferred to think of Cartesian mechanism and atomism not as two rival philosophies but as two versions of one single philosophy, two versions which diverged only on metaphysical and therefore (in practice) irrelevant issues.²⁴ It is not difficult to see why Boyle, as a working scientist, took this view. Descartes, despite his metaphysical opposition to a vacuum, made no attempt to develop even an elementary system of continuum mechanics — apart from a little preliminary work by Torricelli and Mariotte, the first such system was attempted by Newton in Book II of the Principia. Instead, Descartes sketched a physical system involving three types of particle and (like the atomists) sought to explain phenomena by means of the collisions of these various particles with one another. The only important respect in which his system differed from that of the atomists lay in the way that the

properties allotted to the first type of matter were just those necessary to make sure that no void space was ever produced.²⁵ Both atomists and Cartesians were in agreement on what Boyle saw as the fundamental point of explaining phenomena by means of movements and configurations of little bodies without any reference to the substantial forms and real qualities of the scholastics. Hence Boyle thought it appropriate to introduce and promote the word corpuscularian as a neutral and uncontentious term designed to be acceptable to both parties.

Boyle was probably aware that his greatest abilities lay in the field of experimental investigation, and he very much wanted his scientific work to be accepted and used by other experimentalists, whatever their more strictly philosophical views. Hence he took the greatest care never to alienate any group by appearing to take sides;²⁶ indeed he deliberately disclaimed any desire to act as an umpire between the different parties.²⁷ It was essential for the progress of experimental learning that metaphysical disagreements should not be allowed to stand in the way of scientific collaboration.

Boyle was indeed disinclined to spend much time on strictly metaphysical problems. The questions that really interested him were in the natural sciences and theology, and in that borderland between them which he liked to refer to as physico-theology. Metaphysics in the strict sense he regarded as a matter of secondary importance, and like many scientists he was inclined to think of metaphysical questions as being ultimately incapable of solution.²⁸ It is not therefore at all surprising that his remarks on metaphysical topics are fairly brief and are to be found scattered among writings addressed primarily to other

questions. The polemic in The Origin of Forms and Qualities is only an apparent exception; it is as long as it is only because Boyle considered substantial forms and real qualities to be examples of erroneous physics. Purely metaphysical objections to aspects of the mechanical philosophy were not something that he took very seriously. He preferred to press on with his investigations "without troubling myself to answer objections that appeared rather to be drawn from metaphysical or logical subtleties, or to be grounded upon the authority of men, than to be physical ratiocinations, founded upon experience or the nature of the things under debate..."²⁹

Boyle's disinclination to take part in metaphysical disputes appears to have two separate though closely related causes.

One was a Baconian distrust of the powers of what he called abstract reason, that is the human mind operating without continual reference to the results of experimental investigations.³⁰ The chances of soaring away into a realm of pure sophistry were simply too great. It is not at all surprising that Boyle was very doubtful about the validity of Descartes's theological proof that the quantity of motion in the world remains constant, even though he was strongly inclined to accept the law itself.³¹

The second reason for Boyle's scepticism about metaphysics is that he appears not to have regarded it as being a real science in the way that physics is. For example, he drew a revealing contrast between what he called "real and physical entities" on the one hand and "logical or metaphysical ones" on the other,³² and he described the form of a composite body postulated by the scholastics as "rather a metaphysical conception in our mind than a physical agent that performs all things in the body it

is ascribed to."³³ Hence he could upon occasions refer dismissively to "airy metaphysical notions".³⁴ Logic and metaphysics are on this view the works of the human intellect,³⁵ and it is therefore our metaphysics that should be adapted to our physics and not vice-versa:

I shall add that, for my part, that which I am solicitous about is what nature hath made things to be in themselves, not what a logician or metaphysician will call them in the terms of his art: it being much fitter, in my judgement, to alter words that they may better fit the nature of things, than to affix a wrong nature to things, that they may be accommodated to forms of words that were probably devised when the things themselves were not known, or well understood, if at all thought on.³⁶

Despite these doubts about the value of metaphysics, or possibly because of them, the metaphysical opinions that Boyle did hold were fairly unoriginal. All of them can be found either in Descartes or in Bacon, the Baconian influence decreasing and the Cartesian influence increasing as Boyle grew older.

The extent of Boyle's debt to Descartes is at first sight a little surprising. He followed Descartes in accepting the scholastic thesis that essence and existence are identical in God, and he appears even to have regarded the ontological argument as valid³⁷ — and this comes as near as anything to being a defining characteristic of seventeenth-century rationalism. He also maintained the existence of innate ("congenit") ideas and common notions, planted by God in the soul.³⁸ These and other purely intellectual ideas he distinguished in the Cartesian manner from purely material images in the imagination.³⁹

Boyle also made surprisingly strong claims for metaphysical axioms:

I conceive, then, that there are two kinds or orders of principles and dictates of reason; the one comprises those primary and universal notices and axioms, that are applicable to all kinds of subjects; such as are the first metaphysical and mathematical verities, as that "contradictories cannot both be true, non entis nulla sunt accidentia; the whole is greater than a part of it; if to equal quantities equal quantities be added, the totals also will be equal; every line is strait or crooked; from truth nothing but truth can be legitimately inferred." These and the like self-evident principles hold on all occasions; and therefore may be distinguished from other rules or dictates of philosophy, which, though they will hold in most cases, do not hold in all cases, and are, on that account, subordinate, or at least of an inferior nature, to the primary and catholic principles lately mentioned.⁴⁰

Merely physical principles — and these include not only laws of motion but even axioms such as ex nihilo nihil fit — are not necessarily applicable in all circumstances precisely because God can act contrary to them if he should so decide.⁴¹ Metaphysical axioms are eternally and necessarily true, and are consequently applicable in all circumstances.⁴² Therefore those metaphysical and mathematical axioms which we can discover are of the greatest importance:

I look upon the metaphysical and mathematical principles, [which] we have been speaking of, to be truths of a transcendent kind, that do not properly, and exclusively to the other, belong either to philosophy or theology; but are universal foundations and instruments of all the knowledge we mortals can acquire.⁴³

This part of metaphysics is concerned with "universal and immutable truths",⁴⁴ and the knowledge we can obtain in this area possesses "a metaphysical and absolute certainty."⁴⁵ These truths are to be treated as axiomatic even in matters of religion.

Nothing can count as a genuine revelation which contradicts these primary truths:

The first sort of truths are not to be denied or rejected, upon the account of an alledged revelation, because they are the principles, upon which, or with congruity to them, our assent to that revelation itself, if it be a true one, must be grounded; and therefore the texts, supposed to contain that revelation, must be so interpreted, as not to contradict those principles.⁴⁶

Given Boyle's undoubted veneration for the Scriptures, this commitment to interpreting them in the light of metaphysical axioms shows a quite remarkable confidence in the latter.

It is a very fair question how these high claims for metaphysics fit in with some of the rather disparaging remarks about it quoted a little earlier. Was Boyle simply being inconsistent? On the whole I suspect that he was, and that there is little to be hoped for in trying to reconcile everything he said in some profound synthesis. The real unifying factor is Boyle's lack of any sustained interest in metaphysical and epistemological problems for their own sake. This meant that his attitude towards metaphysics tended to vary with his own intentions in writing and the different audiences to which his remarks were addressed. The study of natural philosophy could be obstructed by spending time trying to resolve metaphysical conundrums; on the other hand metaphysics also appeared as a traditional and apparently necessary auxiliary to natural theology. The opinions Boyle expressed at any time about metaphysics were always subordinate to and governed by his other concerns. He could appear (quite sincerely) as a Cartesian rationalist or a sceptically-minded empiricist (in the style of Glanvill or Sprat) according to the requirements of the occasion.

II

Locke, in the Epistle to the Reader which begins the Essay, described himself as an under-labourer whose ambition was only to clear the ground a little and remove some of the rubbish that lay in the way to knowledge. It is less well-known that Boyle had already made use of almost exactly the same image when he described himself as an under-builder in the task of erecting a solid body of natural philosophy:

But I am content, provided experimental learning be really promoted, to contribute even in the least plausible way to the advancement of it; and had rather not only be an under-builder, but even dig in the quarries for materials towards so useful a structure, as a solid body of natural philosophy, than not do something towards the erection of it.⁴⁷

The difference between the two men is shown by the way they conceived this humble activity. Boyle saw his task as the collection of material; he turned at intervals to more purely philosophical enquiries primarily in order to clear the way for the advance of experimental learning and in order to protect its achievements. Locke's original intentions were probably just as limited in scope, but the cast of his mind was very different: he was not able to rest until he had constructed a systematic account of the powers and limits of the human understanding.

Locke learned so much from Boyle's advocacy of the corpuscularian philosophy that it is rather curious to note how he rejected so many of the metaphysical and epistemological views that Boyle held: the existence of innate ideas, the distinction between ideas and images, the validity of the ontological argument, the usefulness in demonstration of maxims or axioms, and the impossibility of matter being given the power to think.

On one fundamental matter however they were in complete agreement.

For Boyle, as for Locke, the only things that exist are individuals:

For, for aught I can clearly discern, whatsoever is performed in the merely material world, is really done by particular bodies, acting according to the laws of motion, rest, etc. that are settled and maintained by God among things corporeal...⁴⁸

This is strongly reminiscent of Bacon's statement that "in nature nothing really exists besides individual bodies performing pure individual acts according to a fixed law",⁴⁹ except that there is nothing corresponding to the deeply obscure reference to pure individual acts. Bacon and Boyle both saw themselves as inhabiting a world of individual bodies which move in accordance with divinely ordained laws of nature, and which act upon each other in a manner prescribed by their size, shape and texture:

And indeed, though men talk of nature as they please, yet whatever is done among things inanimate, which make incomparably the greatest part of the universe, is really done but by particular bodies, acting on one another by local motion, modified by the other mechanical affections of the agent, of the patient, and of those other bodies that necessarily concur to the effect or the phenomenon produced.⁵⁰

Boyle never attempted to produce an argument to show that only individuals exist; he probably regarded it as entirely self-evident. He ignored the universals of the scholastic realists;⁵¹ all his discussions of natural phenomena proceeded on the assumption that individuals are the only kind of entity which need to be taken into consideration. This presupposition was so little questioned that he automatically treated his scholastic opponents as fellow nominalists, even though some of them might reasonably have been suspected of having realist sympathies. All Boyle's arguments

against substantial forms presuppose that they too are individuals, each of them as individual as the body whose properties it determines.

Boyle's nominalism is further shown by what he says about universal and particular natures. For the scholastic realists a universal nature was something capable of existing in or being predicated of a plurality of things — hoc enim dicitur universale quod natum est multis inesse et de multis praedicari.⁵² Individual natures also exist. The universal nature can be "contracted" by an individuating principle so as to form one or more individual natures. These individual natures determine the properties of every individual member of the species constituted by the universal nature.

Some of this terminology was retained by Boyle, but what he meant by universal and individual nature (the singular is significant) was something very different:

And of universal nature the notion I would offer should be some such as this: that nature is the aggregate of the bodies that make up the world, framed as it is, considered as a principle by virtue whereof they act and suffer according to the laws of motion prescribed by the Author of things. Which description may be thus paraphrased: that nature in general is the result of the universal matter, or corporeal substance of the universe, considered as it is contrived into the present structure and constitution of the world, whereby all the bodies that compose it are enabled to act upon, and fitted to suffer from, one another, according to the settled laws of motion. I expect that this description will appear prolix and require to be heedfully perused, but the intricateness and importance of the subject hindered me from making it shorter, and made me choose rather to presume upon your attention than not

endeavour to express myself intelligibly and warily about a subject of such moment. And this will make way for the other (subordinate) notion that is to attend the former description, since the particular nature of an individual body consists in the general nature, applied to a distinct portion of the universe; or rather, supposing it to be placed as it is in a world framed by God like ours, it consists in a convention of the mechanical affections (such as bigness, figure, order, situation, contexture, and local motion) of its parts (whether sensible or insensible) convenient and sufficient to constitute in or to entitle to its particular species or denominations the particular body they make up, as the concourse of all these is considered as the principle of motion, rest, and changes in that body.

If you will have me give to these two notions more compendious expressions, now that, by what hath been said, I presume you apprehend my meaning, I shall express what I called general nature by cosmical mechanism; that is, a comprisal of all the mechanical affections (figure, size, motion, &c.) that belong to the matter of the great system of the universe. And to denote the nature of this or that particular body, I shall style it the private, the particular, or (if you please) the individual mechanism of that body — or, for brevity's sake, barely the mechanism of it; that is, the essential modification, if I may so speak, by which I mean the comprisal of all its mechanical affections convened in the particular body, considered as it is determinately placed in a world so constituted as ours is.⁵³

Despite Boyle's evident concern to make his words as intelligible as possible there is much in this passage that is by no means easy to understand. One thing that is clear is that the fundamental antithesis lies not between what is not and what is predicable of many things but between the parts of the universe and the universe as a whole. Matter can be said to be universal because there is only one kind of matter in all the

universe. Those laws that are universal can be so described because they hold for bodies of every type. They are universal in the sense which we use when we speak of Newton's law of universal gravitation. Such modes of matter as extension and shape can be described as universal because every lump of matter must have some size and shape. None of these are universals of the Aristotelian kind.

The little that Boyle said about individuation also confirms his attachment to nominalism. The realist's problem of identifying the principle of individuation inevitably appears futile and empty to someone who believes that everything is an individual to begin with. This did not mean that the subject was forgotten. As not infrequently happens, the terminology devised to solve a problem survived longer than the problem itself. Boyle consciously or unconsciously followed Hobbes in using the phrase for what might more accurately be called a criterion of trans-temporal identity:

Nor is it by the vulgar only that the notion of identity has been uneasy to be penetrated. For it seems that even the ancient philosophers have been puzzled about it: witness their disputes whether the ship of Theseus were the same after it had (like that of Sir Francis Drake) been so patched up from time to time to preserve it as a monument that scarce any plank remained of the former ship, new timber having been substituted in the place of any part that in length of time rotted. And even in metaphysics themselves, I think it no easy task to establish a true and adequate notion of identity, and clearly determine what is the true principle of individuation.⁵⁴

There is nothing either here or elsewhere to suggest that Boyle was at all aware that the enquiry for the true principle of

individuation had ever been conceived in any other manner than the one he described.⁵⁵

Another indication of Boyle's nominalist sympathies can be seen in his use of the methodological principle now known as Ockham's Razor. One example occurs in the dialogue On the Positive and Privative Nature of Cold:

Carneades: [I] must add, in the next place, that I, who sustained the person of a respondent, may pretend to have sufficiently discharged my office, if I have shewn the invalidity of all the opponents arguments; and it is his part, who asserts a positive thing in nature, to make it good, whereas he that denies it, needs not alledge any other reason why he does so, than the authority of that justly received axiom in philosophizing, Entia non sunt multiplicanda absque necessitate. And, I hope, there will need no other engine to demolish an ill-formed and proofless opinion about cold, than an axiom so solid and efficacious, that in the opinion of almost all the modern naturalists it has been able to abolish such potent and immense bodies as the primum mobile itself, and a superior orb or two, the least of which contained that firmament, in comparison whereof the whole earth is but a point....

Eleutherius: I the less distrust the validity of the axiom you alledge, because I observe it to be the ground, on which is built a great part of the reformation of philosophy, that is introduced by the moderns. For one of the main things that first moved considering men to seek for more satisfactory opinions, than those of the peripatetick schools, was, that these obtruded a great many tenets in philosophy, that were not only unproved, but unnecessary to the explication of the phaenomena of nature; as it were not difficult to shew.⁵⁶

In this dialogue both Carneades and Eleutherius are spokesmen for Boyle. (One of the reasons why his dialogues are so lamentably dull is that nearly all, and often all, the

speakers are mouthpieces for Boyle's own views; The Sceptical Chymist, tedious as it is, is in this respect a welcome exception.)

In another passage Boyle described this same dictum, entia non sunt multiplicanda absque necessitate, as "the generally owned rule about hypotheses", accepted by almost all modern philosophers.⁵⁷ The manner in which Boyle quoted it, as a Latin phrase embedded in an English context, indicates clearly to us a scholastic origin. It is difficult to believe that Boyle would not have been aware of this, but it was not his business to draw attention to it. He knew very well that in the circles for which he was writing "scarce anything can be presented with more disadvantage than in a scholastic dress".⁵⁸

Boyle's use of this principle entia non sunt multiplicanda absque necessitate is one instance of the congruity of his approach with that of the fourteenth-century nominalists. In isolation it is true that it does not go very far towards showing any closer historical connection. Many twentieth-century nominalists have used Ockham's razor and, unlike Boyle, have even referred to it by that name, without having read a line by Ockham or any of his followers. We may agree that there are elements of Boyle's thought which can be described as nominalist, but are there any good reasons for supposing any historical links connecting him with the nominalists of the Middle Ages?

The reluctance of seventeenth-century writers to name medieval authors makes it difficult (and in many cases probably impossible) to establish their intellectual debts with any precision, even in those cases in which it is quite clear that they exist. Hobbes's two-name theory of predication, for example,

is evidently of medieval origin, but it is unlikely that we shall ever know with any certainty the route by which it came down to him. Boyle avoided the traditional university education, and with it the full exposure to the scholastic curriculum. Instead he was sent to Geneva, where he was educated by a Calvinist tutor, Isaac Marcombes. The ideas and outlook of the medieval nominalists were therefore probably first conveyed to Boyle through the medium of Calvinist theology.

Calvin was not and had no intention of being a systematic philosopher. Admittedly he was educated in a nominalist stronghold, the Collège de Montaigu,⁵⁹ but it is clear that this experience left him with no taste for the subtleties and elaborations of terminist logic and scholastic metaphysics. To try to decide whether Calvin should or should not be classified as a nominalist is an unrewarding task, and one that could engender a misapprehension of the character of his thought. The greatest medieval scholastics were all professional theologians, in the sense that they had taken higher degrees in theology and continued to work in that faculty,⁶⁰ but even their theological works contain large tracts of philosophical material, and many of them wrote at length on purely philosophical topics. Calvin was a theologian in a much more exclusive sense. He appears to have been interested in philosophical questions only insofar as they directly affected theology. Calvin may perhaps have been a nominalist, but it is difficult to imagine him caring very much about the existence or non-existence of universals. The aspect of his inheritance from Ockham which really mattered was his massive insistence on God's unlimited power

and absolute sovereignty over his creation. Whether or not Calvin was a nominalist, he was unquestionably a voluntarist.

Things are however somewhat more complex than might first appear. There are several distinct philosophical positions which have been given the name of voluntarism, and it is quite possible for a philosopher to be a voluntarist in one area and an anti-voluntarist in another. The central idea of every type of voluntarism is of things being made by some act of the will. Ethical voluntarism bases morality on rules chosen either by God or (in later, secular versions) by human beings. Mathematical voluntarism supposes that mathematical theorems are made true by either a divine act of will (as in Descartes) or by human convention (as in later Wittgenstein). In both these cases there are two variants, in one instance the choice being human, in the other divine. As far as the natural world is concerned the only will that could be relevant is the will of God: the world was made either by God or by nobody, but in any case certainly not by us. Physical voluntarism is therefore simply the view that the world owes both its existence and its nature to a free choice by God.

The doctrine that God was free to create or not to create and that the world does not come into existence by any necessary and involuntary emanation from the divine nature is part of orthodox Christian theology, whether Catholic or Protestant. Aquinas, who is not usually thought of as a voluntarist, stated very clearly that the cause of the world existing is God's will and not his nature,⁶¹ and that God does not will things necessarily: Non ergo quidquid Deus vult, ex necessitate vult.⁶²

Where Aquinas differed from the physical voluntarists who were to come after him is that he held that some created things do exist

necessarily: "there is an absolute necessity in things from the order of their essential principles to the properties flowing from their matter or form; a saw, because it is made of iron must be hard; and a man is necessarily capable of learning."⁶³

A very similar view continued to be maintained in the seventeenth century. According to Leibniz:

The dominion of his [God's] will relates only to the exercise of his power, he gives effect outside himself only to that which he wills, and he leaves all the rest in the state of mere possibility. Thence it comes that this dominion extends only over the existence of creatures, and not over their essential being. God was able to create matter, a man, a circle, or leave them in nothingness, but he was not able to produce them without giving them their essential properties. He had of necessity to make man a rational animal and to give the round shape to a circle, since, according to his eternal ideas, independent of the free decrees of his will, the essence of man lay in the properties of being animal and rational, and since the essence of the circle lay in having a circumference equally distant from the centre as to all its parts. This is what has caused the Christian philosophers to acknowledge that the essences of things are eternal, and that there are propositions of eternal truth; consequently that the essences of things and the truth of first principles are immutable.⁶⁴

The difference between Leibniz and the physical voluntarists can be seen from their analysis of miracles. For Samuel Clarke the laws of nature are simply the ways in which God usually causes matter to act; miracles occur when God for special reasons acts in an unaccustomed way: "To cause the sun or earth to move regularly, is a thing we call natural: to stop its motion for a day we call supernatural: but the one is the effect of no greater power, than the other; nor is the one, with respect to God, more or less

natural or supernatural than the other."⁶⁵ For Leibniz on the other hand a body could not move freely round a fixed centre without a perpetual miracle, because such motion is contrary to the nature of bodies.⁶⁶ As Leibniz wrote against Bayle:

It is evident that M. Bayle believes that everything accomplished through general laws is accomplished without miracles. But I have shown sufficiently that if the law is not founded on reasons and does not serve to explain the event through the nature of things, it can only be put into execution by a miracle. If, for example, God had ordained that bodies must have a circular motion, he would have needed perpetual miracles, or the ministry of angels, to put this order into execution: for that is contrary to the nature of motion, whereby the body naturally abandons the circular line to continue in the tangent straight line if nothing holds it back.⁶⁷

The central thesis of physical voluntarism is therefore that God is entirely free as to what world to create and that he is not limited by antecedent natural necessities of any kind. The natural is what is in accordance with the laws of nature, and these are freely chosen by God. The central thesis of ethical voluntarism is that moral laws are quite as dependent on God's will as natural laws are. God does not command actions because he knows that they are right: they are on the contrary right only because God commands them. On this view anything that God might command would ipso facto be just.

Physical voluntarism and ethical voluntarism are therefore quite distinct, and there is not the slightest inconsistency in being an advocate of the one and an opponent of the other. Samuel Clarke was a voluntarist in his attitude towards nature, but in ethics he was a thoroughgoing rationalist, quite as hostile to

voluntarism as Cudworth had been.⁶⁸ The same contrast can also be seen, though in a muddier form, in Locke.

There have never been very many consistent ethical voluntarists, unless perhaps we include the advocates of such secularized variants as existentialism and prescriptivism. Some of the later medieval nominalists held that God could command us to murder other people or even to hate God himself.⁶⁹ Calvin described such opinions as detestable,⁷⁰ but some of his followers nevertheless maintained them: Leibniz described the Scottish theologian Samuel Rutherford as saying that nothing is unjust or bad in God's eyes before he has forbidden it and that without God's prohibition it would be a matter of indifference whether one murdered a man or saved his life.⁷¹ Rather surprisingly, Descartes seems to have held similar views, though he was understandably cautious about expressing them in print.⁷² Hobbes on the other hand was not cautious at all. His insistence that God's right of sovereignty derives solely from his irresistible power⁷³ and his association of this with a theory of government which gave absolute power to earthly sovereigns combined to make Hobbes the most notorious ethical voluntarist of his own or perhaps any age.

Hobbes's advocacy of ethical voluntarism would scarcely have been a recommendation to Boyle. Nevertheless it has been suggested that Boyle should be classified as an ethical voluntarist. One of the very few scholars to discuss this aspect of Boyle's thought, E.M. Klaaren, quotes the following passage from Some Considerations about the Reconcilableness of Reason and Religion:

I will not here enter upon the controversy de jure Dei in creaturas, upon what it is founded, and how far it reaches. For, without making myself a party in that quarrel, I think, I may safely say, that God, by his right of dominion, might, without any violation of the laws of justice, have destroyed, and even annihilated Adam and Eve, before they had eaten of the forbidden fruit, or had been commanded to abstain from it. For man being as much and as entirely God's workmanship as any of the other creatures, unless God had obliged himself by some promise or pact, to limit the exercise of his absolute dominion over him, God was no more bound to preserve Adam and Eve long alive, than he was to preserve a lamb, or a pidgeon...⁷⁴

Klaaren describes this passage as rivalling the strongest statements of the voluntarist tradition. It appears less so if we notice how Boyle continues, in words not quoted by Klaaren:

...and therefore, as we allow, that he might justly recal the lives he had given those innocent creatures, when he pleased, (as actually he often ordered them to be killed, and burned in sacrifice to him:) so he might, for the declaration of his power to the angels, or for other reasons, have suddenly taken away the lives of Adam and Eve, though they had never offended him. And upon the same grounds he might, without injustice, have annihilated, I say not, damned their souls; he being no more bound to continue existence to a nobler, than a less noble creature; as he is no more bound to keep an eagle, than an oyster always alive.⁷⁵

It is clear from this that Boyle believed that God could not have damned Adam and Eve without acting unjustly, and therefore that there are standards of justice and injustice independent of God's will. Boyle certainly believed that God could justly do actions which it would be wholly unjust for a man to do, but he did not believe that God could choose to make anything whatever just or unjust.⁷⁶

The case however for regarding Boyle as a physical voluntarist is overwhelmingly strong. There could hardly be a more brief yet complete formulation of the position than Boyle's statement that "the most free and powerful Author of nature is able, whenever He thinks fit, to suspend, alter, or contradict those laws of motion, which He alone at first established, and which need his perpetual concurrence to be upheld."⁷⁷ God has the power both to change the laws of nature in this world⁷⁸ and to create other worlds governed by other laws.⁷⁹

III

Apart from Klaaren, the only writer to have seen the importance of Boyle's nominalism has been J.E. McGuire, in an important and influential⁸⁰ article, "Boyle's Conception of Nature", published in 1972.⁸¹ In this article McGuire sets out to establish four main themes:

1. The "mechanical philosophy" of Boyle and other seventeenth-century thinkers is in part a reformulation of a nominalist ontology arising mainly from the reformed theology of the Calvinists...
2. ...explicit in Boyle's thought is the view that a nominalist ontology, claiming as it does that nature contains non-related particulars, gave rise partially to a new conception, namely, that physical laws are categories imposed upon nature by the human mind in the light of the observed regularities of experience, or of those experimentally produced.
3. ...Since a nominalist ontology conceives particulars as unrelated, they are denied the power to cause change in and of themselves. God's Will, therefore, is the only causally efficacious agency in nature. Hence there are no

laws or causal connections in nature existing as entities over and above particulars conceived as events, bodies or particles.

4. ...Thus nature conceived as a contingent artefact of eternal power is totally dependent on Providence such that it is the mere exemplification of rules or laws continually imposed by the latter.... Hence there are no secondary causes in nature which are miraculously dispensed with by Providence; rather, Providence is God's continual action in nature.⁸²

The first of these theses is concerned with questions of historical influence and therefore stands a little apart from the others. In my opinion, though both Klaaren and McGuire are right in stressing Boyle's debt to the Calvinists, they nevertheless go too far in depreciating the importance of other sources of nominalist opinions. Boyle had certainly read Gassendi, and he appears to have been well acquainted with Gassendi's physical works.⁸³ Gassendi was a Catholic priest, and the influence Calvin could have had on his thought must have been small, at most.

As far as McGuire's remaining three theses are concerned, it would appear, if they were correct, that Boyle's views about causation and the laws of nature are remarkably similar to those which Berkeley later put forward in The Principles of Human Knowledge.⁸⁴ It appears to me, however, that McGuire's interpretation (though ingenious and in places illuminating) is fundamentally wrong, that the resemblances between Boyle and Berkeley are fewer than McGuire supposes, and that those which do exist can be attributed to other causes.

Boyle's sequence of thought, as reconstructed by McGuire and in McGuire's own words, is as follows (the numbers in

parentheses are the relevant pages of McGuire's article; the quotation marks indicate quotations from Boyle himself):

1. Only individuals exist (525, 534).
2. Everything which exists depends totally on God's power for its existence, and therefore there are no inherent connections among such discrete, contingent particulars (528).
3. All created individuals are therefore non-related (525) or unrelated (537). [These two terms appear to have the same meaning.]
4. A law of any kind is "but a notional rule of acting according to the declared will of a superior", and consequently "nothing but an intellectual Being can be properly capable of receiving and acting by a law" (534).
5. "Inanimate bodies which cannot incite or moderate their own actions are produced by real power, not by laws" (535, McGuire's italics).
6. This "real power" is God himself (535).
7. There are therefore no agents in nature and no true causation in the physical realm (535).
8. Causation is something imposed upon observed regularity in nature by the conceptualizing power of the human mind (536).
9. A physical law is therefore an abstract conception which we project upon nature (536).

It is, I think, clear that there are two separate arguments here, corresponding to stages 1 to 3 and 4 to 9 respectively. The first is of a purely metaphysical kind and concerns the kinds of relations which can and cannot exist between individual substances. The second takes as its starting point a particular interpretation

of what it is to be a law of nature, an interpretation which Boyle certainly held, but which is not connected in any obvious way with nominalism.

The weak link in the first argument is the inference from stage 2 to stage 3. It is one thing to say that for a nominalist there are no inherent connections between individuals, if by this it is meant that it is logically possible that any individual should exist in the absence of any other (and hence that God has the power to make it so exist). This is what Ockham meant when he said that all individuals are res absolutae. It is another thing altogether to say that there exist no relations whatever between individuals. Just what would be involved in denying the existence of all relations between created individuals is in any case not at all self-apparent. Leibniz did have an elaborate programme for reducing all relational propositions to subject-predicate form, but no-one could seriously suppose that he might have been anticipated in this by Boyle, who showed little interest in such elaborate logico-metaphysical enterprises. Leibniz, in any case, was not a nominalist.⁸⁵ On the other hand it is clear that many philosophers who unquestionably were nominalists, including Ockham, Hobbes and Locke, have maintained quite unambiguously that individual bodies can be causally related. For a materialist like Hobbes to deny this would have been to deny the existence of causality altogether. Neither Ockham nor Locke was a materialist, but for each of them the existence of causal relations is necessary because it provides the starting point of their proofs of the existence of God. (Berkeley on the other hand made no use of the cosmological argument — quite rightly,

given his premises.) It appears that nominalism is equally compatible with mechanistic materialism and anti-mechanistic immaterialism, and it seems reasonable to suppose that Berkeley's rejection of mechanical causation was a consequence, not of his nominalism, but of his denial that there exist any entities other than spirits and ideas. Berkeley was fully prepared to grant the existence of non-causal relations between individual ideas.

We may therefore draw the following conclusions. The first is that it no way follows from the original nominalist premises that created individuals are "unrelated". The second is that there is no reason to suppose that Boyle ever tried to make any such inference. If he did hold the views about physical causation which McGuire suggests, he must have done so for quite separate reasons. This brings us to McGuire's reconstruction of Boyle's second argument.

The starting point of the second argument is Boyle's statement that strictly speaking it is only correct to say that an agent follows or obeys a law if the agent is intelligent, and hence capable of understanding what the law is. The passage quoted by McGuire is from A Free Inquiry into the Vulgarly Received Notion of Nature:

But to speak strictly (as becomes philosophers in so weighty a matter), to say that the nature of this or that body is but the law of God prescribed to it is but an improper and figurative expression. For, besides that this gives us but a very defective idea of nature, since it omits the general fabric of the world and the contrivances of particular bodies, which yet are as well necessary as local motion

itself to the production of particular effects and phenomena — besides this, I say, and other imperfections of this notion of nature that I shall not here insist on, I must freely observe that, to speak properly, a law being but a notional rule of acting according to the declared will of a superior, it is plain that nothing but an intellectual being can be properly capable of receiving and acting by a law. For if it does not understand, it cannot know what the will of the legislator is; nor can it have any intention to accomplish it, nor can it act with regard to it, or know when it does, in acting, either conform to it or deviate from it.⁸⁶

It follows from this that it is wrong to think of laws as physical causes:

I look upon a law as a moral, not a physical cause, as being indeed but a notional thing, according to which, aⁿ intelligent and free agent is bound to regulate its actions. But inanimate bodies are utterly incapable of understanding what a law is, or what it enjoins, or when they act conformably or uncomformably to it; and therefore the actions of inanimate bodies, which cannot incite or moderate their own actions, are produced by real power, not by laws.⁸⁷

This real power, according to McGuire, is God himself.⁸⁸

This is clearly the crucial step in the argument. Once it is agreed that God is the real cause of all physical phenomena the remaining propositions (7-9) follow quite straightforwardly — as in Berkeley.

That Boyle accepted the fourth and fifth propositions is not open to serious doubt — the passages just quoted make this quite clear. The decisive question for McGuire's interpretation is whether he also accepted proposition 6, that the real power producing physical phenomena is God himself. Unfortunately for

his interpretation, McGuire fails to quote any passage to show that Boyle did hold this position, and indeed I am unaware of any passage that he might have quoted. There is however no shortage of evidence in favour of an alternative interpretation. Some of it can be found even in the places referred to by McGuire, though not in the quotations which he himself provides. The passage from the Free Inquiry quoted above, for example, continues as follows:

And it is intelligible to me that God should at the beginning impress determinate motions upon the parts of matter, and guide them as he thought requisite for the primordial constitution of things, and that, ever since, he should by his ordinary and general concourse maintain those powers which he gave the parts of matter to transmit their motion thus and thus to one another. But I cannot conceive how a body devoid of understanding and sense, truly so called, can moderate and determine its own motions, especially so as to make them conformable to laws that it has no knowledge or apprehension of.⁸⁹

This certainly appears to say that bodies do have real powers to transmit motion to one another. It is true that Boyle believed that this power is not essential to matter, and that matter possesses it only as a consequence of a free decision by God; but the power is a real power nonetheless.

McGuire also cuts short the other quotation on which his interpretation depends. This is the passage from The Christian Virtuoso which concludes that the actions of inanimate bodies are produced by real power, not by laws. McGuire's quotation finishes at this point. The passage then continues: "though the agents, if intelligent, may regulate the exertions of their power by settled rules."⁹⁰ This qualification would be quite

pointless if Boyle did not recognise the existence of unintelligent as well as intelligent agents. It is hardly compatible with an interpretation which makes God the real and immediate cause of all natural phenomena.

There are many other passages which say very much the same;⁹¹ it should be enough to quote only one more. In his short but very important tract About the Excellency and Grounds of the Mechanical Hypothesis Boyle described how his version of the corpuscular philosophy proposed that

...the universe being once framed by God, and the laws of motion being settled and all upheld by his incessant concourse and general providence, the phenomena of the world thus constituted are physically produced by the mechanical affections of the parts of matter, and what they operate upon one another according to mechanical laws.⁹²

The syntax of the latter part of this sentence appears to be a little disordered, but the general point being made could hardly be clearer. Material bodies are endowed by God with real causal powers.⁹³

Berkeley on the other hand maintained quite explicitly "that solidity, bulk, figure, motion and the like, have no activity or efficacy in them, so as to be capable of producing any one effect in nature."⁹⁴ The mechanical properties of bodies are not causes but marks or signs instituted by God for our information and benefit:

To all which my answer is, first, that the connexion of ideas does not imply the relation of cause and effect, but only of a mark or sign with the thing signified. The fire which I see is not the cause of the pain I suffer upon my approaching it, but the mark that forewarns

me of it. In like manner, the noise that I hear is not the effect of this or that motion or collision of the ambient bodies, but the sign thereof.⁹⁵

In the light of these passages it is difficult to understand the justification for McGuire's comparison of Boyle and Berkeley:

Thus, for the same essential reasons, namely, an adherence to a particularized ontology, to the doctrine that with respect to nature only God can act causatively, and to a critique of the reification of abstract concepts, both thinkers express the view that physical laws are a natural grammar imposed on nature by God's will, which by analyzing the ends to which things act according to these rules, the Virtuoso may discover at one and the same time more about the structure of nature and more of God's attributes. Accordingly, from this point of view nature is not to be regarded as a rigid machine-like structure. This view was for Boyle as much as for Berkeley merely a way of characterizing the uniformity and coherence of nature as expressed in physical laws. In fact for both thinkers the tradition of referring to relations among phenomena as a clock was simply a mode of extending the grammar of nature by analogy.⁹⁶

There are in fact two points of very close resemblance between Boyle's thought and Berkeley's, and one large difference. The points of resemblance are an acceptance of nominalism and a deeply felt concern for the defence and propagation of Christianity. The difference is, of course, immaterialism. In the terms of Sir Isaiah Berlin's classification of hedgehogs and foxes, Berkeley is a paradigm of a hedgehog: the "one big thing" around which all his philosophy is centred is the non-existence of matter. His instrumentalist interpretation of the laws of nature is a consequence primarily of this, and

and not of the nominalism which he shared with materialists like Hobbes and dualists like Boyle and Locke.

On the question of mind and body Boyle was a Cartesian — a characteristically undogmatic, English Cartesian in that he stayed clear of disputes about the souls of beasts and the pineal gland, but an unhesitating dualist nonetheless.⁹⁷ In the ordinary course of nature neither bodies nor souls have the power to influence the other; they can do so when united to form a human being only because God sees it fit to give them the appropriate supra-mechanical powers.⁹⁸ This "strange union" (in Boyle's words⁹⁹) has no parallel in nature and is therefore necessarily beyond the comprehension of the human mind, but God understands it perfectly, just as he can also understand the solution of the (to us) equally inexplicable problem of how "senseless matter, to whose nature motion does not at all belong, comes to be both put into motion and qualified to transfer it according to determinate rules, which it cannot understand."¹⁰⁰ The thing that Boyle finds so mysterious is not transeunt causation but the ability inanimate bodies have of acting as though they were following precise rules. This is mysterious only because bodies really are endowed with causal powers. If bodies were merely passive entities moved directly by God there would be nothing to baffle our understandings.

Boyle's conception of the laws of nature is therefore different both from Berkeley's conception and from the conception held by the great majority of Boyle's own contemporaries. Under the influence of Descartes, the idea that the motions of bodies are governed by divinely imposed laws had become generally

accepted among both scientists and philosophers, and Boyle appears to have been quite exceptional in expressing doubts about the intelligibility of the idea of a body obeying a law of motion.

The true explanation of Boyle's attitude does not, pace McGuire, lie either in Boyle's nominalism or his voluntarism, or in the conjunction of the two. Other nominalists and voluntarists in the seventeenth century, for example Locke and Descartes, show no signs of sharing Boyle's worries. Moreover the only tradition which did reject the idea of irrational creatures being governed by laws had no connection with and was indeed in general hostile to nominalist and voluntarist ideas. Aquinas had defined natural law as the participation of the eternal law in a rational creature,¹⁰¹ and had from this drawn the apparently necessary conclusion that irrational creatures cannot in the strict sense be said to follow or obey a law.¹⁰² In the seventeenth century this view continued to be maintained, for example by Suarez¹⁰³ and, in England, by Culverwell.¹⁰⁴ Boyle was probably aware of this line of thought, but there is no reason to suppose that it influenced him. The Thomistic conception of the lex naturalis has little in common with the Cartesian laws of motion, and Boyle was concerned with the correct interpretation of the latter.

Another explanation is that Boyle was merely being rather more intellectually honest than most of his contemporaries. For the mechanical philosophers the desires and appetites ascribed by the schoolmen to inanimate bodies were treated as objects for ridicule. In fact it is by no means clear that the idea

of a body having an appetite to move towards the centre of the world is any more absurd than the idea of a body obeying a law of nature. If a modern scientist were to say that of course he doesn't mean that the body literally understands and then obeys the law, an Aristotelian could equally fairly reply that he didn't mean that the body literally has desires. If the one kind of explanation can be understood as a figure of speech, so can the other. If on the other hand for the purpose of criticism one takes literally the scholastic talk of appetites, the horror vacui etc., as Boyle sometimes did,¹⁰⁵ then one is equally under an obligation to provide an intelligible account of how inanimate bodies can follow laws which they have no capacity to understand.

How important these considerations may have been to Boyle is uncertain, but it is unlikely that his thought would have taken the path that it did if they alone had influenced him. The horror vacui of the schoolmen was open to other, much more decisive criticisms, notably for its complete uselessness in explaining the quantitative aspects of barometric phenomena. There was no need for Boyle to get entangled in difficulties about the status of the laws of nature just in order to provide himself with some additional and somewhat inconclusive metaphysical arguments.

A much more adequate explanation of Boyle's conception of the laws of nature can be found in his religious beliefs and preoccupations. If the universe is regarded as a gigantic machine or automaton (and Boyle certainly did so regard it)¹⁰⁶ then there exists an obvious possibility that the part which God need (or indeed can) play may be reduced, first to creating the system

and giving it an initial impetus, and then to nothing at all. Boyle and Berkeley were alike in being implacably opposed to any such account of the world, whether deistic or, worse still, overtly atheistic. The common features of their otherwise thoroughly dissimilar philosophies arise chiefly from this shared abhorrence.

All forms of deism (and a fortiori of atheism) assume that the world can maintain itself as an ordered system without divine help or intervention, and in practice most of them are implicitly or explicitly materialistic — explicitly in the case of Lucretius and Hobbes. All such systems presuppose the existence of self-subsisting, self-moving matter. Berkeley set out to remove this foundation by denying that matter can exist; Boyle, more moderately, by denying that matter can be self-moving:

For the ancient Corpuscularian philosophers (whose doctrine in most other points, though not in all, we are the most inclinable to), not acknowledging an Author of the universe, were thereby reduced to make motion congenite to matter, and consequently coeval with it: but since local motion, or an endeavour at it, is not included in the nature of matter, which is as much matter when it rests as when it moves, and since we see that the same portion of matter may from motion be reduced to rest, and, after it hath continued at rest as long as other bodies do not put it out of that state, may by external agents be set a-moving again, I, who am not wont to think a man the worse naturalist for not being an atheist, shall not scruple to say with an eminent philosopher of old [Anaxagoras] — whom I find to have proposed among the Greeks that opinion (for the main) that the excellent Descartes hath revived amongst us — that the origin of motion in matter is from God...¹⁰⁷

An argument of this type is not really satisfactory. If rest and motion are equally excluded from the essence of matter then they ought (in the absence of any other considerations) to be treated as exactly equivalent. The most natural conclusion would therefore appear to be that a body should retain the state of motion or rest it already has unless something from outside should interfere. This line of thought leads to Newton's first law and eventually to Einstein's Principle of Equivalence, but not obviously to the kind of theological conclusion for which Boyle was looking.

There are in fact two different ways in which the proposition that motion is inessential to matter can be understood. One is that motion and rest are equally natural; the other is that rest is natural but motion is not, and therefore that matter can be kept in motion only by the operation of some external cause. There is good evidence that Boyle sometimes inclined to the latter as well as the former position. He remarked approvingly of Anaxagoras, that "though he believed, as Aristotle did after him, that matter was eternal, yet he discerned that, the notion of matter not necessarily including motion, there was the necessity of taking in a mens, as he styles God, to set this sluggish matter a moving."¹⁰⁸ The key phrase is "sluggish matter" — without the action of God matter would cease to move, though whether immediately or in due course is not clear.

This type of argument also has severe defects. It presupposes a fundamentally Aristotelian system of mechanics, of a kind that had already been abandoned by the ablest of Boyle's

contemporaries. It also fits in very uneasily with the anti-essentialist aspect of Boyle's nominalism — an anti-essentialism which his materialistic opponents would in practice be very likely to share. Boyle had to admit that it lay within God's absolute power to create a world in which matter would be self-moving;¹⁰⁹ given this possibility, how could we be sure that this possible world is not in fact the world in which we live?

There remains another less familiar and more interesting argument. This takes as its starting point the fact that the world is not merely in motion but that this motion is regular and apparently in accordance with laws. Now if it is absurd to suppose that an inanimate body can by itself follow a law, it follows that it can do so only because it is continually guided by an intelligent agent — which for the universe as a whole can be no-one other than God himself. The thing which Boyle found most unsatisfactory in the philosophy of his deistic opponents was their failure

to make intelligible to us...how mere and consequently brute bodies can act according to laws, and for determinate ends, without any knowledge either of the one or of the other. Let them, therefore, till they have made out their hypothesis more intelligibly, either cease to ascribe to irrational creatures such actions as in men are apparently the productions of reason and choice, and sometimes even of industry and virtue; or else let them with us acknowledge that such actions, of creatures in themselves irrational, are performed under the superintendence and guidance of a wise and intelligent Author of things.¹¹⁰

For Boyle therefore God must be the keystone of any system of natural philosophy. God can be left out only at the cost of

incoherence — of using principles the only possible justification of which one in fact denies. This is why Boyle maintained so strongly that laws do not arise out of the nature of matter. The world can be orderly and law-governed only because its laws have been imposed by a free and intelligent creator.

This argument for the existence of God from the existence of precisely defined laws of nature appears to have been invented by Boyle himself. The belief that God is active at all times in conserving the existence of created things was on the other hand characteristic not of any particular school or movement but of pre-deistic Christianity as a whole. Boyle held that God must be thought of as continually active and that

no being but God can subsist by its own power, but must be continually upheld by the constant influx of the conserving power of God.¹¹¹

The same notion of continuous conservation was expressed with equal clarity by Aquinas:

Every creature depends on God, and could not therefore subsist for a moment, but would revert to nothing, were it not conserved in being by the operation of the power of God.¹¹²

On this point Boyle was merely repeating the traditional doctrine of Catholic and Protestant Christianity.

Boyle's devout and utterly sincere belief in Christianity is indeed one of the keys to his thought. The other is his unshakeable belief in the correctness of the corpuscularian philosophy. Most of Boyle's original contributions to philosophy are consequences of his determined attempt to work out the full consequences of a theistic corpuscularian view of the world. Boyle's

nominalism appears to arise primarily from this source. He saw the natural world as a vast collection of individual corpuscles moving in accordance with divinely decreed laws. Hence Boyle's nominalism was for the most part implicit rather than explicit. He did not repeatedly state, as Hobbes had done and as Locke was to do, that everything which exists is an individual. He merely ignored the possibility that universal forms and essences might exist when he set out to construct explanations for any of the phenomena of nature. Boyle's fundamental principles of explanation were the shapes and arrangements of corpuscles which made up the matter in the world and the laws of motion by which God ordered their movements. There was in this scheme no place for the principles of explanation — universal essences and forms, divine Ideas — which had been used by the realists.

Universals had been eliminated from natural philosophy.

Notes to Chapter 4

1. Viz. An Examen of Mr T. Hobbes his Dialogus Physicus, added to the second edition (1662) of New Experiments Physico-Mechanical touching the Air; An Examen of Mr Hob's Doctrine About Cold, added to New Experiments and Observations touching Cold (1665); and Animadversions upon Mr Hobbes's Problemata de Vacuo (1674). In the 1772 edition, to which all future references are made as Works, these tracts are in volumes I, II and IV respectively.
2. Most memorably by Newton, when suffering from his mental breakdown. See Newton to Locke, 16 September 1693, The Correspondence of Isaac Newton, ed. H.W. Turnbull, vol. III, p.280. Also printed in Locke, Correspondence, vol.IV, p.727.
3. The best known example of this aspect of Boyle's character was his habit of pausing slightly every time he used the word "God". See Birch's Life of Boyle, Works, vol.I, p.cxxxviii.
4. A Hydrostatical Discourse, Works, vol.III, p.596.
5. Some Considerations about the Reconcilableness of Reason and Religion, Works, vol.IV, p.167, cf. p.175.
6. For a complete list of Boyle's references to Hobbes, see B.C. Teague, "The Origins of Robert Boyle's Philosophy", (unpublished Ph.D. thesis, University of Cambridge, 1971), pp.272-73. There are references to Leviathan in Works, vol.I, p.187, and vol.IV, p.104; and to De Corpore in vol.I, pp.191, 194,238, and vol.II, p.501.
7. Boyle refers to the work on hypotheses as though it had already been written both in The Excellency of Theology (Works, vol.IV, p.59) and in The Excellency and Grounds of the Mechanical Hypothesis (Works, vol.IV, p.68). Various versions of these notes are to be found in M.A. Stewart, Selected Philosophical Writings of Robert Boyle [henceforth cited as Stewart], p.119; Marie Boas Hall, Robert Boyle on Natural Philosophy, pp.134-35; R.S. Westfall, "Unpublished Boyle Papers relating to Scientific Method", Annals of Science, 12 (1956), pp.116-17.
8. Certain Physiological Essays, Works, vol.I, p.306.

9. Philosophical Transactions of the Royal Society, 1672, reprinted in I.B. Cohen, Isaac Newton's Papers and Letters on Natural Philosophy, pp.47-59.
10. Boyle explicitly rejected animal automatism in The Christian Virtuoso, Works, vol.VI, p.728-29.
11. About the Excellency and Grounds of the Mechanical Hypothesis, Stewart, p.145, Works, vol. IV, p.73.
12. J. Redwood, Reason, Ridicule and Religion, p.40.
13. This whole episode is well described by D.B. Sailor, "Moses and Atomism", JHI, 25 (1964), pp.3-16.
14. Certain Physiological Essays, Works, vol.I, p.356; The Sceptical Chymist, Works, vol.I, p.497-98; The Excellency of Theology, Works, vol.IV, p.48.
15. As described by Lucretius, De Rerum Natura, v.187-94
16. Diogenes Laertius, Lives and Opinions of Eminent Philosophers, x.85, cf. 79-80.
17. Ibid., 104,115,116.
18. As may be seen from the MS notes on hypotheses, Stewart, p.119.
19. R. Descartes, Philosophical Works (ed. E.S. Haldane and G.R.T. Ross), vol.I, p.168, vol.II, pp.56,57,219.
20. Pensées, 1001 (Lafuma) / 77 (Brunschvicg). The source for this remark was Pascal's sister, Marguerite.
21. The Origin of Forms and Qualities, Works, vol.III, p.74.
22. Certain Physiological Essays, Works, vol.I, p.354.
23. Marie Boas, Robert Boyle and Seventeenth-Century Chemistry, p.68.
24. Certain Physiological Essays, Works, vol.I, p.356.
25. Principia Philosophiae, iii.48-49.
26. New Experiments Physico-Mechanical touching the Spring of Air, Works, vol.III, p.250,251.
27. Experiments, Notes &c about the Mechanical Origin and Production of divers particular Qualities, Works, vol.IV, p.236.
28. A Discourse of things above Reason, Works, vol.IV, p.412.
29. The Origin of Forms and Qualities, Stewart, pp.8-9, (Works, vol.III, p.8). Cf. Works, vol.III, p.132.
30. The Christian Virtuoso, Works, vol.V, pp.513,539,540.

31. Of the High Veneration Man's Intellect owes to God, Works, vol.V, p.140. In a letter to Henry Oldenburg (14 October 1665) Boyle states that he rejects "more than one" of Descartes's laws of motion, The Correspondence of Henry Oldenburg, ed. A.R. and M.B. Hall, vol.II, p.569.
32. The Origin of Forms and Qualities, Stewart, p.22 (Works, vol.III, p.17).
33. Ibid., Works, vol.III, p.136.
34. The Excellency of Theology, Works, vol.IV, p.13.
35. A Discourse of Things above Reason, Stewart, p.229 (Works, vol.IV, p.419).
36. The Origin of Forms and Qualities, Stewart, p.58 (Works, vol.III, p.41).
37. Some Advices about judging of Things said to transcend Reason, Works, vol.IV, pp.459,461.
38. The Christian Virtuoso, Works, vol.V, pp.513,520 (but cf. also p.538). A Discourse of Things above Reason, Stewart, p.221 (Works, vol.IV, p.414).
39. The Christian Virtuoso, Works, vol.VI, pp.684,688. Elsewhere Boyle appears, as Stewart remarks, to misunderstand Descartes on this point. See Stewart, pp.xxxiv,228-29.
40. The Christian Virtuoso, Works, vol.VI, p.711.
41. Some Considerations about the Reconcilableness of Reason and Religion, Works, vol.IV, p.182.
42. The Christian Virtuoso, Works, vol.VI, p.709.
43. Ibid., p.711.
44. Ibid.
45. The Excellency of Theology, Works, vol.IV, p.42.
46. The Christian Virtuoso, Works, vol.VI, pp.711-12.
47. Certain Physiological Essays, Works, vol.I, p.307.
48. A Free Enquiry into the Vulgarly Received Notion of Nature, Works, vol.V, p.218.
49. Novum Organum, ii.2.
50. A Free Enquiry into the Vulgarly Received Notion of Nature, Stewart, p.191 (Works, vol.V, p.180).
51. The only passage that might be given a realist interpretation

is the statement in The Christian Virtuoso (Works, vol.V, p.517) that the rational soul has the ability to conceive universals. This could be understood in a realist manner, but it probably refers to no more than a power to frame Lockean general ideas.

52. Aquinas, In Aristotelis Metaphysicam Commentaria, VII, §1572.
53. A Free Enquiry into the Vulgarly Received Notion of Nature, Stewart, pp.187-88. (Works, vol.V, pp.177-78).
54. Some Physico-Theological Considerations about the Possibility of the Resurrection, Stewart, p.194 (Works, vol.IV, p.193).
55. The fact that Boyle followed Aquinas in making each angel a unique member of its own species (Of the High Veneration Man's Intellect Owes to God, Works, vol.V, p.142) need not indicate any awareness of Aquinas's reasons for this, namely the absence of individuating matter which would enable a pure form to be really multiplied into several individuals, (Summa Theologiae, I^a q.50 a.4).
56. On the Positive or Privative Nature of Cold, Works, vol.III, p.752.
57. A Hydrostatical Discourse, Works, vol.III, p.609. In A Disquisition about the Final Causes of Natural Things (Works, vol.V, p.413), Boyle describes "entia non sunt multiplicanda sine necessitate" as "that rational and received rule of philosophizing".
58. Some Considerations about the Reconcilableness of Reason and Religion, Works, vol.IV, p.154.
59. For a brief description of the Collège de Montaigu in the early sixteenth century, see R. Guerlac, Juan Luis Vives against the Pseudodialecticians, pp.17-23.
60. The most notable of the scholastics to have remained in the Arts faculty were Siger of Brabant and Jean Buridan. Ockham never took the doctorate in theology for which he had qualified.
61. Summa Theologiae, I^a q.19 a.4.
62. Ibid., q.19 a.3.
63. Summa contra Gentiles, ii.30.
64. Theodicy, §183, trans. E.M. Huggard, p.242.
65. The Leibniz-Clarke Correspondence, Clarke's Second Letter, §12.

66. Ibid., Leibniz's Third Letter, §17.
67. Theodicy, §355, trans. E.M. Huggard, pp.338-39.
68. Samuel Clarke, A Discourse of Natural Religion, in D.D. Raphael (ed.), British Moralists 1650-1800, vol.I, §§225,230,247.
69. Gordon Leff quotes Nicholas of Autrecourt and John of Mirecourt as saying this. See G. Leff, "The Changing Pattern of Thought in the Earlier Fourteenth Century", Bulletin of the John Rylands Library, 43 (1961), p.358.
70. Institutes of the Christian Religion, III.xxiii.2.
71. Theodicy, §176, trans. E.M. Huggard, pp.236-37.
72. Reply to the Sixth Set of Objections in Philosophical Works, ed. E.S. Haldane and G.R.T. Ross, vol.II, p.250.
73. De Cive, xv.5; Of Liberty and Necessity, in English Works, vol.IV, p.250.
74. E.M. Klaaren, Religious Origins of Modern Science, pp.136-37. The passage quoted in in Works, vol.IV, p.162.
75. Some Considerations about the Reconcilableness of Reason and Religion, Works, vol.IV, p.162.
76. Boyle's view that God could justly kill but not justly damn an innocent creature was also held by Samuel Parker: "The Rights of God's Dominion over sinless Creatures, do not extend so far as to warrant his dooming them to a condition more wretched and forlorn than Non-existence." An Account of the Nature and Extent of the Divine Dominion and Goodnesse, (1666), p.14.
77. A Disquisition about the Final Causes of Natural Things, Works, vol.V, p.414.
78. Some Considerations about the Reconcilableness of Reason and Religion, Works, vol.IV, p.161.
79. Of the High Veneration Man's Intellect Owes to God, Works, vol.V, pp.139-40.
80. See Stewart's acceptance of McGuire's main theses, Stewart, p.xxii.
81. J.E. McGuire, "Boyle's Conception of Nature", JHI, 33 (1972), pp.523-42.
82. Ibid., pp.525-26.
83. Even if we exclude from our count the dialogue Of the Positive or Privative Nature of Cold (Works, vol.III, pp.733-54), which

is specifically concerned with Gassendi's view that cold is a positive quality and not a mere absence of heat, there are over fifty references to Gassendi scattered throughout Boyle's works. For a complete list, see B.C. Teague, "The Origins of Robert Boyle's Philosophy", p.269.

84. McGuire, op. cit., p.537.
85. Leibniz did in fact hold a position something like that attributed by McGuire to Boyle: "It is quite true that speaking with metaphysical rigour, there is no real influence of one created substance on another and that all things, with all their reality, are continuously produced by the power of God.", A New System of the Nature and Communication of Substances, in Philosophical Papers and Letters, ed. L.E. Loemker, p.457. God's action is needed, however, only to sustain things in existence, and not in any way to guide their behaviour, which is wholly predetermined or (to use one of Leibniz's favourite expressions) pre-established.
86. McGuire, op. cit., p.534. Stewart, p.181 (Works, vol.V, p.170).
87. The Christian Virtuoso, Works, vol.V, p.521.
88. McGuire, op. cit., p.535.
89. Stewart, pp.181-82 (Works, vol.V, p.170).
90. The Christian Virtuoso, Works, vol.V, p.521.
91. E.g. A Free Enquiry into the Vulgarly Received Notion of Nature, Stewart, p.185 (Works, vol.V, p.176); A Disquisition about the Final Causes of Natural Things, Works, vol.V, p.413; The Christian Virtuoso, Works, vol.VI, pp.679-80.
92. Stewart, p.139 (Works, vol.IV, pp.68-69). Italics mine.
93. This interpretation of Boyle's thought is further supported by what he says about miracles. One way in which God performs miracles is by suspending the causal powers possessed by bodies. "Thus though iron be a body above eight times heavier, bulk for bulk, than water, yet in the case of Elisha's helve its native gravity was rendered ineffectual, and it emerged from the bottom to the top of the water; and the gravitation of St. Peter's body was suspended whilst his master commanded him, and by that command enabled him, to come to him walking on the sea. And the operation of the activest body in nature,

- flame, was suspended in Nebuchadnezzar's fiery furnace...",
Some Physico-Theological Considerations about the Possibility
of the Resurrection, Stewart, p.207 (Works, vol.IV, p.201).
94. The Principles of Human Knowledge, §61.
 95. Ibid., §65.
 96. McGuire, op. cit., pp.537-38.
 97. One reason for this being that it provided the most convincing argument for the immortality of the soul. See The Christian Virtuoso, Works, vol.V, pp.517-18.
 98. The Christian Virtuoso, Works, vol.VI, p.754.
 99. Of the High Veneration Man's Intellect Owes to God, Works, vol.V, p.150.
 100. Ibid.
 101. Summa Theologiae, I^aII^{ae} q.91 a.2.
 102. Ibid., I^aII^{ae} q.91 a.2ad3.
 103. De Legibus ac Deo Legislatore, I.i.2, I.iii.8.
 104. An Elegant and Learned Discourse of the Light of Nature, ch.4.
 105. A Free Enquiry into the Vulgarly Received Notion of Nature, Works, vol.V, pp.203,205-6.
 106. Boyle refers to the universe as an automaton in Works, vol.III, pp.34,48; vol.IV, p.52; vol.V, pp.179 (twice),251.
 107. The Origin of Forms and Qualities, Stewart, p.19 (Works, vol.III, p.15).
 108. Some Considerations touching the Usefulness of Experimental Natural Philosophy, Stewart, p.165 (Works, vol.II, pp.42-43).
 109. Of the High Veneration Man's Intellect Owes to God, Works, vol.V, pp.139-40.
 110. Some Considerations touching the Usefulness of Experimental Natural Philosophy, Stewart, p.159 (Works, vol.II, p.38).
 111. The Christian Virtuoso, Works, vol.VI, p.697.
 112. Summa Theologiae, I^a q.104 a.1.

Chapter 5

Locke's Early Thought

I

Unlike Boyle, but like Bacon, John Locke received a traditional university education; unlike Bacon, he commenced this education at what was at the time an unusually late age¹ and he stayed the full course. He was subjected therefore to a more prolonged exposure to the traditional scholastic curriculum than were either of his predecessors; and though this greater acquaintance certainly produced no greater affection it is likely that Locke learned more from his first teachers than he would subsequently have cared to admit or even have been able to acknowledge.

Although Locke referred quite frequently to "the schoolmen" in his writings, his remarks are usually very general in character and he seldom mentioned any names. Burgersdijk and Scheibler are mentioned in Some Thoughts concerning Education as examples of the kind of author to whom the young should not be introduced,² and Burgersdijk and Sanderson are mentioned in dismissive terms in the First Letter to Stillingfleet.³ These are the only references by name in his published writings to any of the schoolmen, medieval or modern. There is also in the Essays on the Law of Nature one reference to Aquinas, which was almost certainly taken not directly but via a footnote in Hooker.⁴

The suggestion of these passages that Locke was better acquainted with the modern scholastic writers than with their

medieval predecessors is confirmed by the other evidence which we possess. There have survived two early notebooks which contain a few extracts made by Locke of other philosophical writers and a rather later list of books which Locke as a young tutor recommended to his students. One notebook (MS Locke e.6) contains on its last page⁵ an extract from Johann Combach's Metaphysicorum Libri duo, a textbook produced by a German Lutheran at Marburg and republished in Oxford.⁶ The other notebook (MS Locke f.33) contains detailed notes on Philippe du Trieu's Manuductio ad Logicam and on another as yet unidentified logic textbook.⁷ The list of books purchased by Locke's pupils is contained in one of Locke's account books. The names which it contains include all those mentioned above, together with those of more sixteenth and seventeenth-century philosophers and logicians: Flavell, Magirus, Powell, Ringelberg, Smiglecki, Smith and Zabarella.⁸ How interesting Locke found these authors is unknown, but in later life he owned only two books by any of them: Sanderson's Logicae Artis Compendium and Du Trieu's Manuductio ad Logicam.⁹

The picture conveyed by these names is confirmed by the other evidence we have of philosophy teaching in seventeenth-century Oxford.¹⁰ The writings of the great medieval schoolmen were not recommended to young students, who had to subsist on the third-rate textbooks and compendia.¹¹ It is scarcely surprising that the ablest of them grew to despise the education to which they had been subjected.

The philosophers whom we have evidence that Locke read, or at least requested his pupils to read, were realists. There is

however some evidence of a current of nominalist ideas in seventeenth-century Oxford and of a degree of interest (unusual in Europe at that time) in the writings of the great fourteenth-century nominalists. Buridan's commentaries on Aristotle's Nicomachean Ethics and Politics were printed in Oxford in 1637 and 1640 respectively, and in 1675 Ockham's Summa Logicae was issued in the first new edition anywhere for nearly a century, and the last before recent times.¹² Locke might possibly have read this, though there is no evidence that he did, but the fact of its publication does suggest the existence of some people in Oxford who were interested in Ockham's thought.

The existence of an interest in nominalist ideas at the time when Locke was a student is also suggested by letters from Henry Oldenburg to Adam Boreel and to Edward Lawrence. Oldenburg described how pleased he was that there were now in Oxford a few men who had become disgusted with "scholastic theology and nominalist philosophy", and who were therefore turning their attention to the more solid problems of experimental science.¹³ This is almost certainly a reference to the experimentally-minded group gathered round John Wilkins at Wadham, but who the proponents of nominalist philosophy were is less clear. Nevertheless it is apparent that the old nominalist philosophy which Ockham had advocated in fourteenth-century Oxford had not entirely disappeared three hundred or more years later.

II

Locke's earliest philosophical writings were on politics, religion and ethics. None of them was published in his own

lifetime or indeed for long after his death; but since the rediscovery of Locke's manuscripts in the Lovelace Collection all of them have been meticulously edited and published.

The earliest of these works are two short treatises, one in English and one in Latin, on the question of whether a government has the right to determine forms of religious worship, given that these are indifferent in the sense of not being imposed by any divine law. These writings are now generally known as the Two Tracts on Government, the title supplied by their first editor, Philip Abrams. The English Tract was written in 1660, apart from the preface which belongs to the following year.¹⁴ The Latin Tract is undated, but internal and external evidence suggests that it was written after the English Tract but before the spring of 1663.¹⁵

As one might have expected, neither of these writings throws very much light on the state of Locke's metaphysical and epistemological opinions. Locke did not attempt at any stage in his career to deduce his political conclusions from general philosophical principles, even when he certainly possessed them, and it is quite possible that at this time he had no definite or settled views on matters of this kind. Nevertheless it is often peculiarly rewarding to study the earliest writings of any philosopher, even when the intrinsic interest of the material which they contain is relatively small. Lines of thought which later become modified or even partially submerged can in early writings stand out more clearly because their more remote and unwelcome implications have not as yet become understood. In this context the Two Tracts are especially interesting because

it has been suggested that they contain a voluntarist theory of law; and voluntarism, though strictly independent of nominalism, has nevertheless frequently been closely associated with it.

The most thorough discussion which the Two Tracts on Government has received has been by Abrams in the Introduction to his edition of these works. Abrams clearly regards Locke as being already both a voluntarist and a nominalist:

His increasingly straightforward use of consent arguments simplified and emphasized his preference for the voluntaristic end of the traditional see-saw on obligation. Conversely, his voluntarism, which I take to be the fundamental instinct of his thought, combined with his new axiom of ignorance to incline him towards arguments from consent.¹⁶

And again:

If we follow Gierke's famous analysis of medieval theories of law it is clear at once that Locke stands well towards the nominalist pole of the scholastic continuum.... But if we are to appreciate his later development and his unique contribution to the reconstituting of ideology in the eighteenth century we must start by seeing that at the outset of his career he both stands within the arch of the traditional scholastic compromise and has taken a position on the nominalist wing of that compromise.¹⁷

If Abrams is right then the nominalism and voluntarism which can be found in Locke's later writings were already present in his thought in 1660-1662. It is possible, and perhaps quite likely, that this is correct: certainly such a conclusion would be broadly consonant with the account of Locke's intellectual development presented in this present work. Unfortunately it is very much easier to quote Abrams to the effect that Locke

was a voluntarist and a nominalist than to find decisive passages in favour of this interpretation in the Two Tracts themselves. Abrams produces nothing from the Tracts to show that Locke was a nominalist, and there is indeed nothing in either of them which is at all relevant to this question. Whether the Tracts show that Locke was a voluntarist depends on the meaning which we attach to that widely-used but rather slippery word. Abrams never supplies a definition, but he appears to characterise as voluntarist any theory of law in which it is the will of the law-giver that establishes an obligation.¹⁸ On this definition Locke certainly does emerge as voluntarist. There is however no trace in either of the Tracts of the radical kind of ethical voluntarism which holds that things are made right or wrong by human or divine choice. Locke made it clear that while it is the will of the legislator which establishes an obligation, this is only the case in materia licita.¹⁹ There is nothing in either of the Tracts which might suggest that what is right and wrong is made so by any will, human or divine. Locke described the divine law as the eternal foundation of all moral good and evil.²⁰ He gave no indication of believing that God might from eternity have willed something different.

The last and most substantial of these early writings is a set of eight disputations on the Law of Nature. These are now generally known as the Essays on the Law of Nature, the title given by their editor, W. von Leyden. In some respects this title is unfortunate: these writings are not essays of the kind written by Montaigne or Bacon, but rather scholastic disputations whose medieval form is no more than partially disguised by a

more humanistic style of composition and by passages of elaborate and rather tiresome rhetoric. When exactly they were written is not known for certain but may be conjectured with some confidence. One manuscript finishes with the words Sic cogitavit J. Locke 1664,²¹ and we know from Locke's valedictory speech as Censor of Moral Philosophy, given in December 1664, that in the course of the year he had conducted disputations on the law of nature with the bachelors in the College.²² It is clear therefore that the Essays were completed in 1664. When they were begun is less certain, but their general stylistic resemblance to the Latin Tract on Government and the fact that draft versions of both works can be found in the same notebook²³ suggest that Locke started to write the Essays in 1662 or (more probably) in 1663.²⁴

The voluntarist theory of law which is present in the Two Tracts on Government can also be found in the Essays on the Law of Nature, though only in a modified form and in conjunction with elements of a different and alien tradition. The mixed character of Locke's thought is well indicated by the account of natural law which he states just after the beginning of the first Essay:

Hence, this law of nature can be described as being the decree of the divine will discernible by the light of nature and indicating what is and what is not in conformity with rational nature, and for this very reason [eoque ipso]
commanding or prohibiting.²⁵

The law of nature is a decree (ordinatio) of the divine will, yet at the same time it commands and prohibits because it shows what is and what is not in accordance with a rational nature. Despite this it cannot properly be described as a dictate of reason. The passage just quoted continues:

It appears to me less correctly termed by some people the dictate of reason, since reason does not so much establish and pronounce this law of nature as search for it and discover it as a law enacted by a superior power and implanted in our hearts. Neither is reason so much the maker of that law as its interpreter, unless, violating the dignity of the supreme legislator, we wish to make reason responsible for that received law which it merely investigates; nor indeed can reason give us laws, since it is only a faculty of our mind and part of us.²⁶

This duality of approach persists throughout the remainder of Locke's account, sometimes one aspect being given greater emphasis and sometimes the other. There are passages which explain our obligation towards God solely in terms of his omnipotent will:

For, in the first place, since God is supreme over everything and has such authority and power over us as we cannot exercise over ourselves, and since we owe our body, soul, and life — whatever we are, whatever we have, and even whatever we can be — to Him and to Him alone, it is proper that we should live according to the precept of His will. God has created us out of nothing and, if He pleases, will reduce us again to nothing: we are, therefore, subject to Him in perfect justice and by utmost necessity.²⁷

There are other passages in which what seems to be a purely rationalistic theory is put forward. The law of nature

...is a fixed and permanent rule of morals, which reason itself pronounces, and which persists, being a fact so firmly rooted in the soil of human nature. Hence human nature must needs be changed before this law can be either altered or annulled. There is, in fact, a harmony [convenientia] between these two, and what is proper now for the rational nature, in so far as it is rational, must needs be proper for ever, and the same reason will pronounce everywhere the same moral rules.... In fact, this law

does not depend on an unstable and changeable will, but on the eternal order of things. For it seems to me that certain essential features of things are immutable, and that certain duties arise out of necessity and cannot be other than they are. And this is not because nature or God (as I should say more correctly) could not have created man differently. Rather, the cause is that, since man has been made such as he is, equipped with reason and his other faculties and destined for this mode of life, there necessarily result from his inborn constitution some definite duties for him, which cannot be other than they are. In fact it seems to me to follow just as necessarily from the nature of man that, if he is a man, he is bound to love and worship God and also to fulfil other things appropriate to the rational nature, i.e. to observe the law of nature, as it follows from the nature of a triangle that, if it is a triangle, its three angles are equal to two right angles...²⁸

It is not at all clear that Locke was aware of the great difference between these two accounts, and there is no reason to suppose that he regarded them as incompatible. Sometimes they occur side by side in the same passage, as for example in the explanation of why we are under an obligation to obey God:

And this obligation seems to derive partly from the divine wisdom of the law-maker, and partly from the right which the Creator has over His creation. For, ultimately, all obligation leads back to God, and we are bound to show ourselves obedient to the authority of His will because both our being and our work depend on His will, since we have received these from Him, and so we are bound to observe the limits He prescribes; moreover, it is reasonable that we should do what shall please Him who is omniscient and most wise.²⁹

According to a thoroughgoing ethical voluntarist such as Hobbes God's right to exact obedience from us derives not from his goodness but simply from his omnipotence.³⁰ According to the more traditional view we are obliged to obey God because he is good and his laws are just. In the Essay concerning Human Understanding Locke explicitly stated that God does not choose what is good but is determined by what is the best,³¹ and therefore implied that we owe him obedience because he is a benevolent creator. Here in the Essays on the Law of Nature he gave both reasons for obedience without apparently choosing between them.

The unsatisfactory character of Locke's moral philosophy is generally admitted. No-one would place him in this field on the same level as Hume and Kant, or even Butler and Adam Smith. The reason is certainly not lack of philosophical ability, nor does it appear to have been the unavoidable but often unsurmountable misfortune of having been born at the wrong time. Equally clearly, the reason for Locke's failure to achieve greatness in moral philosophy is not that he cared little for the subject or that he did not adequately address his mind to it. Locke's first writings were on ethics and politics; the Essay concerning Human Understanding had its origin in discussions about ethics and religion, and was designed at one stage at least to conclude with a chapter on ethics;³² the possibility of a demonstrative science of morality remained one of Locke's firmest convictions even as the prospect of actually producing the demonstration receded. If there is any one subject which lies at the centre of Locke's multifarious intellectual concerns it is ethics, and it is

therefore all the more significant that his positive achievement in this field should have been so relatively meagre.

One reason which has been given for Locke's apparent failure to produce a coherent system of ethics is that he attempted to combine too many discordant approaches. This is Laslett's diagnosis:

The trouble was that Locke began by basing right and wrong on God's commands and punishments, but also adopted a hedonistic ethic as well, an ethic of the Hobbesian sort. Meanwhile he passionately believed in the possibility of demonstrating ethics mathematically, though he was perpetually complicating everything with his anthropological relativism, noting the variety of ethical values among the world's peoples and hinting that virtue and vice were simply customary.³³

This analysis of Locke's difficulties appears however to involve a misconception of their nature. The hedonistic elements which occur in Locke's mature philosophy arise from his analysis of human desire and volition and are not signs of an incipient utilitarian theory of ethics.³⁴ The reports of strange customs and strange moral beliefs may appear to a modern reader as a prelude to some relativistic account of morality, but Locke held no such view. The function of the travellers' tales in Book I of the Essay and elsewhere was to cast doubt on the innateness of moral principles, and not on their objectivity.

There is nevertheless a real divergence of approach in Locke's ethical writings. He was simultaneously attracted and repelled both by the voluntaristic approach of Hobbes and his predecessors and by the anti-voluntarist approach of the scholastic realists, of Hooker and of the Cambridge Platonists.

The attraction of the former was its simplicity and lack of troublesome metaphysical and epistemological commitments. Its overwhelming drawback was its tendency to ascribe arbitrary power to God. The attraction of the latter approach was primarily the picture it provided of morality as something eternal, necessary and divine. The disadvantage was that this congenial description of morality was grounded on theories of the human mind and the nature of reality which Locke was never disposed to accept.

The attraction which this conception of ethics as a system of eternal truths had for Locke led him to make metaphysical statements which have a distinctly Platonistic sound. What, for example, did he mean by the statement (quoted earlier in translation) that mihi enim videntur quidam immutabiles esse rerum status?³⁵ There is no explanation given, and he never used this kind of language again. In the Essay concerning Human Understanding the immutability of essences is explained in a very different way.³⁶ Locke probably took over this kind of language from Culverwell, but it would scarcely be reasonable to suppose, on the basis of one remark, that he had adopted the kind of metaphysics that Culverwell accepted. It is however quite likely that his own metaphysical opinions were not yet so clearly thought out that he would automatically avoid writing anything that might suggest an appearance of Platonism.

This isolated remark apart, the Essays on the Law of Nature provide evidence for three aspects of Locke's metaphysical and epistemological thought. In the first place he was firmly opposed to any theory of innate ideas. The arguments later developed in Draft B and in the Essay itself are already

to be found in Essay III. The testimony of the Essays is particularly valuable on this point, because the earliest Draft of the Essay concerning Human Understanding contains only one belated and somewhat casual reference to this whole topic.³⁷

Secondly, the only kind of reason of which Locke recognised the existence was discursive reason³⁸ — the kind of reason that makes inferences from one proposition to another. This was probably the major consideration in his refusal to call the natural law a dictate of reason:

However...someone perhaps may wonder in this connexion why I have omitted to mention reason, that great and, as it seems, chief light of all knowledge, especially because the law of nature is most often called right reason itself and the dictate of right reason. Our explanation is that we investigate here the first principles and sources of all kinds of knowledge, the way in which primary notions and the elements of knowledge enter the mind. Yet all these, we maintain, are not apprehended by reason: they are either stamped on our minds by inscription [a possibility which Locke rejects in the following essay], or we receive them second-hand, or they enter by the senses. Nothing indeed is achieved by reason, that powerful faculty of arguing, unless there is first something posited and taken for granted. Admittedly, reason makes use of these elements of knowledge, to amplify and refine them, but it does not in the least establish them. It does not lay a foundation, although again and again it raises a most majestic building and lifts the summits of knowledge right into the sky. As easily, indeed, will a man be able to construct a syllogism without premisses as find use for his reason without anything first being known and admitted as true.³⁹

The function of reason is not to supply premises but to draw conclusions from premises already given by other means.

Locke's refusal to admit the existence of any kind of reason other than discursive reason has consequences of the greatest importance for his thought as a whole. It separates him irrevocably from Hooker, for whom the goodness of things is discovered directly by the use of reason.⁴⁰ It is this, and not the denial of innate ideas, which provides the really fundamental distinction between Locke and the philosophers who are customarily thought of as his rationalist opponents.

If the scope of reason is limited to the deduction of conclusions from premises already given, then the question naturally arises as to how premises are to be known. In the Essay Locke held that the primary truths from which demonstrations proceed are known by intuition. In the Essays on the Law of Nature there is no such theory. All axioms, even such purely logical ones as that the same thing cannot at the same time both be and not be, are established "by induction and by the observation of particular things".⁴¹ By implication this is true for mathematical axioms, and indeed in Draft A of the Essay Locke sketches an explicitly empiricist theory of geometry in which the axioms are in principle fully open to refutation by counter-example.⁴²

III

We do not now know for certain when Locke started to write the Essay. The reason is partly that we lack decisive evidence and partly that some of the evidence which we do have is conflicting. There is no reason at all to reject Locke's own account in the Epistle to the Reader of how the Essay arose out of discussions with five or six of his friends; unfortunately he gave no

indication of when these discussions took place, though there is certainly a suggestion that it was by then many years in the past. James Tyrrell, in a marginal note in his own copy of the Essay, placed this meeting in the winter of 1673.⁴³ At the end of 1686, however, Locke wrote to Edward Clarke and described the Essay as having had its beginnings five or six years earlier.⁴⁴ These testimonies, both plausible in isolation, are mutually inconsistent; and in any case neither can be reconciled with the existence of what are evidently two Drafts for the Essay, both dated 1671. Locke's meeting must therefore have taken place in or before that year. The only reason for choosing 1671 itself is the far from conclusive argument that the Drafts which we possess were more likely to have been written in an initial burst of activity than after one or two years of reflection. This may be true, but it is scarcely certain. One thing that is certain however is that these two Drafts provide our first evidence of Locke's work on the Essay, and it is with them that we must start.

The two Drafts of 1671 differ both in length and in character, though these differences have been somewhat accentuated by their different manners of publication.⁴⁵ Draft A has been published in the form in which it was written, without any changes in Locke's erratic spelling and minimal punctuation. Draft B, on the other hand, has been tidied up and the spelling modernised. Draft A is about one tenth, Draft B about one fifth of the length of the published Essay.

Locke was as parsimonious in writing as in everything else, and substantial sections of both Drafts reappear in the Essay

with only minor (though sometimes significant) changes. Much of the second half of Draft A reappears in the later chapters of Book IV; while material from Draft B can be found principally in Book I, in the later chapters of Book III and scattered throughout Book II.⁴⁶

When we look more closely at the distribution of these passages a certain pattern emerges, and it becomes apparent that they can be placed almost without exception in one of two groups. In the first place there are Locke's polemics against the philosophical tradition in which he had been educated and with which he was now so evidently impatient. This is indicated by the titles of some of the chapters which take over most material from the Drafts: Of the Imperfection of Words, Of the Abuse of Words, Of Maxims, Of trifling Propositions, Of Error; here, and in his whole polemic against innate ideas, Locke's intentions were primarily to expose and to destroy.

The passages which make up the second main group are those that were later to be incorporated into Book II. Here Locke was concerned with laying the foundations of his theory of knowledge and providing analyses of our complex ideas in terms of the simple ideas of sensation and reflection. To describe these analyses as routine would be unfair, but they are among the less remarkable parts of the Essay. Many of the most original discussions of Book II — power and liberty, personal identity, primary and secondary qualities — are missing entirely; and so too is the all-important distinction between real and nominal essences.⁴⁷

One of the most obvious features of Draft A, one in which it differs completely from the Essays on the Law of Nature, is the distinction which Locke makes between two kinds of general truth.

We can gain certain knowledge of some particular matters of fact by means of our senses,⁴⁸ but in the case of general truths we are faced with a clear but unwelcome dilemma:

And therefor that all Universall propositions that are certain are only verball or words applyd to our owne Ideas & not instructive: & vice-versa all universal propositions that are instructive (i.e. informe us anything about the nature qualitys & operations of things existing without us) are all uncertain, i.e. we cannot certainly know them to be true, is very apparent.⁴⁹

Or more briefly:

...all Universall propositions are either Certain & then they are only verball but are not instructive. Or else are Instructive & then are not Certain...⁵⁰

The certainty of self-evident truths is founded on the clear and distinct knowledge we have of our own ideas,⁵¹ while the truth or falsity of instructive propositions is investigated "by history and enquiry into particulars".⁵² General words serve us well enough in the common affairs of life, "yet they are utterly uncapeable to produce infallible knowledg of things or to make demonstrations of reall beings existing in rerum natura".⁵³

This distinction between two kinds of proposition remains at the heart of all Locke's subsequent work on the nature of human knowledge. Although Draft A is the first of his writings in which it appears, his statement of it is quite unqualified and unhesitating. It is indeed formulated in terms more uncompromising than those used subsequently in any of the editions of the Essay. In the Draft Locke said quite simply that propositions can be either instructive or certain but not both, and there is no indication that he regarded this choice

as being subject to any exceptions. In the paragraph in the first edition of the Essay which most closely corresponds to this passage in the Draft, however, he wrote:

We having no knowledge of what Combinations there be of simple Ideas existing together in Substances, but by our Senses, we cannot make any universal certain Propositions concerning them, any farther than our nominal Essences lead us: which being to a very few and inconsiderable Truths, in respect of those which depend on their real Constitutions, the general Propositions that are made about Substances, if they are certain, are for the most part but trifling; and if they are instructive, are uncertain, and such as we can have no knowledge of their real Truth, how much soever constant Observation and Analogy may assist our Judgments in guessing.⁵⁴

In the second and subsequent editions Locke reduced further the scope of his claim by modifying the opening of this sentence so that it began: "We having little or no knowledge of what Combinations..."⁵⁵

The general movement of Locke's thought after 1671 was therefore away from the classification of all propositions into those which are certain but uninformative and those which are informative but uncertain. Nowhere in Draft A are there any signs of Locke finding his way towards this position. This absence of hesitancy would of course have been entirely natural if Locke had merely been taking over a standard philosophical device from his predecessors. It is however beyond doubt that he did not do this. No such distinction had been employed by the authors from whom he learned his first philosophy.

There is of course a sense in which any philosopher can make a distinction between two distinct kinds of proposition.

Any appropriate property will do, provided only that it characterises some propositions and not others: thus we can distinguish necessary and contingent propositions, falsifiable and unfalsifiable propositions, and so on. Locke however was doing much more than this. He proposed not merely that propositions can be divided into those that are certain and those that are uncertain, or into those that are not instructive and those that are; he also maintained that in the case of universal propositions these two classifications coincide, and therefore that there are no universal propositions which are simultaneously both certain and instructive.

None of Locke's predecessors made a radical distinction of this kind. Hobbes proposed a distinction between two different kinds of knowledge; but although it also can be seen as an ancestor of the distinction between a priori and a posteriori knowledge, the consequences which Hobbes drew from it were entirely unlike the consequences which Locke drew from his distinction. According to Hobbes there are two quite different kinds of knowledge: knowledge of fact and knowledge of the consequences of one affirmation from another.⁵⁶ At first sight this appears to be fairly close to Hume's distinction between matters of fact and relations of ideas; indeed to a twentieth-century philosopher Hobbes's non-psychological formulation probably appears superior. Nevertheless such first impressions would be gravely misleading. For Hobbes the distinction is between the knowledge by perception of individual matters of fact, the kind of knowledge which we share with brute animals, and the universal knowledge produced by the sciences:

By this we may understand there be two kinds of knowledge, whereof the one is nothing else but sense, or knowledge original...and remembrance of the same: the other is called science or knowledge of the truth of propositions, and how things are called, and is derived from understanding.⁵⁷

The sciences thus defined include disciplines which no-one has ever supposed might be demonstrable a priori (in the modern sense of that phrase). In chapter 9 of Leviathan, immediately after making the distinction between the two types of knowledge, Hobbes set out a table showing how the sciences are related to one another. The sciences mentioned include not only geometry, ethics and physics, but also geography, meteorology, music, poetry and astrology.⁵⁸ Whether Hobbes really thought that geography could be demonstrated from appropriate definitions might well be doubted, but it is at least clear that he was not in the least inclined towards Locke's view that the only general propositions which we can know for certain are those which are trifling and therefore scarcely worth discovery.

Hobbes's distinction between two kinds of knowledge does not therefore coincide even approximately with Locke's distinction between two kinds of proposition. Nevertheless their views can be usefully compared, because they both stem from the same basic metaphysical position. For Hobbes, as for his predecessors, scientific knowledge is knowledge not of particular but of general truths:

Science is understood as being concerned with theorems, that is, with the truth of general propositions, that is, with the truth of consequences. Indeed, when one is dealing with truth of fact, it is not properly called science but simply knowledge.⁵⁹

If there were general entities as well as particular entities and therefore general states of affairs as well as particular states of affairs then it would be possible to interpret both particular and general truths as statements of fact. If on the other hand any supposition of general entities is (as Hobbes firmly claimed) incoherent and absurd,⁶⁰ then the truth-conditions of general propositions will need to be explained in some other way.

The epistemological dilemma which appears to be inseparable from any nominalist metaphysics results from the fact that universal propositions cannot be made true by universal facts. If the universal proposition is taken as being factual in character then it is strictly equivalent to the logical product of an indefinitely large number of singular propositions; in this case it is doubtful whether it can be known with certainty. If on the other hand the universal proposition is not taken as being factual in character then it is by no means obvious that the truth which it expresses will be of any real interest or importance.

Bacon, as we have seen, chose the first of these alternatives and outlined the elements of an inductive procedure which he hoped would produce certain knowledge in a finite number of steps. Hobbes, who despised inductive reasoning, chose the second alternative and attempted to combine a deductive, rationalistic theory of science with a strictly nominalistic metaphysics. Locke, in 1671, had no solution to offer.

IV

The explanation just given for the sceptical impasse in which Locke found himself in 1671 presupposes one point which has not yet been adequately established, namely that Locke had by then acquired the nominalist outlook which is so clearly evident in the Essay but which cannot easily be detected in the Essays on the Law of Nature. On this point the testimony of Draft A is by no means as clear and unambiguous as might be wished. The passages in which Locke refers explicitly to universals are relatively few and for the most part lacking in precision:

Only here I thinke I may take notice that when we leave particulars and make universals substantial or speicies or rather generall words (for I thinke I may say that we have noe notion of generall things) the objects of our understandings or knowledg, which words are not definde, we think reason or dispute about words and not things... 61

And again:

Memorandum. That all our knowledg of things existing are only particulars and that if we know the truth of any universall proposition it only supposes existence upon which supposition the universal truth follows. for though we know it to be universally true that the 3 angles of a triangle are equall to two right ones, yet it supposes a triangle to exist which can be knowne noe other way but by our senses, which are conversant only about particular things. 62

By itself this second passage would leave Locke's theory of universals quite undetermined: the statement that the senses are conversant only with particulars is entirely in accord with the scholastic dictum that sensus sunt particularia; intellectus

sunt universalia. The first passage makes the conclusion that Locke was a nominalist highly probable, but does not absolutely require it. If Locke had said that there are no general things then the matter would be settled; in fact all that he said is that we have no notion of general things. It would admittedly be a bizarre kind of realism which admitted the existence of universals but denied that they could be known: one of the chief functions of universals, ever since Plato, has been to be the objects of our knowledge. Nevertheless it is not utterly impossible, on the basis of the evidence of Draft A alone, that Locke might have held this view, nor is it inconceivable that Locke might have been undecided as to what to think or perhaps confused in his own thoughts.

Fortunately, Draft B provides very much clearer evidence for the state of Locke's thought. It resembles Draft A in being unfinished and in leaving unsolved the problem of how much certain knowledge of universal non-trifling propositions might be obtained.⁶³ It differs from Draft A in being a substantially more mature piece of writing; if either or both Drafts had been undated it might well be doubted whether modern scholars would have assigned them both to the same year.

On the nature of universals Draft B is clear and precise where Draft A had been vague or ambiguous. "General" and "universal" are words which cannot be applied to things but only to "words as names of many particular things, or our ideas supposed to represent many particular things".⁶⁴

But universality belongs not to the things themselves, which are all particulars, for a more general word is but a name of a complex idea, which is but a part of that complex idea

which a less general word, or specific name, stands for...⁶⁵

Universals are particular things which can function as universal signs:

For when we leave particulars and make universals, which are only signs, i.e., either ideas or words (for I think I may say we have no notion of general things), neither are our ideas or words any other than particular things in their own existence, but general only in their signification, either as they are thought to represent or made to stand for many particular things, the objects of our understandings or knowledge.⁶⁶

This passage is clearly transcribed from §2 of Draft A, quoted above. (This may explain its defective grammar.) What is of particular interest is therefore the clause inserted into the middle of the passage: "neither are our ideas or words any other than particular things in their own existence, but general only in their signification, either as they are thought to represent or made to stand for many particular things..." Whether Locke's thought had changed between writing the opening pages of Draft A and the later pages of Draft B or whether he had merely realised that his earlier remarks were open to misinterpretation cannot now be decided with certainty. Possibly the truth lies somewhere between the two extremes: by the end of 1671 Locke may have clarified in his own mind the implications of a position which he held more vaguely and perhaps more tentatively earlier in the year. One thing which is clear is that when he wrote Draft B he was already certain that the only universals which exist are particulars functioning as universal signs:

There is one thing more to be remembered about these simple ideas, that though that idea, e.g., of blue or bitter, which exists in anyone's understanding, be but one single numerical

thing, yet, as it agrees to and represents all the qualities of that kind wheresoever existing, it may be considered as a specific idea, and the word that stands for it a specific word comprehending many particular things; so that the idea of white in the mind which stands for all the white that anywhere exists, and the word white which stands for that idea, though both these in their existence be but particular things, yet as representatives or in their significations are universals.⁶⁷

On this point his views stayed unchanged for the remainder of his life. All Locke's subsequent enquiries about the nature of knowledge and certainty have as their starting point the axiom that only particular things exist.

Notes to Chapter 5

1. In 1652, at the age of twenty. At this time the average age of matriculation was about seventeen. For a graph showing ages of matriculation, see L. Stone, "The Size and Composition of the Oxford Student Body 1580-1910" in L. Stone (ed.), The University in Society, vol.I, p.32.
2. Some Thoughts concerning Education, §94.
3. First Letter, pp.11-12 (Works, vol.IV, p.8); Locke later claimed that his reference to "Burgersdicius, Sanderson and the whole tribe of logicians" was not intended to be disrespectful, Second Reply, p.381 (Works, vol.IV, p.449).
4. Essays on the Law of Nature, p.116 & n. Von Leyden appears to be entirely justified in his claim that Locke's quotation came from this source. The words which Locke quoted appear in Hooker (Of the Laws of Ecclesiastical Polity, I.ii.1) but not in Aquinas, at least in the place to which Hooker referred (Summa Theologiae, I^a II^{ae} q.93 aa.4-6).
5. MS Locke e.6, fol.91r. Combach is also mentioned on fol.2r.
6. J. Combach, Metaphysicorum Libri Duo.
7. MS Locke f.33, fols.8-25, and fols.186-174 (reversed). The handwriting in this manuscript does not resemble Locke's usual style. On the question of its authenticity see W.H. Kenney, "John Locke and the Oxford Training in Logic and Metaphysics", (unpublished Ph.D. dissertation, St. Louis University, 1959), pp.32-34.
8. MS Locke f.11, fols.8r,10v-11v.
9. Library catalogue numbers 2548^a, 2982.
10. H. Kearney, Scholars and Gentleman, pp.82-84; Kenney, op. cit., pp.34-36.
11. An examination of books on logic and metaphysics published in Oxford between 1600 and 1640 shows a complete absence of medieval authors (apart from Buridan) and a sizeable increase in the number of modern works on scholastic philosophy appearing after 1620. The authors printed in the 1630s include Sanderson, Smiglecki, Burgersdijk, Combach and Scheibler. F. Madan, The Early Oxford Press, contains full details.

12. The last edition was the Venice edition of 1591. For a list of editions of Ockham's works, see P. Boehner, The Tractatus de Successivis attributed to William Ockham, pp.16-23.
13. The Correspondence of Henry Oldenburg, vol.I, pp.90-91,95.
14. John Locke, Two Tracts on Government, (ed. P. Abrams), pp. 10-12.
15. Ibid., p.16.
16. Ibid., pp.91-92.
17. Ibid., pp.80-81.
18. Ibid., pp.69-70,72-73.
19. Ibid., p.192 (Latin Tract, p.6).
20. Ibid., p.222 (Latin Tract, p.7).
21. John Locke, Essays on the Law of Nature, (ed. W. von Leyden), p.214.
22. Ibid., pp.237-39.
23. MS Locke e.6.
24. Essays on the Law of Nature, pp.10-12.
25. Ibid., p.111.
26. Ibid.
27. Ibid., p.187.
28. Ibid., p.199.
29. Ibid., p.183.
30. Leviathan, ch.31, (ed. Oakeshott, p.234).
31. Essay, II.xxi.49.
32. Of Ethick in General (MS Locke c.28, fols.146-52), printed in P. King, The Life of John Locke, pp.306-12. See also Von Leyden, op.cit., pp.69-73.
33. Two Treatises of Government, (ed. Laslett), p.82n.
34. Hans Aarsleff, "The state of nature and the nature of man in Locke", in J.W. Yolton (ed.), John Locke: Problems and Perspectives, pp.99-136, esp. pp.121-22.
35. Essays on the Law of Nature, p.198.
36. Essay, III.iii.19.
37. Draft A, §43, fol.88. There are in addition many passages in Draft A (for example the very first sentence of §1) which if taken literally entail the non-existence of innate ideas, but it does not follow from these that Locke had fully grasped this.

38. Essays on the Law of Nature, p.149.
39. Ibid., p.125.
40. Of the Laws of Ecclesiastical Polity, I.vii.2-6.
41. Essays on the Law of Nature, p.145.
42. Draft A, §11. Locke produces the outline of another quite different theory in §12.
43. British Library catalogue number, C.122, f.14.
44. Letter 886, Locke to Edward Clarke, 21 December 1686 (Correspondence, vol.III, pp.88-89). The autograph of the letter has not survived, and our knowledge of its contents depends on Rand's transcription, which may in this case not be accurate. See De Beer's note to this letter, and also his general remarks on the letters between Locke and Edward Clarke in Correspondence, vol.I, pp.xxxix-xl.
45. Draft A was first edited by R.I. Aaron and J. Gibb, An Early Draft of Locke's Essay, together with Excerpts from his Journals. I have used however the more recent and more accurate edition by P.H. Nidditch, Draft A of Locke's Essay concerning Human Understanding. Draft B was first edited by B. Rand, An Essay concerning the Understanding, Knowledge, Opinion and Assent. I have where necessary amended his text in accordance with the corrections supplied by P.H. Nidditch, "Rand's Edition of Draft B of the Essay", The Locke Newsletter, 12 (1981), pp.65-94.
46. The parallels between Draft B and the Essay can be found for the most part by using the annotations in Rand's edition. It should be noted however that Draft B, §13 (pp.51-52) corresponded to I.iv.25 (not I.ii.6), and §22 (pp.70-71) corresponds to II.i.21-22.
47. Material from Draft B is incorporated with few or no changes into the following chapters of Book II: i, ii, viii-ix, xiii, xiv, xvi, xviii, xxiii, xxv, xxvi, xxviii.
48. Draft A, §27, fol.80.
49. Ibid., fol.84.
50. Ibid., §29, fol.75.
51. Ibid., §27, fol.81.
52. Ibid., §29, fol.75.

53. Ibid., §27, fol.84.
54. Essay, IV.viii.9, first edition.
55. Ibid., my italics.
56. Leviathan, ch.9 (ed. Oakeshott, p.53); cf. ch.5 (p.29), ch.7 (p.40).
57. Human Nature, vi.1.
58. Leviathan, ch.9 (pp.54-55). The presence of astrology here does not indicate that Hobbes accepted its claims: for an explicit rejection see De Corpore, i.8.
59. De Homine, x.4.
60. Leviathan, ch.4 (p.19); De Corpore, ii.9; Human Nature, v.6. The most detailed account of why statements about universal things are incoherent is in De Corpore, v.2ff, esp. §§5,8.
61. Draft A, §2, fol.58. The edition of Aaron and Gibb is inaccurate here, in that it makes Locke say that we have no knowledge of general things.
62. Ibid., §45, fol.95.
63. Draft B, §140 (p.283). Locke did not return to this question in the remainder of Draft B.
64. Ibid., §69 (p.139).
65. Ibid.
66. Ibid., §86 (p.170).
67. Ibid., §59 (p.119).

Chapter 6

The Composition and Sources of the Essay

I

The fortunate survival of the two Drafts A and B enables us to form a good picture of the state of Locke's thought in 1671. The completed Essay was finally published in December 1689, though with the year 1690 on the title page; from that time onwards we can trace with some precision the changes in Locke's thought by means of the successive editions of the Essay, the polemics with Stillingfleet and others, and his correspondence, especially with his young Irish disciple, William Molyneux.

The way in which Locke's thought developed in the crucial years between 1671 and 1689 is less easy to discover, even in broad outline. A very large number of letters from and (more especially) to Locke have been discovered, but their philosophical content is disappointingly meagre. The journals and notebooks which have survived are a little, but only a little, more rewarding. They enable us to answer a few questions but provide little or no assistance in answering many more.

It appears from Locke's Journals that he kept in his possession a manuscript, described as Intellectus or De Intellectu, which can hardly be anything other than a draft version of the Essay. In July 1678 he left it in a trunk in Paris while he journeyed round France,¹ and after returning to England he left what was probably the same manuscript in a locked box in the rooms of one of his Oxford friends, Nathaniel Hodges.² The nature of this

manuscript is unfortunately entirely unknown, but Locke's decision to place it in safe-keeping with other people suggests that during these years his attention was occupied elsewhere. This is what we might expect if Locke was largely occupied with the Exclusion Crisis and with the composition of the Two Treatises of Government.³

There does exist one further draft of the Essay, now known as Draft C. It dates from 1685, according to a note added to the title page. Unlike its predecessors it has not as yet been published in full; nevertheless the description and extracts given by Aaron⁴ provide a good indication of its character. Although the title page refers to four books, only the first two survive, and these are very much closer to the published version of the Essay than they are to either of the Drafts of 1671. In these two books Draft C appears to differ about as much from the first edition of the Essay as that edition differs from the second edition of 1694. If a similar manuscript of Books III and IV had survived it would have been an invaluable source for discovering the evolution of Locke's thought about real and nominal essences and the limits of human knowledge. As things are Draft C is of little relevance to the present enquiry.

The evidence of Draft C shows that by 1685 the first two Books of the Essay existed in a state not very different from the form in which they were eventually published. That this is also true of Books III and IV is confirmed by a number of letters written at about this time. Locke left England for Holland in late August or early September 1683. He took with him some at least of his philosophical papers, with the intention of using the leisure

provided by this enforced exile to put his scattered thoughts together into a coherent treatise.⁵ In December 1684 he wrote to the Earl of Pembroke to defend himself from the charge of being the author of some seditious pamphlets:

My time was most spent alone, at home by my fires side, where I confesse I writ a good deale, I thinke I may say, more then ever I did in soe much time in my life, but noe libells, unlesse perhaps it may be a libell against all mankinde to give some account of the weaknesse and shortnesse of humane understanding, for upon that my old theme de Intellectu humano (on which your Lordship knows I have been a good while a hammering), has my head been beating, and my pen scribeing all the time I have been here except what I have spent in travelling about to see the country.⁶

A few days later he wrote a delicately phrased letter to Edward Clarke, asking whether Pembroke had expressed any desire to see something of "my discourse De Intellectu humano" which was being put "into a forme that one may see the designe and connection of the parts."⁷

A substantial portion of this new version of the Essay was completed and sent to Pembroke the following year;⁸ it is presumably this or some closely similar version that has survived as Draft C.⁹ Book III, covering a topic that Locke had not originally intended to include,¹⁰ took longer to write. It was finished by the end of August 1686.¹¹ Book IV took less time, perhaps because more of it existed in draft form; it was finally sent to Clarke at the end of the same year.¹²

The evidence that we possess proves beyond reasonable doubt that by the end of 1686 the Essay existed in a form fairly close to the one eventually published in 1689. It is

also probable that Locke did not begin to put it into this form until after he had come to Holland. Some individual sections of the Essay are of course much older. Many quite long passages are taken almost word for word from Draft A or Draft B, and it is likely that others were taken from other papers now lost.¹³ If the story is true that Shaftesbury on his deathbed read the long chapter on the existence of God (IV.x),¹⁴ then that chapter would provide an example, since there is nothing corresponding to it in either Draft A or Draft B.

The only evidence, or rather apparent evidence, against this dating comes from a letter written by Locke in June 1679 to his French acquaintance Nicholas Toinard (or Thoynard). Both Fox Bourne¹⁵ and Aaron¹⁶ quote Locke as saying that "I think too well of my book, which is completed, to let it go out of my hands." This sounds clear enough. It can hardly refer to Draft A or Draft B; it presumably therefore indicates that some substantially fuller treatise had been recently completed in the summer of 1679.

If, however, Locke's remark is read in its proper context, then another interpretation becomes not only possible but necessary. What Locke wrote was the following:

Dans vostre retreat a Orleans j'espere que vous acheverez les notes et tout ce que appertien a vostre harmonie pour estre bien tost publié avec toute la perfection qu'un tel ouvrage merite. par la premiere je vous manderez ce qu on dit icy. j'ay fait coudre ensemble un recuile de ces feuilles que vous mavez donnéz pour les monstrier a quelques uns des gens scavantes parceque j estime trop mon livre qui est perfect pour le laisser sortir d entre mes mains.¹⁷

Locke was writing not about any of his own writings but about Toinard's Harmony of the Gospels. This letter therefore has no relevance whatever to the question of when the Essay was written.

II

The remainder of this chapter consists of an examination of some of the sources of Locke's ideas and the influences on his thought. As a survey it makes no claim to be even approximately complete: some important influences, such as the Cambridge Platonists, have been left out of the discussion altogether, and others have been considered only very briefly. Instead I have considered those thinkers who have influenced or who have often been supposed to have influenced Locke's views on universals and on the scope of natural philosophy and the possibility of a science of nature.

The date at which Locke's Essay was written is in itself a matter of some interest. It also has important consequences for the question of his indebtedness to the greatest of all his contemporaries, Isaac Newton. Locke's Essay was published at the end of 1689. The Principia was published in the summer of 1687. In the past these dates have led many writers to suppose that Locke owed a substantial intellectual debt to Newton, a judgement apparently confirmed by the well-known reference to Newton in the Epistle to the Reader, and by other favourable (for Locke, very favourable) references elsewhere.¹⁸ Locke could be seen, and very frequently has been seen, primarily as an under-labourer employed in removing the rubbish impeding the progress of the new sciences.¹⁹

If at the end of 1686 the Essay already existed in a form

quite close to that finally published, then the common assumption that Locke's thought owed anything of major importance to Newton must be called into question. By the time that the Principia was published Locke's examination of human knowledge and the ways in which it could and could not be acquired had already been completed. Locke had at last answered to his own satisfaction the questions which he had set out to examine. The most that a reading of the Principia might be expected to produce would be a few changes in the peripheral regions of Locke's system.

In fact the changes made in the Essay under Newton's influence are quite small. According to Aaron there are no significant differences between the discussions of space and time in Draft C and in the first edition (or for that matter any subsequent edition) of the Essay.²⁰ The contents of the first edition of the Essay appear almost entirely unaffected by the Principia, and the same is largely true of the later editions as well. The only significant modification is in the fourth edition, where Locke removed his previous assertion that bodies operate on one another only by impulse, and replaced it by the weaker claim that this is the only manner of operation which we can conceive.²¹

The Principia had little impact even on Locke's views about space and time and the interactions of bodies, peripheral as these matters were to his thought as a whole. It had no effect whatever on the central issue of the nature of human knowledge. On this subject Locke's views had already been formed. In the course of time Newton's achievement and others modelled on it were to change the accepted view of what was to count as knowledge, and eventually even the meaning of the word "science" itself. None of these

changes can be seen even to be beginning in Locke. He quickly grasped the magnitude of Newton's achievement, but he made no attempt to change any of the basic principles of his philosophy. The Essay remains an essentially pre-Newtonian work.

The effects of Locke's reading of Newton can be seen most clearly in his remarks on natural science in Some Thoughts concerning Education. On the whole Locke was pessimistic about even the possibility of such a science:

Natural Philosophy, as a speculative Science, I imagine we have none, and perhaps, I may think I have reason to say, we never shall be able to make a Science of it. The Works of Nature are contrived by a Wisdom, and operate by ways too far surpassing our Faculties to discover, or Capacities to conceive, for us ever to be able to reduce them into a Science.²²

The benefits of studying nature are considerable but they do not include the acquisition of certain knowledge:

But to return to the study of Natural Philosophy, though the World be full of Systems of it, yet I cannot say, I know any one which can be taught a Young Man as a Science, wherein he may be sure to find Truth and Certainty, which is, what all Sciences give an expectation of. I do not hence conclude that none of them are to be read: It is necessary for a Gentleman in this learned Age to look into some of them, to fit himself for Conversation. But whether that of Des Cartes be put into his Hands, as that which is most in Fashion; or it be thought fit to give him a short view of that and several others also, I think the Systems of Natural Philosophy, that have obtained in this part of the World, are to be read, more to know the Hypotheses, and to understand the Terms and Ways of Talking of the several Sects, than with hopes to gain thereby a comprehensive, scientific, and satisfactory Knowledge of the Works of Nature: Only this

may be said, that the Modern Corpuscularians talk, in most Things, more intelligibly than the Peripateticks, who possessed the Schools immediately before them.²³

A general acquaintance with the various systems of natural philosophy produced by the ancients and the moderns is a suitable accomplishment for a gentleman; otherwise practical enquiries of limited scope are of the most value:

But I would not deterr any one from the study of Nature, because all the Knowledge we have, or possibly can have of it, cannot be brought into a Science. There are very many things in it, that are convenient and necessary to be known to a Gentleman: And a great many other, that will abundantly reward the Pains of the Curious with Delight and Advantage. But these, I think, are rather to be found amongst such Writers, as have imploy'd themselves in making rational Experiments and Observations, than in starting barely speculative Systems. Such Writings therefore, as many of Mr. Boyle's are, with others, that have writ of Husbandry, Planting, Gardening, and the like, may be fit for a Gentleman, when he has a little acquainted himself with some of the Systems of the Natural Philosophy in Fashion.²⁴

At this point Locke's tone suddenly changed:

Though the Systems of Physicks, that I have met with, afford little encouragement to look for Certainty or Science in any Treatise, which shall pretend to give us a body of Natural Philosophy from the first Principles of Bodies in general, yet the incomparable Mr. Newton, has shewn, how far Mathematicks, applied to some Parts of Nature, may, upon Principles that Matter of Fact justifie, carry us in the knowledge of some, as I may so call them, particular Provinces of the Incomprehensible Universe. And if others could give us so good and clear an account of other parts of Nature, as he has of this our Planetary World, and the most considerable Phaenomena observable in it, in his admirable Book, Philosophiae

naturalis principia Mathematica, we might in time hope to be furnished with more true and certain Knowledge in several Parts of this stupendous Machine, than hitherto we could have expected.²⁵

The reason for this sudden change can be found in the fact that Some Thoughts concerning Education was written in two distinct stages. Much of it originally formed letters to Edward Clarke, written for the most part while Locke was in Holland; the remainder was presumably added shortly before publication in 1693. Of the passages quoted above all except for the last were taken (with a few minor changes) from a letter written in 1686²⁶ — before Locke could have known anything of Newton's work.²⁷ Later, when re-ordering the letters to form a coherent treatise for publication, Locke realised that it was now necessary that something should be said about Newton. The kind of mathematical physics set out in the Principia was clearly quite different from either the speculative systems of the Cartesians or the practical discussions of husbandry, planting and gardening which had been encouraged by the early Royal Society. Exactly how far Locke was aware of the discrepancy between his earlier remarks and those he was now adding is by no means clear; fortunately it is only of secondary importance. What is significant is that Locke was not prepared to reconsider all that he had said about the possibility of a science of nature. Locke's conception of a science remained unaffected by what Newton had done. The achievement of the Principia did not provide a refutation of Locke's claim that no science of nature was possible, and Locke did not see that what it did make necessary was a change in the conception of what a science must be.

III

The problem of Locke's intellectual debts to Newton can be quite straightforwardly settled because we know the dates of the composition and publication of their works. In the case of the other possible influences on Locke no such simple procedure is available. In every case of any importance it is chronologically possible that Locke had read the relevant works, but it is not always easy to determine whether or not he had done so or, if he had, how important the influence had been.

Seventeenth-century writers were in general sparing in their acknowledgements to their contemporaries. Locke gladly acquiesced in this convention and, like Descartes, extended it to the ancients. He had easily comprehensible motives for avoiding anything more than a few very infrequent references to other philosophers. The impression of the Essay which he intended to convey was of a work written out of direct experience and prolonged reflection, and not out of books by other people. (In exactly the same way, the religion of The Reasonableness of Christianity is ostensibly based on the pure text of the Bible, unaccompanied by the interpretations of commentators and theologians.) The few references that Locke did make (few at least in comparison to the bulk of the Essay) are therefore for the most part to accounts of travels in remote parts of the world, to such ancient authors as Cicero, Virgil or Horace, or to an older generation of moderns, notably Hooker and Herbert of Cherbury, from whom he could hardly have been accused of borrowing anything of really major importance. The modern writers by whom he might have been expected to have been decisively influenced were never directly quoted and in some

cases never even mentioned. Accordingly, when Stillingfleet suggested that Locke had derived some of his opinions from Descartes Locke chose to reply with the heavy sarcasm which he apparently considered suitable for this kind of controversy:

And your Lordship is so great a Man, and every way so far above my Meanness, that it cannot be supposed that your Lordship intended this for any thing but a Commendation of me to the World, as the Scholar of so great a Master. But though I must always acknowledge to that justly admired Gentleman, the great Obligation of my first Deliverance from the unintelligible way of talking of the Philosophy in use in the Schools in his time, yet I am so far from entitling his Writings to any of the Errors or Imperfections which are to be found in my Essay, as deriving their Original from him, that I must own to your Lordship they were spun barely out of my own Thoughts, reflecting as well as I could on my own Mind, and the Ideas I had there, and were not, that I know, derived from any other Original.²⁸

On the specific point at issue — the nature of certainty — Locke had a good case, but the general innuendo is most certainly false. Locke owed very much more to Descartes than a mere good example of how to write philosophy clearly and intelligibly.

Locke only referred to Descartes by name in a few places in the Essay,²⁹ but there can be no doubt that he was deeply influenced by his works. No-one, as far as I know, has ever denied that Locke had Descartes in mind when he was arguing against the identity of body and extension or the supposition that the soul always thinks.³⁰ In these places the identity of the target is obvious, and it is a measure of Descartes's importance to Locke that he was prepared to digress from his main theme in order to make his objections known. Descartes's positive influence is equally

great, though it is less easy to delineate with any precision. When one thinker has had only a small influence on another the extent of that influence can be estimated by conjecturing how the one author might have written if he had remained quite ignorant of the thought of the other. It can be said of Descartes, as perhaps it can be said of no-one else, that if he had not existed Locke either would never have written any philosophy at all or would have written something quite unlike the Essay.

IV

In seventeenth-century England there was one philosopher who was probably more influential even than Descartes. Francis Bacon's writings provided the inspiration for the experimental philosophers who dominated the early Royal Society. Not everyone however responded to his influence: Newton evidently did not, nor did the Cambridge Platonists; and there is a good case for supposing that the same is true of Locke.

The opinion of the great majority of recent writers is that Bacon had little or no influence on Locke. The most extreme statement of this view comes from Gibson: "Of the work of Bacon there is not the slightest trace in the Essay."³¹ Aaron, very slightly more moderate, held that "there is no evidence to show that Bacon was an influence on Locke's philosophical development."³² Most other recent writers have agreed, either explicitly or implicitly (by discussing Locke without mentioning Bacon at all).

A number of writers in the last century, including Fox Bourne³³ and Thomas Fowler,³⁴ allowed Bacon a rather more important place in the formation of Locke's thought; but the only recent writer to make a case for Bacon has been Neal Wood, in a long and copiously documented article entitled "The Baconian Character of Locke's 'Essay'".³⁵ Wood's position is in fact quite as extreme as Gibson's had been, though of course on the opposite side: "Locke is a Baconian, and...the Essay concerning Human Understanding is fundamentally Baconian, whether directly or indirectly derivative."³⁶

One fact which lends some support to Wood's claim is that Locke did own a substantial collection of books by Bacon (nineteen catalogue entries, eleven separate titles; a greater number than for any other author apart from Cicero, Boyle and Locke himself). There are of course obvious dangers involved in making inferences from the contents of a man's library. Nearly everyone is influenced by books which he does not own and owns books of which he has read little or even nothing. Nevertheless it is scarcely credible that Locke would have assembled such a collection, including quite a number of duplicate copies, if he had not read a fair amount of Bacon and had continued to find him worth reading.

Our knowledge of the books in Locke's library enables us to say with some confidence that Locke had read Bacon; it does not enable us to settle the question of how far he was influenced by him. It may be certain that Locke owned one or more copies of most of Bacon's works. It is also certain that there are very few references anywhere in Locke's works either to Bacon or to any of his writings.

Wood describes the Essay as a Baconian work, but he has nevertheless to admit that there is no place in it at which Bacon is either mentioned or quoted. There are in fact only two quotations from Bacon in all of Locke's writings, both in Section 1 of The Conduct of the Understanding, and both taken from the Preface to the Great Instauration. Apart from this Wood produces only three further references: one is to The History of the Reign of King Henry VII;³⁷ another occurs in the fragment De Arte Medica, which was probably written not by Locke but by Sydenham;³⁸ and the third is in one of the letters to Edward Clarke which provided the material for Some Thoughts concerning Education. In the letter Locke recommended reading Bacon as a guide to those who wished to reason well; in the published version Bacon's name was replaced by Chillingworth's.³⁹ None of these references adds anything to Wood's claim, and neither do another two (which Wood omits) in the Second Reply to Stillingfleet.⁴⁰ Only the two quotations in The Conduct of the Understanding are of any real significance, and even they do not by themselves provide any greater evidence of an important debt to Bacon than the (in some respects parallel) quotation in the Essay from The Laws of Ecclesiastical Polity provides evidence that Locke was strongly influenced by Hooker.⁴¹

The question of how many times Locke mentioned Bacon or his writings is one that can be given a precise and incontrovertible answer. The question of how many times Locke alluded to Bacon or was influenced by him cannot be answered so decisively. Wood, for example, describes the statement in the Epistle Dedicatory to the Essay that "truth, like gold, is not the less so for being

newly brought out of the mine" as a Baconian metaphor.⁴² It is not unlike Bacon, but it might also be found in many other writers of the period. Again Wood claims that when Locke asks the reader to "be pleased to make a trial, with the air enclosed in a football"⁴³ or to "consider the red and white colours in porphyry"⁴⁴ or to "pound an almond"⁴⁵ he is exhorting the reader "to become a collaborator in the common Baconian enterprise".⁴⁶ This claim seems grossly overstated, unless we take the ridiculous step of ascribing to Bacon's influence any and every attempt to conduct an experiment.

The number of passages in the Essay which show any definite or even probable sign of Baconian influence is in fact small. In II.xii.1 Locke explains that we make all complex ideas by either combining, comparing or separating simple ideas:

This shews Man's Power and its way of Operation to be muchwhat the same in the Material and Intellectual World. For the Materials in both being such as he has no power over, either to make or destroy, all that Man can do is either to unite them together, or to set them by one another, or wholly separate them.

There is perhaps a reminiscence here of Novum Organum, i.4:

"Toward the effecting of works, all that man can do is to put together or put asunder natural bodies. The rest is done by nature working within." The distinction between the material and the intellectual world is certainly characteristic of Bacon, but scarcely uniquely so.

Another passage in the Essay which may have been influenced by Bacon is IV.xii.12. Locke has just repeated his (very un-Baconian) assertion that it is morality which is the proper business of mankind in general. In case this gives the wrong

impression, Locke adds that he in no way intends to discourage the study of nature:

I would not therefore be thought to dis-esteem, or dissuade the Study of Nature. I readily agree the Contemplation of his Works gives us occasion to admire, revere, and glorify their Author: and if rightly directed, may be of greater benefit to Mankind, than the Monuments of exemplary Charity, that have at so great Charge been raised, by the Founders of Hospitals and Alms-houses. He that first invented Printing; discovered the Use of the Compass; or made publick the Virtue and right Use of kin kina [quinine] did more for the propagation of Knowledge; for the supplying and increase of useful commodities; and saved more from the Grave, than those who built Colleges, Work-houses, and Hospitals.

Nevertheless we should not expect certain, scientific knowledge where none is to be had:

In the Knowledge of Bodies, we must be content to glean, what we can, from particular Experiments: since we cannot from a Discovery of their real Essences, grasp at a time whole Sheaves; and in bundles, comprehend the Nature and Properties of whole Species together.

Here there is a metaphor which does have a good claim to be described as Baconian. In the Great Instauration, which Locke certainly had read, we find Bacon saying that:

For though it be true that I am principally in pursuit of works and the active department of the sciences, yet I wait for the harvest time and do not attempt to mow the moss or to reap the green corn. For I well know that axioms once rightly discovered will carry whole troops of works along with them and produce them, not here and there in ones, but in clusters.⁴⁷

Even here, although Locke's manner of expression is reminiscent of Bacon, his thought is very different. Bacon hoped as the

sciences matured to gather whole troops and clusters of works; but this is precisely what Locke warned us not to expect.

Apart from these passages the only places in which Locke's thought may owe something to Bacon are the discussions of scholastic philosophy and its deficiencies,⁴⁸ and the attack on the syllogism as a means of gaining knowledge,⁴⁹ and in neither of these is the Baconian influence at all certain.

The Conduct of the Understanding, though very much shorter than the Essay, nevertheless contains many more signs of Bacon's influence. This is what might have been expected given the purpose of the book. Locke's aim was to provide a handbook for learning to think that would be of more use than the logic textbooks of the schools. On this subject Bacon had few competitors of remotely equal stature, either ancient or modern. Chillingworth might in Locke's opinion have provided a better example of how best to engage in a rational polemic, but as a general guide for how to learn to think properly the Novum Organum stood alone. Locke borrowed from it freely, attacking those who "are apt to draw general conclusions, and raise axioms from every particular they meet with",⁵⁰ those "who run natural philosophy into metaphysical notions and the abstract generalities of logic",⁵¹ and those who are too hasty and proceed "by running too fast into general observations and conclusions, without a due examination of particulars enough whereon to found those general axioms."⁵² Characteristic Baconian phrases absent from the Essay now appear: anticipations of the mind,⁵³ idols of the mind,⁵⁴ and not least the word "induction" itself.⁵⁵ Locke was quite prepared to borrow from Bacon when he thought that he had

anything to learn from him; the absence of Baconian references in the Essay merely indicated the extent to which Locke and Bacon were concerned with different problems.

On the evidence presented so far there is therefore little reason for regarding Bacon as one of the major influences on Locke's thought. Locke had certainly read something of what Bacon had written, and probably a fair amount; he was also associated with people, most notably Boyle, who unquestionably did owe much to Bacon.⁵⁶ Despite this the detectable influence of Bacon on his thought appears to have been quite small. The contrast with such contemporaries as Hooke is very marked.⁵⁷

This conclusion is the opposite of that proposed by Wood. According to Wood both the title and the form of the Essay "express in authentic Baconian spirit Locke's consciousness of the novelty of his undertaking."⁵⁸ Even the words used are Baconian:

The word "understanding" does not seem to figure in the title of a previous English work of substance. Bacon uses it frequently; five of the famous aphorisms of the Novum Organum dealing with the "Idols of the Tribe" begin "The Human Understanding" or Intellectus humanus, the term that Locke employed both for Draft B and the final draft, De Intellectu humano. Even Locke's frequent employment of "idea" unparalleled in previous English philosophical writing may be of Baconian instead of Cartesian origin, and perhaps its use reflects Locke's recognition of the novelty of his enterprise.⁵⁹

The first of these claims is weak; the second is truly extraordinary. In the one passage Wood adduces as evidence (Novum Organum, i.23) Bacon used the word "idea" in a strictly traditional manner, for the divine Ideas. There is nothing anywhere in Bacon which anticipates Descartes's revolutionary usage.

Some of Wood's other claims are equally difficult to accept:

In Bacon's lengthy "Catalogue of Particular Histories", a list of titles of subjects, among them natural histories, that he believes would have to be written before his scheme of a universal science could be realized, the seventy-eighth is "History of the Intellectual Faculties, Reflexion, Imagination, Discourse, Memory, etc." Locke's essay, De Intellectu humano, somewhat broader in scope, is just such a natural history.... The Essay is a "natural history" of the understanding in keeping with the many natural histories in the sciences of Locke's day, written under the influence of Bacon.⁶⁰

It is not difficult to imagine what a Baconian natural history of the intellect would look like: the ages children learn to speak, prodigious feats of memory, stories of learned men and their oddities, reports of second sight and other paranormal phenomena, discussions of madness and wit; perhaps even Locke's rational parrot would find a place as a Deviant Instance.⁶¹ One can only speculate as to the precise contents, but one book such a natural history would never have resembled is the Essay concerning Human Understanding. Wood's claim that "Locke's 'historical plain method' is, indeed, exactly the method of the Baconian natural history"⁶² is a wholly inappropriate description of the character of the Essay.

According to Wood Locke shared Bacon's deep concern that the sciences should not only enlighten men's understandings but also be of practical use in their lives. "Locke's natural history, then, is aimed at utility, and not only at philosophic analysis."⁶³ He then quotes from the opening chapter of the Essay:

Our Business here is not to know all things, but those which concern our Conduct. If we can find out those Measures, whereby a rational Creature put in that State, which Man is in, in this World, may, and ought to govern his Opinions, and Actions depending thereon, we need not be troubled, that some other things escape our Knowledge.⁶⁴

There is an emphasis on action or practice in Locke as well as in Bacon, but the conclusions drawn are very different. Bacon was concerned above all to inaugurate a science of nature in which theoretical understanding and practical application would be indissolubly bound together. About the possibility of such knowledge and the (relative) ease of acquiring it he had no doubts. Once the natural histories had been compiled (a laborious but by no means endless task) the discovery of all sciences and causes would be but the work of a few years. Moral philosophy on the other hand was not a subject that attracted Bacon very deeply. There are a few pages on it in the Advancement of Learning, and apart from that little else.⁶⁵

On these matters Locke's outlook was quite opposed to Bacon's. He placed a high value on useful inventions which would ease the burden of human life, but he had no belief that any science of nature would be developed which would make large numbers of such inventions possible. Locke was on these matters as marked a pessimist as Bacon had been an optimist. Bacon had been convinced that God had given us the possibility, if only we were prepared to humble ourselves and enter the kingdom of nature as little children, of reversing at least some of the effects of the Fall. Locke believed that God had placed us here not to know but to act,⁶⁶ and therefore that the proper business of mankind was morality.⁶⁷

As far as inanimate nature was concerned, God had given us no more than the capacity to discover enough for our well-being during our temporary existence in this world.

The commonly-held view that the Essay owed little to Bacon's thought appears therefore to be broadly correct. The explanation is not that Locke was only imperfectly acquainted with Bacon's works, but rather that he found that they had only occasional relevance to the problems which troubled his mind and which he wrote the Essay in order to solve.

V

The two men who most influenced the way that Locke thought about natural philosophy were Robert Boyle and Thomas Sydenham.

The extent of Locke's interest in Boyle's writings can be seen from the catalogue of books in his library.⁶⁸ There are sixty-two entries under Boyle's name, a greater number than for any other author. This total is in some respects misleading in that it includes parts of works already listed elsewhere, but even when allowance has been made for this it is still true that Locke owned more books by Boyle than by anyone else — about thirty-five separate works in all.⁶⁹ Together these amount (in length) to about seventy per cent of those works by Boyle which were published in Locke's lifetime; if we exclude from our reckoning the purely religious writings, none of which Locke possessed,⁷⁰ the total is even higher. Locke owned only a selection of Boyle's writings on chemistry, but otherwise he possessed a copy of almost every scientific and philosophical work that Boyle wrote.

It is in addition possible, indeed quite probable, that Locke gained his knowledge of Boyle's thought not only by reading his books but also by direct personal contact. It was through his friend Richard Lower that Locke became acquainted with the group of experimental scientists associated with John Wilkins, and although Locke's involvement with this group remained rather marginal he did get to know Robert Boyle. Boyle left Oxford in 1664, but the two men continued to correspond, and they saw one another frequently again after Locke himself moved to London in 1667.⁷¹

Locke owned most of Boyle's works and he possessed at least the opportunity of supplementing and clarifying by private conversation whatever he might learn from them. It is clear however from Locke's own writings that Boyle's influence was quite as narrow as it was deep. There was a significant overlap between the two men's interests, but most of Boyle's work was concerned with matters that lay outside Locke's range of concern or indeed competence. Locke possessed the philosopher's characteristic of moving from the particular to the general, from the concrete to the abstract. Boyle's inclinations on the other hand led him towards individual facts and problems. Posterity may have been mistaken in placing too much importance on The Sceptical Chymist, but it was right in locating Boyle's peculiar genius in the area of chemistry. In the late seventeenth century there was no possibility of anyone doing for chemistry what Newton had done for mechanics, but Boyle had an ability of creating a degree of order in an extraordinarily confusing subject, an ability which deeply impressed many of his contemporaries. Boyle's achievements

were however not such as could be made use of by someone whose primary interests were in epistemology. There is no sign in Locke's writings that he was in any way influenced by Boyle's work in chemistry.

There are other parts of Boyle's thought to which Locke owed equally little, notably the work on pneumatics and the long discussions of the usefulness of experimental philosophy. It is highly significant that the phrase "experimental philosophy", so frequently used by the virtuosi in the Royal Society, does not appear even once in the whole of the Essay. Locke responded as little to the modified Baconianism advocated by Boyle as he had to the original Baconian philosophy itself.

What Locke did take over from Boyle was a set of fundamental assumptions about the kind of things that there are in the world and the way that they are related. It was the mechanical philosophy that provided Locke with a picture of how the world is organised, and consequently also with a picture of what a successful explanation of a physical phenomenon would be like. There are of course several respects in which Locke's attitude towards the mechanical philosophy was not altogether the same as Boyle's. Unlike Boyle he had strong doubts about both its theoretical fruitfulness and its practical utility. Nevertheless he had no reservations about its essential correctness. There are no signs in any of Locke's writings that he ever doubted that the perceptible qualities of bodies are determined by the arrangements and motions of their sub-microscopic parts. The way in which he differed from Boyle was that he did not believe that we would ever gain any knowledge of what these arrangements and these motions might be.

Locke first encountered the new mechanical philosophy as a young man, already bitterly dissatisfied with the scholastic logic which he had been forced to learn as an undergraduate and with the scholastic physics that was part of the curriculum for the Master of Arts. He appears to have accepted the mechanical philosophy from the very start and it remained one of the unquestioned bases of his thought. Locke found already developed in Boyle, most notably in The Origin of Forms and Qualities, a mechanistic, corpuscularian account of the essences of material substances — an account which could serve as an intelligible replacement for the discredited conception of a substantial form. The only significant difference between the two men lay in the names used. Boyle retained the word "form", though he took great care to emphasize the difference between his essential forms and the substantial forms of the schoolmen.⁷² Locke on the other hand preferred to discard the word "form" altogether and to speak of real essences. Locke, of course, needed a pair of terms — real and nominal essences — whereas Boyle did not. This latter difference is of great importance, but on the nature of real essences their views were fundamentally the same.

The standard conception of scientific explanation which Locke and Boyle shared can perhaps best be described as a kind of mechanistic nominalistic essentialism. As in Aristotle the properties of a substance are explained by reference to its essence. For Locke and Boyle however the real essences or essential forms of bodies are conceived in a purely nominalistic and mechanistic manner as the hidden individual mechanisms which are the causes of the sensible qualities which we observe.

The value for Locke of this mechanistic account of the real essence of bodies was not that he expected anyone to explain with its aid the qualities of any particular substance, but rather that it provided a picture of what would and what would not count as intelligible explanation:

Did we know the Mechanical affections of the Particles of Rhubarb, Hemlock, Opium, and a Man, as a Watchmaker does those of a Watch, whereby it performs its Operations, and of a File which by rubbing on them will alter the Figure of any of the Wheels, we should be able to tell before Hand, that Rhubarb will purge, Hemlock kill, and Opium make a Man sleep; as well as a Watch-maker can, that a little piece of Paper laid on the Balance, will keep the Watch from going, till it be removed; or that some small part of it, being rubb'd by a File, the Machin would quite lose its Motion, and the Watch go no more. The dissolving of Silver in aqua fortis, and Gold in aqua Regia, and not vice versa, would be then, perhaps, no more difficult to know, than it is to a Smith to understand, why the turning of one Key will open a Lock, and not the turning of another. But whilst we are destitute of Senses acute enough, to discover the minute Particles of Bodies, and to give us Ideas of their mechanical Affections, we must be content to be ignorant of their properties and ways of Operations; nor can we be assured about them any farther, than some few Trials we make, are able to reach. But whether they will succeed again another time, we cannot be certain.⁷³

The mechanistic philosophy in the first part of this passage was taken over from Boyle. The pessimistic conclusion was Locke's own contribution.

Locke's pessimism about the scientific usefulness of the mechanical philosophy was probably influenced by, and was certainly shared by, his medical guide and teacher, Thomas Sydenham. While

still at Oxford Locke read and was deeply impressed by Sydenham's Methodus Curandi Febres, and on coming to London he quickly secured an introduction. For the next few years the two of them were closely associated. Locke accompanied Sydenham on the rounds of his practice and transcribed (and perhaps helped to compose) a number of short papers on medical matters. It is true that Locke was by no means ignorant of medicine before he made Sydenham's acquaintance, and it is probable that he sought Sydenham out precisely because his approach was already consonant with Locke's own. Nevertheless the importance of Sydenham's influence cannot easily be exaggerated. Medicine was the only scientific or quasi-scientific discipline with which Locke had any deep first-hand acquaintance. In his youth he had dabbled in chemistry and he had read the works and perhaps observed the experiments of many of the physicists, but the one discipline he knew from the inside was medicine — practised in the manner of Thomas Sydenham.

Sydenham can be described as an empiricist in one of the legitimate senses of that much-abused word, namely that he followed the empirical school in his attitude to medical theory. Locke described his own and Sydenham's approach in a letter to Thomas Molyneux:

What we know of the works of nature, especially in the constitution of health, and the operations of our own bodies, is only by the sensible effects, but not by any certainty we can have of the tools she uses, or the ways she works by. So that there is nothing left for a physician to do, but to observe well, and so by analogy argue to like cases, and thence to make to himself rules of practice...

Sydenham was sceptical not only about such pieces of traditional medicine as the doctrine of humours, but also about the value of anatomy:

All that Anatomie can doe is only to shew us the gross and sensible parts of the body, or the vapid and dead juices all which, after the most diligent search, will be noe more able to direct a physician how to cure a disease than how to make a man; for to remedy the defects of a part whose organically constitution and that texture whereby it operates, he cannot possibly know, is alike hard, as to make a part which he knows not how is made. Now it is certaine and beyond controversy that nature performs all her operations on the body by parts so minute and insensible that I thinke noe body will ever hope or pretend, even by the assistance of glasses or any other invention, to come to a sight of them, and to tell us what organically texture or what kinde of ferment...separate any part of the juices in any of the viscera, or tell us what liquors the particles of these juices are, or if this could be donne (which yet is never like to be) would it at all contribute to the cure of the diseases of those very parts which we so perfectly knew.⁷⁵

The minute workings of nature are forever beyond the reach of human inquiry. In attempting to discover them we learn more, but not in such a way as to further the chief end of medicine:

So that I thinke it is cleare that after all our porings and mangling the parts of animals we know noething but the grosse parts, see not the tools and contrivances by which nature works, and are as far off from the discovery we aime at as ever. Soe that he that knows but the natural shape, size, situation and colour of any part is as well learned for the knowing of its diseases, and their cure, as he that can describe all the minute and sensible parts of it, can tell how many veins and arteryes it has, and how many distributed, count every fibre and describe all the qualityes

of the parenchyma. Since he knows all this, and yet not to perceive how it performs its office, is indeed to take pains for something more difficult, but not a jott more usefull, than the other less accurate knowledg in anatomie I mentioned. The laborious anatomist I will not deny knows more, but not more to the purpose, for if he cannot come to discover these little differences which preserve health or make a disease, if he cannot possibly see how nature prepares those juices which serve in their fitt places and proportions for the use and preservation of the body he may perhaps be the better anatomist by multiplying dissections, but not a better physician, for pereing and gazeing on the parts which we dissect without perceiving the very precise way of their working is but still a superficial knowledg, and though we cut into there inside, we see but the outside of things and make but a new superficies for ourselves to stare at.⁷⁶

In the Essay Locke drew on the work of both Boyle and Sydenham. He firmly believed in the mechanical philosophy as giving a true picture of the ultimate workings of nature, but he had no hope that any genuine science of nature would ever be established with its aid (or of course in any other way). This was not because such a science was intrinsically impossible. Locke never doubted the bare possibility of a science of nature in the way in which many of Locke's readers have doubted the possibility of a demonstrative science of morality. The barrier that prevents us from having a science of nature is nothing more than the narrowness of our senses and the fewness of our ideas. "It is not to be doubted," Locke assured his readers "that spirits of a higher rank than those immersed in Flesh, may have as clear Ideas of the radical Constitution of Substances, as we have of a Triangle, and so perceive how all their Properties and Operations flow from thence: but the manner how they come by that knowledge, exceeds our conception."⁷⁷

A science of nature is therefore not impossible, but so far as we can tell it is forever beyond our reach. We are left merely with the opportunity of making experiments and observing what we can:

I deny not, but a Man accustomed to rational and regular Experiments shall be able to see farther into the Nature of Bodies, and guess righter at their yet unknown Properties, than one, that is a Stranger to them: But yet, as I have said, this is but Judgment and Opinion, not Knowledge and Certainty. This way of getting, and improving our Knowledge in Substances only by Experience and History, which is all that the weakness of our Faculties in this State of Mediocrity, which we are in in this World, can attain to, makes me suspect, that natural Philosophy is not capable of being made a Science. We are able, I imagine, to reach very little general Knowledge concerning the Species of Bodies, and their several Properties. Experiments and Historical Observations we may have, from which we may draw Advantages of Ease and Health, and thereby increase our stock of Conveniences for this Life: but beyond this, I fear our Talents reach not, nor are our Faculties, as I guess, able to advance.⁷⁸

The conclusion Locke drew from this is stated in one of the most important of all the passages of the Essay for understanding Locke's thought as a whole:

From whence it is obvious to conclude, that since our Faculties are not fitted to penetrate into the eternal Fabrick and real Essences of Bodies; but yet plainly discover to us the Being of a GOD, and the Knowledge of our selves, enough to lead us into a full and clear discovery of our Duty, and great Concernment, it will become us, as rational Creatures, to imploy those Faculties we have about what they are most adapted to, and follow the direction of Nature, where it seems to point us out the way. For 'tis

rational to conclude, that our proper Employment lies in those Enquiries, and in that sort of Knowledge, which is most suited to our natural Capacities, and carries in it our greatest interest, i.e. the Condition of our eternal Estate. Hence I think I may conclude, that Morality is the proper Science, and Business of Mankind in general; (who are both concerned, and fitted to search out their Summum Bonum,) as several Arts, conversant about several parts of Nature, are the Lot and private Talent of particular Men, for the common use of humane Life, and their own particular Subsistence in this World.⁷⁹

Locke shared Bacon's concern for the improvement of human life on earth but disagreed completely as to the way this might be achieved. Bacon imagined a gigantic collective enterprise of research increasing simultaneously the understanding and the control of nature. There is no sign that Locke shared his faith. He believed that we could and should improve the useful arts: patients could be healed who would otherwise have died and inventions could be made that would benefit mankind. Nevertheless our real business is elsewhere, with our conduct in this life and with the condition of our eternal estate.

VI

Locke learned much from Descartes, Boyle and Sydenham, but there are nevertheless large areas of his thought which show little or no sign of their influence. It does not in any way follow that there must exist other sources for these areas also. There are of course many people who never have a genuinely original thought in their life. Locke was not one of these; if he had been there would be little justification for continuing to study his writings

nearly three centuries after his death. There are in all periods philosophers who are almost entirely unoriginal: Cicero and Sextus Empiricus are two examples from the ancient world. In each case scholars can (where the surviving evidence allows it) trace back ideas and arguments to the more creative thinkers from whom they have been borrowed. We know incomparably more about Locke's intellectual background, but the evidence that we have lends no support to any project of discovering sources for all of Locke's ideas.

There are however good reasons for looking at the possible influence on Locke of two more of his immediate predecessors, namely Pierre Gassendi and Thomas Hobbes. Two of the most important and enduring elements in Locke's thought were the nominalist elimination of real universals and the empiricist theory of the origin of our ideas, and in neither case can the influence of Descartes, Boyle or Sydenham have been of any real significance. Both views on the other hand had been vigorously championed by Gassendi and by Hobbes.

There is a long tradition of interpretation, extending back to Leibniz, which considers Locke as being more or less deeply indebted to Gassendi. Fox Bourne, Cranston and Aaron have all held this view.⁸⁰ Not altogether surprisingly it has been considered with particular favour in France, and the most detailed discussions of Locke's real or alleged debts to Gassendi have been produced by Bonno⁸¹ and by Duchesneau.⁸²

The external evidence that Locke was at all well acquainted with Gassendi's works is not very strong. The catalogue of Locke's library mentions only one work by Gassendi, and this — the

biography of Peiresc — is of minimal relevance to philosophy.⁸³ Admittedly Locke did own the abridgement of Gassendi's works produced by François Bernier, but this is not necessarily evidence of any marked interest in Gassendi's philosophy. Locke had met Bernier in Paris, and his copy of the Abregé de la philosophie de Gassendi was a gift from its author.⁸⁴ These books have survived, and they retain three hundred years after they were published a crispness of condition which any book that has been much read inevitably loses. Locke's ownership of these volumes therefore proves nothing. Indeed Locke's interest in Bernier seems more to have centred round his experiences as a traveller in India. As Cranston remarks:

Another and greater exponent of Gassendi Locke did certainly come to know in Paris: namely François Bernier, author of the Abrégé de la philosophie de Gassendi. But Bernier was also an orientalist and, strange to say, all Locke's references to him in his journal deal with Bernier's knowledge of the East; none with Gassendi, or indeed with any philosophical question at all. Bernier, the author of several travel books, stimulated in Locke an interest in the literature of travel which lasted all his life. The two men also shared an interest in medicine, and it is hardly conceivable that they did not discuss philosophy as well, for Bernier had only just published his abridgement of Gassendi at the time of his first interviews with Locke.⁸⁵

The absence of references to Gassendi in Locke's journals is only strange if we assume that Locke must have been interested in Gassendi. If we make no such presumption then there is nothing that need cause any surprise. Locke had never been to India and was never likely to go there. It is hardly strange, given what

we know of Locke's cast of mind, that he thought he could learn more by asking about India than by discussing the human understanding, a subject on which Bernier (and Gassendi) could have no information denied to Locke himself.

The only other work by Gassendi which Locke owned was the fifth set of objections to Descartes's Meditations, included in Locke's collection of Descartes's works. Cranston states that Locke read both this and the longer Disquisitio Metaphysica, also directed against Descartes; unfortunately he cites no evidence to justify this statement.

The evidence so far presented for the view that Locke was indebted to Gassendi is not particularly convincing. Unfortunately there is little to add. Locke never quoted Gassendi in any of his published works, and only once referred to him by name, in response to a mention by Stillingfleet.⁸⁶ There is rather more information to be gained from Locke's manuscripts. One of his early notebooks, MS Locke f.14, dated 1667, contains a fair number of references to Gassendi or to his writings, and these have been used by Bonno and Viano as evidence that Locke was well acquainted with Gassendi's thought.⁸⁷ In fact the total number of these references is rather greater than either Bonno or Viano state, but their character provides no evidence of any extensive knowledge of Gassendi's writings. The majority of the references are to the philosophically insignificant Life of Peiresc.⁸⁸ The remainder, eight in number,⁸⁹ are to what Locke describes as Gassendi's "Physica" — Book II of the Syntagma Philosophicum, published posthumously in the Opera Omnia of 1658. An examination of these eight citations shows that they all refer to only three (consecutive) pages of Gassendi's

⁹⁰ work. This notebook, MS Locke f.14, was used by Locke as an alphabetically-organised dictionary containing the opinions of various modern writers, mostly scientists, on their contemporaries. Locke at this stage in his career was interested in finding out who was important in the scientific world of the seventeenth century, and all that this notebook shows is that he read Gassendi in order to find out Gassendi's views about such thinkers as Galileo, Torricelli and Pascal. At the same time Locke noted comments by other writers on Gassendi himself,⁹¹ but his doing this does not by itself provide any evidence that Locke was significantly influenced by Gassendi's own views.

Some further slight evidence that Locke might have known Gassendi's works at first hand comes from a series of manuscripts concerned with Locke's purchase of books. Gassendi's Opera Omnia of 1658 is mentioned twice, first in a manuscript which is undated but which clearly belongs to Locke's period in Holland,⁹² and secondly in a list of books sold in an auction in Groningen in 1687.⁹³ In neither case however is it at all certain that Locke bought these books, and their absence from his library after he returned to England suggests that he did not. The most therefore that these references show is that Locke retained some interest in Gassendi's works during the time that he was engaged in writing the Essay.

There are a few other references to Gassendi or to his writings scattered throughout Locke's unpublished writings.⁹⁴ Perhaps the most interesting comes from another notebook, MS Locke d.11, in which there is a reference (apparently dating from 1696) to Gassendi's views on the souls of brute animals.⁹⁵ This

reference is notable primarily because of its late date: it indicates that Locke had access to a copy of Gassendi's Opera Omnia even after he had returned to England. However it shows only that Locke was prepared to look up what Gassendi had to say about a particular, rather marginal, problem.

The external evidence for Locke's being at all deeply indebted to Gassendi is therefore not strong. The internal evidence is also indecisive. There are certainly broad similarities about Locke's and Gassendi's thought, but mere similarities establish nothing if the ideas involved were widely diffused during the period in question. There is nothing peculiarly Gassendist about nominalism, empiricism or hedonism. As yet no-one has shown that there is anything in Locke for which Gassendi is the most probable (still less the only possible) source.

VII

The question of Locke's indebtedness or lack of indebtedness to Hobbes has naturally received most discussion in connection with the Two Treatises of Government.⁹⁶ Very much less sustained attention has been given to the problem of Hobbes's possible influence on the Essay. Fox Bourne described Locke as "a diligent and wise student of Hobbes", but the consensus of more recent opinion is that Hobbes's influence was very limited.⁹⁷

The task of determining the degree to which Locke was influenced by Hobbes is beset with some difficulties peculiar to itself. Locke was never ready to acknowledge that he had learned anything from another philosopher, but he had a particular aversion to admitting even that he had read anything by Hobbes.

When he was accused of having borrowed the contents of the Reasonableness of Christianity from Leviathan, he replied that not only did he not know that the words his critic had quoted were in Leviathan, but that he still did not know that they were there "any further than I believe them to be there from his quotation".⁹⁸ Locke wished to appear in public as a man who had read little or nothing of Leviathan and who was not prepared even to open a copy of it in order to check the accuracy of his opponent's accusations.

The same attitude appears in Locke's correspondence with Stillingfleet. Stillingfleet had suggested that Locke's views about matter being given the power to think were close to those of Hobbes and Spinoza. Locke merely replied that he was not so well read in Hobbes or Spinoza as to be able to say what their opinions were.⁹⁹ Again the implication is that Locke's orthodox opponents were better acquainted with these dangerously irreligious works than was Locke himself.

It follows that a scarcity of definite references to Hobbes or his opinions need not indicate a lack of knowledge on Locke's part. Locke was well aware that his views might be attacked as conducive to religious unorthodoxy and scepticism, as indeed in due course they were. He had therefore strong motives for concealing as far as possible any indebtedness to Hobbes.

The evidence of Locke's library certainly suggests that he was not well acquainted with Hobbes's writings. Apart from Hobbes's contribution to the third set of Objections and Replies to Descartes's Meditations, there are only three works listed: the Latin poem De Mirabilibus Peccii, the Problemata Physica, and a

first edition of Leviathan. There is also a small collection of works written against Hobbes, by Boyle, Clarendon, George Lawson, James Lowde, John Templer and Thomas Tenison.¹⁰⁰ Of the works by Hobbes himself, Leviathan is the only one of any real importance, and the extent of its possible influence on Locke is limited by the fact that he lent his copy to Tyrrell in 1674 and did not receive it back until 1691.¹⁰¹

The number of passages in the Essay which appear to have been influenced by Hobbes or to be directed against him is quite small. There is only one reference to Hobbes, or rather to his followers, and even this shows a serious misunderstanding of Hobbes's thought:

That Men should keep their Compacts, is certainly a great and undeniable Rule in Morality: But yet, if a Christian, who has the view of Happiness and Misery in another Life, be asked why a Man must keep his Word, he will give this as a Reason: Because God, who has the Power of eternal Life and Death, requires it of us. But if an Hobbist be asked why; he will answer: Because the Publick requires it, and the Leviathan will punish you, if you do not.¹⁰²

It is interesting that the only explicit reference to Hobbes in the Two Treatises also involves a misunderstanding.¹⁰³ It appears either that Locke was very careless, or that he misunderstood Hobbes, or that he did not wish to appear to have correctly understood him, or finally that he was concerned not with Hobbes himself but with the cruder "Hobbism" which had become fashionable in some quarters.

There are no passages in the Essay which are unquestionably directed against Hobbes, but there are a few which can be so regarded with a fair degree of probability. The two long attacks

on materialism.¹⁰⁴ can hardly have been written without any reference to the most notorious of all modern materialists, and one further comment is so well suited to Hobbes that it is likely that it was specifically aimed at him:

Intellectual Habits and Defects this way contracted are not less frequent and powerful, though less observed. Let the Ideas of Being and Matter be strongly joined either by Education or much Thought, whilst these are still combined in the Mind, what Notions, what Reasonings, will there be about separate Spirits? Let custom from the very Childhood have join'd Figure and Shape to the Idea of God, and what Absurdities will that Mind be liable to about the Deity?¹⁰⁵

The passages which contain possible borrowings from Hobbes are equally few in number. The statement in IV.iii.18 that without property there is no injustice has a very close parallel in

Leviathan.¹⁰⁶ Locke's contemptuous dismissal of the suggestion that spirits "are not in Loco, but Ubi"¹⁰⁷ bears a close resemblance to Hobbes's no more favourable remarks on those who suggest that immaterial beings are in space not circumscriptive but definitive.¹⁰⁸ A further point of resemblance is the use of a rather striking pharmacological analogy in matters of religion.

Locke referred to countries where

Men are forced, at a venture, to be of the Religion of the Country; and must therefore swallow down Opinions, as silly People do Empiricks Pills, without knowing what they are made of, or how they will work, and have nothing to do, but believe that they will do the Cure...¹⁰⁹

Hobbes twice used a similar analogy, in Leviathan and in De Cive:

For it is with the mysteries of our religion, as with wholesome pills for the sick; which swallowed whole, have

the virtue to cure; but chewed, are for the most part cast up again without effect.¹¹⁰

Even here, though, it is difficult to be sure as to what conclusion can be drawn. The analogy is unusual enough for it to be unlikely that Locke invented it for himself quite independently of Hobbes; on the other hand it is memorable enough for it to have become detached from its original context. After all, how many of the people who have alluded to Bentham's statement that (quantities of pleasure being equal) pushpin is as good as poetry, have any knowledge even of which work it is that contains this remark?¹¹¹

Another passage which may show the influence of Hobbes is the attack on the faculty theory of the will. Here the most relevant passage in Hobbes is to be found in the Objections against

Descartes:

But if M. Descartes shows that he who understands and the understanding are identical we shall lapse back into the scholastic mode of speaking. The understanding understands, the vision sees, the will wills, and by exact analogy walking, or at least the faculty of walking will walk.¹¹²

Locke's criticism is very similar:

For if it be reasonable to suppose and talk of Faculties, as distinct Beings, that can act, (as we do, when we say the Will orders, and the Will is free,) 'tis fit that we should make a speaking Faculty, and a walking Faculty, and a dancing Faculty, by which those Actions are produced, which are but several Modes of Motions; as well as we make the Will and Understanding to be Faculties, by which the Actions of chusing and Perceiving are produced, which are but several Modes of Thinking: And we may as properly say, that

'tis the singing Faculty sings, and the dancing Faculty dances; as that the Will chuses, or that the Understanding conceives...¹¹³

The resemblance of thought is clear, but it does not provide a guarantee of direct influence. Similar statements can be found elsewhere; and one, in Cudworth's unpublished Treatise on Free-will is closer still to Locke's words.¹¹⁴

There are of course many passages in the Essay which put forward views broadly similar to those found in Leviathan. This is only what might be expected. Hobbes and Locke agreed with one another on a number of points, notably the denial of innate ideas, the rejection of the Cartesian distinction between ideas and images, the acceptance of a mechanical theory of the origin of secondary qualities and the rejection of real universals of every kind. It does not follow that Locke derived his opinions on these matters from Hobbes. In every case there were other possible sources, many of which we know that Locke read.

There is however one distinctive Hobbesian doctrine which is not to be found in Bacon or Descartes or Boyle but which does exist, albeit in a rather different form, in Locke. Hobbes made a fundamental distinction between two quite different kinds of knowledge:

There are of KNOWLEDGE two kinds; whereof one is knowledge of fact; the other knowledge of the consequence of one affirmation to another. The former is nothing else, but sense and memory, and is absolute knowledge; as when we see a fact doing, or remember it done: and this is the knowledge required in a witness. The latter is called science; and is conditional; as when we know, that, if the figure shown be a circle, then any straight line through the centre shall

divide it into two equal parts. And this is the knowledge required in a philosopher; that is to say, of him that pretends to reasoning.

The register of knowledge of fact is called history. Whereof there be two sorts: one called natural history.... The other, is civil history....

The registers of science, are such books as contain the demonstrations of consequences of one affirmation, to another; and are commonly called books of philosophy...¹¹⁵

In The Conduct of the Understanding Locke made a similar distinction:

All that can be recorded in writing are only facts or reasonings. Facts are of three sorts:

1. Merely of natural agents, observable in the ordinary operations of bodies one upon another....
2. Of voluntary agents, more especially the actions of men in society, which makes civil and moral history.
3. Of opinions....

Under reasonings I comprehend all the discoveries of general truths made by human reason, whether found by intuition, demonstration, or probable deductions. And this is that which is, if not alone knowledge (because the truth or probability of particular propositions may be known too), yet is, as may be supposed, most properly the business of those who pretend to improve their understandings...¹¹⁶

The verbal resemblance between these two passages is quite close, though not perhaps close enough for it to be said with any confidence that Locke had the passage from Leviathan in mind when he was writing. There are important as well as unimportant differences in the thought, but the central distinction between knowledge of facts and knowledge of reasonings or consequences is fundamentally the same.

The extent to which Locke was influenced by Hobbes in making this distinction cannot now be determined with any certainty. One thing that is clear, as we shall see in the two following chapters, is that Locke's version of the distinction was founded, as Hobbes's had been, on a strictly nominalistic metaphysics. It is this very fact that makes it possible and perhaps probable that Locke arrived at his views without significant influence from Hobbes.

The general question of the nature of Hobbes's influence on Locke cannot be given a certain and definite answer. Laslett's opinion, based primarily on Locke's political thought, is that Locke probably read Hobbes quite early in his career and thereby absorbed opinions and sentiments which he later reproduced as his own.¹¹⁷ This view, which appears to me to be already plausible on the evidence Laslett has produced, is fully in accordance with the evidence provided by the Essay and the two 1671 drafts. All the passages in the Essay which appear to contain echoes of Leviathan are already to be found in either Draft A or Draft B, and the latter contains in addition one remark strongly reminiscent of Hobbes which Locke chose not to include in the final published version. This is the statement that everything which exists must exist in some place: "For supposing anything to exist we cannot conceive it but to be in some place, i.e. at a certain distance from some other things that do exist."¹¹⁸ This may be compared with Hobbes's dismissal of immaterial substances "that are in no place; that is to say, that seeming to be somewhat, are nothing."¹¹⁹ Locke certainly disagreed with Hobbes over the question of whether immaterial substances can exist. Nevertheless in the Essay the

Hobbesian view that all things which exist must exist at some place or other in space is still to be found, even though the explicit statement of Draft B had been omitted. Locke did not think of God as material, but he did think of him as existing in space. "Motion cannot be attributed to GOD, not because he is an immaterial, but because he is an Infinite Spirit."¹²⁰

It is also possible that Locke read something more of Leviathan after receiving his copy back from Tyrrell in 1691. The passage in the Conduct of the Understanding quoted earlier was written in or after 1697, and the remarks attacking those for whom the ideas of being and matter have become indissolubly associated was not added until the fourth edition of 1700.

The evidence which we possess about Locke's knowledge of Hobbes's works is therefore decidedly scanty, but at least it all points in the same direction. It is probable that Locke had read at least some of Leviathan at some time before 1674, and it is possible that he consulted it again after 1691. There is no evidence that Locke read any of Hobbes's philosophical works, apart perhaps from the Objections against Descartes, in the period from 1674 to 1691, during which the greater part of the Essay was written.

VIII

On the evidence presented above it appears that there is no straightforward answer to the question of how Locke acquired his nominalist opinions. The authors whose works we know or have good reason to believe Locke read thoroughly had little or nothing

to say about the nature of universals, while the evidence that Locke was at all deeply influenced by philosophers who certainly did have something to say, such as Hobbes and Gassendi, is not at all strong. Nominalist ideas were in circulation in Oxford during Locke's time there, but the books of scholastic philosophy which we have any evidence that he read were realist in tendency.¹²¹

A chronological analysis of the development of Locke's thought sheds only a little light on these matters. Explicit nominalist views appear for the first time in the Drafts of 1671, but their absence from earlier works proves nothing, given the subject matter of these works. All that we can safely say is that Locke maintained a nominalistic theory of universals in 1671, and that there is no evidence that he had ever held a different view at any earlier time.

The question of why Locke held the views that he did therefore remains unsolved. Any conjectures which we may choose to make are unlikely ever to be decisively confirmed or refuted. I suspect that Locke became acquainted with the traditional problem of universals during his early years at Oxford, and that from the start he inclined towards the side of the nominalists. Subsequent reading — for example of the early chapters of Leviathan — would have done no more than confirm his adherence to a position which he already held. Such a hypothesis is supported by Locke's later attitude towards realists like Norris and Stillingfleet. He appears to have found their outlook perverse and incomprehensible, in a way that suggests, though it certainly does not prove, that he had always held the nominalist axiom that everything which exists is an individual.

Notes to Chapter 6

1. Journal, 2 July 1678 (N.S.), MS Locke f.3, p.183, printed in J. Lough, Locke's Travels in France, p.202.
2. Journal, 3 February 1680, MS Locke f.4, p.8.
3. The precise dating of the Two Treatises of Government remains a matter of controversy. It is now universally accepted that the First Treatise and a large part of the Second Treatise were written before 1689, but it is disputed whether they date largely from 1679-80, the period of the Exclusion Crisis, or from 1683, the period of the Rye House Plot, or even from 1673-75, before Locke's visit to France. For these differing opinions, see Laslett's Introduction to his edition of the Two Treatises, pp.45-66; R.W.K. Hinton, "A Note on the Dating of Locke's Second Treatise", Political Studies, 22 (1974), pp.471-78; and R. Ashcraft, "Revolution Politics and Locke's Two Treatises of Government", Political Theory, 8 (1980), pp.429-85.
4. R.I. Aaron, John Locke, pp.55-73.
5. Letter 801, Locke to Clarke, 22 December 1684 (Correspondence, vol.II, p.671).
6. Letter 797, Locke to Lord Pembroke, 28 November 1684 (Correspondence, vol.II, p.665).
7. Letter 801, Locke to Clarke, 22 December 1684 (Correspondence, vol.II, p.674).
8. Letter 822, Locke to Clarke, 23 April 1685 (Correspondence, vol.II, p.721).
9. The MS of Draft C has survived among the papers of the Rotterdam merchant Benjamin Furly, and it is therefore unlikely that it was sent over to England. See R.I. Aaron, John Locke, pp.56-57.
10. Essay, III.ix.21.
11. Letter 871, Clarke to Locke, 16 October 1686 (Correspondence, vol.III, p.51).
12. Letter 886, Locke to Clarke, 21 December 1686 (Correspondence, vol.III, p.88).
13. For example material from Locke's Journal for 25 August 1676 reappears almost unchanged in Essay, IV.xviii.5,11. The Journal

- passages are reproduced in W. von Leyden's edition of the Essays on the Law of Nature, pp.276-77.
14. The source is a letter of 1706 by Thomas Cherry to Thomas Hearne, H.R. Fox Bourne, The Life of John Locke, vol.I, p.469.
 15. H.R. Fox Bourne, op. cit., vol.II, p.97.
 16. R.I. Aaron, John Locke, p.53 of the second edition. This reference has been removed from the third edition.
 17. Letter 475, Locke to Toinard, 6 June 1679 (Correspondence, vol.II, p.33).
 18. Essay, IV.i.9, IV.vii.11.
 19. This interpretation can be found explicitly in G. Buchdahl, Metaphysics and the Philosophy of Science, pp.1-2, but it is implicit in much modern writing on the Essay.
 20. R.I. Aaron, John Locke, p.66.
 21. Essay, II.viii.11. Locke's views on this topic are explained in more detail in the Second Reply, pp.401,408 (Works, vol.IV, pp.463,467-68).
 22. Some Thoughts concerning Education, §190.
 23. Ibid., §193.
 24. Ibid.
 25. Ibid., §194.
 26. Addendum to Letter 844, Locke to Clarke, 29 January 1686 (Correspondence, vol.II, p.785).
 27. Locke could have known of Newton's early work on optics, but there is no sign of any influence. The theory of light described in Essay, IV.ii.11-13 is clearly incompatible with the Newtonian conception of white light as a mixture of light of different colours.
 28. First Letter, p.103 (Works, vol.IV, pp.48-49).
 29. Essay, II.xxvii.12, III.iv.9-10, IV.vii.12-13.
 30. Essay, II.xiii.11-27; IV.vii.12-14; II.i.10-21.
 31. J. Gibson, Locke's Theory of Knowledge, p.233.
 32. R.I. Aaron, John Locke, p.12.
 33. H.R. Fox Bourne, The Life of John Locke, vol.I, p.62.
 34. See the Introductions to Fowler's editions of Bacon's Novum Organum, p.98, and Locke's Conduct of the Understanding, p.xxiii.

35. Studies in History and Philosophy of Science, 6 (1975), pp. 43-84.
36. Ibid., p.82.
37. Some Thoughts concerning Reading and Study for a Gentleman, Works, vol.III, pp.274-75.
38. See K. Dewhurst, Dr. Thomas Sydenham (1624-1689), pp.73-74, for some good though not absolutely conclusive reasons for ascribing De Arte Medica to Sydenham.
39. Addendum to Letter 844, Locke to Clarke, 29 January 1686 (Correspondence, vol.II, p.785); Some Thoughts concerning Education, §188. In a subsequent letter Locke asked Clarke to replace Bacon's name by Chillingworth's, the mention of the former being an error of Locke's amanuensis. See Letter 849, 24 April 1686 (Correspondence, vol.III, p.3).
40. Second Reply, pp.312,349 (Works, vol.IV, pp.402,427).
41. On Locke's reasons for quoting Hooker as an authority see Two Treatises of Government, ii.239. Compare also Locke's employment of quotations from that other pillar of moderate, rational Anglicanism, Chillingworth in the Second Reply, p.124 (Works, vol.IV, pp.275-76).
42. Wood, op. cit., p.61.
43. Essay, II.iv.4.
44. Essay, II.viii.19.
45. Essay, II.viii.20.
46. Wood, op. cit., p.67.
47. Bacon, Works, vol.IV, p.29.
48. Essay, III.x.7-13.
49. Essay, IV.xvii.4.
50. The Conduct of the Understanding, §13 (ed. Fowler, p.37).
51. Ibid., §24, p.51.
52. Ibid., §25, p.59.
53. Ibid., §26, p.61.
54. Ibid., §1, p.3.
55. Ibid., §13, p.37.
56. Wood (op. cit., p.55 & n) draws attention to the very substantial number of books in Locke's library written by scientists working in the Baconian tradition.

57. Hooke's debt to Bacon can be seen very clearly in his A General Scheme, or Idea of the Present State of Natural Philosophy, first published in The Posthumous Works of Robert Hooke, pp.1-65.
58. Wood, op. cit., p.59.
59. Ibid., p.60.
60. Ibid., p.63.
61. Novum Organum, ii.29. Cf. Essay, II.xxvii.8.
62. Wood, op. cit., p.65.
63. Ibid., p.71.
64. Essay, I.i.6.
65. Bacon, Works, vol.III, pp.419-29.
66. Essay, II.xxii.10.
67. Essay, IV.xii.11, cf. also I.i.6. In Draft B on the other hand it is "the truth of any one thing really existing without us, which is the great concernment of our understandings" (§11, p.44).
68. Library catalogue numbers 413-473.
69. Boyle's practice of internally subdividing his works into self-contained sections and of having groups of works published together in one volume make it very difficult to say precisely how many separate works he published. J.F. Fulton's A Bibliography of the Honourable Robert Boyle gives an indication of the problems involved.
70. A note in Locke's Journal for 8 November 1685 (N.S.) does suggest that he then had in his possession Boyle's Some Considerations touching the Style of the Holy Scriptures, MS Locke f.8, p.300.
71. A very full discussion of Locke's personal contacts with Boyle can be found in M.A. Stewart, "Locke's Professional Contacts with Robert Boyle", The Locke Newsletter, 12 (1981), pp.19-44.
72. See The Origins of Forms and Qualities, Works, vol.III, p.43, for the term "essential form". For Boyle's conception of a form, see *ibid.*, pp.28-29,36.

73. Essay, IV.iii.25.
74. Letter 1593, Locke to Thomas Molyneux, 20 January 1693
(Correspondence; vol.IV, p.629).
75. Sydenham, Anatomie (Dewhurst, op. cit., pp.85-86).
76. Ibid., pp.87-88.
77. Essay, III.xi.23.
78. Essay, IV.xii.10.
79. Essay, IV.xii.11.
80. H.R. Fox Bourne, The Life of John Locke, vol.I, p.72; vol.II,
pp.91-94; M. Cranston, John Locke, pp.102-3,170; R.I. Aaron,
John Locke, pp.31-35.
81. G. Bonno, Les relations intellectuelles de Locke avec la
France, pp.237-42.
82. F. Duchesneau, L'empirisme de Locke, pp.93-119.
83. Library catalogue number 1211.
84. Library catalogue number 283. On the title page of volume 1
there is written "Ex Dono Authoris humanissimi, juxta ac doctissimi."
85. M. Cranston, John Locke, p.170. For the relevant entries in
Locke's Journals, see J. Lough, Locke's Travels in France,
1675-1679, pp.177,200.
86. Second Reply, p.338 (Works, vol.IV, p.420).
87. G. Bonno, op. cit., p.238; C.A. Viano, John Locke, dal
razionalismo all'illuminismo, p.336.
88. Locke's references are to the 1657 English translation, The
Mirror of True Nobility and Gentility, being the Life of
Nicolaus Claudius Fabricius, Lord of Peiresc. This is not
the edition which later appears in Locke's Library catalogue.
89. MS Locke f.14, pp.28,60,62,64 (twice),78,82,84.
90. P. Gassendi, Opera Omnia, vol.I, pp.203-5.
91. MS Locke f.14, pp.28-29.
92. MS Locke b.2,fol.52r. The manuscript is undated, but it is
contained within a parchment cover on which there is some
writing in Dutch.
93. MS Locke b.2,fol.72v. This, though now bound into the same
volume as the manuscript mentioned in note 92 was originally
quite separate.

94. For a discussion of some of these other references, see E.A. Driscoll, "The Influence of Gassendi on Locke's Hedonism", International Philosophical Quarterly, 12 (1972), pp.87-110. This is a valuable article which covers an area rather wider than its title suggests.
95. MS Locke d.11, fol.3v.
96. P. Laslett, Introduction to John Locke, Two Treatises of Government, pp.67-91; J. Dunn, The Political Thought of John Locke, pp.77-83.
97. H.R. Fox Bourne, The Life of John Locke, vol.II, p.89; J. Gibson, Locke's Theory of Knowledge, pp.234-36; R.I. Aaron, John Locke, pp.29-31.
98. A Second Vindication of the Reasonableness of Christianity, Works, vol.VII, p.420.
99. Second Reply, p.422 (Works, vol.IV, p.477).
100. Library catalogue numbers 436, 464, 730, 1695, 1813, 2849, 2850.
101. P. Laslett, Introduction to John Locke, Two Treatises of Government, p.71n.
102. Essay, I.iii.5.
103. Two Treatises of Government, ii.98.
104. Essay, II.xxiii.22-32, IV.x.13-19.
105. Essay, II.xxxiii.17.
106. Leviathan, ch.15 (ed. Oakeshott, p.94).
107. Essay, II.xxiii.21.
108. Leviathan, ch.46 (ed. Oakeshott, pp.442-43).
109. Essay, IV.xx.4.
110. Leviathan, ch.32 (ed. Oakeshott, pp.242-43); cf. De Cive, xviii.4.
111. J. Bentham, The Rationale of Reward, Book III, ch.1, in Works, (ed. J. Bowring), vol.II, p.253.
112. Descartes, Philosophical Works, (ed. E.S. Haldane and G.R.T. Ross), vol.II, p.65. Translation amended slightly.
113. Essay, II.xxi.17.
114. The relevant passage of Cudworth's Treatise on Free-will can be found in D.D. Raphael (ed.), British Moralists 1650-1800, vol.I, §145. See also J.A. Passmore, Ralph Cudworth,

- pp.93-94. Locke would have had access to Cudworth's unpublished manuscripts through Lady Masham.
115. Leviathan, ch.9 (ed. Oakeshott, p.53).
 116. The Conduct of the Understanding, §24, (ed. Fowler, pp.54-55).
 117. P. Laslett, Introduction to John Locke, Two Treatises of Government, pp.72,74.
 118. Draft B, §144, p.285.
 119. Leviathan, ch.34 (ed. Oakeshott, p.260).
 120. Essay, II.xxiii.21 (derived from Draft B, §94, p.201). The implication of this passage is that God is infinitely extended in space. Berkeley certainly interpreted Locke in this way; see Philosophical Commentaries, §825.
 121. F. Burgersdijk, Institutionum Metaphysicarum, I.xiii.1,7; II.ii.1. J. Combach, Metaphysicorum Libri Duo, ch.21. C. Scheibler, Metaphysica, I.vii.4-7. M. Smiglecki, Logica, disputatio iv.

Chapter 7

The Metaphysics of the Essay

I

It is possible that Locke would not have responded very favourably to a discussion of his metaphysics. His own division of the sciences into phusikē, praktikē and sēmeiōtikē¹ leaves no apparent place for metaphysics as traditionally understood; indeed the traditional kind of metaphysics was regarded by Locke with undeviating contempt. Anyone who has learned

...these following Words, with their ordinary mutually relative Acceptations annexed to them; v.g. Substance, Man, Animal, Form, Soul, Vegetative, Sensitive, Rational, may make several undoubted Propositions about the Soul, without knowing at all what the Soul really is; and of this sort, a Man may find an infinite number of Propositions, Reasonings, and Conclusions, in Books of Metaphysicks, School-Divinity, and some sort of natural Philosophy; and after all, know as little of GOD, Spirits, or Bodies, as he did before he set out.²

Locke made it clear that he was not condemning every kind of natural philosophy and divinity, but only school divinity and the wrong kind of natural philosophy. In contrast there was no attempt to exclude any part of metaphysics from the condemnation.

With hindsight and with three more centuries' experience of the extreme difficulty of dispensing with metaphysics altogether, we can see clearly the metaphysical elements present in the philosophy of the Essay. We can also see, perhaps more easily

than Locke himself could have done, how they affect and indeed in some cases generate the epistemological problems which the Essay was written to solve.

The question of what counts as a metaphysical problem is not one which admits of any straightforward and universally acceptable answer. The corpuscularian philosophy is nowadays often classified as metaphysics, especially by those who take empirical testability to be the criterion of scientific character, but it is clear that Locke would have insisted on treating it as part of natural philosophy. Again, the problems surrounding the relations between mind and body would now be almost universally classed as metaphysical, whereas Locke included within natural philosophy the study of both bodies and spirits, and presumably also the problem of their interaction.³ There is however one series of problems falling within the boundaries of metaphysics as usually defined which could not possibly be counted as a part of natural philosophy. These are the problems concerned with universals.

Locke's basic position on universals is quite clear. Universals, whether conceived as universal natures, essences or forms, have no real existence either in particulars or independently of them. The discussion of general words in Book III of the Essay starts by taking this for granted:

All Things, that exist, being Particulars, it may perhaps be thought reasonable, that Words, which ought to be conformed to Things, should be so too, I mean in their Signification: but yet we find the quite contrary.⁴

A little later on Locke returned to this point in order to explain his position in more detail:

To return to general Words, it is plain, by what has been said, That General and Universal, belong not to the real existence of Things; but are the Inventions and Creatures of the Understanding, made by it for its own use, and concern only Signs, whether Words, or Ideas. Words are general, as has been said, when used, for Signs of general Ideas; and so are applicable indifferently to many particular Things; and Ideas are general, when they are set up, as the Representatives of many particular Things: but universality belongs not to things themselves, which are all of them particular in their Existence, even those Words, and Ideas, which in their signification, are general. When therefore we quit Particulars, the Generals that rest, are only Creatures of our own making, their general Nature being nothing but the Capacity they are put into by the Understanding, of signifying or representing many particulars.⁵

Finally in the chapter "Of Reason" Locke returned again to the subject of general ideas and emphasized again that universal knowledge does not require for its possibility the existence of universal entities, either in the world or in the mind:

Every Man's Reasoning and Knowledge, is only about the Ideas existing in his own Mind, which are truly, every one of them, particular Existences: and our Knowledge and Reasoning about other Things, is only as they correspond with those our particular Ideas. So that the Perception of the Agreement, or Disagreement of our particular Ideas, is the whole and utmost of all our Knowledge. Universality is but accidental to it, and consists only in this, That the particular Ideas, about which it is, are such, as more than one particular Thing can correspond with, and be represented by.⁶

Every metaphysical system supposes the existence of some type or types of thing to be absolutely or relatively unproblematic. Locke regarded the existence of individuals in this way. The only

"problem of universals" which occupied his attention was the problem of how something which is in itself an individual can nevertheless acquire some kind of universal function — as a general word or a general idea. He was quite unconcerned about any possible problem of how universal natures might be individuated. There is in Locke's philosophy no place for any problem of individuation. The problem which had so worried the scholastic realists was for him entirely unnecessary and indeed nonsensical. Given this it might appear that the search for the principle of individuation ought to be abandoned. If everything that exists is necessarily an individual, in itself and not as a result of any process of individuation, then there is surely no need to continue asking about the principle by the agency of which the process of individuation takes place. In fact however the problem continued to be discussed; or to be more accurate the words devised for the older problem continued to be used. As often happens, words and phrases have a longer existence than the thoughts and problems which had originally caused them to be devised.

In the first edition of the Essay Locke said nothing at all about individuation. He was induced to say something in the second edition by William Molyneux, who wanted to use the philosophy of the Essay as a basis for a textbook on logic and metaphysics.⁷ Locke appears not to have understood what the scholastic realists had originally meant by the principle of individuation, and he therefore found no difficulty in producing a simple answer:

From what has been said, 'tis easy to discover, what is so much enquired after, the principium Individuationis, and

that 'tis plain is Existence it self, which determines a Being of any sort to a particular time and place incommunicable to two Beings of the same kind. This though it seems easier to conceive in simple Substances or Modes; yet when reflected on, is not more difficult in compounded ones, if care be taken to what it is applied; v.g. Let us suppose an Atom, i.e. a continued body under one immutable Superficies, existing in a determined time and place: 'tis evident, that, considered in any instant of its Existence, it is, in that instant, the same with it self. For being, at that instant, what it is, and nothing else, it is the same, and so must continue, as long as its Existence is continued: for so long it will be the same, and no other.⁸

Existence is the principium individuationis because it is existence and nothing else which keeps anything one and the same while it continues to exist:

To conclude, whatever Substance begins to exist, it must, during its Existence, necessarily be the same: Whatever Compositions of Substances begin to exist, during the union of those Substances, the concrete must be the same: Whatsoever Mode begins to exist, during its Existence, it is the same: And so if the Composition be of distinct Substances, and different Modes, the same Rule holds.⁹

And again:

For whatever be the composition whereof the complex Idea is made, whenever Existence makes it one particular thing under any denomination, the same Existence continued, preserves it the same individual under the same denomination.¹⁰

In these passages just quoted Locke is to be found entangling himself in the kind of metaphysical nonsense seasoned with tautologies which he was so ready to condemn in the writings of the schoolmen. The reason is not that he had temporarily

allowed himself to be seduced into discussing a scholastic problem in scholastic terms. The schoolmen had sometimes written nonsense, but not nonsense of the kind produced by Locke. Locke's uncharacteristic descent into bad metaphysics was a consequence of his unfortunate decision to write about a problem which he did not understand and which was indeed in the context of his own philosophy no problem at all. For a nominalist who understands properly the principles of his own philosophy there can be no problem of individuation. As Ockham remarked, "what is to be sought is not the cause of individuation...rather what is to be sought is the cause of how it is possible that there should be anything common and universal."¹¹

It is interesting to note in this connection that both Locke's nominalist predecessors and his nominalist successors had a much clearer insight into the implications of their own metaphysics. Hobbes and Boyle both spoke of the principle of individuation only in connection with the old conundrum of whether Theseus' ship had remained the same even though all its timbers had been successively replaced as they had rotted away.¹² Neither Berkeley nor Hume discussed this particular problem, but both regarded the search for the principle of individuation as a search for a criterion of identity for things which change with time.¹³

II

The reason why Locke failed to comprehend the older problem of individuation is that the problems which really engaged his attention were of the opposite kind. He was concerned not with

how individuals are made from universals, but with how universals (i.e. universal signs) can exist in a world of individuals. This is the problem of the nature of general ideas.

The significance of Locke's views about general ideas has frequently been misunderstood, primarily as a result of a widespread failure to understand the problem of universals. Ignorance of the history of nominalism has engendered an incomprehension of what nominalism is; and in consequence Locke has been accredited with views variously described as conceptualist,¹⁴ realist¹⁵ and "mainly a mixture of conceptualism with a resemblance theory".¹⁶ Berkeley's polemic against Locke's theory of abstract general ideas has accordingly been seen as an argument for a genuinely different solution to the perennial Problem of Universals. In fact the dispute between Locke and Berkeley is an internal disagreement within the nominalist tradition. Both men were agreed on the fundamentalist nominalist thesis that only individuals exist. General ideas are in themselves merely individual existents which have the capacity to function as general signs; they are not universal things — not even intra-mental universal things. The only area of dispute remaining concerned the exact nature of general ideas and the way that the mind used them in thinking. Unfortunately a historical myopia of a kind that has remained too common in discussions of the history of philosophy has engendered a widespread belief that Locke and Berkeley were advocating fundamentally different solutions to the problem of universals, and this has caused Locke's thought in particular to be badly misunderstood.

Real universals had first been introduced into philosophy primarily in order to explain the possibility of real certain universal knowledge. A denial of the existence of any kind of real universals would be likely to be seen (and of course was seen) by realists as opening the door to scepticism of a most destructive sort. Locke had no intention whatever of promoting any kind of scepticism and no liking for being accused of doing so. He needed therefore to set out a coherent account of the nature of knowledge which would be free of any dependence on a realistic metaphysics. This involved a complete re-examination of the traditional concept of an essence, a concept which was closely linked with both the account of knowledge which Locke wished to retain and the metaphysics of universals which he had already rejected.

According to Locke it was quite impossible that there should be real universals of the kind postulated by Aristotle and the scholastic realists. The traditional realist theories attributed to essences a self-contradictory set of properties: on the one hand essences were real causes; on the other hand they possessed the property of universality, a property which can only be attributed to signs, in virtue of their signification, but never to things of any kind.

Locke therefore set out to clarify these matters by introducing¹⁷ a distinction between real and nominal essences. The real essence of a (material) substance is the constitution of the insensible parts of the body on which its qualities and other properties depend.¹⁸ The nominal essence of a species is an abstract idea associated with an appropriate name.¹⁹ In

character real and nominal essences are quite unlike one another. The justification for using the word "essence" for them both is that they share between them all the properties traditionally (and, according to Locke, inconsistently) ascribed to essences by the scholastic realists: real essences are real things which exist in the world and which are the causes of observable qualities; nominal essences are universal, immutable and eternal, and capable of being present directly to the mind.

The real essences of individual substances are therefore themselves individuals.²⁰ The springs and cogwheels and escapement of a clock are individual things, just as the clock itself is. The same is true of the far smaller natural mechanisms of substances such as lead or gold or wood. The only difference is that we can know what the mechanism of a clock is, whereas the arrangements of the corpuscles which make up a natural substance such as gold are in all probability forever beyond the reach of discovery.

The real essences of all created substances are therefore as perishable as the substances themselves:

All Things, that exist, besides their Author, are all liable to Change; especially those Things we are acquainted with, and have ranked into Bands, under distinct Names or Ensigns. Thus that, which was Grass to Day, is to Morrow the Flesh of a Sheep; and within few days after, becomes part of a Man: In all which, and the like Changes, 'tis evident, their real Essence, i.e. that Constitution, whereon the Properties of these several things depended, is destroy'd, and perishes with them.²¹

Nominal essences on the other hand are abstract ideas and are therefore, as the scholastics had said, ingenerable and

incorruptible:

But Essences being taken for Ideas, established in the Mind, with Names annexed to them, they are supposed to remain steadily the same, whatever mutations the particular Substances are liable to. For whatever becomes of Alexander and Bucephalus, the Ideas to which Man and Horse are annexed, are supposed nevertheless to remain the same; and so the Essences of those Species are preserved whole and undestroy'd, whatever Changes happen to any, or all of the Individuals of those Species. By this means the Essence of a Species rests safe and entire, without the existence of so much as one Individual of that kind.... From what has been said, it is evident, that the Doctrine of the Immutability of Essences, proves them to be only abstract Ideas; and is founded on the Relation, established between them, and certain Sounds as Signs of them; and will always be true, as long as the same Name can have the same signification.²²

This statement that abstract ideas are immutable evidently requires careful interpretation. Considered as mental particulars ideas are clearly far from immutable. Mental images are more transient and unstable than material substances, and it is clear that ideas, even if not identical with mental images, can scarcely survive the death of their possessor. Locke of course believed that thought does not cease with death; nevertheless there is no suggestion that he believed such survival to be a necessary consequence of the human capacity for abstract thought. God could presumably have made intelligent creatures that would perish like the beasts.

If ideas as mental particulars are not immutable, then what is? This is a problem which was given no adequate answer in the first edition of the Essay. It was only subsequently that Locke gave serious consideration to it.

In a passage at the end of Book IV, chapter 1, introduced for the first time in the fourth edition (1700) Locke explained the eternal character of mathematical knowledge by the eternal nature of the relations between ideas:

The immutability of the same relations between the same immutable things, is now the Idea that shews him, that if the three Angles of a Triangle were once equal to two right ones, they will always be equal to two right ones. And hence he comes to be certain, that what was once true in the case is always true; what Ideas once agreed will always agree; and consequently what he once knew to be true he will always know to be true, as long as he can remember that he once knew it.²³

Some further details are added to this account by some remarks about the aeternae veritates which Locke added to the second edition (1694):

Such Propositions are therefore called Eternal Truths, not because they are Eternal Propositions actually formed, and antecedent to the Understanding, that at any time makes them; nor because they are imprinted on the Mind from any patterns, that are any where of them out of the Mind, and existed before: But because being once made, about abstract Ideas, so as to be true, they will, whenever they can be supposed to be made again at any time past or to come, by a Mind having those Ideas, always actually be true. For Names being supposed to stand perpetually for the same Ideas; and the same Ideas having immutably the same Habitudo one to another, Propositions, concerning any abstract Ideas, that are once true, must needs be eternal Verities.²⁴

Ideas are not themselves immutable, but the relations which hold between the ideas are.

It follows from this account that the aeternae veritates

are not a limited group of truths of particular nobility or importance. All the general truths founded upon abstract ideas are to be counted as eternal truths. As Locke wrote to Molyneux:

You desir'd me too to enlarge more particularly about eternal verities, which, to obey you, I set about, but upon examination find all general truths are eternal verities, and so there is no entering into particulars; though, by mistake, some men have selected some as if they alone were eternal verities.²⁵

Just as all truths about the relations between abstract ideas are eternal truths, so all abstract ideas once named are nominal essences:

So that in truth every distinct abstract Idea, is a distinct Essence: and the names that stand for such distinct Ideas, are the names of Things essentially different. Thus a Circle is as essentially different from an Oval, as a Sheep from a Goat: and Rain is as essentially different from Snow, as Water from Earth; that abstract Idea which is the Essence of one, being impossible to be communicated to the other. And thus any two abstract Ideas, that in any part vary one from another, with two distinct names annexed to them, constitute two distinct sorts, or, if you please, Species, as essentially different, as any two the most remote, or opposite in the World.²⁶

There exist precisely as many species as there are (named) abstract ideas,²⁷ and these ideas fix the boundaries of each species. It follows that every attribute contained within the nominal essence of a species is as essential as every other:

The measure and boundary of each Sort, or Species, whereby it is constituted that particular Sort, and distinguished from others, is that we call its Essence, which is nothing but that abstract Idea to which the Name is annexed: So that every thing contained in that Idea, is essential to that Sort.²⁸

If the nominal essence of gold which I construct contains (inter alia) solubility in aqua regia, malleability and very high density, then all these attributes are equally part of the essence (i.e. my essence)²⁹ of gold; if someone who knows no chemistry omits solubility in aqua regia from his abstract idea then it ceases to be part of his nominal essence. There is therefore no universally correct answer to the question of whether solubility in aqua regia (or any other attribute) is part of the essence of gold. It may be or it may not, according to which nominal essence has been chosen:

For the complex Ideas of Substances, being made up of such simple ones as are supposed to co-exist in Nature, every one has a right to put into his complex Idea, those Qualities he has found to be united together. For though in the Substance Gold, one satisfies himself with Colour and Weight, yet another thinks Solubility in Aqua Regia, as necessary to be joined with that Colour in his Idea of Gold, as any one does its Fusibility; Solubility in Aqua Regia, being a Quality as constantly join'd with its Colour and Weight, as Fusibility, or any other; others put in its Ductility or Fixedness, etc. as they have been taught by Tradition, or Experience. Who of all these, has establish'd the right signification of the Word Gold? Or who shall be the Judge to determine? Each has his Standard in Nature, which he appeals to, and with Reason thinks he has the same right to put into his complex Idea, signified by the word Gold, those Qualities, which upon Trial he has found united; as another, who has not so well examined, has to leave them out; or a third, who has made other Trials, has to put in others.³⁰

The attributes of individuals on the other hand cannot properly speaking be said to be either essential or non-essential:

That Essence, in the ordinary use of the word, relates to Sorts, and that it is considered in particular Beings, no farther than as they are ranked into Sorts, appears from hence: That take but away the abstract Ideas, by which we sort Individuals, and rank them under common Names, and then the thought of any thing essential to any of them, instantly vanishes: we have no notion of the one, without the other: which plainly shews their relation. 'Tis necessary for me to be as I am; GOD and Nature has made me so: But there is nothing I have, is essential to me. An Accident, or Disease, may very much alter my Colour, or Shape; a Fever, or Fall, may take away my Reason, or Memory, or both; and an Apoplexy leave neither Sense, nor Understanding, no nor Life. Other Creatures of my shape, may be made with more, and better, or fewer, and worse Faculties than I have: and others may have Reason, and Sense, in a shape and body very different from mine. None of these are essential to the one, or the other, or to any Individual whatsoever, till the Mind refers it to some Sort or Species of things; and then presently, according to the abstract Idea of that sort, something is found essential.³¹

There is therefore no individual to which any quality is essential, unless we tacitly think of it as an instance of some species or other:

But Essence, even in this sense, relates to a Sort, and supposes a Species: For being that real Constitution, on which the Properties depend, it necessarily supposes a sort of Things, Properties belonging only to Species, and not to Individuals; v.g. Supposing the nominal Essence of Gold, to be Body of such a peculiar Colour and Weight, with Malleability and Fusibility, the real Essence is that Constitution of the parts of Matter, on which these Qualities, and their Union, depend; and is also the foundation of its Solubility in Aqua Regia, and other Properties accompanying that complex Idea. Here are Essences and Properties, but all upon supposition

of a Sort, or general abstract Idea, which is considered as immutable: but there is no individual parcel of Matter, to which any of these Qualities are so annexed, as to be essential to it, or inseparable from it. That which is essential, belongs to it as a Condition, whereby it is of this or that Sort: But take away the consideration of its being ranked under the name of some abstract Idea, and then there is nothing necessary to it, nothing inseparable from it.³²

In this passage, Locke uses the word "property" in the old Aristotelian and not in the looser modern sense. There are in nature as such no properties, no specific differences or any other praedicabilia:

Should there be found a parcel of Matter, that had all the other Qualities that are in Iron, but wanted Obedience to the Load-stone; and would neither be drawn by it, nor receive Direction from it, Would any one question, whether it wanted any thing essential? It would be absurd to ask, Whether a thing really existing, wanted any thing essential to it. Or could it be demanded, Whether this made an essential or specifick difference, or no; since we have no other measure of essential or specifick, but our abstract Ideas? And to talk of specifick Differences in Nature, without reference to general Ideas and Names, is to talk unintelligibly. For I would ask any one, What is sufficient to make an essential difference in Nature, between any two particular Beings, without any regard had to some abstract Idea, which is looked upon as the Essence and Standard of a Species? All such Patterns and Standards, being quite laid aside, particular Beings, considered barely in themselves, will be found to have all their Qualities equally essential; and every thing, in each Individual, will be essential to it, or, which is more true, nothing at all.³³

There is therefore the basis in Locke's philosophy for a sharp distinction between two kinds of knowledge. We can make no essential predications about individuals. All that exist in nature are particular contingent matters of fact. The general truths which can be established with certainty concern only the immutable relations of abstract ideas:

So that as to all general Knowledge, we must search and find it only in our own Minds, and 'tis only the examining of our own Ideas, that furnisheth us with that. Truths belonging to Essences of Things, (that is, to abstract Ideas) are eternal, and are to be found out by the contemplation only of those Essences: as the Existence of Things is to be known only from Experience.³⁴

Locke therefore anticipated the distinction which Hume was to make between relations of ideas and matters of fact. He did not, of course, derive from it the destructively positivistic conclusions which Hume set out with such evident pleasure in the concluding paragraphs of the first Enquiry. Nevertheless the general tendency of Locke's thought is towards a general division of all truths into these two classes.³⁵ Such a division, as Hume clearly saw, poses severe — indeed insoluble — problems for any rationalistic theory of ethics.³⁶ For Hume such a conclusion was most welcome, but for Locke it most certainly was not. Locke was strongly drawn towards the rationalists' conception of ethics as a system of eternal and immutable truths. Many of the apparently insuperable problems which he faced when he attempted to show that a demonstrable science of morality is possible were a consequence of his attempt to combine an approach to ethics characteristic of the Platonic tradition with a strictly nominalist system of metaphysics.

III

The philosophical problems associated with classification are connected, indeed closely connected, with the traditional problem of universals. Nevertheless the two problems are distinct, not only in the weak sense that they can be distinguished from one another, but in the stronger sense that an answer given to one problem does not in general determine the answer that must be given to the other. Locke's broadly relativistic theory of classification is quite compatible with his nominalist theory of universals, but is not entailed by it.

To most modern philosophers, the scholastic theories of essences and substantial forms probably appear as purely metaphysical in character, inaccessible to empirical confirmation or refutation. In fact there are good prima facie reasons for treating them as scientific, in a Popperian sense at least. The existence of substantial forms cannot be confirmed by any empirical tests, but if such forms were to exist then certain empirically-testable conclusions about the grouping of individuals in genera and species do appear to follow; and if the predicted states of affairs are found not to exist then grave doubt is cast on the correctness of the original theory.

Following Aristotle, the scholastic realists believed that universal natures or substantial forms (the precise details vary from author to author) are progressively more closely defined by the addition of successive differentiae to the original summum genus until the process is exhausted and the lowest species (the species infimae) are reached. The lowest specific natures are still universal. They are then "contracted" into individuality

and multiplied into as many individual natures as there are individuals, this being done by the appropriate principle of individuation. In Scotus, for example, each specific nature is made by adding an appropriate specific differentia to a generic nature; while at the end of this process the various individual natures are made by combining the lowest specific nature with the appropriate individual differentiae. Thus the individual nature of Socrates is made by combining the specific nature of man with the unique individuating difference — the haecceitas or "thisness" — characteristic of Socrates.³⁷

This account of classification is evidently both absolute and objective in intention. Genera and species have an objective existence, and there is only one correct way of allocating an individual to a species and a species to a genus. Two individuals are of the same (lowest) species if they are produced by adding the appropriate principle(s) of individuation to the same specific nature. Two species belong to the same genus if the specific natures were formed by combining the appropriate differentiae to the same generic nature. Classification should therefore proceed by retracing the (timeless) process by which every individual was made. A perfect and complete classification of everything would no doubt be beyond the power of man to achieve, but if it were produced it would reflect exactly the order of creation. One fragment of this system of classification became known in the Middle Ages as the Tree of Porphyry.³⁸ The highest genus of all, being or ens, is first divided into substance and accidents. Substances are then divided into those which are corporeal and those which are incorporeal. Corporeal

substances are divided into the living and the non-living; and living corporeal substances are in turn divided into animals, which are endowed with senses, and plants, which are not. Animals are divided into those which are rational and those which are not. Finally, rational animals are divided into those which are mortal, and those which are immortal, man being the sole representative of the former group. In this way we at last reach a lowest species, since there are no groups of men which differ essentially from one another. Below the lowest species there are only individuals. The Tree of Porphyry therefore terminates with the individual members of the lowest species: in this case with Socrates, Plato, and all the other men who have existed, or who will in the future come into existence.

Locke rejected this account of classification completely. He did so on three main grounds: one metaphysical, one epistemological, and one empirical.³⁹

1. The first and perhaps the most fundamental defect of the realist theory, in Locke's eyes, was that it postulates the existence of entities which do not and cannot exist. Locke held that existence can only be intelligibly ascribed to individual things. As his disputes with Malebranche and Stillingfleet bear ample witness, he regarded any suggestion that there might be universal things as utterly nonsensical.

The realist theory of classification has, however, the further disadvantage that it requires the existence not merely of one real universal essence, but of many:

If therefore any one will think, that a Man, and a Horse, and an Animal, and a Plant, etc. are distinguished by

real Essences made by Nature, he must think Nature to be very liberal of these real Essences, making one for Body, another for an Animal, and another for a Horse; and all these Essences liberally bestowed upon Bucephalus.⁴⁰

Locke regarded this proliferation of essences as an absurd yet unavoidable feature of the realist theory. He repeated his criticism in more detail in the Second Reply to Stillingfleet:

Bucephalus must have the real Nature of Ens or Being, and the real Nature of Body, and the real Nature of Vivens, and the real Nature of Animal, and the real Nature of a Horse; i.e. Five distinct real Natures in him, to make him Bucephalus: For these are all really distinct common Natures, whereof one is not the Subject of precisely the same essential Properties as the other. This, though very hard to my Understanding, must be really so, if every distinct, common or general Nature, be a real Being, that really exists any where, but in the Understanding...⁴¹

Locke, unlike Boyle, never referred to Ockham's Razor, but there can be little doubt that he disapproved of any multiplication of unnecessary entities. Any theory which supposes that five (or perhaps even more) real natures exist in one individual horse could hardly expect to be taken seriously.

2. The second objection is that even if the universal real essences imagined by the scholastic realists were to exist, they would be entirely unknowable, and hence quite irrelevant to the task of devising classifications. This is true even of individual real essences. Such essences certainly do exist, and are indeed the true causes of the qualities which we perceive; but they are in fact useless as far as the classification of substances is concerned, because they are wholly unknown to us:

Nor indeed can we rank, and sort Things, and consequently (which is the end of sorting) denominate them by their real Essences, because we know them not. Our Faculties carry us no farther towards the knowledge and distinction of Substances, than a Collection of those sensible Ideas, which we observe in them; which however made with the greatest diligence and exactness, we are capable of, yet is more remote from the true internal Constitution, from which those Qualities flow, than, as I said, a Countryman's Idea is from the inward contrivance of that famous Clock at Strasburg, whereof he only sees the outward Figure and Motions.⁴²

3. Finally the realist theory of classification must be rejected because it is incompatible with observed phenomena:

Concerning the real Essences of corporeal Substances, (to mention those only,) there are, if I mistake not, two Opinions. The one is of those, who using the Word Essence, for they know not what, suppose a certain number of those Essences, according to which, all natural things are made, and wherein they do exactly every one of them partake, and so become of this or that Species. The other, and more rational Opinion, is of those, who look on all natural Things to have a real, but unknown Constitution of their insensible Parts, from which flow those sensible Qualities, which serve us to distinguish them one from another, according as we have Occasion to rank them into sorts, under common Denominations. The former of these Opinions, which supposes these Essences, as a certain number of Forms or Molds, wherein all natural Things, that exist, are cast, and do equally partake, has, I imagine, very much perplexed the Knowledge of natural Things. The frequent Productions of Monsters, in all the Species of Animals, and of Changelings, and other strange Issues of humane Birth, carry with them difficulties, not possible to consist with this Hypothesis: Since it is as impossible, that two Things, partaking exactly of the same real Essence, should

have different Properties, as that two Figures partaking in the same real Essence of a Circle, should have different Properties.⁴³

The analogy of the circle makes it clear that Locke believed that the realist theory strictly entailed the non-existence of monsters, and could therefore be decisively refuted on empirical grounds. In fact the realist theory is sufficiently polymorphous to be able to escape this kind of refutation. Aristotle, for example, explained monstrous births by supposing that in some cases the form supplied by the father fails to master the matter supplied by the mother, and the resulting foetus has only the generic nature of an animal.⁴⁴ This is scarcely satisfactory, but it does suggest that the empirical refutation of the realist theory is likely to be a more protracted business than Locke appears to have imagined.

Phenomena which cast doubt on the realist theory of natural species can also be found by investigators in the inanimate part of nature. Here we find that

...many of the Individuals that are ranked into one Sort, called by one common Name, and so received as being of one Species, have yet Qualities depending on their real Constitutions, as far different one from another, as from others, from which they are accounted to differ specifically. This, as it is easy to be observed by all, who have to do with natural Bodies; so Chymists especially are often, by sad Experience, convinced of it, when they, sometimes in vain, seek for the same Qualities in one parcel of Sulphur, Antimony, or Vitriol, which they have found in others. For though they are Bodies of the same Species, having the same nominal Essence, under the same Name; yet do they often, upon severe ways of examination, betray Qualities so different one from another, as to frustrate the Expectation

and Labour of very wary Chymists. But if Things were distinguished into Species, according to their real Essences, it would be as impossible to find different Properties in any two individual Substances of the same Species, as it is to find different Properties in two Circles, or two equilateral Triangles.⁴⁵

Again the geometrical analogy is used to suggest that the realist theory strictly entails the existence of discrete natural species.

The realist theory of universals requires the existence of discrete naturally defined species. It is not on the other hand a necessary consequence of the nominalist theory that such species should not exist. The nominalist theory insists that only individuals have real existence, but it imposes no restrictions of any kind on the extent to which individuals may or may not resemble one another. Here a continuous range of positions is possible, all of which are in principle open to a nominalist. At one extreme one could maintain (as Leibniz did) that every individual has a unique essence and (as Leibniz did not) that every individual differs from every other one in such a way that not even a moderately useful system of classification can be drawn up. At the other extreme is the view that there exist discrete, objectively defined classes, into one but no more than one of which every individual must fall. Neither of these possibilities is perhaps very attractive, but between them there are indefinitely many intermediate positions, none of which needs be held to the exclusion of the others. It is always possible a priori (and very plausible a posteriori) that species might have a kind of existence in one part of nature which they do not in another.

On this question of the nature of species Locke adopted a

middling position remote from either extreme, though inclining perhaps more to the relativist side. He considered that the existence of monsters, changelings and suchlike provided a refutation of the theory of discrete naturally defined species, but he had no wish and no need to deny that in some sense there are species or rather the foundations of species in nature:

I would not here be thought to forget, much less to deny, that Nature in the Production of Things, makes several of them alike: there is nothing more obvious, especially in the Races of Animals, and all Things propagated by Seed.⁴⁶

Nevertheless it is we who draw up the boundaries of the species:

But yet, I think, we may say, the sorting of them under Names, is the Workmanship of the Understanding, taking occasion from the similitude it observes amongst them, to make abstract general Ideas, and set them up in the mind, with Names annexed to them, as Patterns, or Forms, (for in that sense the word Form has a very proper signification,) to which, as particular Things existing are found to agree, so they come to be of that Species, have that Denomination, or are put into that Classis.⁴⁷

Names are necessary "if not to the Being, yet at least to the completing of a Species".⁴⁸ Locke insisted strongly both that the resemblances and differences which exist between individuals are independent of human thought, and that it is we who decide the boundaries of species:

I do not deny, but Nature, in the constant production of particular Beings, makes them not always new and various, but very much alike and of kin one to another: But I think it is nevertheless true, that the boundaries of the Species, whereby Men sort them, are made by Men; since the Essences of the Species, distinguished by different Names, are, as has been proved, of Man's making, and seldom adequate to

the internal Nature of the Things they are taken from. So that we may truly say, such a manner of sorting of Things, is the Workmanship of Men.⁴⁹

And again:

'Tis true, that many particular Substances are so made by Nature, that they have agreement and likeness one with another, and so afford a Foundation of being ranked into sorts. But the sorting of Things by us, or the making of determinate Species, being in order to naming and comprehending them under general terms, I cannot see how it can be properly said, that Nature sets the Boundaries of the Species of Things: Or if it be so, our Boundaries of Species, are not exactly conformable to those in Nature. For we, having need of general names for present use, stay not for a perfect discovery of all those Qualities, which would best shew us their most material differences and agreements; but we our selves divide them, by certain obvious appearances, into Species, that we may the easier, under general names, communicate our thoughts about them.⁵⁰

We make the boundaries between species partly, as this last paragraph suggests, because we have necessarily to make our classification on the basis of inadequate information, but also (and more importantly) because the resemblances which exist between individuals are not such as to compel us to adopt any one single system of classification:

Besides, there is scarce any particular thing existing, which, in some of its simple Ideas, does not communicate with a greater, and in others with a less number of particular Beings: Who shall determine in this Case, which are those that are to make up the precise Collection, that is to be signified by the specifick Name; or can with any just Authority prescribe, which obvious or common Qualities are to be left out; or which more secret, or more particular, are to be put into the signification of the name of any Substance?⁵¹

We tend naturally to assume that nature works regularly, and therefore that every individual of a given species has the same real essence. Deeper experience, of the kind gained by chemists and by craftsmen,⁵² shows that this expectation is false:

That which, I think, very much disposes Men to substitute their names for the real Essences of Species, is the supposition before mentioned, that Nature works regularly in the Production of Things, and sets the Boundaries to each of those Species, by giving exactly the same real internal Constitution to each individual, which we rank under one general name. Whereas any one who observes their different Qualities can hardly doubt, that many of the Individuals, called by the same name, are, in their internal Constitution, as different one from another, as several of those which are ranked under different specifick Names.⁵³

We make the boundaries of species and consequently we also determine the number of species that there are. This number depends in part on the nature of things and in part on our habits and customs, but above all on the words that we use:

But to return to the Species of corporeal Substances. If I should ask any one, whether Ice and Water were two distinct Species of Things, I doubt not but I should be answered in the affirmative: And it cannot be denied, but he that says they are two distinct Species, is in the right. But if an English-man, bred in Jamaica, who, perhaps, had never seen nor heard of Ice, coming into England in the Winter, find, the Water he put in his Bason at night, in a great part frozen in the morning; and not knowing any peculiar name it had, should call it harden'd Water; I ask, Whether this would be a new Species to him, different from Water? And, I think, it would be answered here, It would not to him be a new Species, no more than congealed Gelly, when it is cold, is a distinct Species, from the same Gelly fluid and warm;

or than liquid Gold, in the Fornace, is a distinct Species from hard Gold in the Hands of a Workman.⁵⁴

One consequence which Locke drew from this was that there are as many distinct species as there are abstract ideas with names attached:

One thing, I doubt not, but will seem very strange in this Doctrine; which is, that from what hath been said, it will follow, that each abstract Idea, with a name to it, makes a distinct Species. But who can help it, if Truth will have it so? For so it must remain, till some body can shew us the Species of Things, limited and distinguished by something else; and let us see, that general terms signify not our abstract Ideas, but something different from them. I would fain know, why a Shock and a Hound, are not as distinct Species, as a Spaniel and an Elephant. We have no other Idea of the different Essence of an Elephant and a Spaniel, than we have of the different Essence of a Shock and a Hound; all the essential difference, whereby we know and distinguish them one from another, consisting only in the different Collection of simple Ideas, to which we have given those different names.⁵⁵

The zoological example is not perhaps very well chosen: two dogs can produce fertile offspring, whereas a dog and an elephant could never produce any offspring at all, even if artificial insemination were used to avoid the obvious problems involved in mating; though Locke, who claimed actually to have seen the offspring of a cat and a rat with "the plain Marks of both about it",⁵⁶ would presumably have denied this. We have rather less freedom in allocating plants and animals to species than Locke imagined. He was on surer ground when he applied his principles to inanimate bodies:

A silent and an striking Watch, are but one Species, to those who have but one name for them: but he that has the name Watch for one, and Clock for the other, and distinct complex Ideas, to which those names belong, to him they are different Species. It will be said, perhaps, that the inward contrivance and constitution is different between these two, which the Watch-maker has a clear Idea of. And yet, 'tis plain, they are but one Species to him, when he has but one name for them. For what is sufficient in the inward Contrivance, to make a new Species? There are some Watches, that are made with four Wheels, others with five: Is this a specifick difference to the Workman? Some have Strings and Physies [Fusees], and others none; some have the Balance loose, and others regulated by a spiral Spring, and others by Hogs Bristles: Are any, or all of these enough to make a specifick difference to the Workman, that knows each of these, and several other different contrivances, in the internal Constitutions of Watches? 'Tis certain, each of these hath a real difference from the rest: But whether it be an essential, a specifick difference or no, relates only to the complex Idea, to which the name Watch is given: as long as they all agree in the Idea which that name stands for, and that name does not as a generical name comprehend different Species under it, they are not essentially nor specifically different.⁵⁷

Watches and clocks differ from one another in size and shape, and particular examples differ perhaps quite markedly in internal construction. The number and character of the classifications we make depend partly on our knowledge of the way such machines are made and partly on our interests and motives for making the classification. There is no absolute answer to the question of whether or not watches and clocks are the same species. Anyone who supposed that there must be such an answer would by doing so manifest their complete failure to understand the nature of classification.

It is not, of course, likely that anyone would ever seriously have asked whether watches and clocks are one species or two. Locke's opponents would have disagreed with him not in respect of his views on the classification of artificial bodies but in respect of his belief that natural and artificial bodies can be considered in the same way. The Aristotelians believed that there was a fundamental difference between the natural and the artificial. Some pieces of wood may be assembled into the shape of a bed, but if the bed were planted in the ground what (if anything) would grow out of it would be a sapling, not another bed.⁵⁸ Locke, on the other hand, maintained that natural and artificial bodies differ only in the size of their constituent parts, and hence in the extent to which we can gain knowledge of them:

But if any one will make minuter Divisions from Differences, that he knows in the internal frame of Watches; and to such precise complex Ideas, give Names, that shall prevail, they will then be new Species to them, who have those Ideas with names to them; and can, by those differences, distinguish Watches into these several sorts, and then Watch will be a generical name. But yet they would be no distinct Species to Men, ignorant of Clock-work, and the inward Contrivances of Watches, who had no other Idea, but the outward shape and Bulk, with the marking of the Hours by the Hand. For to them, all those other Names would be but synonymous Terms for the same Idea, and signifie no more, nor no other thing but a Watch. Just thus, I think, it is in natural Things. No body will doubt, that the Wheels, or Springs (if I may so say) within, are different in a rational Man, and a Changeling, no more than that there is a difference in the frame between a Drill and a Changeling. But whether one, or both these differences be essential, or specifical, is only to be known to us,

by their agreement, or disagreement with the complex Idea that the name Man stands for: For by that alone can it be determined, whether one, or both, or neither of those be a Man, or no.⁵⁹

The difference between Locke and the scholastic realists against whom he was arguing was therefore as much a matter of natural philosophy as it was of metaphysics. Locke's paradigm of physical explanation was mechanistic: the mere allocation of an individual to an appropriate genus and species does not constitute an explanation of any kind; it may be valuable in clarifying the meanings of our words, but it furnishes no insight into the way that the world is constructed. For the realists on the other hand substantial forms were conceived as ultimately explanatory principles. Substantial forms made the world intelligible, and if scientific knowledge of nature were to be obtained by human beings it would be achieved by such forms being abstracted and coming to exist in the human intellect. A complete science of nature would consist of a knowledge of what every species is and how its essence is related to every other essence, the whole enterprise culminating in the drawing up of a complete tree of classification descending from the highest genera to the lowest species.

Locke continued to use the terminology devised by Aristotle and the schoolmen while discarding the metaphysics which had originally given the terminology its justification. The result was that what had formerly been central was displaced to the margin. The definition of a species by means of the correct genus and differentia was no longer conceived as a paradigm of

explanation. For Locke the function of such definitions, indeed of all definitions,⁶⁰ is merely to enable one person to convey his meaning to another.⁶¹ Provided that this is done there is no reason why any form of definition should not be used; definition per genus et differentiam is only one particular variety of definition, and not necessarily the most useful.⁶²

Propositions about genera and species are therefore demoted from their former exalted status to the lowest position of all. They now appear as merely trifling or barely verbal propositions:

Another sort of Trifling Proposition is, when a part of the complex Idea is predicated of the Name of the Whole; a part of the Definition of the Word defined. Such are all Propositions wherein the Genus is predicated of the Species, or more comprehensive of less comprehensive Terms: For what Information, what Knowledge carries this Proposition in it, viz. Lead is a Metal, to a Man, who knows the complex Idea the name Lead stands for. All the simple Ideas that go to the complex one signified by the Term Metal, being nothing but what he before comprehended, and signified by the name Lead.⁶³

As far as nature is concerned, real knowledge can only be had of particulars. We should not demand certain universal knowledge when there is none to be had, merely because such knowledge if it were possible would be the best kind of all. It is better to know something informative about an individual than to know something purely trifling about a universal class, and it is better to have uncertain but probable beliefs about real matters of fact than to have certain knowledge of merely verbal truths.

Notes to Chapter 7

1. Essay, IV.xxi.2-4.
2. Essay, IV.viii.9. Cf. also III.x.2.
3. Essay, IV.xxi.2.
4. Essay, III.iii.1.
5. Essay, III.iii.11.
6. Essay, IV.xvii.8.
7. Letter 1592, Locke to Molyneux, 20 January 1693 (Correspondence, vol.IV, p.626-27; Letter 1609, Molyneux to Locke, 2 March 1693 (ibid. p.650).
8. Essay, II.xxvii.3.
9. Essay, II.xxvii.28.
10. Essay, II.xxvii.29.
11. Ockham, Ordinatio, d.2 q.6, Opera Theologica, vol.II, p.197.
12. Hobbes, De Corpore, xi.7. Boyle, Some Physico-Theological Considerations about the Possibility of the Resurrection, Works, vol.IV, p.193. The source of the problem about Theseus' ship is Plutarch's "Life of Theseus", §23.
13. Berkeley, Alciphron, vii.8, Works (ed. Luce and Jessop), vol. III, p.298. Hume, A Treatise of Human Nature, I.iv.2, (ed. Selby-Bigge, pp.199-201).
14. R.S. Woolhouse, Locke's Philosophy of Science and Knowledge, p.102.
15. J.D. Mabbott, John Locke, p.45.
16. J.L. Mackie, Problems from Locke, p.130.
17. Locke explicitly claims the distinction as his own innovation in the First Letter, pp.201-2 (Works, vol.IV, p.87).
18. Essay, III.iii.17; III.vi.2.
19. Essay, III.iii.15-16,19; III.vi.2.
20. First Letter, pp.210-11 (Works, vol.IV, p.90).
21. Essay, III.iii.19.
22. Ibid.
23. Essay, IV.i.9. This is taken without any significant changes from the Second Reply, p.62 (Works, vol.IV, p.234).
24. Essay, IV.xi.14.

25. Letter 1655, Locke to Molyneux, 23 August 1693 (Correspondence, vol.IV, p.723).
26. Essay, III.iii.14.
27. Essay, III.vi.38; First Letter, p.209-10 (Works, vol.IV, p.90).
28. Essay, III.vi.2.
29. Essay, III.vi.31.
30. Essay, III.ix.13. Cf. III.ix.15,17.
31. Essay, III.vi.4.
32. Essay, III.vi.6.
33. Essay, III.vi.5.
34. Essay, IV.iii.31.
35. "There are two sorts of knowledg in the world general and particular founded upon two different principles i.e. true Ideas and matter of fact or history..." Journal, 26 June 1681, MS Locke f.5, fol.77; quoted in R.I. Aaron and J. Gibb, An Early Draft of Locke's Essay, p.116.
36. A Treatise of Human Nature, III.i.1 (ed. Selby-Bigge, pp.458, 463-64).
37. A brief, lucid and accurate description of Scotus' views on the nature of universals and the problem of individuation is by no means easy to produce. One of the best short accounts is in D.E. Sharp, Franciscan Philosophy at Oxford in the Thirteenth Century, pp.298-307. The most thorough of Scotus' own discussions of these topics can be found in Ordinatio, Book II, dist.iii part 1, qq.1-7, Opera Omnia (Vatican edition), vol.VII, pp.391-516.
38. The Tree of Porphyry can be found, though not of course under that name, in Porphyry's Isagoge, (ed. Warren, pp.35-36). In the Middle Ages and afterwards it was frequently put in a diagrammatic form; for a seventeenth-century example, see Gassendi's Institutio Logica, canon vi (ed. Jones, p.89).
39. In addition to the quotations below, see Essay, III.vi.14-20, III.x.21.
40. Essay, III.vi.32.
41. Second Reply, p.360 (Works, vol.IV, pp.434-35).
42. Essay, III.vi.9.
43. Essay, III.iii.17.

44. De Generatione Animalium, 769b11-13, 770b16-17.
45. Essay, III.vi.8 (taken virtually unchanged from Draft B, §83, pp.165-66).
46. Essay, III.iii.13.
47. Ibid.
48. Essay, III.vi.39.
49. Essay, III.vi.37.
50. Essay, III.vi.30.
51. Essay, III.ix.14.
52. Essay, III.vi.35.
53. Essay, III.x.20.
54. Essay, III.vi.13.
55. Essay, III.vi.38. On the importance of naming the abstract idea, see Essay, III.v.11.
56. Essay, III.vi.23.
57. Essay, III.vi.39.
58. Physics, 193a12-18. Cf. Metaphysics, 1028b8-15, 1043b18-23. The abandonment of this distinction between natural and artificial things was of very great importance for seventeenth-century science. It can be found both in Bacon (Descriptio Globi Intellectualis, ch.2; De Dignitate et Augmentis Scientiarum, ii.2) and in Descartes (Letters to Mersenne, January 1638, and to Henry More, August 1649, in Descartes, Philosophical Letters, trans. A. Kenny, pp.44-45,258). What appears at first sight to be a piece of purely philosophical criticism by Locke is, as often, heavily dependent on contemporary science.
59. Essay, III.vi.39.
60. Essay, III.iv.6.
61. Essay, III.iii.20, III.vi.33.
62. Essay, III.iii.10.
63. Essay, IV.viii.4. Cf. IV.viii.13.

Chapter 8

The Problem of Universal Knowledge

I

One of the chief complaints that Bishop Stillingfleet made against Locke was that in an age of scepticism and infidelity he had undertaken the dangerous task of advocating a new method of certainty. This was a charge which Locke vigorously denied. He had no intention whatever of trying to change our concept of knowledge. Knowledge is what it is, and any proposal merely to use the word in a different sense would achieve nothing. "Knowledge, ever since there has been any in the World, has consisted in one particular Action of the Mind; and so, I conceive, will continue to do to the end of it..."¹ The perplexities in which we find ourselves concerning knowledge and certainty cannot be removed by altering the meaning of words; instead we must attempt to understand what knowing, considered as an act of the mind, really is:

There are several Actions of Mens Minds, that they are conscious to themselves of performing, as Willing, Believing, Knowing, &c. which they have so particular a Sense of, that they can distinguish them one from another; or else they could not say when they Willed, when they Believed, and when they Knew any Thing. But though these Actions were different enough from one another, not to be confounded by those who spoke of them, yet no Body, that I had met with, had, in their Writings, particularly set down wherein the Act of Knowing precisely consisted.

To this Reflection upon the Actions of my own Mind, the subject of my Essay concerning Humane Understanding naturally

led me; wherein, if I have done any Thing New, it has been to describe to others, more particularly than had been done before, what it is their Minds do, when they perform that Action which they call Knowing; and if, upon Examination, they observe, I have given a true Account of that Action of their Minds in all the parts of it; I suppose it will be in vain to dispute against what they find and feel in themselves. And if I have not told them right, and exactly what they find and feel in themselves, when their Minds perform the Act of Knowing, what I have said will be all in vain; Men will not be persuaded against their Senses.²

This description of what Locke considered to be his own achievement tallies closely with what he originally set out to do. The earliest Draft of the Essay, Draft A, has the title Intellectus humanus cum cognitionis certitudine, et assensus firmitate. In the first chapter of the Essay itself, Locke explained his intention of combating scepticism by finding out what things do and what things do not lie within the capacities of our understandings:

Thus Men, extending their Enquiries beyond their Capacities, and letting their Thoughts wander into those depths, where they can find no sure Footing; 'tis no Wonder, that they raise Questions, and multiply Disputes, which never coming to any clear Resolution, are proper only to continue and increase their Doubts, and to confirm them at last in perfect Scepticism. Whereas were the Capacities of our Understandings well considered, the Extent of our Knowledge once discovered, and the Horizon found, which sets the Bounds between the enlightened and dark Parts of Things; between what is, and what is not comprehensible by us, Men would perhaps with less scruple acquiesce in the avow'd Ignorance of the one, and imploy their Thoughts and Discourse, with more Advantage and Satisfaction in the other.³

Given that one of Locke's ultimate aims was to provide a reasoned alternative to scepticism, his first explorations left him

in a most unwelcome position. His difficulties were not with the senses — he never took general sceptical doubts about perception very seriously⁴ — but with respect to the possibility of attaining any certain knowledge of universal, non-trivial truths. As has been shown in chapter 5 above, Locke had arrived by 1671 at the rather disconcerting conclusion that the only universal propositions which we can know with certainty to be true are those which inform us about the meanings of words:

Indeed all universall propositions are either Certain and then they are only verball but are not instructive. Or else are Instructive and then are not Certain. v.g. Every man is an animal or Corpus vivens is as certain a Proposition but noe more conducing to the knowledg of things than to say a Palfry is an ambleing Horse, or neighing ambleing animal both being only about the signification of words, & make me know but this.⁵

It appears therefore that we can make conjectures and acquire beliefs as to the truth or falsity of instructive universal propositions, but we cannot acquire real certain universal knowledge:

And therefore in all such things we must not expect a certain knowledg of any universall proposition, which though it may be true yet can never be demonstrated to us, and therefor we are not to put others upon demonstrating nor our selves upon search of certeine knowledg in all those matters, wherein we are not capeable of any other assurance or certainty besides what our senses give us, in this or that particular. Beyond which in all those things that exist without us all that our understandings can attain to in the enquiry into their existence nature and operations, is but praesumption beleif, conjecture, & confidence but not certein knowledg And therefor all the propositions about them (except only such particular ones as every mans sences have

made knowne to him) are but probable, not evident or demonstrations, & our assent to them faith, not knowledg.⁶

This choice, that one can have either certain knowledge of trifling truths, or more-or-less uncertain beliefs about real matters of fact, is of crucial importance for all Locke's subsequent discussions of the nature of human knowledge and belief. It presents us with a simple but alarming dilemma: we can have either certainty or non-triviality, but (apparently) not both at once.

There are in principle three ways out of this dilemma:

1. One can break the connection between knowledge and certainty, and admit some kind of conjectural or probable knowledge.

2. One can retrace the arguments which led to the dilemma, with the aim of discovering and exploiting some flaw within them.

3. One can accept the dilemma in principle but try to find some way between its horns, and so establish the possibility of a third type of proposition which would both be real and instructive and be capable of being known with certainty.

1. There can be no doubt at all that Locke was determined to maintain the connection between knowledge and certainty. Knowing and believing are two different acts of the mind,⁷ and correspond to the two distinct faculties of knowledge and judgement. We know when we perceive the agreement and disagreement of ideas; we judge when we merely presume the agreement or disagreement to exist without actually perceiving it.⁸

In both the early Drafts and in the Essay itself Locke assumes without argument that all knowledge is certain knowledge. How he would have responded to a Popperian advocate of conjectural knowledge we can only surmise; quite probably he would have thought

such a person mad.⁹ Such attacks as Locke did face concerned his apparent association of faith or belief with a degree of assurance less than full certainty. Stillingfleet raised the question of what he called the certainty of faith. Locke replied that "to talk of the Certainty of Faith, seems all one to me, as to talk of the Knowledge of Believing; a way of speaking not easie to me to understand."¹⁰ When Stillingfleet raised the matter again Locke pointed out that he had never denied that there are some probable truths whose probability is so great that we necessarily assent to them.¹¹ As he had written in the Essay, there are some cases in which "the Probability is so clear and strong, that Assent as necessarily follows it, as Knowledge does Demonstration."¹² Nevertheless such full assurance of the truth of a proposition is quite different from certainty properly so called.

Perhaps the most thorough of all Locke's explications of this difference comes in the unfinished Fourth Letter on Toleration, written in reply to the criticisms of Jonas Proast. Here Locke described in the plainest terms how knowledge and belief differ from one another:

Here the first thing you do is to pretend an uncertainty of what I mean by Knowing or Knowledge, and by Believing or Opinion. First, As to knowledge, I have said certainly know. I have call'd it Vision, Knowledge and Certainty, Knowledge properly so called. And as for Believing or Opinion, I speak of Believing with assurance, and say, that Believing in the highest degree of Assurance, is not Knowledge. That whatever is not capable of Demonstration, is not, unless it be self-evident, capable to produce Knowledge, how well grounded and great soever the Assurance of Faith may be wherewith it is received. That I grant that a strong Assurance of any Truth settled upon prevalent and well-grounded Arguments of Probability is often called Knowledge in popular ways of

talking; but being here to distinguish between Knowledge and Belief, to what degrees of Confidence soever raised, their Boundaries must be kept, and their Names not confounded.... by Knowledge, I mean the effect of strict Demonstration; and by Believing or Opinion, I mean any degree of persuasion even to the highest degree of Assurance...¹³

The range of truths which we can genuinely know is therefore, as Locke admitted, rather narrow.¹⁴ We can have more-or-less adequate reasons for believing in the truth of an empirical generalisation, but even if our rational grounds for uncertainty could by some means be asymptotically reduced towards zero, we would still never be in a position to know with certainty that the proposition was true. As Locke explained to Stillingfleet, non-demonstrative arguments necessarily leave us to some degree unsure of the truth of their conclusions:

So that all barely probable Proofs, which procure Assent, always containing some visible possibility that it may be otherwise (or else it would be demonstration)...It thence follows, that where there is such a mixture of Uncertainty, there a man is so far uncertain...¹⁵

2. The second possibility would have been to repudiate the philosophical position which provided a foundation for the dilemma. This was also impossible for Locke. General truths are grounded either on the relations of general ideas or on the simultaneous existence of a (usually) large, perhaps infinite, number of particular matters of fact. This is an unavoidable consequence of taking a nominalist position. There are no universal essences, natures or forms; there are only individual things existing in the world and general ideas existing in the mind. Universal truths about open sets of individuals are real and instructive,

but cannot be known with certainty — which for Locke meant that they cannot be known at all. Universal truths that can be known with certainty can only be certain because they are concerned with the ideas in our minds. The realists among Locke's predecessors held that real certain universal truths are grounded on the existence of real universals. Locke could not say this because he denied that such universals exist.

3. The third possibility is to accept the arguments on which the dilemma is based, but nevertheless to assert that it is possible for at any rate a restricted class of truths to be both certain and non-trifling. The problem here is to find a convincing, or even a plausible, basis for such an assertion; the mere desirability of granting the existence of a third class of propositions is clearly not enough. Despite these difficulties it was this possibility that Locke chose to pursue.

II

The problem which Locke faced after 1671 resembles the problem which Kant faced after reading Hume. The language Locke used to describe trifling propositions is very close to the language Kant used for analytic propositions. For Kant, an analytic judgement is one in which "the predicate B belongs to the subject A, as something which is (covertly) contained in this concept A."¹⁶ For Locke, verbal or trifling propositions are either identities or "Propositions, wherein a part of the complex Idea, which any Term stands for, is predicated of that Term..."¹⁷

Kant's problem — what he described as the proper or general problem of pure reason¹⁸ — was to show how there could be synthetic judgements which are true a priori, independently of any possible experience. Locke's problem was to show how there could be real universal certain truths. The differences between Locke's project and Kant's are important, but they should not be supposed to be greater than in fact they are. Locke may conventionally be classed as an empiricist, but the certainty he was seeking was not of a kind that might be gained by cumulative experience. Certainty comes through intuition and through demonstration, which is itself founded (as in Descartes) on intuition, and the certainty of what is demonstrated cannot be undermined by appealing to experience. The danger for Locke is never that his real, certain truths will cease to be certain, but always that they will cease to be real.

There were two kinds of knowledge the reality and certainty of which Locke was particularly concerned to defend, namely mathematics and morality. His reasons in the two cases were probably rather different. Locke was not a mathematician, and nothing in his writings suggests that he had any noticeable talent for the subject. The extremely narrow variety of the examples he used indicates this, especially when a comparison is made with Leibniz's discussions of the same topics in the Nouveaux Essais. Nevertheless mathematics, and especially geometry, was universally recognised as the paradigm of a real, certain, universal science; a theory of knowledge which failed to explain this characteristic would generally have been regarded as seriously deficient. Mathematics could not be left on one side.

The situation with respect to morality was quite different. No universally accepted deductions of moral truths existed, and Locke was therefore under no obligation to show how such deductions might be possible. On the other hand morality was something about which Locke cared very deeply. He practised medicine and he was interested in natural philosophy, but the centre of gravity of his intellectual interests lay, if anywhere, in the region where politics, theology and ethics overlapped and were entangled with one another.¹⁹ Morality, and not any science of natural phenomena, is the proper business of mankind in general. Hence a philosophy that would show, if not how morality might be demonstrated, at any rate that it was in principle demonstrable, would have been for Locke one of the greatest of philosophical prizes.

The basis of the division of propositions into those that are real but uncertain and those that are certain but trifling is the distinction between real and nominal essences. Real essences are in general unknown, and therefore propositions about them cannot be certain. Nominal essences are general abstract ideas; propositions about nominal essences are accordingly propositions about ideas, not about real extra-mental things. Certainty is associated with nominal essences, real non-trifling truth with real essences. The only way of giving a proposition both of these desirable characteristics would be by showing that the relevant real and nominal essences are one and the same.

In Book II Locke held that all complex ideas fall into one of three classes: ideas of substances, ideas of modes and ideas of relations.²⁰ As Locke recognised, this involved stretching somewhat the hitherto customary concept of a mode, but he felt that

it was better to extend the meaning of a familiar word than to invent a new one.²¹ Modes are of two types: simple modes, such as number and extension, which are each derived from one simple idea; and mixed modes, which are made from several different simple ideas. A good part of Book II is concerned with simple modes, but after that they largely drop out of consideration: in Book III Locke passed over the question of how simple modes are named in one brief sentence.²² By contrast the naming of mixed modes and relations was considered to deserve a whole chapter to itself.

Between the ideas of substances and the ideas of mixed modes and relations there is one difference of the utmost significance.

This appears when we consider the relation of an idea to whatever it may be supposed to be an idea of. Here Locke made three distinctions: between real and fantastical ideas, between adequate and inadequate ideas, and between true and false ideas. Locke himself appears, understandably, not to have been entirely happy with this final distinction;²³ it is probable that he made it more because it had become customary among post-Cartesian thinkers²⁴ than because it played a deep part in his own thought. It is the first two distinctions which are of real importance.

Locke defined the difference between real and fantastical ideas as follows:

First, by real Ideas, I mean such as have a Foundation in Nature; such as have a Conformity with the real Being, and Existence of Things, or with their Archetypes. Fantastical or Chimerical, I call such as have no Foundation in Nature, nor have any Conformity with that reality of Being, to which they are tacitly referr'd, as to their Archetypes.²⁵

Ideas of substances may be either real or fantastical, according to whether the appropriate substances exist or not. Ideas of mixed modes and relations, on the other hand, must always be real:

Secondly, Mixed Modes and Relations, having no other reality, but what they have in the Minds of Men, there is nothing more required to those kind of Ideas, to make them real, but that they be so framed, that there be a possibility of existing conformable to them. These Ideas, being themselves Archetypes, cannot differ from their Archetypes, and so cannot be chimerical, unless any one will jumble together in them inconsistent Ideas.²⁶

Real ideas can in turn be subdivided into those which are adequate and those which are inadequate. Adequate ideas are those "which perfectly represent those Archetypes, which the Mind supposes them taken from; which it intends them to stand for, and to which it refers them."²⁷ Inadequate ideas are those which only partially or incompletely represent their archetypes.²⁸ Given these definitions Locke drew the conclusion that all our ideas of substances are inadequate.²⁹ This is the case whether we take the archetype to be the unknown real essence or the collection of sensible qualities we use to distinguish the substance. We have no idea at all of the real essence, and hence a fortiori no adequate idea. The ideas which we can frame of any substance are completely inadequate:

Some, who have examined this Species more accurately, could, I believe, enumerate ten times as many Properties in Gold, all of them as inseparable from its internal Constitution, as its Colour, or Weight: And 'tis probable, if any one knew all the Properties, that are by divers Men known of this Metal, there would an hundred times as many

Ideas, go to the complex Idea of Gold, as any one Man yet has in his; and yet, perhaps, that not be the thousandth part of what is to be discovered in it.³⁰

Ideas of modes and relations, on the other hand, must be adequate:

Secondly, Our complex Ideas of Modes, being voluntary Collections of simple Ideas, which the Mind puts together, without reference to any real Archetypes, or standing Patterns, existing any where, are, and cannot but be adequate Ideas. Because they not being intended for Copies of Things really existing, but for Archetypes made by the Mind, to rank and denominate Things by, cannot want any thing; they having each of them that combination of Ideas, and thereby that perfection which the Mind intended they should: So that the Mind acquiesces in them, and can find nothing wanting.³¹

The ideas of modes and relations are therefore their own archetypes.

From this it follows that the real and the nominal essences of mixed modes (and relations) are one and the same:

Another thing we may observe from what has been said, is, That the Names of mixed Modes always signifie (when they have any determined Signification) the real Essences of their Species. For these abstract Ideas, being the Workmanship of the Mind, and not referred to the real Existence of Things, there is no supposition of any thing more signified by that Name, but barely that complex Idea, the Mind it self has formed, which is all it would have express'd by it; and is that, on which all the properties of the Species depend, and from which alone they all flow: and so in these the real and nominal Essence is the same; which of what Concernment it is to the certain Knowledge of general Truths, we shall see hereafter.³²

It can now be seen how the apparently irreconcilable desiderata of reality and certainty in knowledge can be simultaneously

obtained. "For the attaining of Knowledge and Certainty it is requisite, that we have determined Ideas: and to make our Knowledge real, it is requisite, that the Ideas answer their Archetypes."³³ Real certain knowledge can therefore be had, not of substances, but of modes and relations:

Secondly, All our complex Ideas, except those of Substances, being Archetypes of the Mind's own making, not intended to be the Copies of any thing, nor referred to the existence of any thing, as to their Originals, cannot want any conformity necessary to real Knowledge. For that which is not designed to represent any thing but it self, can never be capable of a wrong representation, nor mislead us from the true apprehension of any thing, by its dislikeness to it: and such, excepting those of Substances, are all our complex Ideas.³⁴

From this we can establish the demonstrability not of mathematics alone, but also of morality:

And hence it follows, that moral Knowledge is as capable of real Certainty, as Mathematicks. For Certainty being but the Perception of the Agreement, or Disagreement of our Ideas; and Demonstration nothing but the Perception of such Agreement, by the Intervention of other Ideas, or Mediums, our moral Ideas, as well as mathematical, being Archetypes themselves, and so adequate, and complete Ideas, all the Agreement, or Disagreement, which we shall find in them, will produce real Knowledge, as well as in mathematical Figures.³⁵

In this way Locke showed, to his own satisfaction at least, how the sceptics might be driven from at least part of the territory which they had claimed. Two parallel passages, one in Draft A and one in the final Essay, make it clear what Locke thought he had achieved. In 1671 Locke wrote that "Indeed all

Universall propositions are either Certain and then they are only verball but are not instructive. Or else are instructive and then are not Certain."³⁶ In the Essay the claim made is smaller in scope: "the general Propositions that are made about Substances, if they are certain, are for the most part but trifling; and if they are instructive, are uncertain..."³⁷ The original dilemma now applies only to propositions about substances, and possibly not always even then.³⁸ There is no reason why real truths concerning modes and relations should not be known with certainty.

III

Unfortunately for Locke, his method of rescuing mathematics and morality from the sceptics is open to a number of extremely damaging objections.

The first is that Locke has given the appearance of establishing the possibility of real certain knowledge only because he has changed his criterion of reality. This charge was made by Leibniz:

You give one account of the real/chimerical distinction for ideas of modes, and a different one for ideas of substantial things: you have two distinctions, with nothing in common between them that I can see. You regard modes as real when they are possible, but you do not allow the reality of ideas of substantial things unless the things are existent.³⁹

There is nothing very remarkable about demonstrating the possibility of real, certain knowledge if one is prepared to allow the meaning of the word "real" to shift as the argument requires.

This is an extremely powerful objection, and it is not

at all clear that Locke would have been able to produce an adequate reply. His only real hope would have been to argue that the criterion for the reality of ideas of modes and relations must be different from the criterion for the reality of ideas of substances, not because the meaning of the word "real" has surreptitiously been changed, but because modes and relations are sufficiently unlike substances for the same criterion not to be appropriate. This raises the question of whether Locke's account of the essences of mixed modes and relations can be considered as satisfactory.

Secondly, Locke's claim that we make the essences of mixed modes⁴⁰ is open to serious objections. Locke in practice treated the class of modes as a catch-all class, containing everything that is not a substance, a quality or a relation. Mixed modes include states such as drunkenness, institutions such as ostracism, actions such as running and speaking, and crimes such as parricide.⁴¹ They also include things that we would call events, such as a triumph⁴² or an apotheosis.⁴³ There seems therefore to be no good reason why natural events, for example a thunderstorm or an eclipse, should not be counted as modes.⁴⁴ On any reckoning they cannot possibly be counted as substances, which alone have distinct real and nominal essences. Nevertheless it is evidently false to say that we make the essences of an eclipse or a thunderstorm. The essence of an eclipse was known to Locke; the essence of a thunderstorm was not. Both need to be discovered, and cannot be invented. In each case we can clearly distinguish between the nominal essences (disappearance or partial disappearance of sun; jagged

flashes of light, noise etc.) and the real essences (interposition of moon between earth and sun, passage of electric current through ionized air).

It seems therefore that in the case of natural mixed modes we can distinguish a real and a nominal essence, the former of which we do not make and may not even know. It also appears that there are some substances, artificial substances, the real essences of which we do make ourselves. A clock is a substance, at any rate according to Locke,⁴⁵ though admittedly not according to Aristotle, or Spinoza, or Leibniz. It is certainly not a mode, a quality or a relation. Nevertheless there is a good sense in which it is we who make the real essence of a clock, and indeed of all pieces of machinery, tools and other artefacts.

The fundamental distinction which needs to be made is not therefore between modes and substances, but between things that we make (of any category) and things that we do not make. Locke concealed this from the reader (and probably from himself) by choosing his quite large number of examples from a restricted range of the total variety possible. The following are the mixed modes Locke mentioned in the three most relevant chapters (II.xii, II.xxii, III.v): gratitude, murder, beauty, theft, obligation, drunkenness, a lie, hypocrisy, sacrilege, parricide, ostracism, proscription, triumph, apotheosis, parrhēsia, testiness, revenge, adultery, incest, stabbing, justice, gratitude, glory and ambition. All of these are connected with human beings, none with inanimate nature. The substances mentioned in II.xii and II.xxiii on the other hand are all natural: lead, sheep, man, horse, gold, water, iron, diamond, stone, loadstone, sun, vitriol, bread

fire, charcoal, aqua regia, sand and blood. There are no artefacts designed and made by man, no ploughs, clocks, candlesticks, kettles or spoons.

The ultimate conclusion to which Locke's line of argument naturally tends is therefore the position already reached by Hobbes. The disciplines in which demonstration is possible are those in which we ourselves construct the subject matter:

Of arts, some are demonstrable, others indemonstrable; and demonstrable are those the construction of the subject whereof is in the power of the artist himself, who, in his demonstration, does no more but deduce the consequences of his own operation. The reason whereof is this, that the science of every subject is derived from a precognition of the causes, generation, and construction of the same; and consequently where the causes are known, there is place for demonstration, but not where the causes are to seek for. Geometry therefore is demonstrable, for the lines and figures from which we reason are drawn and described by ourselves; and civil philosophy is demonstrable, because we make the commonwealth ourselves. But because of natural bodies we know not the construction, but seek it from the effects, there lies no demonstration of what the causes be we seek for, but only of what they may be.⁴⁶

Such a conclusion suited Hobbes very well, but it was thoroughly repugnant to Locke. Hobbes was quite ready to say that men (through the sovereign) make justice and injustice, and that in the state of nature nothing is either just or unjust, or even right or wrong.

"To this war of every man, against every man, this also is consequent; that nothing can be unjust. The notions of right and wrong, justice and injustice have there no place. Where there is no common power there is no law: where no law, no injustice."⁴⁷

Locke had no sympathy either with this view or with any

subjectivist picture of ethics as (to quote the subtitle of a recent book) "inventing right and wrong".⁴⁸ The truths of morality are not invented and cannot be changed even by God himself, let alone by man. God is omnipotent, but not even he can act to save anyone whom he might choose, whatever his or her manner of life:

This would have been to encourage Iniquity, contrary to the Purity of his Nature; and to have condemned that Eternal Law of Right, which is Holy, Just, and Good; Of which no one Precept or Rule is abrogated or repealed; nor indeed can be, whilst God is an Holy, Just, and Righteous God, and man a Rational Creature. The Duties of that Law, Arising from the Constitution of his very Nature, are of Eternal Obligation; Nor can it be taken away or dispensed with, without changing the Nature of Things, overturning the measures of Right and Wrong, and thereby introducing and authorizing Irregularity, Confusion, and Disorder in the world.⁴⁹

The law which God intends men to obey is "the Law of Reason",⁵⁰ and "the eternal, immutable Standard of Right".⁵¹ The language, and much more than the language, is very close to that of Cudworth and the other Cambridge Platonists. Locke rejected the metaphysical systems of the Cambridge Platonists but he shared to the full their detestation of a theory of ethics which would make God an arbitrary ruler and morality (when not divinely imposed) a human invention. Locke wanted to show that ethics could be made into a demonstrable science, but he was not prepared to pay any price to achieve his goal. Any argument for the demonstrability of morality which could prove nothing more than the demonstrability of morality as conceived by Hobbes would be as bad as (and perhaps worse than) no argument at all.

Locke's arguments to show the possibility of real certain knowledge are therefore defective. Because of the differences between mathematics and ethics these deficiencies manifest themselves in different ways. In mathematics demonstrations are unquestionably possible; they must be because they already exist and can be produced. Moreover the theorems of arithmetic and geometry are clearly not analytic (if we use Kant's definition of that term⁵²) or trifling, in Locke's sense.

There is a sense in which Locke is justified in saying that we make the essences of numbers and geometrical figures, but there is also a sense in which we certainly do not. Consider one example from the theory of numbers. We can define a perfect number as one which is equal to the sum of its factors, prime and non-prime, including 1 but excluding the number itself. It follows that 6 is perfect because

$$6 = 1+2+3$$

and 28 is perfect because

$$28 = 1+2+4+7+14$$

There can be no doubt that in one sense we make the essence of a perfect number — the nominal essence, because it is we who construct the nominal definition. It is equally clear that nothing we can do can have the slightest influence on whether any numbers are perfect numbers in the sense which we have defined.

The same thing is true of geometry. We provide the definition of a rhombus — an equilateral parallelogram. There is nothing that compels us to consider such parallelograms as a distinct species; we have no specific name for equilateral trapezia. Nevertheless, it is not we who give the rhombus, so defined, such further properties as possessing mutually perpendicular diagonals.

There are in the Essay two rather different accounts of the nature of mathematics, one of which is predominant in Book III, and the other in Book IV. In Book IV Locke founds mathematical knowledge on our capacity to intuit relations between ideas and hence to build demonstrations each step of which is guaranteed by intuition. To what extent this conception of mathematics was borrowed from Descartes is a matter of some uncertainty, but it is clearly Cartesian in spirit. In Book III on the other hand Locke's discussion presupposes a theory of geometrical demonstration which was ultimately scholastic in origin.

Geometry was one of the seven liberal arts and thereby gained at least a nominal place in the medieval educational system. In practice it was seldom studied at a very high level, and perhaps for this reason it did not receive very much attention from philosophers and logicians. The medieval accounts of demonstration owed little or nothing to geometrical practice. They were derived from the Posterior Analytics, but not from those parts of the Posterior Analytics which had been most deeply influenced by contemporary work on geometry.

The scholastic theory of demonstration supposed that we demonstrate the properties of things by syllogistic deduction from real definitions — definitions which state the essences of things. The theory survived and indeed flourished even in the increasingly anti-scholastic climate of the seventeenth century. It found its greatest acceptance not among mathematicians but among philosophers, who viewed geometrical reasoning as an ideal which other disciplines might hope to imitate. Pascal expressed with great clarity the view that the definitions with

which geometers are concerned are nominal definitions,⁵³ and the same view can be found in Isaac Barrow.⁵⁴ The opposite view, that geometry proceeds by deduction from real definitions, was put forward by Spinoza. Definitions, including geometrical definitions, reveal the essences of the things defined:

In order that a definition may be called perfect, it must explain the inmost essence of a thing.... The conception or definition of a thing is required to be such that all the properties of that thing, regarded in itself and not conjoined with others, can be concluded from it...⁵⁵

Locke's theory of demonstration differed little from the theory put forward by Spinoza. The properties of a geometrical figure "flow" from its essence:

Thus a Figure including a Space between three Lines, is the real, as well as nominal Essence of a Triangle; it being not only the abstract Idea to which the general Name is annexed, but the very Essentia, or Being, of the thing it self, that Foundation from which all its Properties flow, and to which they are all inseparably annexed.⁵⁶

The only respect in which Locke departed from this traditional account of demonstration lay in his discarding the scholastic language of real and nominal definitions. It is unlikely in the extreme that he would not have been familiar with the distinction between real and nominal definitions,⁵⁷ but in the Essay (and indeed elsewhere) he consistently refrained from using either term. The account of definition in the Essay is unmistakably an account of what Locke's contemporaries called nominal definitions, but Locke himself never used the expression.

The reason why Locke avoided the terminology of real and nominal definitions obviously cannot now be known with certainty, but it may be plausibly conjectured. Locke declined to make a distinction between real and nominal definitions because there could be no circumstances which would make such a distinction necessary. The real essences of substances are unknown and cannot therefore be defined; the real and nominal essences of modes and relations on the other hand are identical, and one single type of definition is therefore all that is required.

The fundamental deficiency of this account of geometry is that by focussing attention solely on the part played by definitions it conceals the necessity for premises of a different kind. It is these premises (whether called axioms, postulates, common notions or anything else) which give a mathematical system its logical content. The definitions either are purely nominal, serving to introduce new words, or else (as with some of Euclid's) are mere elucidations of the meaning of primitive terms, and play no part in the construction of any of the proofs.

Locke recognised the existence of axioms (or maxims, as he preferred to call them) but he considered them to be of little use at best and frequently worse than useless.⁵⁸ If we have determined⁵⁹ ideas then the truths founded on those ideas are never less and are often more clearly self-evident than the general maxims of which they are particular instances. A man can know that $1+2 = 3$ without ever having thought of the maxim that a whole is equal to the sum of its parts; and if any of these ideas are going to cause problems through their obscurity, it will be the ideas of whole and part, and not the ideas of one, two

and three.⁶⁰ In cases such as this, when we have determined ideas, maxims are superfluous, but they are at least harmless. It is when our ideas are confused that maxims become dangerous. One consequence of a traditional scholastic education was that it encouraged men to rely confidently on maxims even, or perhaps especially, when they had no clear ideas. The result of such misplaced trust is confusion, mistake and error.⁶¹

For Locke, therefore, axioms are certainly not the premises which give any mathematical system its content. Many of them are purely verbal: they inform us of "nothing but the Respect and Import of Names one to another".⁶² None of them are of any use in leading us towards real knowledge. Nevertheless it would be misleading to say that Locke assigned the content-giving function to definitions, even though such a conclusion is implicit in what he said. Locke never considered geometry as a formal system of theorems deduced from premises, and he therefore never faced squarely the question of which premises have the kind of real truth possessed by the theorems. His preference for discussing problems about the foundations of knowledge in psychological terms enabled him to evade such problems completely.

IV

The difficulties in which Locke found himself concerning the possibility of real certain universal knowledge arose primarily from his desire to retain a demonstrative theory of knowledge while at the same time discarding the realistic metaphysics which had originally been introduced in order to explain how such knowledge could be possible. Locke's conception

of the nature of knowledge is ultimately Platonic in character. Like Plato he held that we acquire universal knowledge through the intuition of ideas. The immense distance between their two philosophies is a consequence of their utterly dissimilar conceptions of what an idea is. For Plato Ideas are transcendent and self-subsistent entities, eternal and unchanging, far more real than the phenomenal world which we perceive by our senses. Later Platonists modified this picture in one important respect by making Ideas exist in the mind of God.⁶³ Superficially, such Ideas are closer to Locke's ideas than the original Platonic Ideas had been; in reality the difference is as great as it had been before. The divine Ideas are the eternal models which the essences of particular created things resemble. The same form exists in the divine mind and in the created particulars, and the same form would also exist in the mind of any man who had grasped what the essence of the created particulars was.

This theory of knowledge was by no means extinct among Locke's contemporaries. It can be found, for example, in a fairly traditional form, in Locke's critic, John Sergeant. Locke found Sergeant's views partially incomprehensible and (where they could be understood) wholly absurd.⁶⁴ Sergeant followed the schoolmen and, ultimately, Aristotle in supposing that the same form exists in the intellect and in the external object.⁶⁵ Locke on the other hand held that most ideas do not in any way resemble the things which exist outside our minds.⁶⁶

For Locke each man's ideas are nothing more than individual signs existing in his own mind. In the world there are also only individuals, bodies and spirits, acting in accordance with

divinely ordained laws. Locke avoided all the metaphysical difficulties generated by realistic theories of universals from Plato onwards. He did so at a price which one of the most acute of his early critics saw clearly. As Berkeley commented in one of his notebooks, "The reason why we can demonstrate so well about signs is that they are perfectly arbitrary & in our power, made at pleasure."⁶⁷ The only moral truths that Locke was able to demonstrate were purely trifling truths.⁶⁸ Locke had explained how certain universal knowledge is possible, but at the cost of making it impossible that such knowledge should simultaneously be real.

Notes to Chapter 8

1. First Reply, pp.88-89 (Works, vol.IV, p.143).
2. Ibid., pp.90-91 (Works, vol.IV, pp.143-44).
3. Essay, I.i.7.
4. Essay, IV.ii.14, IV.xi.8.
5. Draft A, §29, fol.75.
6. Draft A, §31, fols.76-77.
7. Second Reply, p.118 (Works, vol.IV, p.272).
8. Essay, IV.xiv.4.
9. For Locke's placing conjecture among the lower kinds of assent see Essay, IV.xv.2. Cf. Examination of Malebranche, §50.
10. First Reply, pp.95-96 (Works, vol.IV, p.146).
11. Second Reply, p.124 (Works, vol.IV, p.276).
12. Essay, IV.xvii.16.
13. The Posthumous Works of Mr. John Locke, p.250 (Works, vol.VI, p.558).
14. Essay, IV.iii.22.
15. Second Reply, p.159 (Works, vol.IV, p.299).
16. Critique of Pure Reason, A6/B10.
17. Essay, IV.viii.13.
18. Critique of Pure Reason, B19.
19. The evidence for this can be seen in the character of Locke's library (see J. Harrison and P. Laslett, The Library of John Locke, pp.18,292-308), in his correspondence, especially with Furly and Limborch, and in the controversies in which he chose to become involved after he returned to England in 1689. On the immense importance of Locke's religious beliefs for the interpretation of his thought, see R. Ashcraft, "Faith and knowledge in Locke's philosophy" in J.W. Yolton (ed.), John Locke: Problems and Perspectives, pp.194-223.
20. Essay, II.xii.3.
21. Essay, II.xii.4.
22. Essay, III.iv.17.
23. Essay, II.xxxii.1,19.
24. For example Arnauld's Des vrayes et des fausses idées, a copy of which Locke owned (Library catalogue number 124).

25. Essay, II.xxx.1.
26. Essay, II.xxx.4.
27. Essay, II.xxxi.1.
28. Ibid.
29. Essay, II.xxxi.6.
30. Essay, II.xxxi.10.
31. Essay, II.xxxi.3.
32. Essay, III.v.14.
33. Essay, IV.iv.8.
34. Essay, IV.iv.5.
35. Essay, IV.iv.7.
36. Draft A, §29, fol.75.
37. Essay, IV.viii.9.
38. Locke believed that we could discover a very few self-evident truths about bodies — for example that two bodies cannot be in the same place at the same time, Essay, IV.vii.5; cf. I.ii.18.
39. Nouveaux Essais, II.xxx.5.
40. Essay, III.v.5-6.
41. Essay, II.xxii.1,4,6,10.
42. Essay, III.v.10.
43. Essay, II.xxii.8.
44. Locke describes a rainbow as a mixed mode in Essay, II.xviii.4.
45. Essay, III.vi.39.
46. Hobbes, Six Lessons to the Professors of Mathematics, Preface, English Works, vol.VII, pp.183-84.
47. Leviathan, ch.13 (ed. Oakeshott, p.83).
48. J.L. Mackie, Ethics.
49. The Reasonableness of Christianity, pp.211-12 (Works, vol.VII, p.112).
50. Ibid., p.14 (Works, vol.VII, p.11).
51. Ibid., p.253 (Works, vol.VII, p.133).
52. On the disadvantages of using Kant's definition, see Frege, The Foundations of Arithmetic, §89, pp.99-101.
53. Pascal, De l'esprit géométrique, in Oeuvres complètes (ed. L. Lafuma), pp.348-55, esp. 349. This work was not published until 1776, but many of its ideas were available to Locke's generation in Arnauld's and Nicole's La logique ou l'art de penser.

54. I. Barrow, The Usefulness of Mathematical Learning, lecture vii, esp. pp.112-14.
55. Spinoza, Tractatus de Intellectus Emendatione, ch.xiii, §§95-96. Cf. the use of this picture of geometry in Ethics, I, prop.xvii, note.
56. Essay, III.iii.18, cf. II.xxxi.11, xxxii.24.
57. The distinction between real and nominal definitions can be found in the great majority of logic textbooks, such as (to give one example only) Burgersdijk's Institutionum Logicarum, bk.ii, ch.1 (Cambridge, 1644, p.145). It can also be found in the Port Royal Logic: A. Arnauld and P. Nicole, La logique ou l'art de penser, i.12-14; iv.4-5.
58. Essay, IV.vii.20.
59. Locke introduced this term in the fourth edition of the Essay in place of the Cartesian terminology of clear and distinct ideas which he had hitherto used.
60. Essay, IV.vii.10.
61. Essay, IV.vii.12-18, esp.14.
62. Essay, IV.vii.11.
63. On the history of the concept of an Idea after Plato, see J. Dillon, The Middle Platonists, pp.28-29,47-48,95,254-56.
64. J.W. Yolton, "Locke's Unpublished Marginal Replies to John Sergeant", JHI, 12 (1951), pp.550-51.
65. De Anima, 431b26-432a1.
66. Essay, II.viii.7.
67. Philosophical Commentaries, §732.
68. Ibid., §§690,691. Berkeley presumably had Essay, IV.iii.18 in mind.

Chapter 9

Locke's Late Polemics: Malebranche and Norris

After completing the Essay Locke wrote five more purely philosophical works — six if we include The Conduct of the Understanding, which was originally intended to be part of the Essay. Three, directed against Edward Stillingfleet, Bishop of Worcester, were written in 1696-1698. These will be discussed in the next chapter. The other two, in opposition to John Norris and to Norris's most important contemporary source, Malebranche, were written earlier, in 1693, but were published only after Locke's death.¹ The repetitive and in places somewhat rancorous style which Locke chose to employ together with the sometimes rather niggling character of his criticisms have together had the consequence that these works have had few readers in comparison to the Essay. Nevertheless they are in places of considerable value for understanding Locke's thought, not least because none of the men he was writing against shared his metaphysical outlook. Locke was in consequence led to discuss in some detail problems which in the Essay he had largely passed by.

I

Among the philosophers who were alive and active when Locke published the Essay the most important is now generally agreed to have been Leibniz; but at the time it was probably Malebranche who enjoyed the greatest reputation, not only in Europe but also in England. Locke certainly paid close attention to Malebranche's

work.² He possessed no less than four copies of the Recherche de la vérité,³ as well as some of Malebranche's other writings, and criticisms by Arnauld, Foucher and Des Gabets.⁴

Despite Locke's interest in Malebranche, it is unlikely that he would have written against him had he not quarrelled with Malebranche's English follower John Norris. Norris had been the first of all Locke's critics to publish his objections,⁵ but the manner of his doing so had been so respectful⁶ that Locke had not taken offence and had even used his influence with the Earl of Pembroke to obtain for Norris the comfortable living of Bemerton, just outside Salisbury. The relations between the two men did not remain amicable for long. Locke was always inclined to be excessively suspicious and secretive, and in the autumn of 1692 he came to suspect Norris of prying into his correspondence.⁷ His attitude to Norris thereupon changed completely, as the correspondence between the two bears witness, and he decided to submit Norris's philosophy to a thorough examination.

The first fruit of this was a short manuscript, dated 1692, entitled J.L. Answer to Mr. Norris's Reflection,⁸ clearly written while Locke was in an extremely bad temper. It contains little of any philosophical interest, but it provides ample (though unfortunately superfluous) evidence for one of the less attractive sides of Locke's character. This rather unappealing work breaks off suddenly after some 1200 words. Locke probably realised that it was hardly suitable for publication. It was followed in the next year by two works of cooler, more measured and more substantial criticism.

In the form in which it was first published in 1706 the Examination of Malebranche contains no references to Norris or to his works. The impression thus created is misleading: as Charlotte Johnston has shown,⁹ the original manuscript (JL. Of Seeing all thing in God 1693)¹⁰ contains in its opening paragraphs a number of references to Norris, all of which were carefully removed by Locke's first editor, Peter King. King cannot justly be blamed for this; he was not attempting to deceive his readers either by his choice of title or by his excisions. The Examination of Malebranche may have been begun as an attack on Norris, but it quickly became a work directed wholly against Malebranche. Nevertheless the survival of the omitted material is important in that it indicates the reason why Locke chose to submit Malebranche's philosophical views to such a careful scrutiny.

The contents of the Examination of Malebranche are accurately indicated by the full title which King chose for it: An Examination of P. Malebranche's Opinion of Seeing All Things in God. It is not a general examination of Malebranche's philosophy, but rather a detailed study of the first seven chapters of the Second Part of Book III of the Recherche de la vérité, together with a few further comments on Malebranche's own subsequent elucidation of his position in Éclaircissement X. Locke was not concerned with the correctness or coherence of Malebranche's philosophy as a whole. His target was the central and most remarkable part of Malebranche's whole theory of knowledge: the vision in God.

Occasionalism can be considered simply as a radical but rather desperate solution of the difficulties inherent in Cartesian dualism. The problem of how an unextended thinking substance can possibly either act or be acted on by an unthinking extended substance can be avoided if we suppose that neither acts on the other but that God continuously causes our bodies to move in accordance with what we decide and continuously supplies us with ideas appropriate to the disposition of our organs of sense. This is the essence of the occasionalist systems of Cordemoy and Geulincx. They bear a close resemblance to Berkeleyan idealism, with the addition of a material world which serves no very obvious function. Malebranche's system was more complex, less inelegant, and philosophically very much more interesting.

Malebranche explicitly rejected the view that God produces in us the ideas of the things that we perceive.¹¹ The ideas which are the objects of our thoughts and perceptions are not within our minds at all. They are in fact nothing other than the divine Ideas, which God chooses to reveal to us and which (because of the finiteness of our minds) we perceive in a more or less confused manner.¹²

This type of occasionalism therefore provides a possible solution not only to the problem of the relation of mind and matter but also the problem of the nature of the eternal truths:

I am certain that the ideas of things are immutable, and that eternal laws and truths are necessary — it is impossible that they should not be as they are. Now, I see nothing in me of a necessary or immutable nature — I am able not to be, or not to be such as I am; there might be minds unlike me, yet I am certain that there can be no

mind that sees truths and laws different from those I see — for every mind necessarily sees that twice two is four, and that one's friend is to be valued more than one's dog. It must be concluded, then, that the reason consulted by all minds is an immutable and necessary Reason.... But if it is true that the Reason in which all men participate is universal, that it is infinite, that it is necessary and immutable, then it is certainly not different from God's own reason, for only the infinite and universal being contains in itself an infinite and universal reason. All creatures are particular beings; universal reason, therefore, is not created. No creature is infinite; infinite reason, therefore, is not a creature. But the reason we consult is not only infinite and universal, it is also independent and necessary, and in one sense, we conceive it as more independent than God Himself. For God can act only according to this reason— He has to consult and follow it. Now, God consults only Himself and depends on nothing. This reason, therefore, is not different from Himself; it is, therefore, coeternal and consubstantial with Him.¹³

The Platonic character of this theory of knowledge is evident. It was in St. Augustine that Malebranche found the basis for a solution of the sceptical quandary into which the Cartesian philosophy had led him,¹⁴ and as his thought developed the Platonic element in it increased. Malebranche did not cease to be (in a broad sense) a Cartesian; indeed one of the superiorities of the Neoplatonic type of realism over the Aristotelian scholastic type was that it did not suppose the existence of immanent universals or forms which would have been incompatible with strict Cartesian mechanism.

The realistic character of Malebranche's philosophy appears clearly in his account of general ideas. The most general ideas

are not formed by abstraction from particular ideas, but rather particular ideas are formed from general ideas:

In order for us to conceive of a finite being, something must necessarily be eliminated from this general notion of being, which consequently must come first. Thus, the mind perceives nothing except in the idea it has of the infinite, and far from this idea being formed from the confused collection of all our ideas of particular beings (as philosophers think), all these particular ideas are in fact but participations in the general idea of the infinite; just as God does not draw His being from creatures, while every creature is but an imperfect participation in the divine being.¹⁵

All our particular ideas of creatures are described by Malebranche as being merely limitations of the idea of the creator.¹⁶ God is not a particular being but rather all being, being in general,¹⁷ and the idea of God and the idea of being are therefore the same. It is because we are usually absorbed in thinking about particular objects of sense that we fail to understand this, and we fall into the error of supposing that our general ideas are formed by abstracting from particulars:

But because commonplace things that do not affect us do not forcefully arouse the mind and command its attention, this idea of being, however great, real, positive, and vast it may be, is so familiar to us and affects us so little that we almost believe ourselves not to see it, do not reflect on it, and then judge that it has but little reality and is formed only from the confused collection of all our particular ideas, although, quite to the contrary, it is in it and by it alone that we perceive all beings in particular.¹⁸

It follows therefore that there are not only particular and general ideas but also particular and general things:

Do you not see that there is this difference between God and the human soul, that God is a being without restriction, a universal and infinite being, whereas the soul is a kind of particular being? It is a property of an infinite being to be simultaneously one and all things, compounded, as it were, of an infinity of perfections, and to be so simple that each perfection it possesses contains all other perfections without any real distinction; for since each divine perfection is infinite, it constitutes the entire divine being.¹⁹

God alone is universal and infinite, and it is therefore impossible that he could be represented by anything finite and particular, as anything existing in the human mind must necessarily be. Indeed whenever we think about something universal and infinite the object of our thought cannot be anything created:

Furthermore, it is clear that the idea, or immediate object of our mind, when we think about limitless space, or a circle in general, or indeterminate being, is nothing created. For no created reality can be either infinite or even general, as is what we perceive in these cases.²⁰

It is the existence of these uncreated divine Ideas and the fact that God can manifest them to us which make it possible for us to possess universal knowledge:

It even seems that the mind would be incapable of representing universal ideas of genus, species, and so on, to itself had it not seen all beings contained in one. For, given that every creature is a particular being, we cannot say that we see a created thing when, for example, we see a triangle in general.²¹

It is not surprising that Locke found this theory of knowledge and its associated metaphysics thoroughly unacceptable. In some places indeed he found it impossible to understand.

Malebranche followed Plato and Aristotle in distinguishing between things that are sensible and things that are intelligible, and he borrowed from the Neoplatonic tradition the notion of an intelligible world:

For God neither senses nor imagines, but sees in Himself, in the intelligible world He contains, the material and sensible world He has created. The same is true of a mind that knows the truth; it neither senses nor imagines — sensations and phantasms represent only false relations to the mind, and whoever discovers the truth perceives it only in the intelligible world to which the mind is joined and in which God Himself sees it, for the material and sensible world is not intelligible by itself.²²

Locke could make nothing of this kind of philosophy. In reply to Malebranche's statement that God alone is purely intelligible,²³ he could only express his bafflement at what Malebranche could possibly mean:

He says, There is no Substance purely intelligible but that of God. Here again I must confess my self in the dark, having no notion at all of the Substance of God; nor being able to conceive how his is more intelligible than any other substance.²⁴

When Malebranche said that we know by means of ideas things that are not intelligible by themselves,²⁵ Locke commented:

This reasoning I do not understand, First, Because I do not understand why a Line or a Triangle is not as intelligible as any thing that can be nam'd; for we must still carry along with us, that the Discourse here is about our Perception, or what we have any Idea or Conception of in our own Minds.²⁶

Locke found Malebranche's remarks about universal beings no more easy to understand. Malebranche had argued that God, as

a universal being, could not be represented to our minds by any particular being, such as anything distinct from himself must necessarily be.²⁷ Locke commented on this argument as follows:

I shall take notice of one or two things in it that confound me, and that is, that he calls God here the universal Being; which must either signifie that Being which contains, and is made up as one comprehensive aggregate of all the rest, in which sense the Universe may be call'd the universal Being; or else it must mean Being in general, which is nothing but the Idea of Being abstracted from all inferiour divisions of that general Notion, and from all particular Existence. But in neither of these senses can I conceive God to be the universal Being, since I cannot think the Creatures either to be a Part or a Species of him. Next he calls the Ideas that are in God, particular Beings. I grant whatever exists is particular, it cannot be otherwise; but that which is particular in Existence may be universal in representation, which I take to be all the universal Beings we know, or can conceive to be.²⁸

Locke could make no sense of what Malebranche meant by a universal being, since God is neither everything which exists nor is he a general notion of any kind. Locke therefore merely restated the nominalist philosophy of the Essay: all things that exist are particulars and may be conceived as universal only in virtue of their capacity to function as signs.

Since Locke rejected without qualification Malebranche's conception of God as a universal being, he had also to reject the associated account of universal knowledge. According to Malebranche our capacity to acquire universal knowledge can only be explained by supposing that the ideas which are the objects of our thoughts are nothing other than the eternal and unchangeable divine Ideas. The alternative view that ideas are transitory

modifications of our minds leads unavoidably to scepticism:

We can see clearly (provided that what I have just said is seriously considered) that to maintain that ideas that are eternal, immutable, and common to all intelligences, are only perceptions or momentary particular modifications of the mind, is to establish Pyrrhonism and to make room for the belief that what is moral or immoral is not necessarily so, which is the most dangerous error of all.²⁹

Demonstration of necessary truths is possible because the divine Ideas contain within themselves all their properties:

As the ideas of things in God include all their properties, whoever sees their ideas can also see all their properties successively; for when we see things as they are in God, we always see them in perfect fashion, and the way we see them would be infinitely perfect if the mind seeing them were infinite. What is lacking to our knowledge of extension, figures, and motion is the shortcoming not of the idea representing it but of our mind considering it.³⁰

Locke's reaction to this claim was that it is quite irrelevant to the possibility of demonstration whether the ideas concerned are in God or in any other mind:

He says farther, That whereas the Ideas of things that are in God contain all their Properties, he that sees their Ideas may see successively all their Properties. This seems to me not to concern our Ideas more, whether we see them in God, or have them otherwise. Any Idea that we have, whencesoever we have it, contains in it all the Properties it has, which are nothing but the relations it has to other Ideas, which are always the same. What he says concerning the Properties, that we may successively know them, is equally true, whether we see them in God, or have them by any other means.³¹

Locke did not believe that there were any eternal and

immutable ideas that could be accessible to any human mind. For this reason he found Malebranche's claim that ideas are immutable beyond his comprehension:

In his Eclaircissements on the nature of Ideas, p.535. of the Quarto Edition, he says, that he is certain that the Ideas of things are unchangeable. This I cannot comprehend; for how can I know that the Picture of any thing is like that thing, when I never see that which it represents? For if these words do not mean that Ideas are true unchangeable representations of things, I know not to what purpose they are. And if that be not their meaning, then they can only signifie, that the idea I have once had will be unchangeably the same as long as it recurs the same in my Memory; but when another different from that comes into my Mind, it will not be that. Thus the Idea of a Horse, and the Idea of a Centaur, will, as often as they recur in my mind, be unchangeably the same; which is no more than this, the same Idea will be always the same Idea...³²

Locke founded eternal and immutable truths, not on eternal and immutable ideas, but on eternal and immutable relations existing between ideas which do not themselves possess these characteristics. This account of the eternal truths does not, as we have seen, appear in the first edition of the Essay. It is alluded to here in the Examination of Malebranche when Locke refers to the "infinite unchangeable Relations which are in things"³³ and in the Remarks upon some of Mr. Norris's Books,³⁴ but the clearest account appears in the second edition of the Essay:

Such Propositions are therefore called Eternal Truths, not because they are Eternal Propositions actually formed, and antecedent to the Understanding, that at any time makes them; nor because they are imprinted on the Mind from any patterns, that are any where of them out of the Mind, and

existed before: But because being once made, about abstract Ideas, so as to be true, they will, whenever they can be supposed to be made again at any time past or to come, by a Mind having those Ideas, always actually be true. For Names being supposed to stand perpetually for the same Ideas; and the same Ideas having immutably the same Habitudes one to another, Propositions, concerning any abstract Ideas, that are once true, must needs be eternal Verities.³⁵

It is very likely that this passage was written with Malebranche in mind. The second edition of the Essay went to the printers in the autumn of 1693,³⁶ and the new material which it contains was probably therefore written shortly after the polemics against Malebranche and Norris.

Locke failed to understand Malebranche primarily because their two philosophies were so different. Superficially they should have had enough in common: they were almost exact contemporaries; both were deeply indebted to Descartes and both were hostile to the scholastics. Nevertheless Malebranche thought in a way which Locke could not understand. Malebranche's philosophy is radically theocentric and at least incipiently monistic. Finite minds can only reason by participating in the divine reason, just as all finite things exist by participation in the divine being.³⁷ For Locke on the other hand, although we owe our existence to God, we can nevertheless think for ourselves by using the faculties which God has given us. There is therefore no Universal Reason of the kind that Malebranche imagined:

What he says here of universal Reason, which enlightens every one, whereof all Men partake, seems to me nothing else but the Power Men have to consider the Ideas they have one with another, and by thus comparing them, find

out the relations that are between them; and therefore if an intelligent Being at one end of the World, and another at the other end of the World, will consider twice two and four together, he cannot but find them to be equal, i.e. to be the same Number. These Relations, 'tis true, are infinite, and God, who knows all things and their Relations as they are, knows them all, and so his Knowledge is infinite. But men are able to discover more or less of these Relations, only as they apply their minds to consider any sort of Ideas, and to find out intermediate ones, which can shew the Relation of those Ideas, which cannot be immediately compared by juxta-position. But then what he means by that infinite Reason which Men consult, I confess my self not well to understand.³⁸

Locke was unable to understand what Malebranche was trying to say because he had no sympathy for and no real insight into the kind of Augustinian Neoplatonism which lay at the heart of Malebranche's philosophy. Locke made no attempt to understand Malebranche's statements in their true intellectual context. He translated them in accordance with the principles of his own philosophy, found a good many of them more-or-less incomprehensible, and concluded with an adverse judgement on Malebranche's intellectual powers.

II

The character and contents of the Remarks upon some of Mr. Norris's Books are accurately indicated by the full title which it bears in Locke's manuscript: Some other loose thoughts which I set down as they came in my way in a hasty perusal of some of Mr. Norris's writings, to be better digested when I shall have leisure to make an end of this Argument.³⁹ It begins in the form of a fairly coherent treatise, but it subsequently dwindles into

a series of disconnected marginalia, some of which can hardly be understood without reference to the passage from Norris against which they are directed. These come not from Norris's Cursory Reflections on the Essay but from his earlier work, Reason and Religion, published in 1689.

The Remarks upon some of Mr. Norris's Books is in every sense a slighter work than the Examination of Malebranche, and some of its readers have gone so far as to say it adds little of interest to what had already been written in the Examination and in the earlier unpublished diatribe against Norris.⁴⁰ This is unfair: it is indubitably a minor work but it does contain something more than mere repetitions of what Locke had said earlier. In some places Norris quite openly borrowed Malebranche's arguments and his conclusions, but his philosophy taken as a whole was his own, with its own distinctive order of argument. Malebranche was a Cartesian who found a key to a solution of his philosophical difficulties in Augustinian Neoplatonism. Norris was from the beginning a Platonist, and it was only subsequently that he discovered "the incomparable Monsieur Malebranche".⁴¹

The main argument which Norris used for the theory that we see all things in God was what Aristotle called the Argument from the Sciences.⁴² There exist eternal and immutable truths. Consequently there must also exist eternal and immutable essences which provide the subject matter of these truths, and since nothing that is created can be eternal and immutable these essences must exist in God. It follows that when we perceive the truth of these eternal and immutable truths we do so by intuiting essences which exist in the divine nature; it is in this sense that we see things in God.

Locke of course agreed with Norris's premise that there are eternal and immutable truths, but disagreed with his conclusion that there must be eternal and immutable essences: according to Locke it is the relations between ideas that are eternal and immutable, not the ideas themselves. Norris did not discuss this view in his Cursory Reflections, but in Reason and Religion he had already considered it and rejected it:

And if there can be no Connexion or relation between things that are not, then also there can be no Eternal connexion or relation between things that have not an Eternal Existence. For things cannot be related before they are.⁴³

This last sentence contains the heart of Norris's position. The theory of seeing all things in God may appear strange, but it is at least coherent, which the supposition of eternal relations between purely temporal things can never be:

Now if after all, this Ideal way of things subsisting from all Eternity in God, should seem strange (as I suppose it will to those who are unexercised in these Contemplations) I shall only further say, First, that it must be infinitely more strange that there should be Eternal Truths, that is, Eternal Relations and Habitues of simple Essences, or things, without the Co-eternal existence of the things themselves so related. For what should support such Relations? The simple Essences must therefore exist eternally, if their relations do; and where can that be but in the Mind of God?⁴⁴

This is an argument which deserves to be taken very seriously.

It was used not only by Norris but also by Leibniz:

The Scholastics hotly debated de constantia subjecti, as put it, i.e. how a proposition about a subject can have a real truth if the subject does not exist. The answer is that its truth is a merely conditional one which says

that if the subject ever does exist it will be found to be thus and so. But it will be further asked what the ground is for this connection, since there is a reality in it which does not mislead. The reply is that it is grounded in the linking together of ideas. In response to this it will be asked where these ideas would be if there were no mind, and what would then become of the real foundation of this certainty of eternal truths. This question brings us at last to the ultimate foundation of truth, namely to that Supreme and Universal Mind who cannot fail to exist and whose understanding is indeed the domain of eternal truths. St. Augustine knew this and expresses it pretty forcefully. And lest you should think that it is unnecessary to have recourse to this Mind, it should be borne in mind that these necessary truths contain the determining reason and regulating principle of existent things — the laws of the universe, in short. Therefore, since these necessary truths are prior to the existence of contingent beings, they must be grounded in the existence of a necessary substance.⁴⁵

It is moreover an argument which Locke would have found particularly difficult to evade, since he himself agreed with the principle that there can be no relations between things which do not exist:

The nature therefore of Relation, consists in the referring, or comparing two things, one to another; from which comparison, one or both comes to be denominated. And if either of those things be removed, or cease to be, the Relation ceases, and the Denomination consequent to it, though the other receive in it self no alteration at all.⁴⁶

Locke unfortunately made no comments on these passages from Reason and Religion quoted above. His aim was to find the weak spots in Norris's arguments, not to draw attention to cogent arguments which could be used against himself. There is however one passage

dealing with this topic on which he did comment. Norris wrote:

The nature of Truth consists in a certain mutual respect or habitude of simple Essences one to another. But these relations which I comprehend, and which are the same with Truth, are not verified of the simple Essences, as they are in their External and Natural subsistencies, but as they are in the Divine Idea's. I deny not but that there may be relations between things in their natural subsistencies, but I say that it is not the relation which I primely and directly behold when I contemplate Truth. For, first, things according to their Natural subsistencies are Temporary, and once were not, but the relation which I behold is Eternal, and was from everlasting; and consequently cannot be the relation of things according to their subsistence in Nature.⁴⁷

Locke's comment on this was the following:

Truth lies only in Propositions. The foundation of this Truth is the relation that is between our ideas. The knowledge of truth is that perception of the relation between our ideas to be as it is express'd. The Immutability of Essences lies in the same sounds, suppos'd to stand for the same ideas. These things consider'd, would have sav'd this learn'd discourse.⁴⁸

This may be compared to the passage from §51 of the Examination of Malebranche quoted earlier: "the idea I have once had will be unchangeably the same as long as it recurs the same in my Memory; but when another different from that comes into my Mind, it will not be that." Ideas are immutable because any change results merely in a new and different idea coming into existence.

This is scarcely satisfactory. Ideas may be immutable (in the strict sense of that word) if they cannot change but can

only start to exist or cease to exist, but they cannot possibly be eternal. Even their immutability is hardly what was intended by the proponents (including Locke himself) of an eternal and immutable morality. It is hardly satisfactory to say that God could not change the moral law if it has to be admitted that he could at any time abolish it and replace it by another.

Scientific knowledge, in the Platonic and Aristotelian sense of that term, is not only of the eternal and immutable but also of universals. Norris saw in this another proof of the Vision in God:

The same may be further confirm'd from the Perception of Universals. Which the mind could not well be supposed able to represent unless it saw all Beings included in One. For since every Created thing is an Individual, no-one can say he perceives anything created, when he perceives, suppose, a Triangle in general. This well deserves to be considered.⁴⁹

Locke rejected Norris's view that although all creatures are individuals, uncreated things need not be:

The perception of Universals, also proves that all beings are present to our minds: and that can only be by the Presence of God, because all created things are Individuals. Are not all things that exist Individuals? If so, then say not, all created, but all existing things are Individuals; and if so, then the having any general idea proves not that we have all objects present to our minds: but this is for want of considering wherein universality consists; which is only in representation abstracting from particulars.⁵⁰

Norris's further elaborations of this point were dismissed impatiently.

Norris had written:

And this is what the Schools themselves must of necessity come to, if they would but attend to the consequences of

what they affirm, when they say, That Science is not of Singulars, but of Universal and Abstract Natures. For where are these Universal Natures? Not in this Ectypal World. Whatever is here, is singular, this or that, It must therefore be in the Ideal or Archetypal World, that is, in the Divine Nature, as exhibitiv of that which is created, where these Universal Natures, which are the proper objects of science, are to be found. And consequently, 'tis in God that we know all the Truth, which we know.⁵¹

Locke replied with apparent bafflement at Norris's inability to understand what universality is:

'Tis in the Divine Nature that these Universal Natures, which are the proper object of Science, are to be found. And consequently 'tis in God that we know all the Truth, which we know. Doth any universal nature therefore exist? Or can any thing that exists any where, or any how, be any other than singular?⁵²

After this Locke appears to have given up trying to explain to Norris what universality is and why there can be no universal things. Some further remarks by Norris in the same vein merely provoked this brief comment: "Whatever exists, whether in God, or out of God, is singular."⁵³

Norris could not consider the kind of philosophy Locke put forward as a serious option because it entailed the absurd position that relations could exist between things that did not. Locke held a similar opinion of Norris's philosophy because it required a similar impossibility, namely that things as well as signs could be universal.

In conclusion it must be admitted that the Remarks upon some of Mr. Norris's Books is a rather disappointing work. This is not because it contains nothing of much interest but because it contains

much less than it might have done. Locke was concerned only to expose the weak points in Norris's philosophy; and Norris, who was presumably unaware that Locke had written against him, did not make a reply that might have forced Locke to defend himself. It is fortunate that there was one critic, more eminent than the Rector of Bemerton, who did reply and who was able to engage Locke in a more protracted controversy.

Notes to Chapter 9

1. The Examination of Malebranche was published in 1706 in The Posthumous Works of Mr. John Locke; the Remarks upon some of Mr. Norris's Books was published in 1720 in A Collection of Several Pieces of Mr. John Locke.
2. Locke's Journals for January and February 1684 contain a large number of references to De la recherche de la vérité. (MS Locke f.8, pp.2-9,33-35).
3. Library catalogue numbers 1875, 1876, 1883, 1883^a.
4. Library catalogue numbers 124, 1877, 1878.
5. Cursory Reflections upon a Book called, An Essay concerning Human Understanding (1690). On Norris's criticisms, see J.W. Yolton, John Locke and the Way of Ideas, pp.65-67,91-93.
6. Cursory Reflections, pp.41-44.
7. The details of this rather sorry episode can be found in Locke's correspondence with Norris, in vol.IV of the Correspondence. See also C. Johnston, "Locke's Examination of Malebranche and John Norris", JHI, 19 (1958), pp.551-58; and R. Acworth, The Philosophy of John Norris of Bemerton, pp.251-73.
8. MS Locke c.28, fols.107-11. Printed in Acworth, op. cit., pp.357-61, and in R. Acworth, "Locke's First Reply to John Norris", The Locke Newsletter, 2 (1971), pp.8-11.
9. Johnston, op. cit., pp.553-55.
10. MS Locke d.3, fols.1-86.
11. De la recherche de la vérité, III(ii).4, p.226-27. Page references to the translation by T.M. Lennon and P.J. Olscamp.
12. Ibid., III(ii).7, p.237; III(ii).8, p.241.
13. Éclaircissements de la recherche de la vérité, X, pp.613-14
14. See the passage from the Première lettre du P. Malebranche touchant la défense de M. Arnauld, quoted by D. Connell, The Vision in God: Malebranche's Scholastic Sources, pp.146n-48n.
15. De la recherche de la vérité, III(ii).6, p.232.
16. Ibid., p.233.
17. Ibid., III(ii).6, p.231; III(ii).8, p.241; IV.11, p.318.
18. Ibid., III(ii).8, p.241.
19. Éclaircissements de la recherche de la vérité, X, p.624.

20. De la recherche de la vérité, III(ii).4, p.227.
21. Ibid., III(ii).6, p.232.
22. Ibid., V.5, p.364.
23. Ibid., III(ii).1, p.218.
24. Examination of Malebranche, §6.
25. De la recherche de la vérité, III(ii).7, p.237.
26. Examination of Malebranche, §45. In the first edition (1706) of the Examination of Malebranche, §§44-52 are misnumbered, as §§45-53, presumably owing to an error on the part of the printer. Although the text I have quoted is that of the first edition, I have used the consecutive numbering found in the 1812 edition of Locke's Works, and in other modern editions.
27. De la recherche de la vérité, III(ii).7, p.237.
28. Examination of Malebranche, §45.
29. Éclaircissements de la recherche de la vérité, X, p.620.
30. De la recherche de la vérité, III(ii).7, p.237.
31. Examination of Malebranche, §45.
32. Ibid., §51.
33. Ibid., §52.
34. Remarks upon some of Mr. Norris's Books, §§20-23,29.
35. Essay, IV.xi.14.
36. P.H. Nidditch, Introduction to John Locke, An Essay concerning Human Understanding, p.xxiv.
37. De la recherche de la vérité, III(ii).7, p.237.
38. Examination of Malebranche, §52.
39. MS Locke d.3, fol.89.
40. R. Acworth, The Philosophy of John Norris of Bemerton, p.273; Johnston, op. cit., p.557.
41. Reason and Religion, II.ii.5. The basic themes of Norris's philosophy are already in his Metaphysical Essay towards the Demonstration of a God, from the Steady and Immutable Nature of Truth, published in A Collection of Miscellanies (1687). He did not begin reading Malebranche until 1688-89, according to Acworth, op. cit., p.114.
42. Reason and Religion, I.v.6-37.
43. Ibid., I.v.10.
44. Ibid., I.v.31.

45. Nouveaux Essais, IV.xi.14 (trans. P. Remnant and J. Bennett, p.447). Cf. Monadology, §§43-44.
46. Essay, II.xxv.5.
47. Reason and Religion, II.ii.29.
48. Remarks upon some of Mr. Norris's Books, §§19-20.
49. Reason and Religion, II.ii.19.
50. Remarks upon some of Mr. Norris's Books, §4.
51. Reason and Religion, II.ii.30.
52. Remarks upon some of Mr. Norris's Books, §12.
53. Ibid., §21.

Chapter 10

Locke's Late Polemics: Bishop Stillingfleet

I

In 1696 Edward Stillingfleet, Bishop of Worcester, published A Discourse in Vindication of the Doctrine of the Trinity, the tenth and final chapter of which contained an attack on some of the views which Locke had put forward in the Essay. Stillingfleet was by virtue of his position and reputation an opponent whose criticisms it was not advisable to ignore. He was a slightly younger contemporary of Locke who had achieved through his numerous and varied writings a solid reputation (and hence preferment) at a time when Locke had published nothing and was still largely unknown.¹ Like many of his latitudinarian contemporaries Stillingfleet spent much of his middle life in London, in due course being made Dean of St. Paul's in 1678. After the Revolution he was one of the first to receive episcopal promotion, being appointed to the see of Worcester in 1689. There is evidence that he had expectations of rising still further. When Archbishop Tillotson died in 1694 Queen Mary wished that Stillingfleet might succeed him, but William and his Whig ministers considered him too high a churchman, and preferred the more reliable if duller Thomas Tenison, Bishop of Lincoln.²

Stillingfleet was a dangerous opponent, not only because of his high social standing but also because of his reputation as one of the Church of England's most skilled and most formidable controversialists. Locke, who owned a good number of Stillingfleet's works, knew this

very well; indeed he had some years previously collaborated with James Tyrrell in producing an unpublished reply to Stillingfleet's sermon on "The Mischief of Separation",³ an attack on those English Protestants who refused to conform to the Church of England.⁴

Stillingfleet has not been kindly treated by some modern writers on Locke, perhaps the most unfavourable comment being that of Jonathan Bennett, who described him as "a touchy and not very intelligent bishop".⁵ This is more than a little unfair. Stillingfleet was distinguished more for his erudition and for his skill as a theological controversialist than for his originality as a philosopher, but he was a man of considerable ability,⁶ and one who knew (as Locke did not) how to conduct a controversy in an urbane and dignified manner.⁷

Stillingfleet first read the Essay shortly after it was published, and when doing so he noticed nothing in it that appeared to have dangerous consequences for theology.⁸ It was the activities of John Toland that caused him to change his mind. The 1690s saw the climax of the polemical war between the English Socinians and their orthodox opponents,⁹ and it was as a contribution to this controversy that the recently installed Bishop of Worcester set out to compose his elaborate and learned Discourse in Vindication of the Doctrine of the Trinity. It was while he was finishing this that Toland's Christianity not Mysterious made its (anonymous) appearance.¹⁰

The primary message of Toland's book is accurately indicated by its full title: Christianity not Mysterious: or, a Treatise Shewing, That there is nothing in the Gospel Contrary to Reason, nor

Above it; and that no Christian Doctrine can be properly call'd a Mystery. Toland's view was "that the true Religion must necessarily be reasonable and intelligible."¹¹ In effect this meant that Christianity was to be purged of everything that was not reasonable — the criterion of reasonableness being that Toland should find it entirely comprehensible. This went well beyond anything that Locke had recommended either in the Essay or in The Reasonableness of Christianity.¹² Locke, unlike Toland, accepted the traditional distinction between things that are above reason and things that are contrary to reason,¹³ and he maintained quite explicitly that propositions known by the light of revelation must be believed "against the probable Conjectures of Reason."¹⁴ Matters of faith include not only those propositions "of whose Truth our Mind, by its natural Faculties and Notions, cannot judge" but also propositions which we would naturally judge to be improbable: "an evident Revelation ought to determine our Assent even against Probability."¹⁵ On this issue Locke had an excellent case for insisting that his views were quite different from Toland's. Unfortunately it was only too clear to Stillingfleet, and to anyone else who might choose to make the comparison, that Toland's account of the nature of knowledge was taken without any significant modifications from Book IV of the Essay.¹⁶ It was this that led Stillingfleet to preface his attack on Toland with a criticism of Locke.

A Discourse in Vindication of the Doctrine of the Trinity was published towards the end of 1696. Locke was immediately provoked to reply: A Letter to the Right Reverend Edward, Lord Bishop of Worcester was completed in January 1697 and was published shortly afterwards. Stillingfleet's riposte, An Answer to Mr. Locke's

Letter was written almost at once and appeared on sale at the beginning of May.¹⁷ Locke in turn replied quickly. Mr Locke's Reply to the Right Reverend the Lord Bishop of Worcester's Answer to his Letter is dated 29 June 1697. Stillingfleet responded two months later with An Answer to Mr Locke's Second Letter, a work which he appears to have intended to have been his final contribution to the controversy.¹⁸ Perhaps for this reason Locke decided not to reply at once but to compose a reply which would leave nothing unsaid. The result was Mr Locke's Reply to the Right Reverend the Lord Bishop of Worcester's Answer to his Second Letter, a work half as long again as its two predecessors combined. This was completed in May 1698, but its printing understandably took more time than usual, and it was not published until the end of that year.¹⁹ Stillingfleet was by then in no state to reply. His health had broken down, and he died on 27 March 1699.²⁰

Locke's writings against Stillingfleet, it must be admitted, do not show him at his best. All three works show signs of being somewhat hurriedly written. They are as a result too long and very poorly organised, and thus lack even the modest stylistic distinction of the Essay. Locke was always ready to spend far too long discussing points of minimal importance; and Stillingfleet, by being deplorably careless in quoting what Locke had actually written, gave him all the opportunity he needed.²¹ The result is that considerable tracts of these three works are of very minor interest, and the passages which are concerned with questions of real importance are scattered about in what appears to be almost a random fashion.

The deficiencies just described are the responsibility of Locke; there are however in addition faults for which Stillingfleet was primarily responsible. Stillingfleet was undoubtedly an able man, but his skills did not lie in philosophy. He was therefore frequently able to locate weak spots in Locke's thought, but he lacked the capacity to make clear issues which Locke had left in an unsatisfactory or confused state.

Despite these undeniable defects, the correspondence between Locke and Stillingfleet contains material of considerable importance for the understanding of Locke's thought. Locke was forced by Stillingfleet's criticisms to reconsider and hence defend or modify some of the views which he had put forward in the

Essay. A number of the important changes in the fourth edition of the Essay (1700) can be seen to be derived from this source, and at least one of the new passages in this edition was taken nearly word for word from the Second Reply.²² Nevertheless a full insight into the development of Locke's thought in the later 1690s can only be gained from a careful examination of the complete correspondence.

II

There is nothing unusual or surprising in the fact that a dispute over the theology of the Trinity rapidly expanded in scope so as to embrace more abstract metaphysical issues. Trinitarian theology is intimately and inextricably connected with metaphysics, and in particular with the metaphysics of common natures and essences. The doctrine received its classical formulation at the hands of theologians who inclined variously towards

Aristotelianism and Neoplatonism and who consequently felt no hesitation in making use of concepts which presuppose a realistic theory of universals.²³

Those philosophers who rejected the kind of realist metaphysics current among the Church Fathers were therefore, if they were concerned to defend the orthodox doctrine of the Trinity at all, liable to find themselves in intellectual perplexities greater even than those endemic in this area of theology. Roscellin had found this already in the early twelfth century, and Ockham was to find it again in the fourteenth. Ockham was forced in his account of the Trinity to employ such philosophical concepts as the Scotist distinctio formalis a parte rei, which elsewhere in his philosophy he had made a great effort to eliminate altogether.²⁴ On the intricacies of Trinitarian theology Locke was, in comparison with Ockham, a blundering amateur, and the controversy with Stillingfleet is characterised at least as much by Locke's incompetence in dogmatic theology as it is by Stillingfleet's more frequently criticised lack of skill in philosophy.

The orthodox doctrine of the Trinity states that three persons coexist in one common substance or essence. The aim of this formulation is to avoid two opposed but in certain respects similar errors. Sabellianism, named after an obscure third-century heresiarch, safeguards the unity of God at the cost of denying any real distinction between the three Persons. The opposite error maintains the reality and distinctness of the three Persons without safeguarding the unity of the divine substance. In effect God becomes an association of three Gods. It is not surprising that

no-one maintained this view himself: tritheism resembles solipsism in that it is a position which no-one ever considers himself as holding, but which is sometimes claimed to be implied by theories put forward by other people.

According to the Athanasian Creed, which would have been thoroughly familiar to both Locke and Stillingfleet from its use in the Book of Common Prayer, the true doctrine of the Trinity neither confounds the Persons nor divides the substance. If this doctrine is to make sense we need at the outset to have a clear understanding of what is meant by a substance and a person. It was Stillingfleet's complaint against Locke that the philosophy of the Essay made an adequate definition of either of these terms impossible. As a result the doctrine of the Trinity is deprived of any rational foundation and becomes at best an article of blind and uncomprehending faith.²⁵

Stillingfleet's criticism of Locke in the Discourse is therefore centred round the notions of substance, nature and person. Most of the discussion of the first of these topics has little relevance to the problems of universals, but one passage does suggest that Stillingfleet held that there are general substances as well as individual substances. Stillingfleet wrote:

And so the Substance, and Essence of a Man are the same; not being taken for the individual Substance, which cannot be understood without particular Modes and Properties; but the general Substance, or Nature of Man abstractly from all the Circumstances of Persons.²⁶

None of this made any sense to Locke. He assumed that Stillingfleet was writing loosely and casually:

That which your Lordship seems to me, principally to drive at, in this and the foregoing Paragraph, is, to assert, That the general Substance of Man, and so of any other Species, is that which makes the real Being of that Species, abstractly from the Individuals of that Species. By general Substance here, I suppose, your Lordship means the general Idea of Substance: And that which induces me to take the liberty to suppose so, is, that I think your Lordship is here discoursing of the Idea of Substance, and how we come by it. And if your Lordship should mean otherwise, I must take the liberty to deny there is any such thing in rerum natura, as a general Substance that exists it self, or makes any thing.²⁷

In fact Stillingfleet was writing, if not precisely, then at any rate quite literally. This is made clear by his explanation of the notions of nature and person. This is one of the central passages in the subsequent debate, and it deserves to be quoted in full:

But we must yet proceed farther. For, Nature may be consider'd two ways.

1. As it is in distinct Individuals, as the Nature of a Man is, equally in Peter, James and John; and this is the common Nature with a particular Subsistence proper to each of them. For the Nature of Man, as in Peter, is distinct from that same Nature as it is in James and John; otherwise they would be but one Person, as well as have the same Nature. And this distinction of Persons in them is discerned both by our Senses, as to their different Accidents; and by our Reason, because they have a separate Existence, not coming into it at once and in the same manner.

2. Nature may be consider'd abstractedly, without respect to individual Persons, and then it makes an entire notion of it self. For however the same Nature may be in different Individuals, yet the Nature in it self remains one and the same; which appears from this evident Reason, that otherwise every individual must make a different kind.²⁸

Stillingfleet's account of the real essences of things also has a realist character. He agreed with Locke's statement that though there is only one sun it is possible that there might have been more than one but the conclusion he drew from this was quite foreign to Locke's thought: "here we have a Real Essence subsisting in one Individual, but being capable of being multiplied into more, and the same Essence remaining."²⁹ It is these common real essences which make individuals of the same species what they are:

Therefore there must be a Real Essence in every individual of the same kind; for that alone is it which makes it to be what it is. Peter, and James, and John are all true and real Men; but what is it which makes them so? Is it the attributing a general Name to them? No certainly, but that the true and Real Essence of a Man is in every one of them. And we must be as certain of this, as we are that they are Men. They take their Denomination of being Men from that common Nature, or Essence which is in them.³⁰

The connection between this theory of real essences and the doctrine of the Trinity is pointed out most clearly in one of Stillingfleet's subsequent contributions to the correspondence:

For if there be nothing really, but an individuated Essence, then it must follow, that there can be no difference of Hypostases in the same Nature: for Nature individuated must take in the Hypostasis; and Nature being taken as common is affirmed by you to be nothing but an Abstract and Complex Idea, and a meer Nominal Essence.³¹

Having settled what a nature is, Stillingfleet then turned to the definition of a person:

Let us now come to the Idea of a Person; for although the Common Nature in Mankind be the same, yet we see a difference

in the several Individuals from one another. So that Peter, James, and John are all of the same kind; yet Peter is not James, and James is not John. But what is this distinction founded upon? They may be distinguished from each other by our Senses, as to difference of Features, distance of Place, &c. but that is not all; for supposing that there were no such external difference, yet there is a difference between them, as several Individuals in the same common Nature. And here lies the true Idea of a Person, which arises from that manner of subsistence which is in one Individual, and is not communicable to another.³²

The obscure meaning of this last sentence is partly elucidated by an earlier passage in chapter vi of the Discourse. Among the things which we need to consider carefully in order to understand the doctrine of the Trinity, Stillingfleet includes:

The peculiar manner of Subsistence, which lies in such Properties as are incommunicable to any other; and herein lies the proper reason of Personality. Which does not consist in a mere Intelligent Being, but in that peculiar manner of Subsistence, in that Being which can be in no other.³³

This definition of a person is derived, probably directly, from Boethius: a person is a naturae rationabilis individua substantia.³⁴

The notion of subsistence comes from the same source. Boethius took it as a translation of the late Greek ousiōsis: something subsists which does not require accidents for its existence. Thus general and species subsist, whereas individuals not only subsist but are also substances. "Itaque genera vel species subsistunt tantum.... Individua vero non modo subsistunt verum etiam substant..."³⁵

It is entirely unsurprising that Locke was able to find little sense in any of this. His comment on the passage quoted above in

which Stillingfleet claimed that nature may be considered in two ways was as follows:

I am so little confident of my own Quickness, and of having got from what your Lordship has said here, a clear and distinct Apprehension concerning Nature, that I must beg your Lordships Pardon, if I should happen to dissatisfie your Lordship, by talking unintelligibly, or besides the purpose, about it. I must then confess to your Lordship, 1. That I do not clearly understand whether your Lordship, in these two Paragraphs, speaks of Nature, as standing for Essential Properties; or of Nature, as standing for Substance.... 2. Your Lordships saying in the first of these Paragraphs, That the nature of Man, as in Peter, is distinct from the same Nature as it is in James and John: And in the second of them, That however the SAME nature may be in different Individuals, yet the Nature it self remains ONE AND THE SAME, does not give me so clear and distinct an Apprehension concerning Nature, that I know which, in your Lordships Opinion, I ought to think, either that one and the same Nature is in Peter and John; or that a Nature distinct from that in John, is in Peter: and the Reason is, because I cannot, in my way by Ideas, well put together one and the same and distinct.³⁶

To Stillingfleet's question of what it is that makes Peter, James and John all men Locke replied:

If when your Lordship asks, What makes them men? your Lordship used the Word making in the proper Sense for the efficient Cause, and in that sense it were true, That the Essence of a Man, i.e. the specifick Essence of that Species, made a Man; it would undoubtedly follow, That this specifick Essence had a reality beyond that of Being only a general, abstract Idea in the Mind. But when it is said, That it is the true and real Essence of a Man in every one of them that makes Peter, James and John, true and real Men; the true and real meaning of these Words is no more, but that

the Essence of that Species, i.e. the Properties answering the complex, abstract Idea, to which the specifick Name is given, being found in them that makes them be properly and truly called Men, or is the Reason why they are called Men.³⁷

This is the standard "conceptualist"³⁸ response: the justification for using a conventional sign such as a general word is to be found in the capacity of a general idea, a natural sign, to represent the individuals to which the general word is applied.³⁹

Stillingfleet's notion of real common essences or natures was for Locke puzzling enough, but his attempt to explicate the nature of a person was simply incomprehensible. Locke therefore had little to say in reply. He remarked with unconcealed irony that he had read Stillingfleet's account "with some hope of getting farther insight into these matters", but without reward:

But after having, with Attention, more than once read over what your Lordship, with so much Application, has writ thereupon; I must, with regret, confess, that the Way is too delicate, and the Matter too abstruse, for my Capacity; and that I learned nothing out of your Lordships elaborate Discourse, but this, That I must content my self with the condemn'd way by Ideas, and despair of ever attaining any Knowledge by any other than that...⁴⁰

With a final reminder that Stillingfleet's criticisms of Toland were of no relevance to the Essay, Locke concluded his letter.

III

The range of topics covered in An Answer to Mr Locke's Letter is considerably wider than it had been in the Discourse. This is a consequence of Stillingfleet's change of approach. He made it quite clear that he was not questioning the sincerity of Locke's opposition to the deists;⁴¹ nevertheless it did not follow from the fact that Locke himself disliked the conclusions drawn by Toland that such conclusions could not be legitimately inferred from the premises of the Essay. An Answer to Mr Locke's Letter consists therefore of a detailed criticism of all those passages in the Essay which appeared to Stillingfleet to contain anything dangerous to religion and morality.

The discussion of Locke's views about universals occupies a relatively small part of the whole, but it contains a number of points of considerable interest. Stillingfleet correctly located the central point at issue:

The Question now between us comes to this, Whether the common Nature or Essence of Things lies only in an Abstract Idea, or a General Name, and the Real Essence consists only in particular Beings from which that Name is abstracted?⁴²

Stillingfleet then rather slyly remarked that the views which Locke appeared to be advocating had been put forward before:

I know now how it comes to pass, that a Man spinning Books out of his own Thoughts should hit so luckily upon the Thoughts of another Man: I do not mean now, about clear and distinct ideas, but about this point of universal Names. For Mr. Hobbs in his chapter of Speech, tells us, that Names were to serve for Marks or Notes of Remembrance, and therefore were called signs. Of these Names, some are proper and singular to one thing, as Peter, John, this Man,

this Tree; some are common to many things, as Man, Horse, Tree, in respect of all which it is called an Universal, there being nothing in the World Universal but Names; for all the things nam'd, are every one of them individual and singular.⁴³

Locke had no wish to be linked with Hobbes in any way. He had replied to Stillingfleet's earlier suggestion that he owed something to Descartes, but in contrast to his usual practice of pursuing every point he left the sally about Hobbes unanswered.

Stillingfleet agreed with Locke in denying the existence of independently existing universal things, but he maintained that it did not follow from this that universals are no more than names or ideas:

I know no Body that thinks now-a-days, that Universals exist any where by themselves; but I do think, that there is a difference to be made between that and making them meer Names, or signs of Ideas.⁴⁴

The reason Stillingfleet gave for holding his realist theory of universals is that he believed that God himself "hath ordered the several Sorts and Ranks of Beings in the World according to his own Eternal Wisdom..."⁴⁵ These sorts of beings are "really and essentially" distinguished from one another, and the individuals of the same sort agree "in the same Essential Properties". As a result we can say that God has made species as well as individuals:

It is certain, that what God created is no meer Name or Idea: It is certain, that God created not only Individuals but the several Kinds, with the Difference which they have from each other; it is certain that these Differences do not lie in mere Names or Ideas: How comes it then not to be certain that there is a Real Common Essence or Nature in the Individuals of the same kind?⁴⁶

According to Locke two individuals which belong to the same species (i.e. can be ranked under the same abstract general idea) will have similar though not necessarily exactly similar real essences. According to Stillingfleet they will share one common real Essence:

To clear this, I put the Instance of the Sun, where an Essence was said by you to be in one Individual; and yet more Suns might agree in it. In this one Sun there is a Real Essence, and not a meer Nominal and Abstracted Essence: upon which I asked, If there were more Suns, would not each of them have the Real Essence of the Sun? For what is it makes the second Sun, to be a true Sun, but having the same Real Essence with the first?⁴⁷

The precise details of Stillingfleet's theory are somewhat unclear, and indeed remain so throughout the subsequent controversy. Its general character on the other hand is unmistakable. Stillingfleet believed that the real essence of things are not individual but common, and hence one real essence is capable of existing in many distinct individuals.

Much of Locke's First Reply is taken up, as usual, with wranglings over points of minor or indeed infinitesimal importance, but it does include one long passage which contains a thorough examination of the foundations of Stillingfleet's metaphysics. This is a discussion of the passage in the Discourse on nature and person: twenty lines of Stillingfleet's original statement are dissected, sometimes word by word, in nearly twenty pages of minute analysis.

This passage is easily separated from its surroundings because Locke chose to place his criticism in the mouths of some un-named

friends to whom (he claimed) he had turned in the hope of being enlightened as to Stillingfleet's meaning. Whether any conversation of the kind which Locke described took place in fact is doubtful, though Locke certainly wrote subsequently as though it had.⁴⁸ The purpose of writing in this way may have been dramatic (another dialogue in the Second Reply supports this possibility); alternatively Locke may have hoped to avoid giving the impression of an essay by a rather confused pupil being corrected by a conscientious tutor. Either way little was achieved: Stillingfleet was not mollified and Locke's dialogue exhibits no trace of the dramatic mastery of Plato or Berkeley. Fortunately one thing is beyond reasonable doubt: the statements which Locke placed in the mouths of others are ones which he himself could have made, and they are therefore capable of being used as evidence of Locke's own views. In what follows I shall treat the views expressed by the main anonymous speaker as Locke's own.

Locke could make no sense of Stillingfleet's claim that "the Nature of a Man is equally in Peter, James and John; and this is the common Nature with a particular Subsistence proper to each of them."⁴⁹

I do not doubt but his Lordship set down these words with a very good Meaning; but such is my Misfortune, that I, for my Life, cannot find it out.⁵⁰

Part of Locke's perplexity appears to arise from the possibility of using "Peter", "James" and "John" as names for horses or other non-humans. There is however also a more serious and fundamental problem:

But let Peter be never so much a man, and let it be impossible to give that Name to a Horse, yet I cannot understand these Words, That the common Nature of Man is in Peter; for whatsoever is in Peter, exists in Peter; and whatever exists in Peter, is particular: But the common Nature of Man, is the general Nature of Man, or else I understand not what is meant by common Nature. And it confounds my Understanding, to make a General a Particular.⁵¹

The notion of subsistence, which was presumably intended to help clarify the issue, is equally incomprehensible:

But to help me to conceive this Matter, I am told, It is the common Nature, with a particular Subsistence proper to Peter. But this helps not my Understanding in the Case. For first, I do not understand what Subsistence is, if it signifie any Thing different from Existence: And if it be the same with Existence, then it is so far from loosening the Knot, that it leaves it just as it was, only covered with the obscure and less known Term Subsistence. For the Difficulty to me, is, to conceive an Universal Nature, or Universal any Thing, to exist; which would be, in my Mind, to make an Universal a Particular: Which, to me, is impossible.

No, said another who was by, 'Tis but using the word Subsistence instead of Existence, and there is nothing easier; if one will consider this common or universal Nature, with a particular Existence, under the Name of Subsistence, the Business is done.⁵²

Locke could not have had any justification in objecting to the use of the word "subsistence": in a number of places in the Essay he had described things as subsisting, as for example when he explained that we give the name "substance" to the unknown support of those qualities which we find existing but which "we imagine cannot subsist, sine re substante".⁵³ For Locke subsistence is the kind of independent existence characteristic of substances. What he was objecting to in Stillingfleet was the apparent supposition

that there could be a notion of subsistence different from existence, so that things to which it would be inconvenient to grant existence might be allowed to subsist rather than be nothing at all. Such a conception of semi-existence has had a long if somewhat disreputable history in Western philosophy, and Locke viewed Stillingfleet's apparent employment of it as a mere subterfuge.

The other way in which nature may be considered, according to Stillingfleet, is "abstractedly, without respect to individual persons". Locke found this quite incomprehensible:

His Lordships next Words are; For however the same Nature may be in different Individuals, yet the Nature in it self remains one and the same: Which appears from this evident Reason, that otherwise every Individual must make a different kind.

The Coherence of which Discourse, continued he, tending, as it seems, to prove, That Nature considered abstractly, makes an entire Notion of it self; stands, as far as I can comprehend it, thus. Because every Individual must not make a different Kind; therefore Nature, however it be in different individuals, yet in it self it remains one and the same. And because Nature, however it be in different Individuals, yet in it self remains one and the same; therefore, consider'd abstractly, it makes an entire Notion of it self. This is the Argument of this Paragraph; and the Connection of it, if I understand the connecting Words, For, and from this evident Reason. But if they are used for any Thing else but to tie those Propositions together, as the Proofs one of another, in that way I have mentioned them; I confess, I understand them not, nor any thing that is meant by this whole Paragraph. And in that Sense I understand it in, what it does towards the giving us clear and distinct Apprehensions of Nature, I must confess I do not see at all.⁵⁴

Effective criticism of something which appears to make no sense at all is often surprisingly difficult, in that one has no clear idea of where to begin. Locke seems to have seen as little sense in some parts of Stillingfleet's metaphysics as the members of the Vienna Circle found in Hegel's or Heidegger's.

The reason why Locke found Stillingfleet's metaphysics incomprehensible deserves to be examined. Locke represented the difference between himself and Stillingfleet as a difference between two views of how the mind worked:

I must necessarily conclude, that the Notionists and the Ideists, have their apprehensive Faculties very differently turned; since in their explaining themselves (which they on both sides think clear and intelligible) they cannot understand one another.⁵⁵

This analysis is predictable but radically misleading. Locke's real point of disagreement with Stillingfleet was a metaphysical one, over the question of whether any real universals exist. The basic objection was not that Stillingfleet misunderstood the workings of the human understanding but that he supposed that real things might have a property — universality — which in Locke's view could belong only to natural or conventional signs. "All things that exist are particulars" was an axiom of Locke's philosophy which did not depend for its acceptance on the Way of Ideas. As Locke made one of the speakers in his dialogue say, "to consider a Circle with four Angles, is no more impossible to me, than to consider a Universal with a particular Existence; which is to consider a Universal really existing, and in effect a Particular."⁵⁶ It appears barely credible that Locke could seriously have supposed Stillingfleet to have been a fellow nominalist, albeit

one with an unfortunate weakness for using systematically misleading language. Nevertheless this is what the passage just quoted suggests, if taken at face value. Such an interpretation only becomes plausible if we suppose that Locke had little understanding of the nature and purpose of realistic systems of metaphysics. This is very probable: Locke appears to have possessed little sense of the historical development of philosophy, and in this case as in many others a failure to understand the past produced an inability to understand some aspects of the present.

Locke's inability to comprehend Stillingfleet's meaning was in part a consequence of a wider failure of philosophical imagination. Locke's nominalism was so basic a feature of his thought that he seems to have found it impossible to understand how or why anyone might maintain, and continue to maintain, any other view. Hence he appears to have had great difficulty in supposing that Stillingfleet could have wished the kind of statements he made to be interpreted literally:

One Thing more I must remark to you, in his Lordships way of expressing himself here; and that is in the former part of the Words last read, he speaks, as he does all along, of the same common Nature being in Mankind, or in the several Individuals: And in the latter part of them, he speaks of several Individuals being in the same common Nature. I do by no means find fault with such figurative and common ways of Speaking, in popular and ordinary Discourses, where unaccurate Thoughts allow unaccurate ways of Speaking; but I think I may say, That Metaphorical Expressions, (which seldom terminate in precise Truth) should be as much as possible avoided, when Men undertake to deliver clear and

distinct Apprehensions, and exact Notions of Things: Because, being taken strictly and according to the Letter, (as we find they are apt to be) they always puzzle and mislead, rather than enlighten and instruct.

I do not say this (continued he) with an Intention to accuse his Lordship of unaccurate Notions; but yet, I think, his sticking so close all along to that vulgar way of Speaking of the same common Nature, being in several Individuals, has made him less easy to be understood. For to speak truly and precisely of this Matter, as in reality it is, There is no such Thing as one and the same common Nature in several Individuals: For all, that in Truth is in them, is particular, and can be nothing but particular. But the true meaning (when it has any) of that metaphorical and popular Phrase, I take to be this, and no more, That every particular individual Man or Horse, &c. has such a Nature or Constitution, as agrees and is conformable to that Idea, which that general Name stands for.⁵⁷

IV

It appears to have been with some reluctance that Stillingfleet returned again to a subject which he believed he had already treated sufficiently thoroughly. His health was poor and the responsibilities of running a large diocese were quite enough to occupy his time. It was therefore "out of regard to Publick Service, in order to the preventing a growing Mischief" that he set out to compose an answer to Locke's First Reply.⁵⁸

Stillingfleet made it clear that he was not at all pleased with the method of proceeding which Locke had adopted in his First Reply, especially on the vexed topic of real common natures:

For I cannot but observe, that instead of clearing some pressing difficulties in my Answer to your Former Letter,

you run back to my Book, and begin a new Critique upon that part of it; and take in the help of some ingenious Persons of your Acquaintance, to whom I must show so much Civility as to take notice of their Objections.⁵⁹

Stillingfleet held that Locke's denial of real common nature was a consequence of his new way of ideas:

If any Man takes it for granted, that your way of Ideas is the only way to Certainty...then I cannot see how he can apprehend one and the same common Nature in different Persons or Individuals, because all his Ideas are taken from Particulars; and therefore a common Nature is no more but one common Name; and every Individual is consider'd as ranked under those Names. But herein lies the fundamental Mistake, that you presume that we are not to judge of things by the general Principles of Reason, but by particular Ideas.⁶⁰

Unlike some metaphysicians, Stillingfleet was prepared not only to talk about the principles of reason but to state what some of them are:

The Principles of Reason which I go upon are these;

1. That Nothing hath no Properties.
2. That all Properties being only Modes or Accidents must have a real Subject to subsist in.
3. That Properties essentially different, must subsist in different Essences.
4. That where there is an Agreement in Essential Properties and a Difference in Individuals, there must be both an Identity and Diversity in several Respects.⁶¹

The deduction of the existence of a real common nature then proceeded as follows:

Now upon these Principles I build my Assertion, that there is one real and common Nature or Essence in Mankind, and a Difference of Persons in the several Individuals. For, that

there are such Essential Properties in Mankind that are not in Brutes, I suppose you will not deny. Now these Essential Properties must subsist somewhere; for Nothing can have no Properties, and these Properties cannot subsist (where Individuals are multiplied) in any one Individual: For that is to exclude all the rest from the Essential Properties which belong to them; and if they have them in common, there must be some common Subject wherein they subsist, and that can be nothing but the common Essence of Mankind.⁶²

Having explained, to his own satisfaction at least, why a real common nature must exist, Stillingfleet turned to the problem of explaining how it can have a particular subsistence in different individuals. God has ordered beings into their several sorts and ranks, according to their essential properties:

I had told you before...that although the Individuals of the several kinds agree in Essential Properties, yet there is a real Difference between them in several Accidents that belong to them, as to Time, Place, Qualities, Relations &c. Now that wherein they agree is the Common Nature; and that wherein they differ, is the Particular Subsistence.... And therefore the Common Nature of Man must exist in Peter, because he is a Man, and so in James and John: and yet every one of these is so distinguished from the other, that we may justly say he hath a Particular Subsistence with that Common Nature.⁶³

Stillingfleet found Locke's views as incomprehensible as Locke had found Stillingfleet's:

I had said "For the Nature of Man as in Peter, is distinct from the same Nature, as it is in James and John, otherwise they would be but One Person as well as One Nature." And what Reply is made to this? You cannot understand what this is a Proof of. It is plain I meant it of a Particular Subsistence; and if you cannot for your Life understand such easie things, how can I for my Life help it?⁶⁴

All that Stillingfleet could suggest was that Locke should read over the passage again, "But I am really ashamed to be put to explain such things."⁶⁵ He appears to have despaired of making Locke understand even the most obvious points of philosophy.

Locke for his part felt very much the same about Stillingfleet. The Second Reply is considerably longer than its two predecessors put together, but though Locke took more time over it, the analyses of Stillingfleet's views which it contains are no more sympathetic than before.

Stillingfleet had been led to discuss the metaphysics of natures and persons in connection with the doctrine of the Trinity, which was still his main concern. Locke had a strong preference for steering the focus of discussion away from the intricacies of Trinitarian theology, in the discussion of which he was for obvious reasons not entirely at ease, and back to the more basic metaphysical issues about which he was quite certain that he was in the right:

The thing in Debate, whether in this Debate or no, I know not; but what led into this Debate, was about these Expressions, One common Nature in several Individuals, and several Individuals in one common Nature; and the Question, I thought, was, whether a general or common Nature could be in Particulars, i.e. Exist in Individuals?⁶⁶

Locke was quite clear in his own mind about the fundamentals of his position. What he found perplexing was not the metaphysics of universals and particulars, but the kinds of things which Stillingfleet had chosen to say about them. As he put it with rather brutal simplicity, what he had complained about was "want

of clearness in your Lordship's discourse, not want of distinction in the things themselves."⁶⁷ It was therefore with no great hope of success that he set out again to try to make Stillingfleet understand what he had failed to understand before.

One way in which Stillingfleet had misunderstood Locke was that he thought that Locke believed common natures to be no more than common names:

You again accuse the way of Ideas, to make a common Nature, no more than a common Name. That, my Lord, is not my way by ideas. When your Lordship shews me where I have said so, I promise your Lordship to strike it out...⁶⁸

The name "nominal essence" was perhaps misleading, and had certainly misled Stillingfleet.⁶⁹ The nominal essence of a species is not a name but an abstract general idea, and the only universals which exist are such abstract general ideas. The real universal natures existing in particular things which Stillingfleet had imagined do not and indeed cannot exist:

Your Lordship farther asks, Is not that a real Nature, which is the Subject of real Properties? And is not the Nature really in those who have the essential Properties? I answer to both those Questions yes, such as is the reality of the Subject, such is the reality of its Properties; the abstract general Idea, is really in the mind of him that has it, and the Properties that it has are really and inseparably annexed to it; let this reality be whatever your Lordship pleases: But this will never prove, That this general Nature exists in Peter or James. Those Properties, with Submission, do not, as your Lordship supposes, exist in Peter and James: Those Qualities indeed may exist in them, which your Lordship calls Properties: But they are not Properties in either of them, but are Properties only of that specifick abstract Nature, which Peter and James, for their supposed Conformity to it, are ranked under.⁷⁰

This passage is of considerable importance because in it Locke made clear and explicit a distinction between qualities and properties; in the Essay the two concepts had not for the most part been clearly distinguished from one another.⁷¹ Individuals as such cannot have properties. Only species, determined by abstract general ideas, can have properties. The traditional Aristotelian conception of science involved the demonstration of the properties of a species from a definition of the essence. The explanations produced in this way are real causal explanations because the essences of individuals causally determine their properties. For Locke this is impossible: there are two essences, the real and the nominal. The former is a real cause but it is, in the case of substances, unknown to us. The nominal essence of a species is certainly known to us, but all that we can demonstrate from it are truths about ideas. There is nothing to stop us following the prescriptions of the traditional theory of demonstration and deducing properties from essences, but all we are doing is moving from conceptual truths to other conceptual truths. Our understanding of the actions of individual bodies is not advanced at all.

Locke was quite certain that there are no real common natures or essences, but hitherto he had used no arguments to show their non-existence. In the Essay he had assumed at the outset that only individuals exist,⁷² and in the first two letters to Stillingfleet he had been content to point out the faults in Stillingfleet's arguments and to repeat the basic premises of his own. It is only in the Second Reply that he finally began to produce arguments aimed at demonstrating the absurdities that follow from any supposition that real universals exist.

The first argument is that if there are real natures then there must exist real generic natures as well as real specific natures, and this leads to a situation in which every individual contains a multiplicity of real natures:

For Example, the Nature of an Animal, is the Subject of essential Properties of an Animal, with the exclusion of those of a Man or a Horse; for else the Nature of an Animal, and the Nature of a Man, and the Nature of a Horse, would be the same: And so, wherever the Subject of the essential Properties of an animal is, there also would be the subject of the essential Properties of a Man, and of a Horse, and so, in effect, whatever is an Animal, would be a Man: The real Nature of an Animal, and the real Nature of a man, being the same. To avoid this, there is no other way (if this reality your Lordship builds so much on, be any thing beyond the reality of Two abstract distinct Ideas in the Mind) but that there be one real Nature of an Animal, the Subject of the essential Properties of an Animal; and another real Nature of a Man, the Subject of the essential Properties of a Man: Both which real Natures must be in Peter, to make him a Man. So that every individual Man or Beast must, according to this account, have two real Natures in him, to make him what he is: Nay, if this be so, Two will not serve the turn. Bucephalus must have the real Nature of Ens or Being, and the real Nature of Body, and the real Nature of Vivens, and the real Nature of Animal, and the real Nature of a Horse; i.e. Five distinct real Natures in him, to make him Bucephalus: For these are all really distinct common Natures, whereof one is not the Subject of precisely the same essential Properties as the other. This, though very hard to my Understanding, must be really so, if every distinct, common or general Nature, be a real Being, that really exists any where, but in the Understanding...⁷³

The second argument traces the absurdities which follow if one and the same real nature exists in several distinct individuals:

Your Lordship thinks it proved, That every common Nature is a real Being: Let it be so, that it is the Subject of real Properties; and that thereby it is Demonstrated to be a real being, this makes it harder for me to conceive, that this common Nature of a Man, which is a real Being, and but one, should yet be really in Peter, in James and in John. Had Amphitruo been able to conceive this, he had not been so much puzzel'd, or thought Sosia to talk Idle, when he told him, Domī ego sum inquam et apud te adsum Sosia idem.⁷⁴

The Latin quotation is from Plautus' Amphitryon.⁷⁵ Sosia the slave has been duped into believing that he has recently been existing in two places at once — in fact the Doppelgänger is the god Mercury, who has impersonated Sosia in order to give Jupiter the opportunity of an affair with Amphitryon's wife.

Locke treated the multiple existence of Sosia and the multiple existence of Stillingfleet's common nature as equally absurd:

For the common Nature of Man, is a real Being as your Lordship says, and Sosia is no more: and he that can conceive any one and the same real Being, to be in divers places at once, can have no difficulty to conceive it of another real Being: And so Sosia may at the same time be at home, and with his Master abroad. And Amphitruo might have been ashamed to demand the explication of so plain a Matter; or at least, if he had stuck a little at here and there too, ought he not to have been satisfied, as soon as Sosia had told him, I am another distinct I HERE, from the same I that I am THERE?⁷⁶

Locke therefore decided to compose a lively dialogue between Sosia and an untutored countryman possessed of an unusual interest in metaphysics:

Countryman. But how is it possible, Sosia, that thou the real same, as thou sayst, should'st be at home, and here too?

Sosia. Very easily, because I am really the same, and yet distinct.

Countryman. How can this be?

Sosia. By a Trick that I have.

Countryman. Canst thou teach me the Trick?

Sosia. Yes, 'tis but for thee to get a particular subsistence proper to thy real self at home, and another particular Subsistence proper to thy same real self abroad, and the Business is done, thou wilt then easily be the same real thing, and distinct from thy self; and thou mayst be in as many places together, as thou canst get particular Subsistences, and be still the same one real Being.

Countryman. But what is that particular Subsistence?

Sosia. Hold ye, Hold ye, Friend, that's the secret, I thought once it was particular Existence, but that I find is an ineffectual Drug, and will not do: every one sees it will not make the same real Being distinct from it self, nor bring it into two different places at once, and therefore it is laid aside, and Subsistence is taken to do the Feat.

Countryman. Existence my Boy's School master made me understand, the other Day, when my grey Mare Fol'd. For he told me that a Horse, that never was before, began then to exist; and when the poor Fole died, he told me the same Horse ceased to exist.

Sosia. But did he tell thee what became of the real common Nature of an Horse, that was in it, when the Fole died?

Countryman. No. But this I know, That my real Horse was really destroy'd.

Sosia. There's now thy Ignorance, So much of thy Horse as had a real Existence, was really destroy'd, that's true: But there was something in thy Horse, which, having a real particular Subsistence, was not destroy'd; nay, and the best part of thy Horse too; for it was that, which had in it all those Properties, that made thy Horse better than a Broom-stick.

Countryman. Thou tellst me Wonders of this same Subsistence, what I pray thee is it?

Sosia. I beg your Pardon for that, it is the very Philosopher's stone, those who are Adepti, and can do strange things with it, are Wiser than to tell what it is.

Countryman. Where may it be Bought then?

Sosia. That I know not: But I will tell thee where thou mayst meet with it.

Countryman. Where?

Sosia. In some of the shady Thickets of the Schoolmen, and 'tis worth the looking after. For if particular Subsistence has such a power over a real Being, as to make one and the same real Being to be distinct and in divers places at once, it may perhaps be able to give thee an Account what becomes of that real Nature of thy Horse after thy Horse is dead, and if thou canst but find whither that retires, who knows but thou mayst get as useful a thing as thy Horse again? since to that real Nature of thy Horse, inseparably adheres the Shape and Motion and other Properties of thy Horse.⁷⁷

Locke considered that Sosia

has made it as intelligible, how his real self might be the same and distinct, and be really in distinct places at once, by the help of a particular Subsistence proper to him in each place, as it is intelligible how any real Being under the name of a common Nature, or under any other name bestowed upon it, may be the same and distinct; and really be in divers places at once, by the help of a particular Subsistence proper to each of these distinct sames. At least, if I may answer for my self, I understand one as well as the other...⁷⁸

Locke's fundamental objection to Stillingfleet's metaphysics, and by implication to the whole realist tradition of which Stillingfleet was an adherent, was that it involved making self-contradictory statements and using words which had been given no clear meaning:

...If in my way of Ideas I cannot understand Words, that appear to me either to stand for no Ideas; or to be so joined, that they put inconsistent Ideas together; I think your Lordship uses me right to turn me off for desperate, and leave me, as you do, to the Reader's Understanding.⁷⁹

V

Locke's writings against Stillingfleet appear to have had few modern readers;⁸⁰ and if the nearly complete absence of citation is any guide, Stillingfleet's contribution has scarcely been read at all. One may or may not regret this, but it is difficult to regard it as wholly surprising. The correspondence read as a whole leaves an impression of missed opportunities.

Stillingfleet and Locke disagreed fundamentally on points of major importance; but Stillingfleet lacked the ability to make his objections clear and forceful enough, and Locke lacked the inclination to learn from his critics. Descartes and Leibniz sought for intelligent criticism of their writings. Locke did not: he appears to have estimated other people's philosophical acumen by the degree of their conformity with his own views.

Valuable as many parts of the correspondence with Stillingfleet are, it can never have the interest and importance of the Objections and Replies to the Meditations, or the exchanges of correspondence which Leibniz conducted with Arnauld and Clarke.

One reason for the disappointing character of the Locke-Stillingfleet correspondence is to be found in the characters of its two authors. Another is to be found in the circumstances

of the debate. Stillingfleet's metaphysics was derived from a decadent scholastic tradition.⁸¹ The scholastic vocabulary continued to be used, but with increasing lack of precision. Stillingfleet was certainly a realist of some kind, but the details of his position are exceedingly difficult to make out — it is indeed quite likely that Stillingfleet never worked out the precise details at all. Locke for his part found it very difficult to understand what Stillingfleet was trying to do. In the Middle Ages the nominalists and the realists knew very well what they and their opponents were doing. Both Locke and Stillingfleet on the other hand give the impression of fighting in a fog. Stillingfleet appears not to have realised the antiquity of the nominalist tradition: he seems to have thought of nominalism as a recent aberration introduced by Hobbes. Locke on the other hand was unable to comprehend why anyone might wish to suppose that things other than individuals could exist. In the end both men were reduced to appealing to the good sense of their readers against what they saw as the intellectual perversity of their opponent.

Notes to Chapter 10

1. On Stillingfleet's early career and writings see R.T. Carroll, The Common-Sense Philosophy of Religion of Bishop Edward Stillingfleet 1635-1699, pp.14-18. For a full bibliography of Stillingfleet's works, see *ibid.*, pp.163-65.
2. Gilbert Burnet, A History of my own Time, pp.605-6.
3. Stillingfleet, Works, vol.I, pp.277-300.
4. MS Locke c.34 consists of 170 pages of notes in the handwriting of Tyrrell, Locke and Locke's amanuensis Sylvester Brownover on Stillingfleet's sermon and on a longer work, The Unreasonableness of Separation, which followed it in 1681. Some extracts are printed by Lord King, The Life of John Locke, pp.341-54.
5. J. Bennett, Locke, Berkeley, Hume, p.61.
6. On Stillingfleet's work as a historian see D.C. Douglas, English Scholars 1660-1730, pp.198-200.
7. Fox Bourne's description of Locke's manner as "singularly courteous" (The Life of John Locke, vol.II, p.424) is scarcely justified. Locke's tone is frequently one of heavy and rather unpleasant sarcasm.
8. An Answer to Mr Locke's Letter, in E. Stillingfleet, Works (1710 edition), vol.III, p.557. Stillingfleet's writings against Locke are all to be found in volume III of this edition, and in the references to these works which follow I have given only the page number of this volume.
9. On this dispute, see J. Redwood, Reason, Ridicule and Religion, ch.7.
10. The significance of Toland's thought is well described by G.R. Cragg, From Puritanism to the Age of Reason, pp.139-55. On Locke's relations with Toland see J.C. Biddle, "Locke's Critique of Innate Principles and Toland's Deism", JHI, 37 (1976), pp.411-22.
11. Christianity not Mysterious, p.xxvii.
12. The Reasonableness of Christianity had been published anonymously in 1695. Stillingfleet never referred to it in his controversy with Locke.

13. Essay, IV.xvii.23.
14. Essay, IV.xviii.8. For the fourth edition of the Essay (1700), Locke revised the wording of this paragraph in order to make his meaning more clear.
15. Essay, IV.xviii.9.
16. "But these simple and distinct Ideas, thus laid up in the great Repository of the Understanding, are the Sole Matter and Foundation of all our Reasoning: For the Soul does upon occasion compare them together, compound them into complex Ideas, enlarge, contract or separate them, as it discovers their Circumstances capable or not. So that our knowledge is, in effect, nothing else but the Perception of the Agreement or Disagreement of our Ideas in a greater or lesser Number, whereinsoever this Agreement or Disagreement may consist." Christianity not Mysterious, pp.10-11.
17. Letter 2254, Locke to Molyneux, 3 May 1697 (Correspondence, vol.VI, p.107).
18. An Answer to Mr Locke's Second Letter, p.611.
19. Locke had received the printed sheets by 10 November 1698, Letter 2507, Locke to Peter King (Correspondence, vol.VI, p. 505).
20. For Stillingfleet's final illness and death, see the anonymous biography included in the 1710 edition of his Works, vol.I, p.46.
21. Second Reply, p.320 (Works, vol.IV, pp.407-8).
22. The addition in Essay, IV.i.9 is taken from Second Reply, p.62 (Works, vol.IV, p.234). Several of the other major changes in the fourth edition concern subjects on which Locke had argued against Stillingfleet: for example the possibility of matter being given the power to think (IV.iii.6), the use of maxims (IV.vii.11) and identical propositions (IV.viii.3), and the value of reasoning in syllogisms (IV.xvii.4).
23. For example, St. Augustine, De Trinitate, vii.4-6. G.L. Prestige, God in Patristic Thought, ch.11, contains an interesting discussion of the impact of Aristotelian metaphysics on Trinitarian theology in some early Byzantine theologians.

24. For Ockham's reluctant use of the formal distinction in theology, see Ordinatio, d.2 q.9, Opera Theologica, vol.II, p.374. Ockham's most careful discussion of the problem of universals (Ordinatio, d.2 qq.4-9) takes place as a preliminary to his treatment of Trinitarian theology.
25. A Discourse in Vindication of the Doctrine of the Trinity, p.503.
26. Ibid., p.504. The 1710 edition has "for all the Circumstances", which makes no sense, and which I have therefore corrected, following the reading of the second edition (1697), the edition which Locke owned, and presumably used.
27. First Letter, p.52 (Works, vol.IV, pp.26-27).
28. A Discourse in Vindication of the Doctrine of the Trinity, p.509.
29. Ibid., p.510. The 1710 edition has "subsistly" where the sense clearly requires "subsisting", which is the reading given in the second edition.
30. Ibid., pp.510-11.
31. An Answer to Mr Locke's Letter, p.554.
32. A Discourse in Vindication of the Doctrine of the Trinity, p.511.
33. Ibid., p.454.
34. Boethius, Contra Eutychen et Nestorium, ch.iii (ed. H.F. Stewart and E.K. Rand, p.84).
35. Ibid., p.88.
36. First Letter, p.163-64 (Works, vol.IV, pp.73-74).
37. Ibid., pp.196-97 (Works, vol.IV, p.86).
38. I take the theory which is usually known as "conceptualism" to be a particular kind of nominalist theory. D.M. Armstrong's suggestion that we ought to speak of "concept nominalism" is a step in the right direction: see D.M. Armstrong, Nominalism and Realism, pp.25-27.
39. Essay, III.iii.6.
40. First Letter, p.218 (Works, vol.IV, p.93).
41. An Answer to Mr Locke's Letter, pp.531-32.
42. Ibid., p.550.
43. Ibid.

44. Ibid.
45. Ibid.
46. Ibid., p.551.
47. Ibid., pp.552-53.
48. Second Reply, p.257 (Works, vol.IV, p.365).
49. A Discourse in Vindication of the Doctrine of the Trinity, p.509.
50. First Reply, p.134 (Works, vol.IV, p.165).
51. Ibid., p.135 (Works, vol.IV, p.166).
52. Ibid., pp.135-36 (Works, vol.IV, p.166).
53. Essay, II.xxiii.3.
54. First Reply, pp.146-47 (Works, vol.IV, pp.171-72).
55. Ibid., p.144 (Works, vol.IV, p.170).
56. Ibid., p.136 (Works, vol.IV, pp.166-67).
57. Ibid., pp.152-54 (Works, vol.IV, p.175).
58. An Answer to Mr Locke's Second Letter, p.563.
59. Ibid., p.586.
60. Ibid., p.605.
61. Ibid., p.606.
62. Ibid.
63. Ibid., p.608.
64. Ibid.
65. Ibid.
66. Second Reply, p.355 (Works, vol.IV, p.431).
67. Ibid., p.352 (Works, vol.IV, p.429).
68. Ibid., p.354 (Works, vol.IV, pp.430-31).
69. "But you say, There may be Objections to the Name of Nominal Essence. My objection is not to the Name, but to the Thing you understand by it, viz. that there is nothing beyond Individuals but Names...", An Answer to Mr Locke's Letter, p.554.
70. Second Reply, p.358 (Works, vol.IV, p.433).
71. That properties can belong only to species and not to individuals is made clear in Essay, III.vi.6; elsewhere the term "property" is often used as a generic term covering both qualities and powers, e.g. in II.xxxi.6 and II.xxxii.24.
72. Essay, III.iii.1.

73. Second Reply, pp.359-60 (Works, vol.IV, pp.434-35).
74. Ibid., pp.360-61 (Works, vol.IV, p.435).
75. Plautus, Amphitryon, line 577.
76. Second Reply, p.361 (Works, vol.IV, pp.435-36).
77. Ibid., pp.361-63 (Works, vol.IV, pp.436-37).
78. Ibid., pp.363-64 (Works, vol.IV, p.437).
79. Ibid., p.364 (Works, vol.IV, p.437).
80. I do not think that there is any discussion of Locke's views on universals which points out that Locke's most prolonged discussion of this topic can be found in the correspondence with Stillingfleet. Quite untrue statements about the Locke-Stillingfleet correspondence can find their way into print, for example, D.J. O'Connor's statement that the dispute between Locke and Stillingfleet was largely about the problem of substance (John Locke, p.74). To be fair to O'Connor, the first few pages of the First Letter are on this topic.
81. On the logic and metaphysics taught in Cambridge in Stillingfleet's youth, see W.T. Costello, The Scholastic Curriculum at Early Seventeenth-Century Cambridge, pp.45-55, 71-83.

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