

An Essay Concerning Human Understanding

Book IV: Knowledge

John Locke

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[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth. Longer omissions are reported on, between [brackets], in normal-sized type.

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Chapter vi: Universal propositions, their truth and certainty

1. The best and surest way to get clear and distinct knowledge is through examining and judging ideas by themselves, setting their names aside entirely; but because of the prevailing custom of using sounds in place of ideas, this 'best way' is very seldom followed. Everyone can see how common it is for names to be used instead of the ideas themselves, even when men don't need words for communicative purposes, because they are thinking and reasoning in their own heads. This happens especially when the ideas are very complex, and made up of a large collection of simple ones. This makes the consideration of *words and propositions* so necessary a part of the topic of *knowledge* that it is very hard to speak intelligibly of *it* without explaining *them*.

2. All our knowledge is either of *particular* truths or of *general* ones. I here set aside the former of these. The latter—general truths—are what we (for good reasons) mostly seek after. They can never be well known, and can very seldom be grasped at all, except as conceived and expressed in *words*. So it isn't out of our way, in examining our knowledge, to enquire into the truth and certainty of universal propositions—I'm talking about *verbal* propositions, not *mental* ones.

3. The doubtfulness of terms is a danger everywhere, including here—where the term 'certainty' could trip us up. So I need to explain that certainty is twofold: there is certainty of *truth* and certainty of *knowledge*. •Certainty of truth occurs when words are put together in propositions in such a way as to express, exactly and accurately, the agreement or disagreement of the ideas they stand for. To have •certainty of knowledge is to perceive the agreement or

disagreement of ideas, as expressed in a proposition. This we usually call 'knowing' (or 'being certain of') the truth of a proposition.

4. We can't be certain of the truth of any general proposition unless we know the precise extent of the species its terms stand for; so we have to know the *essence* of each species, which is what constitutes the species and sets its boundaries. With simple ideas and modes this isn't hard to do. For in these the •real and •nominal essence are the same; or—to put the same thing in other words—the abstract idea that the general term stands for is the •only essence (and sets the only boundary) that the species can be supposed to have; so that there can be no doubt about how far the species extends, or what things fall under each term—namely, all and only things that exactly fit the idea the general term stands for.

But in the case of substances, where the species is supposed to be constituted, fixed, and bounded by a •real essence distinct from the •nominal one, the extent of the general word is very uncertain. That's because we don't know this real essence, so we can't know what does and what doesn't belong to that species, or, therefore, what may and what may not be affirmed of it with certainty. Speaking of a man, or gold, or any other species of natural substances, as supposedly constituted by a precise and real essence that nature regularly imparts to every individual of that kind, making it belong to that species, we can't be certain of the truth of any affirmation or negation made of it. For 'man' and 'gold', taken in this way as naming species of things constituted by real essences that differ from the complex idea in the mind of the speaker, stand for. . . .we don't know

what they stand for! And the extent of these species, with such boundaries, are so unknown and unsettled that we can't with any certainty affirm that all men are rational, or that all gold is yellow. But where the *nominal* essence is kept to as the boundary of each species, and men apply a general term only to particular things in which is found the complex idea the term stands for, there's no danger of mistaking the boundaries of each species and no doubt about whether any given proposition is true. I have chosen to explain this uncertainty of propositions in the scholastic terminology of 'essences' and 'species' so as to bring out the absurdity and inconvenience of thinking of *them* as anything but abstract ideas with names attached. [The section concludes with a defence of this choice: it might make things needlessly difficult for people who aren't 'possessed with scholastic learning', but so many *are* tainted with it that it seemed best to try to rescue them from their mistakes.]

5. When the names of substances are made to stand for species that are supposed to be based on unknown real essences, they can't be used to convey certainty to the understanding. How can we be sure that this or that quality is in gold, when we don't know what is and what isn't gold? Since in this way of speaking nothing is gold except what partakes of an essence that we don't know, we can't be sure whether any bit of matter in the world is gold, because we are incurably ignorant about whether it has that which ·supposedly· entitles anything to be called 'gold', namely that real essence of which we have no idea. . . . And even if we did (which is impossible) know for sure which bits of matter are gold by this standard, i.e. which have the real essence that we don't know, *still* we couldn't be sure that this or that quality could with truth be affirmed of gold ·in general·, because we couldn't know that this or that quality or idea

has a necessary connection with a real essence of which we have no idea at all.

6. On the other hand, when the names of substances are used properly, for the ideas men have in their minds, though this enables them to have clear and determinate meanings it doesn't provide us with many universal propositions of whose truth we can be certain. Not because we are uncertain about what things are signified by them (·because in this use of them we are not·), but because the complex ideas they stand for are combinations of simple ones that have very few discoverable connections or inconsistencies with other ideas.

7. The complex ideas that our names of the species of substances properly stand for are collections of such qualities as have been observed to co-exist in an unknown substratum that we call 'substance'. But what *other* qualities necessarily co-exist with such combinations we can't know for sure unless we can discover their natural dependence. With primary qualities we can know very little of this, and in all the secondary qualities we can discover no connection at all, for the reasons mentioned in chapter iii. [Locke then repeats what he said in iii.13, concluding thus:] And so we can have doubt-free certainty about very few general propositions concerning substances.

[Sections **8–9** illustrate this thesis of Locke's with examples concerning *gold*. It is widely believed that *All gold is fixed* (that is, not easily volatilized), but if fixedness isn't part of the complex idea defining 'gold', then we can't know that all gold is fixed; we can't connect fixedness with the nominal essence of gold directly, for it has no discoverable connection with that complex idea; and we can't connect it via the supposed real essence, because we don't know what that is and so can't know what connections it enters into. And if (section **9**) 'fixed' is included in the complex idea defining

'gold', then indeed we do know for certain that all gold is fixed, but this is now an uninteresting truth on a par with *A centaur is four-footed.*]

10. By putting more co-existing qualities into one complex idea under one name, we make the meaning of the word in question more precise and determinate, but we don't increase its ability to yield universal certainty regarding *other* qualities that are *not* contained in our complex idea. That's because we don't perceive their connection or dependence on one another, being ignorant both of •the real constitution in which they are all founded, and also of •how they flow from that constitution. For the main part of our knowledge about substances is not, as with other things, merely •knowledge of the relation between two ideas that could exist separately; rather, it is •knowledge of the necessary connection and co-existence of several distinct ideas [here = 'qualities'] in the same subject, or of the impossibility of their co-existing in that way. If we could begin at the other end, and discover what a given colour consists in, what makes a body lighter or heavier, what texture of parts makes it malleable, fusible, fixed, and soluble in this sort of liquid and not in that—if we had an idea like *this* of bodies, we might form abstract ideas of them that would be a basis for more general knowledge, and enable us to make universal propositions that carried truth and certainty with them. But while our complex ideas of the sorts of substances are so remote from that internal real constitution on which their sensible qualities depend, and are made up of merely an imperfect collection of apparent qualities that our senses can discover; there can be few general propositions concerning substances of whose real truth we can be certainly assured, because there are so few simple ideas of whose connection and necessary co-existence we can have certain and undoubted knowledge.

Among all the secondary qualities of substances and the powers relating to them, I don't think we can name any two whose necessary co-existence or impossibility of co-existence we can certainly know (except for pairs belonging to the same sense, which necessarily exclude one another, as I have shown elsewhere). No-one, I think, given a body's colour, can certainly know what smell, taste, sound, or tangible qualities it has, or what alterations it can make in or receive from other bodies. The same holds for sound, or taste, and so on. Since our specific names of substances stand for collections of just such ideas, it is no wonder that we can very seldom use them in general propositions of undoubted real certainty. Still, when the complex idea of a sort of substance contains a simple idea whose necessary co-existence with some idea other can be discovered, *then* a universal proposition can with certainty be made concerning it: for example, if we discovered a necessary connection between *malleableness* and the *colour or weight* of gold (or any other part of the complex idea signified by 'gold'), we could make a certain universal proposition concerning gold in this respect; and the real truth of this proposition, 'All gold is malleable', would be as certain as the real truth of 'The three angles of any triangle are equal to two right angles'.

11. If we had ideas of substances that let us know •what real constitutions produce the sensible qualities we find in them, and •how the latter qualities flowed from those constitutions, we could find out their properties [= 'qualities that every member of a species *must* possess'] more certainly than we can now through our senses. In that case, we could know the properties of gold without making experiments on it—indeed without there being any such stuff as gold in existence—just as we can know the properties of a triangle without appealing to any triangle that exists in the physical world; the idea in our

minds would serve for the gold as well as it does for the triangle. But we are so far from being admitted *into* the secrets of nature that we hardly ever get close to *starting to enter into* them. Here are some of the reasons for the great gap between what we know and what there is to be known.

We usually consider each substance that we meet with as an entire thing on its own, having all its qualities in itself and independently of other things. This leads us to overlook most of the operations of invisible fluids in which they are immersed—fluids whose motions and operations influence most of the qualities that we observe in substances and make our basis for classifying and naming them. Put a piece of gold anywhere by itself, separated from the influence of all other bodies, and it will immediately lose its colour and weight and (for all I know to the contrary) its malleableness too. Water, whose fluidity is to us an essential quality, would if left to itself cease to be fluid.

And if inanimate bodies owe so much of their present state to other bodies outside them that their appearance would be changed if those other bodies were removed, it is even more so with plants, that are nourished, grow, and produce leaves, flowers, and seeds in a constant succession—all in dependence on their environment. And if we look a little more closely into the state of animals we shall find that they depend—for life, motion, and the main qualities to be observed in them—wholly on outer causes and qualities of other bodies, so much so that they can't survive for a moment without them. Yet we ignore those other bodies, and don't bring them into the complex ideas we form of those animals. Take the air for just a minute from the most living creatures and they quickly lose sense, life, and motion. Knowledge of this has been forced on us by our need to breathe. But how many other external (and possibly very distant) bodies do the springs of these admirable living machines depend

on—bodies that aren't commonly observed, or even thought of? And how many such bodies are there that can never be discovered by the most thorough enquiry? The inhabitants of this spot in the universe, though many millions of miles from the sun, nevertheless depend so much on the suitably damped-down movements of particles coming from it, or agitated by it, that if this earth were moved to a position just a little further from or nearer to that source of heat, probably most of the animals on earth would immediately perish. The evidence for this is that we often find that animals are destroyed when their place on our little globe exposes them to too much or too little of the sun's warmth. The magnetic qualities observed in a loadstone must have their source far beyond the confines of that body. [Locke was sure of that because he was sure that there are no forces of attraction.] Various sorts of animals are ravaged by invisible causes: some, we are told, meet certain death just by crossing the equator; others certainly die if they are moved into a neighbouring country. All this shows that for these animals to be what they appear to us to be, and to retain the qualities by which we recognize them, they require the concurrence and operations of various bodies that are ordinarily thought to have nothing to do with them.

So we are thoroughly off-course when we think that things contain *within themselves* the qualities that appear to us in them; and it is no use our searching for that constitution within the body of a fly, or of an elephant, which gives rise to the qualities and powers we observe in them. To understand them properly we may even have to look not only beyond our earth and atmosphere but even beyond the sun or the remotest star our eyes have yet discovered. We can't determine the extent to which the existence and operation of particular substances on our planet depends on causes that are utterly beyond our view. We perceive some of the

movements and large-scale operations of things here around us; but as for the streams of matter or influence or whatever that keep all these curious machines in motion and in repair, we haven't the least notion of where they come from or how they are conveyed and what form they take. For all we know to the contrary, it may be that the great parts and wheels (so to speak) of this stupendous structure of the universe are so connected and inter-dependent in their influences and operations that things in our locality would put on quite another face, and cease to be what they are, if some one of the incomprehensibly remote stars were to cease to move as it does. This is certain: however self-sufficient things seem to be in themselves, they are indebted to other parts of nature for the features of them that we attend to most. Their observable qualities, actions, and powers are due to something outside them; we know of no part of nature that is so complete and perfect that it doesn't owe its existence and its excellences to its neighbours; if we want to understand the qualities of any body, we mustn't let its surface mark the boundary of our thoughts—we need to look much further out than that.

[Section 12 rams home the conclusion that we know almost nothing of the real essences of substances. Even apart from our ignorance of distant bodies that may be relevant, 'we can't even discover the size, shape, and texture of substances' minute and active parts'.]

13. So we shouldn't wonder that very few general propositions about substances are certain; our knowledge of their qualities and properties seldom goes further than our senses reach. Enquiring and observant men may by strength of judgment penetrate further, and, on probabilities taken from wary observation and well-assembled hints, guess correctly at what experience hasn't yet revealed to them. But this is

still just guessing; it is only opinion, and hasn't the certainty that is needed for knowledge. For all general knowledge lies only in our own thoughts, consisting merely in the contemplation of our own abstract ideas. [The rest of this section develops the point: we don't have ideas of substances that can support genuine knowledge about them.]

14. Before we can have any tolerable knowledge of this kind, we must know first

- what changes the primary qualities of one body regularly produce in the primary qualities of another, and how;

and secondly

- what primary qualities of bodies produce certain sensations or ideas in us.

Knowing all this is knowing *all the effects of matter* in its different conditions of size, shape, cohesion of parts, motion and rest! I think everyone will agree that we can't possibly have that knowledge unless it comes to us through divine revelation. Furthermore, even if God revealed to us •what sort of shape, size, and motion of corpuscles can produce in us the sensation of a yellow colour, and •what sort of shape, size, and texture on the surface of any body can give such corpuscles the motion appropriate for producing that colour, that *still* wouldn't be enough to enable us to know with certainty any universal propositions about the various sorts of bodies. For such knowledge we would *also* need to have faculties acute enough to perceive the precise size, shape, texture, and motion of the minute parts of bodies by means of which they operate on our senses. •Why would we need such faculties? Because we would need a perceptual intake of those facts in order to build them into our abstract ideas of bodies—ideas that have to be the immediate source of any certain universal knowledge.

I have mentioned here only corporeal substances, whose operations *seem* to lie more within reach of our understandings; for when we try to think about the operations of spirits—how they think, and how they move bodies—we find ourselves at a loss straight off. But there isn't really much of a difference, because when we have thought a bit more closely about how bodies operate, and examined how little—even with bodies—we can grasp clearly beyond matters of particular fact that we learn through our senses, we'll have to admit that with bodies too our 'discoveries' don't amount to much more than perfect ignorance and incapacity!

15. This is evident: the abstract complex ideas of substances, for which their general names stand, don't include their real constitutions, and so they can give us very little universal certainty—because our ideas of them don't include whatever it is that produces the qualities we observe in them and want to know about. For example, let the idea to which we give the name 'man' be *a body of the ordinary shape, with sense, voluntary motion, and reason joined to it*. This being the abstract idea, and consequently the essence of our species *man*, we can make very few general certain propositions concerning man, taken in this sense. We don't know

the real constitution that underlies •sensation, •power of movement, •reasoning, and •that special shape,

producing them and uniting them in a single subject, so there are very few other qualities with which we can perceive them to have a necessary connection. Therefore we can't with certainty affirm that •all men sleep intermittently, that •no man can be nourished by wood or stones, or that •for all men hemlock is a poison; because these ideas have no connection or incompatibility with our nominal essence of *man*, this abstract idea that 'man' stands for. With propositions like these we must appeal to tests with particular subjects, and that can't take us far. For the rest, we must settle for probability. . . . There are animals that safely eat hemlock, and others that are nourished by wood and stones; but as long as we lack ideas of the various sorts of animals' real constitutions, on which such qualities and powers depend, we mustn't hope to reach certainty in universal propositions about them. We can reach such propositions only from ideas that have a detectable connection with our nominal essence or with some part of it; but there are so few of these, and they are so insignificant, that we can fairly look on our *certain general knowledge of substances* as almost non-existent.

[Section **16** sums up the main conclusions of the chapter, without adding to them.]

Chapter vii: Maxims

1. Propositions of a certain kind—labelled ‘maxims’ or ‘axioms’—have been taken to be principles of science; and because they are self-evident they have been thought to be innate, though I know of nobody who has undertaken to show what makes them so clear and compelling. It may be worthwhile to enquire into the reason for their evidentness, to see whether it is special to them alone, and also to examine how far they influence and govern our other knowledge.

2. Knowledge, as I have shown, consists in the perception of the agreement or disagreement of ideas. Now, when that agreement or disagreement is perceived immediately, by itself and without the intervention or help of any other ideas, then our knowledge is *self-evident*. Anyone will see this who merely thinks of one of the propositions that he assents to at first sight, without any proof. For he will find each time that his assent comes from the agreement (or disagreement) which his mind, by bringing the ideas together in a single thought, immediately finds in them corresponding to the affirmation (or negation) in the proposition.

3. Is this self-evidence special to the propositions that commonly pass under the name of ‘maxims’ and have the title of ‘axioms’ conferred on them? Plainly it is not: various other truths that aren’t counted as axioms are equally self-evident. To see this, let us go over the sorts of agreement or disagreement of ideas that I discussed earlier, namely •identity, •co-existence, •relation, and •real existence. ·I shall give these a section each·. We shall discover that not only the small number of so-called ‘maxims’ are self-evident, but a virtually infinite number of other propositions are so as well.

4. The immediate perception of the agreement or disagreement of *identity* is based simply on the mind’s having different ideas; so this provides us with as many self-evident propositions as we have different ideas. Everyone that has any knowledge at all has as its foundation various different ideas; and the first act of the mind (without which it can never be capable of any knowledge) is to know each of its ideas by itself, and to distinguish it from others. Everyone finds in himself that •he knows the ideas he has; that •he knows also when any idea is in his understanding, and what it is; and that •when two or more ideas are there he knows them distinctly without confusing them with one another. So he can never be in doubt, when some idea is in his mind, that it is there and is the idea that it is; and when two different ideas are in his mind, he can’t doubt that they are there and aren’t one and the same idea. All such affirmations and negations are made without any possibility of doubt, uncertainty, or hesitation, and must necessarily be assented to as soon as understood—that is, as soon as we have in our minds definite ideas that the terms in the proposition stand for. [The remainder of this long section elaborates the account already given, emphasizing that an idea’s identity with itself, and its distinctness from every other idea, don’t depend on how general or particular the idea is. This sort of self-evidence, then, can be found not only in the very general propositions that are called ‘maxims’ or ‘axioms’ but also in much less general ones that aren’t accorded that honour. The section concludes:] I appeal to everyone’s own mind to confirm that the proposition *A circle is a circle* is as self-evident a proposition as that consisting of more general terms, *Whatsoever is, is*; and again that the proposition *Blue*

is not red is a proposition that the mind can no more doubt, as soon as it understands the words, than it can doubt the axiom *It is impossible for the same thing to be and not be*; and so on for all the others.

5. As to *co-existence*, or a necessary connection between two ideas such that a subject in which one of them exists must have the other also: the mind almost never *immediately* perceives any agreement or disagreement of this sort. So we have very little intuitive knowledge of this kind; nor are there many propositions of this kind that are self-evident. There are some, however: if our idea of *body* includes the idea of *filling a place equal to the contents of its outer surface* then I think it is a self-evident proposition that *two bodies can't be in the same place* at the same time.

6. As to the *relations* of modes, mathematicians have formulated many axioms concerning the one relation *equality*. For example, *Equals taken from equals, the remainder will be equal*; this and its kind are deemed to be maxims by the mathematicians, and they are unquestionable truths. But I don't think that anyone who considers them will find that they are more clearly self-evident than that *One and one are equal to two*; and that *If you take two from the five fingers of one hand and two from the five fingers of the other hand, the remaining numbers will be equal*. These and a thousand other such propositions may be found concerning numbers—propositions that compel assent at the very first hearing, and carry with them at least as much clearness as the mathematical axioms.

7. As to *real existence*, since that has no necessary connection with any of our other ideas except the ideas of *ourselves* and of *a first being*, we don't even have demonstrative knowledge of the real existence of any things other than ourselves and God, much less self-evident or intuitive

knowledge; and therefore concerning those other things there are no maxims.

8. In the next place let us consider what influence these received maxims have on the other parts of our knowledge. The rule established by the scholastic philosophers that all reasonings are *ex praecognitis et praeconcessis* [= 'from what is known in advance and what is agreed to in advance'] seems to base all other knowledge on these maxims, and to suppose them to be *praecognita*. I think two claims are being made here: •that these axioms are the truths that are first known to the mind, and •that the other parts of our knowledge depend on them. I shall argue against both of these, giving them a section apiece.

9. Our own experience shows us that they aren't the truths first known to the mind (see I.ii). Anyone can see that a child certainly knows that *a stranger is not its mother* and that *its sucking-bottle is not the rod* long before it knows that *it is impossible for the same thing to be and not to be!* And there are ever so many truths about numbers that the mind is perfectly acquainted with, and fully convinced of, before it ever gives thought to the general maxims from which mathematicians in their proofs sometimes derive them. The reason for this is very plain. What makes the mind assent to such propositions is just its perception of the agreement or disagreement of its ideas, according as it finds them affirmed or denied of one another in words it understands; and every idea is known to be what it is, and every two different ideas are known not to be the same; so it necessarily follows that the self-evident truths that are first known must be the ones whose constituent ideas are first in the mind. And the ideas that are first in the mind, obviously, are those of particular things, from which by slow degrees the understanding proceeds to a few general ideas. These, being

taken from the ordinary and familiar objects of sense, are settled in the mind with general names annexed to them. Thus the ideas that are first received and distinguished, and so made the subjects of knowledge, are *particular* ones; next come *specific* or *somewhat general* ones. Ideas that are *more general* come later still, because the more general an idea is the greater the abstraction that is needed to form it. And: for the novice minds of children, abstract ideas aren't as obvious or easy as particular ones are. If they seem easy to grown men that is only because they have been made so by constant and familiar use. For when we reflect on general ideas accurately and with care we'll find that they are artifacts, contrivances of the mind, which have a lot of difficulty in them and don't offer themselves as easily as we tend to think. For example, it requires some effort and skill to form the general idea of a *triangle* (though this isn't one of the most abstract, comprehensive, and difficult), for it must be neither oblique nor rectangle, neither equilateral, equicrural, nor scalenon; but all and none of these at once. In effect, it is something imperfect, that cannot exist; an idea in which some parts of several different and inconsistent ideas are put together. The mind certainly needs such ideas, and hurries to get them as fast as it can, to make communication easier and to enlarge knowledge. But there is reason to suspect that abstract ideas are signs of our imperfection; and at least I have said enough to show that the most abstract and general ideas are not those that the mind is first and most easily acquainted with, nor what its earliest knowledge is about.

10. It plainly follows from this that these vaunted 'maxims' are *not* the principles and foundations of all our other knowledge. If there are many other truths that are as self-evident as the maxims are and known before we know them, the

maxims can't be the principles from which we deduce all other truths. Is it impossible to know that *one and two are equal to three* except through some such axiom as *the whole is equal to all its parts taken together*? Plenty of people know that one and two are equal to three, without having heard or thought of any axiom by which it might be proved; and they know it as certainly as anyone knows that the whole is equal to all its parts or any other maxim, knowing it on the same basis of self-evidence. For the equality of those ideas—the equality of *one and two* with *three*—is as visible and certain to everyone *without* that or any other axiom as it is *with* it. Furthermore, when someone comes to know that *the whole is equal to all its parts* he doesn't then know that *one and two are equal to three* better or more certainly than he did before. If there are relevant differences in those ideas, the ideas of whole and part are more obscure, or at least harder to get securely in the mind, than those of one, two, and three. [In the remainder of this section Locke repeats his reason for holding that particular self-evident truths are not known on the strength of axioms or maxims; and says that in that case we must either •give up the doctrine that all knowledge is based on 'praecognita or general maxims' or else •count every immediately self-evident truth as a maxim, in which case there will be innumerable many maxims.]

11. Then what shall we say? Are these general maxims useless? By no means; though perhaps their use is not what it is commonly thought to be. But my calling into question what some men have claimed for maxims may draw the protest that I am overturning the foundations of all the sciences; so it may be worthwhile to consider them in relation to other parts of our knowledge, and to examine in more detail what purposes they do serve and what purposes they don't. I shall do this in one long section, first treating

three purposes that maxims do not serve, then two that they do.

(1) It is evident from what I have already said that maxims are of no use to prove or confirm less general self-evident propositions.

(2) It is equally clear that they have never been the foundations on which any branch of knowledge has been built. [Locke then pours scorn on the view that a branch of knowledge could be based on *What is, is* or its like. In theological disputes, maxims can ‘serve to silence wranglers’, he concedes, but:] I think that nobody will infer from this that the Christian religion is built on these maxims, or that our knowledge of it is derived from these principles. It is from *revelation* we have received it, and without revelation these maxims could never have helped us to it. When we find out an idea by whose intervention we discover the connection of two others, this is a *revelation* from God to us through •the voice of reason. For then we come to know a truth that we didn’t know before. When God declares any truth to us this is a *revelation* to us through •the voice of his spirit, and we are advanced in our knowledge. But in neither case do we receive our light or knowledge from maxims. In one case, the things themselves provide it, and we see the truth in them by perceiving their agreement or disagreement. In the other case, God himself provides it immediately to us, and we see the truth of what he says in his unerring truthfulness.

(3) Maxims don’t help men forward in the advancement of sciences, or in the discovery of previously unknown truths. Mr. Newton, in his supremely admirable book, has demonstrated various propositions that are new truths, previously unknown to the world, and are further advances in mathematical knowledge. But he wasn’t helped to discover these by such general maxims as *What is, is* or *The whole is bigger than a part*—these weren’t the clues that led

him into the discovery of the truth and certainty of those propositions. Nor did they give him the knowledge of his demonstrations: he achieved *that* by finding out intermediate ideas that showed the agreement or disagreement of the ideas expressed in the propositions he demonstrated. This is the greatest way in which human understanding enlarges its knowledge and advances the sciences; and maxims don’t come into it. Those who have this traditional admiration of these propositions, and think that no step can be made in knowledge without the support of an axiom, ought to distinguish •the method of acquiring knowledge from •the method of communicating it; and •the method of creating a science from •that of teaching it to others as far as it is advanced. Then they would see that general maxims were not the foundations on which the first discoverers raised their fine structures, or the keys that •first• unlocked those secrets of knowledge. Though afterwards, when universities were built, and sciences had their professors to teach what others had found out, *they* often made use of maxims. That is, they laid down certain propositions that were self-evident, or were to be received as true; and then with these settled in the minds of their pupils as unquestionable truths, the professors occasionally employed them to convince the pupils of truths in particular instances that were not so familiar to their minds as those general axioms which had been inculcated in them and carefully settled in their minds. Yet these particular instances, when well reflected on, are just as self-evident as the general maxims used to confirm them; and it was in those particular instances that the first discoverer found the truth, with no help from the general maxims. And so can anyone else who considers them attentively.

•So much for what maxims *cannot* do. I come now to the use that *is* made of maxims.

(1) They are useful, as I have just noted, in the ordinary methods of teaching sciences as far as they are advanced; but of little or none in advancing them further.

(2) They are of use in disputes, for silencing obstinate wranglers and bringing those contests to some conclusion. [In the remaining four pages of this enormous section Locke •paints a satirical picture of men—in ‘the Schools’—engaging in formal debates, each displaying great ingenuity and little shame in trying to vanquish his opponents by any means he can devise, and conjectures that in such situations maxims were found to be useful as setting limits to how far disputants could go in the direction of falsehood and absurdity; •distinguishes *this* use of maxims from one in which they bring new knowledge; •derides the idea that any branch of knowledge could be based on the likes of *Whatever is, is*; •argues that less general maxims, such as *The whole is equal to all its parts*, are merely ‘verbal propositions’ that merely set out facts about the meanings of the words they contain; and •offers to explain why the title of ‘maxim’ tends to be reserved for the most general self-evident propositions rather than for all of them.]

12. One more thing worth noting about these general maxims is that, far from increasing our knowledge or our hold on it, they can serve to confirm us in mistakes. This can happen when our notions are wrong, loose or unsteady, and we give our thoughts over to the sound of •words instead of fixing them on settled determinate •ideas of things. When people are using words in that way •as substitutes for ideas•, general maxims can be employed to prove contradictions! •In this section and the next two I shall discuss one example of this phenomenon•.

Someone who follows Descartes in forming in his mind an idea of *extension* which he calls an idea of *body* can

easily demonstrate that there is no vacuum, i.e. no space that has no body in it, by means of the maxim *What is, is*. •Here is how•. The idea to which he attaches the name ‘body’ is merely the idea of extension, so he knows quite certainly that space can’t exist without body •in his sense of ‘body’•. For he knows his own idea of extension clearly and distinctly, and knows that *it is what it is and not another idea*, though he calls it by the three names ‘extension’, ‘body’, and ‘space’. Because these three words stand for one and the same idea, they can be affirmed of *one another* with the same self-evidence and certainty as each can be affirmed of *itself*. So that when one uses all three names to stand for one and the same idea, the proposition ‘Space is body’ is just as true an identity as the proposition ‘Body is body’, though only the latter bears the identity on its surface.

13. But if someone comes along with an idea that he attaches to the name ‘body’, including in it not only *extension* but also *solidity*, he will have little trouble demonstrating that there can be a vacuum, or space with no body in it—just as little, indeed, as Descartes had in demonstrating the contrary! The idea that he calls ‘space’ is merely the simple idea of

extension,

and the idea he calls ‘body’ is the complex idea of

extension and resistibility (or solidity) together in the same subject.

These are two ideas, not one; they are as distinct in the understanding as are the ideas of *one* and *two*, *white* and *black*, or *corporeity* and *humanity* (if I may use those barbarous terms). So the right way to bring them together in a proposition, whether in our minds or in words, is not by •identifying them with one another, but rather by •denying that they are identical. That is the proposition *Extension or space is not body*, which is as true and self-evidently certain

as the maxim *It is impossible for the same thing to be and not to be* can make any proposition.

14. So you see that with the help of these two certain principles, *What is, is* and *The same thing cannot be and not be* we can demonstrate that there *can't* be a vacuum and that there *can* be one. But neither of those principles will actually prove to us what bodies, if any, do exist. For that we are left to our senses, to reveal to us as much as they can. All there is to those universal and self-evident principles is our constant, clear, and distinct knowledge of *our own more general or comprehensive ideas*. They can't assure us of anything that happens outside the mind; their certainty is based purely on the knowledge we have of each idea by itself, and of its distinctness from other ideas. We can't be mistaken about that •while the ideas are in our minds, though we can be and often are mistaken •when we retain the names without the ideas, or use the names confusedly sometimes for one idea and sometimes for another. When we do the latter, the force of these axioms •or maxims•, which touches only the words and not their meanings, serves only to lead us into confusion, mistake, and error. I point this out in order to show you that these maxims, praised as they are as great guardians of truth, won't secure us from error in a careless loose use of our words.

In all that I have said about •how little use maxims are for the improvement of knowledge, and •how dangerous they are when applied to undetermined ideas, I have been far from saying or meaning they should be laid aside—as some have accused me of saying •in earlier editions of this work•. I shan't make the futile attempt to cut them back in any area where they *do* have a •legitimate• influence. But I am not offending against truth or knowledge when I •say that I have reason to think that the usefulness of maxims is not such as to justify the great stress that seems to be laid on them, and when I •warn men not to misuse them in confirming

themselves in errors.

[In section **15** Locke contends that maxims are *safe* to use in an intellectual environment where all the ideas concerned are agreed, clear, settled, and so on; but, he adds, they are also *unhelpful* there because in that kind of environment the arguments can proceed clearly and well without the aid of maxims. In sections **16–18** he goes through a variant on the 'vacuum' example that he gave in sections **12–14**, this time with people disagreeing about what men can be like because they start with different ideas of *man*. His portrayal of them as working out the implications of their ideas with help from maxims is no more plausible here than it was with the vacuum dispute.]

19. We can conclude that where our ideas are determined in our minds, and have known names attached to them in a steady manner, maxims are not needed or useful to prove the agreement or disagreement of any of our ideas. Someone who can't see the truth or falsehood of such propositions *without* the help of such maxims won't be able to see it *with* the maxims' aid either. If he doesn't know the truth of other propositions •such as that *White is not black*• without proof, he presumably doesn't know the truth of the maxims without proof either, because they are no more self-evident than the others are. That is why intuitive knowledge neither requires nor admits of any proof. . . . If you suppose that it does, you take away the foundation of all knowledge and certainty. And if you need any proof to make you certain in your assent to the proposition that *Two are equal to two*, you will also need a proof to make you accept that *What is, is*. . . .

[In section **20** Locke repeats his earlier thesis that intellectual contexts where maxims might be invoked divide into •those where they are useless and •those where they are dangerous.]

Chapter viii: Trifling propositions

1. I leave it to you to decide whether the maxims treated of in the preceding chapter are as useful to real knowledge as they are generally supposed to be. But I think I may confidently affirm that there are some universal propositions which, though they are certainly true, add no light to our understandings, bring no increase to our knowledge. There are two kinds of such propositions. I shall discuss one in sections 2–3, the other in 4–7.

2. First, all purely *identical propositions*. We can see at a glance that these appear to contain no instruction in them—to give us no news. For a proposition that affirms a term of itself tells us only what we must certainly have known already, before the proposition was put to us; and this is so whether the proposition contains any clear and real idea or rather is merely verbal—that is, is a mere construct of words with no backing in ideas. (This is different from the notion of ‘verbal proposition’ spoken of in v.5.) Indeed that most general proposition *What is, is* may serve sometimes to show a man the absurdity he is guilty of when he implicitly denies something of itself. (This would happen only through circumlocution or ambiguity, because nobody is willing to defy common sense so openly as to affirm visible and direct contradictions.) But neither that received maxim nor any other identical proposition teaches us anything. . . .

[In section 3 Locke mocks identical propositions, pointing out that even a very ignorant person can come up with a million of them, all certainly true and all useless—*A soul is a soul*, *A spirit is a spirit*, and so on. He continues:] This is mere trifling with words. It is like a monkey shifting an oyster from one hand to the other: if he could speak, perhaps he would

say ‘Oyster in right hand is subject, and oyster in left hand is predicate’, thus making the self-evident proposition *Oyster is oyster*; and yet with all this he wouldn’t have been the least bit wiser or more knowledgeable. That way of handling the matter would have satisfied the monkey’s hunger about as well as it would a man’s understanding—monkey and man would have improved in bulk and in knowledge together! [The section continues with a further three derisive paragraphs attacking the idea that in developing some branch of knowledge it is useful to go about reminding oneself or others that substance is substance, that body is body, and so on; and two paragraphs in which Locke defends his calling such propositions ‘trifling’, and defends himself against critics of the first edition of the *Essay*, who had attacked him for saying that all identical propositions are trifling but hadn’t grasped how narrowly Locke was construing the phrase ‘identical proposition’.]

4. Another sort of trifling proposition occurs when a part of a complex idea is predicated of the name of the whole; a part of the definition is predicated of the word defined. This includes every proposition in which a more comprehensive term (the genus) is predicated of a less comprehensive one (the species). What information, what knowledge, does a man get from the proposition that *Lead is a metal* if he knows the complex idea that ‘lead’ stands for? All the simple ideas that belong to the complex one signified by the term ‘metal’ are nothing but what he had already included in his meaning for the name ‘lead’. Indeed, when someone knows the meaning of ‘metal’ and not of ‘lead’, telling him that *Lead is a metal* is a short way to explain the latter. . . .

5. Not only predicating the genus of the species—it is equally trifling to apply to some term any other part of its definition, that is, to predicate of the name of some complex idea a simple idea that is part of it—for example *All gold is fusible*. Fusibility is one of the simple ideas that make up the complex one that ‘gold’ stands for, so affirming it of gold can only be playing with sounds. . . . If I know that the name ‘gold’ stands for this complex idea of *body, yellow, heavy, fusible, and malleable*, I won’t learn much from being solemnly told that all gold is fusible! The only use for such propositions is to point out to someone that he is drifting away from his own definition of one of his terms. However certain they are, the only knowledge they convey concerns the meanings of words.

[Section 6 insists further on the uninformative nature of these ‘trifling’ propositions, exemplified by *Every man is an animal* and *A palfrey is an ambling horse*, each of which Locke takes to be true by definition of its subject term. He concludes with a contrast:] But when someone tells me things like

- Any thing in which sense, motion, reason, and laughter are united has a notion of God,
- Any thing in which sense, motion, reason, and laughter are united would be put to sleep by opium,

he has indeed made an instructive proposition. Neither *having the notion of God* nor *being put to sleep by opium* is contained in the idea signified by the word ‘man’—namely the idea of *thing in which sense, motion, reason, and laughter are united*. So propositions like those teach us something more than merely what the word ‘man’ stands for, and therefore the knowledge they offer is more than verbal.

7. Before a man makes a proposition he is supposed to understand the terms he uses in it; otherwise he talks like a parrot, making noises in imitation of others rather than,

like a rational creature, using them as signs of ideas in his mind. The hearer also is supposed to understand the words as the speaker uses them; otherwise the speaker is talking gibberish and making unintelligible noises. So someone is trifling with words when he makes a proposition that contains no more than one of its terms does, which both speaker and hearer were supposed to know already—for example, *A triangle has three sides*, or *Saffron is yellow*. This is tolerable only when the speaker aims to explain his terms to a hearer who he thinks doesn’t understand them; and then it teaches only the meaning of that word, the use of that sign.

8. So we can know with perfect certainty the truth of two sorts of propositions. One is the trifling propositions whose certainty is only verbal, not instructive. Secondly, we can know for certain the truth of propositions that affirm something of something else where the former is a *necessary consequence* but not a *part* of the complex idea of the latter. For example, *Every triangle has an external angle that is bigger than either of the opposite internal angles*. This relation of the outward angle to each of the opposite internal angles isn’t part of the complex idea signified by the name ‘triangle’, so this is a real truth, conveying instructive real knowledge.

9. senses are our only source of knowledge of what combinations of simple ideas [here = ‘qualities’] exist together in substances; so the only certain universal propositions we can make about them are ones based on our nominal essences; and these truths are few in number, and unimportant, in comparison with ones that depend on substances’ real constitutions. Therefore, this holds for general propositions about substances: when they are certain, they are mostly trifling; and when they are instructive, they are uncertain.

In the latter case, we can't have any *knowledge* of their real truth. however much constant observation and analogy may assist our judgment in *guessing*. That's why it often happens that one encounters very clear and coherent discourses that amount to nothing. Names of substantial beings as well as others, so far as they have relative meanings—as the meaning of 'magnet' is relative, because it includes 'is able to attract *iron*—can be joined negatively or affirmatively in true propositions in ways that their relative definitions make them fit to be joined; and propositions consisting of such terms can be deduced from one another just as clearly as can propositions that convey the most real truths. By this method one can make demonstrations and undoubted propositions in words without advancing an inch in one's knowledge about things. For example, someone who has learned the following words, with their ordinary relative meanings attached to them—

'substance', 'man', 'animal', 'form', 'soul', 'vegetative',
'sensitive', 'rational'

—can make many undoubted propositions about the soul without knowing anything about what the soul really is. Similarly, a man may find an infinite number of propositions, reasonings, and conclusions in books of metaphysics, school-divinity, and some sorts of natural science, yet end up knowing as little about God, spirits, or bodies as he did before he started.

10. Everyone is free to give his names of substances any meaning he likes. Someone who does this casually and thoughtlessly, taking meanings from his own or other men's fancies and not from any enquiry into the nature of things themselves, can easily demonstrate them of one another according to the various respects and mutual relations *he has given them*. In doing this he can ignore how things agree

or disagree in their own nature, and attend only to his own notions, with the names he has given them. But he doesn't increase his own knowledge through this procedure, any more than someone increases his riches by taking a bag of counters and calling one 'a pound', another 'a shilling', a third 'a penny'. This latter person can undoubtedly add correctly and reach a large sum on the bottom line, without being any richer—indeed, without even knowing how much a pound, a shilling, or a penny is, except that a pound contains twenty shillings and a shilling twelve pennies. One can do something analogous to that with the meanings of words, by making them more or less comprehensive than one another.

11. Concerning most words that are used in discourses—especially argumentative and controversial ones—a further sort of trifling occurs. It is the *worst* sort, putting us even further from the certainty of knowledge we hope to attain through what we read. Most writers, far from instructing us in the nature and knowledge of things, use their words loosely and uncertainly. They don't by using words constantly and steadily with the same meanings make plain and clear deductions of some from others, and make their discourses coherent and clear (even if not very instructive). Yet it wouldn't be hard for them to do this, if it weren't that it *suits* them to shelter their ignorance or obstinacy under the obscurity and confusion of their terms. . . .

[In sections **12–13** Locke sums up the chapter, describing the two kinds of 'barely verbal propositions'—the two already described in sections 2 and 4 respectively. The awkward final paragraph of section **13** boils down to this: If you want to say something in which your thoughts don't 'stick wholly in sounds', something with a claim to 'real truth or falsehood', you must •have a known and considered idea attached to

each word, and •affirm of the subject 'something that isn't contained in the idea' of it (or, by clear implication, deny of

the subject something whose negation isn't contained in the idea of it.)]

Chapter ix: Knowledge of existence

1. So far we have considered only the *essences* of things, a procedure that gives us no knowledge of real *existence*. That's because essences are only abstract ideas, and thereby separated in our thoughts from particular existence; for abstraction when it is properly done doesn't consider an idea in relation to any existence except its own existence in the understanding. While on that topic, we may note in passing that universal propositions of whose truth or falsehood we can have certain knowledge don't concern existence; and further that all particular affirmations or negations that wouldn't be certain if they were made general are only about existence ·and nothing more·, for they declare only the *accidental* union or separation in existing things of ideas [here = 'qualities'] which in their abstract natures are not known to be *necessarily* united or separated.

2. Leaving the nature of propositions and different ways of predication to be considered at more length elsewhere, let us proceed now to enquire into our knowledge of the existence of things, and how we come by it. I say that

- intuition gives us knowledge that •we exist,
- demonstration gives us knowledge that •God exists,

and

- sensation gives us knowledge of the existence of •other things.

·I shall discuss these in the next section, chapter x, and chapter xi respectively·.

3. We perceive our own existence so plainly and certainly that it neither needs nor is capable of proof. Nothing can be more evident to us than our own existence: I think, I reason, I feel pleasure and pain; can any of these be more evident to me than my own existence? If I doubt everything else, that very doubt makes me perceive my own existence and won't let me doubt it. For if I know •I feel pain, it is obvious that I perceive own existence as certainly as I do the pain that I feel. ·Similarly·, when I know that •I doubt something, I perceive the existence of the thing that doubts as certainly as I do the thought that I call 'doubt'. Experience convinces us, then, that we have an intuitive knowledge of our own existence, and an internal infallible perception that *we are*. In every act of sensation, reasoning, or thinking, we are conscious to ourselves of our own being, and in this matter we don't fall short of the highest degree of certainty.

Chapter x: knowledge of the existence of a god

1. Though God has given us no *innate* ideas of himself—has not stamped onto our minds from the outset words in which we can read his existence—yet having equipped us with the mental faculties that we have, he hasn't left himself without witness to his existence. We have sense, perception, and reason, and can't be without a clear proof of him as long as we carry our *selves* with us. We can't fairly complain of our ignorance about this great point, since God has so plentifully provided us with the means to discover and know him, so far as is needed for the goal of our existence and for the great matter of our happiness. But though this is the most obvious truth that reason reveals, and though (I think) its evidentness is equal to mathematical certainty, becoming certain of it still requires thought and attention: the mind must deduce God's existence in a rule-guided way from something that is intuitively known, for otherwise we shall be as uncertain and ignorant of this as of other propositions that are in themselves capable of clear demonstration. To show that we are capable of knowing—i.e. being certain—that there is a God, and to see how we can acquire this certainty, I think we need go no further than *ourselves*, and the undoubted knowledge we have of our own existence.

2. I think it is beyond question that man has a clear idea of his own existence; he knows certainly he exists, and that he is something. If you can doubt whether you are anything or not, I have nothing to say to you, any more than I would argue with pure *nothing*, or try to convince *non-entity* that it is *something*. If anyone claims to be so sceptical as to deny his own existence (for really to doubt this is manifestly impossible), I am willing to let him luxuriate in his beloved state of being nothing, until hunger or some other pain

convinces him of the contrary! This then, I think I may take for a truth, which everyone's certain knowledge assures him of and will not let him doubt, namely that he is something that actually exists.

3. In the next place, man knows by an intuitive certainty that *bare nothing* can no more produce any real being than it can be equal to two right angles. If a man doesn't know that *non-entity* or *the absence of all being* cannot be equal to two right angles, he can't possibly know any demonstration in Euclid. If therefore we know there is some real being, and that non-entity cannot produce any real being, that yields an evident demonstration that *from eternity there has been something*; for what didn't exist from eternity had a beginning, and what had a beginning wasn't produced by nothing, and so must be produced by something other than itself.

4. Next, it is evident, that if one thing received its existence and beginning from something else, it must also have received from something else all that is in it and belongs to its being. All its powers must have come from the same source. This eternal source of all being, therefore, must also be the source of all power; and so this eternal being must be also the most powerful.

5. A man finds perception and knowledge in himself, and that yields the next step in the proof: we are certain now that there is not only some being, but some *knowing thinking* being, in the world. So either there was a time when there was no knowing being, and when knowledge began to be, or else there has been a knowing being from eternity. If you take the former option, and say that there was a time

when no being had any knowledge—a time when the eternal being had no understanding—I reply that in that case it was impossible that there should ever have come to be any knowledge. For things wholly devoid of knowledge, and operating blindly and without any perception, to produce a knowing being—this is no more possible than that a triangle should have three angles bigger than two right angles. For it is as inconsistent with the idea of senseless matter that it should put sense, perception, and knowledge into itself as it is inconsistent with the idea of a triangle that it should put into itself greater angles than two right ones.

6. Thus by thinking about ourselves and what we infallibly find in our own constitutions, our reason leads us to the knowledge of the certain and evident truth that *there is an eternal, most powerful, and most knowing being*; and it doesn't matter whether we call it 'God'. The existence of the thing is evident, and from properly thinking through this idea we can easily deduce all the other attributes that we ought to ascribe to this eternal being. If nevertheless anyone should be found so senselessly arrogant as to suppose that man alone is knowing and wise, yet is also the product of mere ignorance and chance, and that all the rest of the universe acts only by that blind chance, I shall offer him Tully's firm and reasonable rebuke: 'What can be more sillily arrogant and unbecoming than for a man to think that he has a mind and understanding in him while all the rest of the universe contains no such thing? Or that things he can barely *comprehend* with the utmost stretch of his reason should be *moved and managed* without any help at all from reason?'

From what I have said it is plain to me that we have a more certain knowledge of the existence of a God than of anything else that our senses haven't immediately revealed

to us. Indeed, I think I can say that we *more* certainly know •that there is a God than •that there is anything else outside us. When I say 'we know', I mean that such knowledge lies within our reach, and that we can't miss it if only we will apply our minds to it as we do to various other enquiries.

7. I won't here examine the question of how far the *idea of a most perfect being* that a man may form in his mind does or does not prove the existence of a God,. Because of differences in men's characters and ways of thinking, some arguments for a given truth carry more weight with one person, some with another. But I will say this: if you want to establish this truth and silence atheists, you are going about it in a poor way if you lay the whole stress of such an important point as this on that one foundation, basing your only proof of the existence of a deity on some men's having that idea of God in their minds. (I speak of *some* men's idea of God because clearly some men have no idea of God, and some worse than none, and the ideas of God that others *do* have are very different from one another.) It is a mistake to let your over-fondness for that darling invention lead you to dismiss, or at least try to invalidate, all other arguments, and forbid us to listen to proofs (weak or fallacious, according to you) which our own existence and the perceptible parts of the universe offer so clearly and convincingly to our thoughts that I think it impossible for a thoughtful person to withstand them. . . . Our own existence provides us, as I have shown, with an evident and unchallengable proof of a deity, and I believe that nobody can avoid the force of that proof, provided he attends to it with the care he would give to any other demonstration with so many parts, Still, this is so fundamental a truth, and of such importance (with all religion and genuine morality depending on it), that I'm sure you will forgive me if I go over

some parts of the argument again and develop them in more detail.

8. There is no truth more evident than that *something must be from eternity*. I never yet heard of anyone so unreasonable, or so willing to accept an obvious contradiction, as to believe there was a time at which there was absolutely nothing. To imagine that *pure nothing*, the perfect negation and absence of all beings, should ever produce any real existence—this is the greatest of all absurdities.

It being then unavoidable for all rational creatures to conclude that something has existed from eternity, let us next see what kind of thing it must be.

9. There are only two sorts of beings in the world that man knows or conceives. First, such as are purely material, without sense, perception, or thought, such as the clippings of our beards and parings of our nails.

Secondly, sensing, thinking, perceiving beings, such as we find ourselves to be. From now on I shall refer to these two groups as *incogitative* and *cogitative* beings respectively. These are perhaps better labels, at least for our present purpose, than ‘material’ and ‘immaterial’.

10. If there must be something eternal, it is very obvious to reason that it must be a cogitative being. For it is as impossible •to conceive that mere incogitative matter should ever produce a thinking intelligent being as •to conceive that *nothing* should of itself produce *matter*. If we suppose that some portion of matter, large or small, is eternal, we shall find that it in itself can’t produce anything. For example, let us suppose that the matter of the next pebble we meet with is eternal, closely united, and the parts firmly at rest together: if there were no other being in the world, wouldn’t it eternally remain what it is, a dead inactive lump? Can we conceive it—a purely material thing—as being able to

add motion to itself, or to produce anything? Matter, then, can’t by its own powers start itself moving; the motion it has must also be from eternity, or else be produced and added to matter by some other being that is more powerful than matter. Well, let us suppose that motion is eternal too. Still matter—incogitative matter and motion—whatever changes it might produce in *shape and size*, could never produce *thought*. Knowledge will still be as far beyond the power of *motion and matter* to produce as matter is beyond the power of *nothing* or *nonentity* to produce. Consult your own thoughts, and see whether I am right: you can as easily conceive matter produced by nothing as thought to be produced by pure matter when before there was no such thing as thought, no intelligent being in existence! Divide matter into parts as small as you like (which we are apt to imagine is a sort of spiritualizing, or making a thinking thing, of it), and vary the shapes and movements of its parts as much as you please; still a globe, cube, cone, prism, cylinder, etc. whose diameters are only one billionth of an inch will affect other bodies of similar size in exactly the same way as do those with diameters of an inch or a foot, You may as rationally expect to produce sense, thought, and knowledge by putting together big particles of matter in certain shapes and movements as to produce it with particles that are the very tiniest that exist. They knock, impel, and resist one another, just as the bigger ones do, and that is all they can do. So

If we suppose that •nothing is first or eternal, •matter can never begin to be.

If we suppose •motionless matter to be first or eternal, •motion can never begin to be.

If we suppose •matter and motion to be first or eternal, •thought can never begin to be.

How about the possibility that matter has sense, perception,

and knowledge not put into it by something else, but basically and inherently and from itself? This is inconceivable, because in that case sense, perception and knowledge would have to be a property eternally inseparable from matter and from every particle of it. And here is a further reason. Although our general conception of matter makes us speak of it as one thing, really all matter is not one individual thing, and there is no such thing existing as one material being, or one single body that we know or can conceive. Therefore, if matter were the eternal first cogitative being, instead of there being just *one* eternal *infinite* cogitative being there would be *infinitely many* eternal *finite* cogitative beings, independent one of another, of limited force and separate thoughts, which could never produce that order, harmony and beauty that are to be found in nature.

Since therefore whatever is the first eternal being must be cogitative; and since whatever is first of all things must actually have all the perfections that can ever after exist (because it can never give to something else any perfection that it doesn't have itself, either actually or in a higher degree), it necessarily follows that the first eternal being can't be matter.

11. Just as it is evident that something must exist from eternity, it is equally evident that this 'something' must be a cogitative being. For it is as impossible that incogitative matter should produce a cogitative being as that nothing, or the negation of all being, should produce a positive being or matter.

12. This discovery of the necessary existence of an eternal mind sufficiently leads us into the knowledge of God: it implies that all other knowing beings that have a beginning must depend on him, and have only such ways of knowledge and kinds of power as he gives them; and therefore that he

made not only those knowing beings but also the less excellent (inanimate) pieces of this universe; and this establishes his omniscience, power, and providence—and all his other attributes necessarily follow. Still, to clear this up a little further, let us see what doubts can be raised against it.

13. First, perhaps it will be said that though it is as clear as demonstration can make it that there must be an eternal being, which must know, it doesn't follow that this thinking being isn't also material. Let it be so—that is, suppose that it is made of matter—it still follows that there is a God. For if there is an eternal, omniscient, omnipotent being, it is certain that there is a God, whether you imagine that being to be material or no.

Still, I think there is something dangerous and deceptive in the supposition of God as composed of matter, as follows. Because there is no way to avoid the demonstration that there is an eternal knowing being, people who are devoted to matter would be glad to have it granted that this knowing being is material; and then, letting slide out of their minds the proof that an eternal *knowing* being necessarily exists, they would argue that everything is matter and be led by that to *deny* a God, that is, to deny that there is an eternal cogitative being. [The section concludes with a somewhat obscure argument that materialists whose minds move in that way 'destroy their own hypothesis'. It seems to overlap the first half of section 15.]

14. But now let us see how they can satisfy themselves or others that this eternal thinking being is material.

First, I would ask them: Do you imagine that all matter, every particle of matter, thinks? They'll hardly say Yes, I think, for then there would be as many eternal thinking beings as there are particles of matter, and so an infinity of gods. And yet if they won't allow matter as matter, i.e. every

particle of matter, to be cogitative as well as extended, they will find that making a cogitative being out of incogitative particles is as hard for them to make sense of as making an extended being out of unextended parts.

15. Secondly, if not all matter thinks I next ask whether it is only one atom that does so? This has as many absurdities as the preceding proposal, and here is why. Either this one ·thinking· atom of matter is the only eternal one or it isn't. If it alone is eternal, then it alone must, through its powerful thought or will, have made all the rest of matter. And so we have the creation of matter by a powerful thought, which is just what the materialists object to. For if they suppose that one thinking atom produced all the rest of matter, they must suppose that it was able to do this because of its thinking, since this is the only supposed difference between it and the rest of matter. (Even if they suppose it to have come about in some other way that is above our conception, it would still be creation, and these ·materialist· men must give up their great maxim that *Nothing is made out of nothing*.) 'Perhaps all the rest of matter is eternal along with that thinking atom—this would have to be said by someone who is irresponsibly determined to say *something*, however absurd; for to suppose that all matter is eternal and yet one small particle is infinitely above all the rest in knowledge and power is to say something that hasn't the faintest chance of being supported by a respectable theory [Locke wrote: 'is without any the least appearance of reason to frame any hypothesis']. Every particle of matter, as matter, is capable of all the same shapes and movements as any other; and I challenge anyone, in his thoughts, to add anything else to one particle in preference to another.

16. Thirdly, given that this eternal thinking being isn't •one special atom alone, and isn't •all matter as matter,

i.e. every particle of matter, the only remaining possibility ·if it is to be made of matter somehow· is for it to be •a certain *system of matter* suitably put together. Those who think of God as a material being are most likely to have this view of him, because it's the view most readily suggested to them by their ordinary view of themselves and of other men, whom they take to be material thinking beings. But however much more natural this view is, it is no less absurd than the others; for to suppose the eternal thinking being to be nothing but a composition of particles of matter each of which is incogitative is to ascribe all the wisdom and knowledge of that eternal being only to *how its parts are put together*; and nothing can be more absurd than that. Putting unthinking particles of matter together, however it is done, can't add anything to them except new spatial relations, and it is impossible that those should give them thought and knowledge.

17. Furthermore, either •this corporeal system has all its parts at rest, or •its thinking consists in a certain motion of its parts. If •it is completely at rest, it is simply one lump, and so can have no privileges above one atom.

If •its thinking depends on the motion of its parts, all the thoughts there must be unavoidably accidental and limited. Here is why. Each of the particles whose movements ·supposedly· cause thought is itself without thought, so it can't regulate its own movements; nor can it be regulated by the thought of the whole system, because *that* thought •results from the movements of the particles and so can't •cause them. ·In the absence of any regulation, then· freedom, power, choice, and all rational and wise thinking or acting will be quite taken away. Such a thinking being will be no better or wiser than mere blind matter; because bringing everything down to

- thought depending on unguided motions of blind matter

is the same as bringing it down to

- accidental unguided motions of blind matter.

Not to mention the narrowness of any thoughts and knowledge that depend on the movements of such parts. But I needn't go through any more absurdities and impossibilities in this hypothesis (however full of them it may be); the one I have presented is enough. Whether this thinking system is a part of the matter in the universe or is all of it, no one particle ·in it· can possibly know its own movements or those of any other particle; nor can the whole thing know the motion of every particle and so regulate its own thoughts or motions, or indeed have any thought resulting from such motion.

18. Others hold that matter is eternal, although they also allow an eternal, cogitative, immaterial being. Let us consider this a little: it doesn't take away the existence of a God, but it denies the first great piece of his workmanship, namely the creation. Matter—they say—must be conceded to be eternal. Why? Because you can't conceive how it can be made out of nothing; ·then· why do you not also think that *you* are eternal? You may answer 'Because about twenty or forty years ago I began to be'. But if I ask 'What is this *you* that came into existence at that time?' you can hardly tell me. The matter of which you are made didn't begin to exist at that time, for if it did then it isn't eternal. So what happened then was that the matter of which you are made began to be put together in such a way as to constitute your body; but that construct of particles isn't *you*, it doesn't constitute *the thinking thing* that you are. (I am now arguing with someone who, while holding that unthinking matter is eternal, allows that there is an eternal, immaterial thinking being ·and so presumably doesn't hold that any thinking

being is material·.) Well, then, when did that thinking thing begin to exist? If it never began to exist, then have you been a thinking thing from eternity! I needn't argue for the absurdity of that until I meet someone who is stupid enough to assert it. If therefore you allow that •a thinking thing might be made out of nothing (as all things that aren't eternal must be), why can't you also allow that •a material being might be made out of nothing, by an equal power? Is it just that you have had experience of the former ·in the coming into existence of human beings·, and no experience of the latter? Actually, when we think about it we find that the creation of a spirit requires as much power as the creation of matter. Indeed, if we were to free ourselves from everyday notions, and raise our thoughts as far as possible to a closer contemplation of things, we might be able to aim at some dim and seeming conception of how matter might at first be made, how it might begin to exist by the power of the eternal first being; whereas to bring a spirit into existence would turn out to be a *more* inconceivable effect of omnipotent power. . . .

19. 'But', you will say, 'isn't it impossible to suppose that something should be made out of nothing, since we can't possibly conceive it?' I answer, No, because it isn't reasonable to deny the power of an infinite being merely because we can't understand its operations. We don't deny other effects because we can't conceive how they are brought about. We can't conceive how a body can be moved by anything other than the impact of another body, but that isn't a good enough reason for us to deny that it is possible—·especially· given our constant experience of our own voluntary movements, which are produced in us purely by the free action or thought of our own minds. Such a movement can't be an effect of the impact of blind matter on our own bodies or of movements of such matter within our bodies; for then it couldn't be

in our power or choice to alter it. My right hand writes, while my left hand is still: what causes movement in one, and rest in the other? Nothing but my will, a thought of my mind. With a change in my thought and nothing else, the right hand rests and the left hand moves. This is a matter of fact that cannot be denied: Explain this and make it intelligible, and then the next step will be to understand creation! Some people explain voluntary motion in terms of alterations in the movements of the animal spirits, but this doesn't solve the problem ; it merely pushes it back to the question of what causes the changes in the movements of the animal spirits. . . . [Locke followed Descartes and others

in believing that animal physiology involves the movements of 'animal spirits', conceived as an extremely rarefied and fast-moving fluid.]

Anyway, it is an overvaluing of ourselves to reduce everything to the narrow measure of our capacities, and to conclude that whatever we can't understand is impossible. Limit •what God can do to •what we can conceive of his doing and you either make our understanding infinite or make God finite! If you don't understand the •operations of your own finite mind, don't be surprised that you can't understand •the operations of the eternal infinite mind who made and governs all things and whom the heaven of heavens cannot contain.

Chapter xi: knowledge of the existence of other things

1. We know of our own existence by *intuition*, and our certain knowledge that a God exists comes through *reason*, .i.e. by *demonstration*., as I have shown.

We can know of the existence of other things only by *sensation*. No idea you have in your mind has any necessary connection with any real existence; and your existence has no necessary connection with the existence of anything except God. Therefore the only way you can know that anything *else* exists is through its actually operating on you, making itself perceived by you. Merely having the idea of a thing in your mind no more proves its existence than the picture of a man is evidence of his existence in the world, or than the visions of a dream make a true history.

2. The fact that we get ideas from outside ourselves is

what informs us of the existence of other things; it tells us that at that time something external to us exists and causes those ideas in us, though we may not know—or even give any thought to—how it does that. The certainty of our senses and of the ideas we receive through them is not lessened by our not knowing how the ideas are produced. For example, while I write these words something produces in my mind—through the effects of the paper on my eyes—an idea that leads me to call *white* whatever object causes it; and from this I know that on this occasion some object outside me has the quality whose appearance before my eyes always causes that kind of idea. The best assurance I can have, the best my faculties are capable of, is the testimony of my eyes; they are the proper and sole judges of this thing. I have reason to rely on their testimony as being so certain that I

can no more •doubt that while I write this I see white and black and something really exists that causes that sensation in me, than I can •doubt that I write or that I move my hand. This is a certainty as great as human nature is capable of concerning the existence of anything except oneself and God.

3. The information that our senses give us concerning the existence of things outside us, although it isn't quite as certain as our intuitive knowledge, or as what we know through deductive reasoning using our own clear abstract ideas, is still secure enough to deserve to be called 'knowledge'. If we convince ourselves that our faculties inform us truthfully about the existence of the objects that affect them, this can't be regarded as an unjustified confidence. Nobody, I think, can genuinely be so sceptical as to be uncertain of the existence of the things that he sees and feels; and if anyone *can* doubt as much as that, he will never have any controversy with me, for he can never be sure I say anything that he disagrees with •because he can't even be sure that I exist•. As for myself, I think God has given me assurance *enough* of the existence of things outside me: I know which ways of relating to them will bring me pleasure and which will bring me pain, and that is a matter of great concern to me here on earth. We certainly can't have better evidence than we do that our faculties don't deceive us about the existence of material beings, for we can't do anything except through our faculties—indeed, we can't even talk of knowledge except with the help of those faculties that enable us to understand what knowledge is.

Furthermore, besides the assurance we have from our senses themselves that they don't err in what they tell us about the existence of things outside us when we are affected by them, we have other, confirming reasons for the same conclusion.

4. First, it is obvious that those perceptions •that we think are produced by outer things• *are* produced in us by exterior causes affecting our senses, because people who lack the organs of one of the senses can never have the ideas belonging to that sense produced in their minds. This is too obvious to be doubted. So we can be sure that those perceptions reach our minds *through* the organs of that sense •from something external to those organs•. Clearly, the organs themselves don't produce such ideas, for if they did then the eyes of a man in the dark would produce colours and his nose would smell roses in the winter, whereas in fact nobody experiences the taste of a pineapple till he goes to the •West• Indies where it is, and tastes it.

5. Secondly, sometimes I find that I can't avoid having those ideas produced in my mind. When my eyes are shut, I can choose to recall to my mind the ideas of light or the sun that former sensations have lodged in my memory, or choose to set such ideas aside and instead take into my •imaginative• view the idea of the smell of a rose or the taste of sugar. But if at noon I turn my eyes towards the sun, I can't avoid the ideas that the light or sun then produces in me. So there is a clear difference between •the ideas stored in my memory (over which, if they were *only* in my memory, I would always have the same power to call them up or set them aside as I choose) and •those that force themselves on me and that I can't avoid having. The latter ideas—the ones I have whether I want them or not—must be produced in my mind by some exterior cause, and the brisk acting of some external objects whose power I can't resist. Besides, everybody can see the difference in himself between having a memory of how the sun looks and actually looking at it. His perceptions of these two are so unlike that few of his ideas are easier to tell apart. This gives him certain knowledge that they are not

both memory or products purely of his mind, and that actual seeing has an external cause.

6. Thirdly, many ideas that are painful to have in the first instance can be remembered afterwards without the least distress. Thus the pain of heat or cold doesn't upset us when the idea of it is revived in our minds in memory, although it was very troublesome when we originally felt it, and troubles us again when it is actually repeated through the disorder that the external object causes in our bodies when it acts on them. Again, we remember the pains of hunger, thirst, or headache without any pain at all: if these were nothing but ideas floating in our minds, without the real existence of things affecting us from outside ourselves, we would either never suffer from them or else always do so whenever we thought of them. The same holds for the pleasure that accompanies many of our actual sensations. . . .

7. Fourthly, our senses often confirm each other's reports concerning the existence of perceptible things outside us. If you see a fire, you may doubt whether it is anything but a mere fancy; but then you can feel it too, and be convinced by putting your hand into it. Your hand certainly could never be given such agonizing pain by a mere idea or imagined fancy, unless the pain is a fancy too! When your burn has healed, you can't make the pain of it return merely by raising the idea of it in your memory or imagination.

Here is an example of how the different senses confirm one another. I see while I am writing this that I can change the appearance of the paper; and by planning what to write I can tell in advance what new idea the paper will exhibit the very next moment merely through my drawing my pen over it. Those new visual ideas won't appear—however hard my imagination works—if my hands remain still or if I move my pen but keep my eyes shut. Also, once those letters have

been put onto the paper, I have no choice about afterwards seeing them as they are—that is, having the ideas of the letters I have actually written. This shows clearly that those ideas aren't merely playthings of my imagination. The letters were made as a result of my mental decision to make them, so they were made at the bidding of my own thoughts; but once they have come into existence they don't then obey my thoughts: they don't cease to exist whenever I shall fancy it, but instead continue to affect my senses constantly and regularly according to the shapes that I put down on the page. A further point: the sight of those written letters will draw from someone who reads them aloud the very sounds that I planned them to stand for; and that leaves little reason for doubt that the words I write really do exist outside me. The sounds that they cause me to hear couldn't come from my imagination or my memory. The letters will cause a long series of regular sounds to affect my ears—too long for my memory to be able to retain them in the right order; and because the sounds come to me whether I want them or not, they couldn't be the effect of my imagination.

8. After all this, will anyone be so sceptical as to distrust his senses, and to affirm that all we see and hear, feel and taste, think and do, during our whole lifetime is nothing but a long dream with no reality in it? If so, I ask such a person—who questions the existence of all things or our knowledge of anything—to consider that if everything is a dream then he is only dreaming that he is raising this question, so that it doesn't matter much that he should be answered by someone who is awake. However, he may if he likes *dream* that I answer him as follows. The testimony of our senses that there are things existing in nature gives us as much assurance of this as we are capable of, and as much as we need. For our faculties are not suited to

the entire range of what is the case, or to a perfect, clear, comprehensive knowledge of things, free from all doubts and worries. But they are suited to the preservation of us whose faculties they are; they are serviceable enough for everyday purposes, because they let us know for sure which things can help and which can hurt us. Someone who sees a candle burning, and has experienced the force of its flame by putting his finger in it, will have little doubt that this is something existing outside him that harms and greatly hurts him; and that is assurance enough, for no man requires greater certainty to govern his actions by than what is as certain as his actions themselves. I can be as sure that *if I move thus and so I will feel pain* as I can be that *I shall move thus and so*. We can't need more certainty about what our actions will lead to than we have about what our actions will be. If our dreamer wonders whether the glowing heat of a glass furnace is merely a wandering imagination in a drowsy man's fancy, he can test this by putting his hand into it. If he does, he will be wakened into a certainty—a greater one than he would wish!—that it is something more than mere imagination. So we have all the assurance that we can want—enough to enable us to steer our course in relation to pleasure and pain, i.e. happiness and misery; and these are all we need be concerned about in theory or in practice. Such an assurance of the existence of things outside us is sufficient to direct us in the attaining the good and avoiding the evil that is caused by them; and this is what really matters to us in our acquaintance with them.

9. In brief, when our senses bring an idea into our understandings, we can't help being confident that *at that time* something really exists outside us—something that affects our senses, and through them alerts us to its existence by producing the idea that we perceive. We can't distrust the tes-

timony of our senses so far as to doubt that such collections of simple ideas [here = 'qualities'] as we have observed to be united together really do exist together. But this knowledge doesn't extend beyond the present testimony of our senses regarding particular objects that are affecting them *now*. If one minute ago I saw a collection of simple ideas of the sort usually called 'a man' existing together, and if I am now alone, I can't be certain that the same man exists now, since his existence a minute ago doesn't necessitate his existing now. In any of a thousand ways he could have ceased to exist since I had the testimony of my senses for his existence. And if I can't be certain that the man I last saw earlier today still exists, still less can I be certain of the present existence of one I haven't seen since yesterday or since last year—let alone one that I never saw. I conclude that although it is highly probable that millions of men now exist, yet while I am alone in my study writing this I am not certain enough of this to say that I *know* it to be so. It is so likely to be the case that I have no doubt of it, and I can reasonably act on my confidence that there are men in the world (and indeed some whom I know, and with whom I have various relations); but still this is only very high probability, not knowledge.

10. This shows how foolish and pointless it is for a man who doesn't know much, but who has been given the faculty of reason to judge how probable things are and to be swayed accordingly, to expect demonstration and certainty in things that aren't capable of it, and to refuse assent to very reasonable propositions and act contrary to very plain and clear truths, simply because they can't be made so evident as to surmount every the least (I won't say reason, but pretence of doubting. If anyone brought that attitude to the ordinary affairs of life, accepting nothing that hadn't been plainly demonstrated, he would be sure of nothing in this

world except an early death. The wholesomeness of his meat or drink wouldn't give him reason to risk it. What indeed *could* he do on grounds that were capable of no doubt, no objection?

11. Just as when our senses are actually employed on any object we know that it exists, so also by our memory we may be assured that things that affected our senses in the past have existed. In this way we have knowledge of the past existence of various things of which, our senses having informed us of them, our memories still retain the ideas; and we are past all doubt about this so long as we remember well. But this knowledge reaches no further than our senses have formerly assured us. Thus seeing water right now it is an unquestionable truth to me that water now exists; and remembering that I saw it yesterday it will also be always true that water existed on the 10th of July, 1688, and as long as my memory retains this it will always be an undoubted proposition to me. Just as it will also be equally true that a certain number of very fine colours existed which at the same time I saw on a bubble of that water. But, being now out of sight both the water and the bubbles, it is no more certainly known to me that the water now exists than that the colours or the bubbles do. For it is no more *necessary* that water should exist today because it existed yesterday than that the colours or bubbles exist today because they existed yesterday; though the former is ever so much more *probable*, because water has been observed to stay in existence for a long time whereas bubbles and the colours on them quickly cease to be.

12. I have already shown what ideas we have of spirits [= 'minds'], and how we come to have them. But though we have those ideas in our minds and know we have them there, merely having ideas of spirits doesn't make us know

that any such things exist outside us, or that there are any finite spirits or any other spiritual beings in addition to the eternal God. We can no more know that finite spirits really exist purely through having the idea we have of them in our minds than we could come to know that there really are fairies or centaurs purely through having ideas of them. Divine revelation and other reasons entitle me to be sure that God has created finite spirits other than myself; but I am not able to know what particular spirits there are, because my senses can't pick them out.

Concerning the existence of finite spirits, therefore, as well as many other things, we must be content with the evidence of faith; we can never establish for certain any universal propositions on this topic. It might be true that (for instance) all the thinking spirits that God ever created still exist, but this can never be something we know for certain. We can assent to propositions like that as highly probable, but I am afraid that in our earthly state we cannot know them. So we shouldn't demand (of others or of ourselves) conclusive proofs or universal certainty in these matters about which we can have only such knowledge as our senses give us in this or that particular case.

13. So it turns out that there are two sorts of propositions. **1** One sort says that *there exists something* that conforms to such and such an idea. When I have the idea of an elephant, a phoenix, motion, or an angel in my mind, I naturally want to know: Does such a thing exist anywhere? This knowledge is only about particulars. Our senses give us all the information we can have about the existence of things outside us, with the sole exception of God whose existence I have proved. **2** The other sort of proposition expresses relations amongst our abstract ideas—how they agree with one another or depend on one another. Propositions of this

kind may be universal and certain. For example, having the ideas of •God and •myself, and of •fear and •obedience, I can't help being sure that *God is to be feared and obeyed by me*; and this proposition will hold for certain regarding all men—that is, all men who belong to the species (of which I am a member) that is defined by my abstract idea of humanity. Still, this proposition that men ought to fear and obey God, however certain I may be of it, doesn't prove to me that there are any men in the world; the proposition is simply true of all the men that there are, whenever they exist, ·so that it could be true even if there were no men·. What makes such general propositions certain is the agreement or disagreement we can find amongst the abstract ideas that they involve ·and not any facts about particular things to which those ideas apply·.

14. With **1** the former kind of proposition, our knowledge is the consequence of the existence of things that produce ideas in our minds through our senses. With **2** the latter, knowledge results from the production in our minds of general certain propositions by our ideas (whatever they may be). Many of these are called 'eternal truths', and all of them indeed are eternally true, ·but let us be careful about *why* that is so·. It is not that all of them—or indeed

that *any* of them—were written in the minds of all men, or that any of them were propositions in anyone's mind until he had acquired the relevant abstract ideas and joined or separated them by affirmation or negation. Rather, ·they are eternal truths because· wherever we can suppose that such a creature as man exists, endowed with faculties that men have and provided by those faculties with ideas such as we have, we must conclude that when that creature applies his thoughts to his ideas he *must* know the truth of certain propositions that will arise from the agreement or disagreement he will perceive in his own ideas. Such propositions are therefore called 'eternal truths', not because they are eternal propositions that were actually formed in advance of anyone's having them in his thought, nor because they are imprinted on the mind from patterns that already existed outside the mind, but because if such a proposition is made about abstract ideas in such a way as to be true, it is always actually true when, at any earlier or later time, someone has those same ideas and makes that same proposition. For names being supposed to stand perpetually for the same ideas, and the same ideas having unchangingly the same relations one to another, a proposition concerning abstract ideas must be eternally true if it is ever true.

Chapter xii: The improvement of our knowledge

1. Among men of letters it has been the standard view that *maxims* are the foundation of all knowledge, and that every science [= 'branch of knowledge'] is built on certain *praecognita* [= 'things known in advance'] which give the understanding its first *lift* and by which it is to conduct itself in its enquiries. That is why the standard practice of the schools has been to lay down in the beginning one or more general propositions, as foundations on which to build the knowledge that can be had in the science concerned. These doctrines, thus laid down as foundations for a science, were called 'principles', because they were supposed to be the •beginnings from which we must set out, looking no further backwards in our enquiries. [The word 'principle' comes from Latin meaning •'first'.]

2. This approach seemed to succeed in mathematics. It was seen that in these sciences a great certainty of knowledge was achieved, which is why they came to be dignified with the title 'Mathemata' [Locke gives it in Greek], meaning learning, or things learned, thoroughly learned, because these have greater certainty, clearness, and self-evidentness than any other science. This success may have encouraged the 'principles' approach in other sciences as well.

3. But if you look into this I think you'll find that the great advancement and certainty of real knowledge that men achieved in the mathematical sciences was not due to the influence of these principles, or derived from any special advantage the mathematicians got from two or three general maxims laid down in the beginning. Rather, it came from the clear, distinct, complete ideas that their thoughts were engaged with, and from the fact that the relations of 'equals' and 'greater than' between some pairs of them were so clear

that the mathematicians knew them intuitively, which gave them a way to discover such relations between other pairs ·by demonstration·—all this being done without the help of maxims. I ask you: can't a young lad know that his whole body is bigger than his little finger without help from the axiom that *the whole is bigger than a part*? Can't a country girl know that when she has received a shilling from someone who owes her three, and a shilling from someone else who also owes her three, the remaining debts are equal? To know this must she rely on the maxim that *if you take equals from equals, the remainder will be equals*, which she may never have heard or thought of? On the basis of what I have said earlier—in vii.4 and 11—ask yourself: which is known first and most clearly by most people, the particular instance or the general rule? Which of these gives life and birth to the other? [The section then repeats things Locke has said earlier about how the mind starts with particulars and gradually works towards general ideas and general propositions. It concludes:] When he has acquired these names, how is he more certain that •his body is a *whole* and his little finger a *part* than he could have been, before he learnt those terms, that •his body was bigger than his little finger? It is as reasonable to question whether your little finger is a *part* of your body as that it is *smaller than* your body; and someone who doubts the latter is sure to doubt the former as well. So the maxim *The whole is bigger than a part* can never be used to prove that the little finger is smaller than the body except when it is useless, being used to convince someone of a truth that he knows already. . . .

[In section 4 Locke begins by saying, in effect: Pretend to be satisfied that mathematics *has* achieved its success through

starting with maxims, because mathematicians have had the good luck or good judgment to use only maxims that are self-evident and undeniable. Still the question arises whether this (supposed) fact about mathematics makes it safe for us to] take the principles that are laid down in any *other* branch of knowledge as unquestionable truths, to accept them without examination, and stick to them without allowing them to be called in to question. The answer is that it is *not* safe. If we proceed in this way, who knows *what* will get accepted as truths in morality or as 'proved' in physics!

Let the principle of some of the ancient philosophers that *All is matter, and there is nothing else* be accepted as certain and indubitable, and you can easily see from the writings of some who have revived it in our day what consequences it will lead us into! Let anyone equate God with the world (Polemo), with the ether or the sun (the stoics), or with the air (Anaximenes), and what a divinity, religion and worship we shall end up with! Nothing is as dangerous as principles taken up uncritically, especially when they concern morality, influence men's lives and shape all their actions. [Then some examples of differing philosophical views that could be expected to lead to different kinds of conduct.]

5. So if we take propositions that are not certain and treat them as principles on the basis of nothing but our blind assent, we are liable to be misled by them; and instead of being guided into truth we shall only be confirmed in error,

6. The knowledge of the certainty of principles, as well as of all other truths, depends purely on our perception of the agreement or disagreement of our ideas; so the way to improve our knowledge is not to receive and swallow principles blindly and with an implicit faith; but it is, rather, to get and fix in our minds as many clear, distinct, and complete ideas

as we can, and to give each of them its own constant name. Just by considering those perfect ideas, and finding their agreements and disagreements and their various intrinsic natures and relations to one another, we shall get more clear knowledge than by taking up second-hand principles and thereby putting our minds at the disposal of others.

7. If we want to proceed as reason advises, therefore, we must adapt our methods of enquiry to the nature of the ideas we are examining and the truth we are searching for. General and certain truths are based purely on the natures and relations of abstract ideas; our only way to learn such truths is by judiciously and methodically applying our thoughts to finding out these relations. We can learn how to go about this from the mathematicians: from very plain and easy beginnings they proceed, gradually and through a continued chain of reasonings, to the discovery and demonstration of truths that at first sight seem beyond human capacity. What has carried them so far, and produced such wonderful and unexpected discoveries, is the art of finding proofs, and the admirable methods they have invented for finding and ordering the intermediate ideas that demonstratively show the equality or inequality of quantities that can't be directly related to one another. I shan't discuss whether something like this may eventually be found to be possible with other ideas, ones that are not quantitative. But I will say this much: if other ideas that are the *real* as well as the *nominal* essences of their species were pursued in the way familiar to mathematicians, they would carry our thoughts further, with results that are more evident and clearer, than we are apt to imagine.

8. This gave me the confidence to advance my conjecture (in chapter iii) that morality is open to demonstration, as well as mathematics. For the ideas that ethics deals with are all

ideas of mixed modes, and so are all real essences, and such as I imagine have discoverable connections and agreements with one another; so that as far as we can find their natures and relations so far we shall come to know truths that are certain, real, and general. I am sure that if a right method were adopted a great part of morality might be made out with such clearness that a thoughtful person would have no more reason to doubt it than he could have to doubt of the truth of demonstrated propositions in mathematics.

9. In our search for knowledge of substances we have to use a quite different method, because we don't have ideas of substances that are suitable for the way of proceeding that I have just described. In the latter (where our abstract ideas are real as well as nominal essences), we advance by contemplating our ideas and attending to their relations and correspondences with one another; but that gives us very little help with substances, for the reasons that I explain in detail elsewhere. So I think it is evident that substances can't be the subjects of much general knowledge, and that merely thinking about their abstract ideas will take us only a very little way in the search for truth and certainty. Then how *are* we to add to our knowledge of substantial beings? Here we must take a quite contrary course; the lack of ideas of the real essences of substances sends us from *our own thoughts* to *the things themselves* as they exist. Experience here must teach me what reason can't: it is only by *testing* that I can know for sure what other qualities co-exist with those of my complex idea—for example, whether the yellow, heavy, fusible body that I call 'gold' is malleable. And the answer that experience gives in a particular case doesn't make me certain that it will be the same for any yellow, heavy, fusible bodies that I haven't yet tested. My complex idea of gold gives me no help with that: the combination of

that colour, weight, and fusibility in a body does not visibly imply or rule out malleability. [Locke goes on to say that if we become confident that all gold is malleable, we may include malleability in our nominal definition of gold; but that still won't help us to establish with certainty any truths stating that further qualities—ones not included in the newly enriched nominal definition—are possessed by all samples of gold.]

10. I don't deny that a man who is accustomed to rational and regular experiments will be able to see further into the nature of bodies, and guess more accurately their yet unknown properties, than one who is a stranger to them. But yet, as I have said in vi.13., this is only judgment and opinion, not knowledge and certainty. This way of getting and improving our knowledge of substances, purely through experience and history, is all that the weakness of our faculties can attain to; and it makes me suspect that natural philosophy [= 'physics'] isn't capable of being made a science [= 'a highly organized system with a disciplined structure']. . . .

11. . . . Since our faculties are not fitted to penetrate into the internal structure and real essences of bodies, but clearly *do* show us the existence of a God and give us enough knowledge of ourselves to lead us into a full and clear discovery of our duty and of what matters most to us, it is appropriate for us as rational creatures to employ our faculties on what they are best adapted to, and follow the direction of nature where it seems to show us the way. For it is reasonable to conclude that we ought to pursue the sort of knowledge that is most suited to our natural capacities, and carries with it our greatest interest, i.e. our means to achieving eternal life. From which I conclude that *morality* is the proper science and business of mankind in general; just as various studies regarding various parts of nature are

suitable for the special talents of particular men, for the common use of human life and for their own survival in this world. [The section continues by presenting an example of how important the knowledge of ‘one natural body’ can be to human life. Although America abounds in natural goods, and its native inhabitants are naturally as able as Europeans are, the level of their lives is much lower than that of people in more developed countries; and this difference is largely due to their not having the use of *iron*. The section concludes:] So that he who first made known the use of that humble mineral may be truly styled the father of arts and author of prosperity. [In this sentence ‘arts’ covers every kind of craft, mechanical skill, technique of manufacture, and so on.]

12. So don’t think that I want to discourage the study of nature. I readily agree that contemplating God’s works can lead us to admire, revere, and glorify him. (And if this is done properly it can be of greater benefit to mankind than the expensive and conspicuous charitable efforts of those who found hospitals and shelters for the homeless. He who first invented printing, discovered the use of the compass, or made public the powers of quinine and the right way to use it, did more to propagate knowledge, to supply and increase useful commodities, and to save people from the grave, than those who built colleges, work-houses, and hospitals.) My point is just that •we shouldn’t be too confident in claiming to have knowledge, or in expecting to get it, in areas where it cannot be had, or not by the ways we are following. And that •we shouldn’t take doubtful systems to be complete sciences, or unintelligible notions to be disciplined demonstrations. In the knowledge of bodies, we must be content to glean what we can from particular experiments, because we don’t know the real essences that would enable us (if we knew them) to pick up whole sheaves of bodies at a time, and understand the

nature and properties of whole species together, in bundles. Where our enquiry concerns co-existence or impossibility of co-existence, which we can’t discover by studying our ideas, *there* experience, observation, and natural history must give us through our senses an insight into corporeal substances, taken one a time. The knowledge of •bodies we must get by our senses, using them alertly in observing bodies’ qualities and operations on one another. As for our knowledge of •unembodied Spirits in this world, I think we must look to revelation for that. When you consider the record of general maxims, precarious principles, and hypotheses laid down at pleasure—how little they have, through the ages, advanced men’s progress towards knowledge in natural science—you will think we have reason to thank those who in this latter age have marked out another path to us, not an easier way to learned ignorance but a surer way to profitable knowledge.

13. This isn’t to deny that we can explain natural phenomena by making use of any *probable* hypothesis whatever. Hypotheses, if they are well made, are great helps to the memory, and they often direct us to new discoveries. My point is just that when we want to penetrate into the causes of things and have principles to rely on, we are very apt to adopt an hypothesis too hastily, before thoroughly examining particular instances and making various experiments with the thing we are trying to explain by our hypothesis, in order to see whether it agrees with them all. The question is whether our ‘principle’—which is what we may call our hypothesis—will carry us the whole way through, rather than seeming to accommodate and explain one phenomenon of nature while being inconsistent with another. At least we should take care that the name ‘principle’ doesn’t deceive us or impose on us, by making us accept as an unquestionable truth something that is really, at best, only a very doubtful

conjecture. That is what most (I almost said 'all') of the hypotheses in natural science are.

14. But whether or not natural science is capable of certainty, there seem to me to be just two ways to increase our knowledge, as far as we can do so at all.

The first is to get and settle in our minds determinate ideas of all the things for which we have general or specific names—or anyway all that we want to think about, know more about, or reason about. And if they are specific ideas of substances, we should try to make them as complete as we can, putting together as many simple ideas as are constantly observed to co-exist and can perfectly pick out the species. And each of the simple ideas that are the ingredients of our complex ones should be clear and distinct in our minds. Obviously our knowledge can't outrun our ideas; so as far as *they* are either imperfect, confused, or obscure, we can't expect to have certain, perfect, or clear knowledge.

The second is the art of finding out intermediate ideas that can show us the agreement or mutual inconsistency of other ideas that can't be immediately inter-related.

15. These two (and not reliance on maxims and inference from general propositions) are the right methods of increasing our knowledge involving the ideas of •non-quantitative modes. We learn this from considering mathematical knowledge, •which involves ideas of •quantitative modes. It is in mathematics that we first find that •knowledge requires good ideas; for example, that •someone who doesn't have perfect and clear ideas of the angles or figures that he

wants to investigate is thereby made utterly incapable of any knowledge about them. . . . Furthermore, what led the masters of that science into the wonderful discoveries they have made was obviously *not* the influence of the maxims that are taken to be principles in mathematics. Suppose that an intelligent man has a perfect knowledge of all the maxims that are generally used in mathematics, and that he thinks about them and their consequences as much as he pleases: I don't think that this will lead him to know that the square on the hypotenuse of a right-angled triangle is equal to •the sum of •the squares on the two other sides! The knowledge that *The whole is equal to •the sum of •all its parts* and *If you take equals from equals, the remainders will be equal* won't help him to this demonstration; and I don't think that any amount of poring over those axioms would add a scrap to one's knowledge of mathematical truths. . . . When people first got knowledge of truths in mathematics, their minds were aiming at things other than—aiming in a direction different from—maxims. Anyone who is well acquainted with those received axioms •or maxims, but ignorant of the methods first used to demonstrate mathematical truths, are astonished by the results that the mathematicians have achieved. Algebra easily finds out ideas of quantities to measure other quantities by—ones whose equality or proportion we might never be able to know without the help of algebra. Well, who knows what methods for increasing our knowledge in other parts of science may some day be invented, corresponding to the method of algebra in mathematics?

Chapter xiii: Some other considerations concerning our knowledge

1. Our *knowledge* is like our *sight* in several respects, including this: it is neither wholly •necessary nor wholly •voluntary. If our knowledge were altogether •necessary, not only would all men's knowledge be alike, but every man would know all that is knowable; and if it were wholly •voluntary, some men—the ones who put little value on it—would have extremely little or none at all. Men that have senses can't help receiving some ideas through them; and if they have memory they can't help retaining some of them; and if they have any distinguishing faculty, they can't help perceiving the agreement or disagreement of some ideas with one another. Similarly, if a sighted person opens his eyes by day he can't help seeing some objects, and perceiving differences amongst them. But there are certain objects that he may choose whether to look at; there may be within reach a book containing pictures and text that he may never decide to open.

2. Here is another thing in a man's power: when he turns his eyes towards an object, he can choose whether he will look at it intently, trying to observe accurately all that is visible in it. But what he does see, he can't see otherwise than he does. It's not for him to decide to see as black something that appears yellow, and he can't convince himself that what actually scalds him feels cold. . . . That's how it is with our understanding: we voluntarily choose whether to employ our faculties on this topic rather than that, and whether to make a more or a less accurate survey of it. But when they are being employed, our will has no power to affect the knowledge of the mind one way or another; that is done only by the objects themselves, as far as they are clearly revealed. And therefore, as far as men's senses are engaged

on external objects, the mind *has to* receive the ideas that are presented by them, and be informed of the existence of things outside it. And so far as men's thoughts are engaged on their own determined ideas, they *can't help* observing to some extent the agreements and disagreements that are to be found amongst some of them—and that, as far as it goes, is knowledge. And if they have names for the ideas that they have thus considered, they can't help being assured of the truth of the propositions that express the agreement or disagreement they perceive in them. For what a man sees, he cannot but see; and what he perceives, he cannot but know that he perceives.

3. Thus someone who has the ideas of numbers, and has taken the trouble to compare *one, two, and three* to *six*, can't help knowing that they are equal. Someone who has acquired the idea of a triangle, and found the ways to measure its angles, is certain that its three angles are equal to two right ones, and can no more be in doubt about that than about this truth, that *It is impossible for the same thing to be and not to be*.

And someone who has the idea of

•a thinking but frail and weak being, made by and depending on •someone else who is eternal, omnipotent, perfectly wise and good

will know that •man is to honour, fear, and obey •God as certainly as he knows when the sun shines that he sees it. For if he has the ideas of two such beings in his mind, and consents to turn his thoughts onto them, he will as certainly find that the *inferior, finite and dependent* is under an obligation to obey the *supreme and infinite* as he is certain to find that *three, four, and seven* are less than *fifteen* if he

chooses to compute those numbers. Nor can he be surer on a clear morning that the sun has risen, if he chooses to open his eyes and turn them that way. Still, he may be ignorant of

either or all of these truths—certain and clear as they are—if he doesn't take the trouble to employ his faculties, as he should, to inform himself about them.