6 Locke's theory of knowledge

In the course of its considerable length the Essay concerning Human Understanding deals with many topics, but its main theme and concern is knowledge and the capacity of the human understanding to acquire it. "[M]y Purpose," Locke tells us, is "to enquire into the Original, Certainty, and Extent of humane Knowledge; together, with the Grounds and Degrees of Belief, Opinion, and Assent" [E I.i.2: 43]. What is knowledge and how is it acquired? Are there any limits to what we can know and, therefore, things about which we can have only beliefs and things about which we must be ignorant? What, indeed, is the difference between knowledge and belief? As its title indicates, the Essay intends these as questions more about the human knower and believer rather than about what is known and believed. What can we, with our minds, know? In setting out to inquire into knowledge Locke is setting out "to take a Survey of our own Understandings, examine our own Powers, and see to what Things they were adapted" [E I.i.7: 47].

In the background to his questions was a contemporary debate that arose from a large number of arguments against the very possibility of knowledge, arguments that were found in an account of early Greek skepticism, Outlines of Pyrrhonism, written by Sextus Empiricus (fl. A.D. 200). Pointing out that people disagree, these arguments challenge anyone who thinks the truth can be found to say who is its proper judge or real discoverer. Pointing out that our senses are unreliable and our reasonings often mistaken, they ask by what means truth is to be discovered.

But though Locke is often dealing with questions like this, his ultimate interest is not merely academic. It has to do with the human predicament, or our place in the total scheme of things.
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pervading feature of his thought as a whole is a deep concern with how we should lead our lives here and now in this world, as God's creatures and in the light of some expectation of an afterlife in another world. So, since we have been given the ability to reason and think, one aspect of this is how we stand as knowers and believers. His basic aim is to "find out those Measures, whereby a rational Creature put in that State, which Man is in, in this World, may, and ought to govern his Opinions, and Actions depending thereon" (E I.i.6: 46).

There is some disagreement as to how exactly Locke's responses to the challenges of the traditional skeptical arguments relate to those of some of his contemporaries. But there can be no doubt that they, and his underlying interest in how we should arrange our lives and thoughts, are of a piece and form a coherent picture.

His response, as expounded in general terms at the beginning of the Essay and confirmed by all of its later detail, is that to an extent the skeptics are right. There are things we do not know, things about which we can only form beliefs and things about which we are ignorant. But some things we do know and our beliefs are often not foundationless. On this earth "we are here," as he records in his journal, "in a state of mediocritie, finite creatures, furnished with powers and facultys very well fited to some purposes, but very disproportionate to the vast and unlimited extent of things" (Journal 1677: B MS Locke f.2: 126).

The things we do know, furthermore, and the things we justifiably believe, answer to our true needs and real interests. "How short soever . . . [people's] Knowledge may come of an universal, or perfect Comprehension of whatsoever is, it yet secures their great Concernments" (E I.i.5: 45). In brief, we are not in ignorance of our duties and obligations to each other and to God; we can, that is, know what we need to know for salvation. As to the practicalities of life in this world, we can learn enough for our everyday comfort. People should be "well satisfied with what God hath thought fit for them, since he has . . . put within the reach of their Discovery the comfortable Provision for this Life and the Way that leads to a better" (ibid.).

Not only have we no need to know much of what we do not know, we also are not suited to know it. A skeptical attitude would be avoided if people would recognize "the Horizon . . . between what is, and what is not comprehensible by us" (E I.i.7: 47). If they did
they would “not be inclined... to... Despair of knowing any thing;... and disclaim all Knowledge, because some Things are not to be understood” (E I.i.6: 46). It is no wonder that people fall to thinking that the truth as a whole lies beyond their grasp when they concern themselves with matters to which they are not suited. “Men, extending their Enquiries beyond their Capacities, ... ‘tis no Wonder, that they raise Questions... which never coming to any clear Resolution, are proper only to ... confirm them at last in perfect Scepticism” (E I.i.7: 47).

In Locke’s picture of things, our capacities and abilities are given us by God. So not only should we thank Him for what we have, also we should be less greedy and “more cautious in meddling with things exceeding [our] Comprehension” (E I.i.4: 45). There is an immodest ungrateful egotism in attempting to know what we are not suited to know, and in complaining that our knowledge has bounds. We should patiently accept our limitations.

When he says that we should not fret at the limitations and bounds to knowledge that are set by the nature of our understandings, Locke does not mean that we should not aim to get what is attainable by us. Rejecting any innateness of knowledge, his view is that what God gave us was not the knowledge that is necessary and useful, but rather the means to acquire it. He speaks of the benefit to mankind of the invention of printing, of the mariner’s compass, and of the discovery of quinine, and stresses that he does not “dissuade the Study of nature,” but only “that we should not be too forwardly possessed with the Opinion, or Expectation of Knowledge, where it is not to be had” (E IV.xii.12: 647).

For substantiation and illustration of this general picture, we must turn to the detail of Locke’s inquiry into the origin and extent of human knowledge. In a word, the origin, the “Fountain of Knowledge,” is experience: “In that, all our Knowledge is founded; and from that it ultimately derives it self” (E II.i.2: 104). But this view, that knowledge is “founded in” and “ultimately derives from” experience, presupposes a distinction between knowledge as such and the ideas that are “the materials of Knowledge” (E II.i.25: 118).

In a draft version of the Essay Locke faces up to an objection, which, he says, he has sometimes met: not all knowledge could have come from experience; some things we know could not have been learned “from our senses.” We know that any number is either even
or odd. But “we can by noe means be assurd by our senses” of this, “because neither our senses nor thoughts have been conversant about all numbers” [Draft A 43: D I: 74–75].

His answer makes clear that his claim is not that all knowledge is “made out to us by our senses,” unassisted and by themselves. This would ignore the fact that human beings have understandings, it would ignore our reason, “which I thinke by a right traceing of those Ideas which it hath received from Sense or Sensation may come to . . . knowldg . . . which our senses could never have discoverd.” His claim is, rather, that all ideas, all the materials out of which knowledge is fashioned by our reason, are derived from experience. We do not learn through experience that any number is even or odd. From experience we get the ideas of numbers and of the properties of evenness and oddness; and then, by our reason, we come to know that any number is even or odd. This insistence on the point that the use of reason is in some way involved in the acquisition of knowledge is one thing that shows the need for caution about the common characterization of Locke as an empiricist.

Locke explains that, behind this mistaken objection to his claim that experience is the “Fountain of Knowledge,” there lay the view that some of our knowledge is not acquired, does not come from anywhere during our lifetime, but is innate. Book I of the Essay is a lengthy attack on this innatist view about the origin of knowledge; and we should look at it before looking at Locke’s positive account of the production of ideas by experience and, out of those materials, of knowledge by reason. “It is,” he says, “an established Opinion amongst some Men, That there are in the Understanding certain innate Principles . . . as it were stamped upon the Mind of Man, which the Soul receives in its very first Being; and brings into the World with it” [E I.ii.1: 48]. These supposed innate principles were divided into the “practical,” or moral and religious (e.g., the commandment “Parents preserve and cherish your Children” [E I.iii.12: 73]), and the “speculative,” or theoretical (e.g. “Tis impossible for the same thing to be, and not to be” [E I.ii.4: 49]). The exact identity of those who believed such principles to be “stamped upon the Mind” is not completely clear. Their reasons for the belief are easier to see.

One reason for believing in the innateness of speculative principles has already been mentioned. It is that their innateness
explains how we can come by truths which we could not have learned from experience. Even after reading Locke's attacks, this is just how James Lowde defended an innateness of knowledge. He argues that we do have knowledge that in “no ways depends upon Observation” and so concludes that it is innate or “naturally inscribed”:

Our Souls have a native power of finding or framing such Principles or Propositions, the Truth or Knowledge whereof no ways depends upon the evidence of sense or observation: thus knowing what is meant by a whole, and what by a part, hence naturally results the truth of this Proposition [the whole is greater than the parts], without being in any ways oblig'd to sense for it. (Lowde 1694: 53)

Another reason is that the hypothesis of innate knowledge provides a needed explanation why some things should seem obviously true, beyond question, and in no need of support. Some people think, Locke says, that if there are any propositions to which “all Men, even Children, as soon as they hear and understand the Terms, assent,” this is “sufficient to prove them innate. For since Men never fail, after they have once understood the Words, to acknowledge them for undoubted Truths, they would infer, That certainly these Propositions were first lodged in the Understanding... without any teaching” (E I.ii.17: 56). Lowde provides an example of this way of thinking too in his reply to Samuel Parker who, along with Locke, was a critic of innatism. According to Parker, there is no need of innate knowledge. Why should God imprint obvious truths on our minds? An obvious truth needs no such artificial support. Lowde's reply makes clear that there is something to explain: “these truths do in great measure, owe their clearness and evidence to their being thus imprinted... the needlessness of imprinting such evident Notions cannot be argued from their present clearness, because it is their being thus imprinted or thus connatural to our minds that makes them so” (Lowde 1694: 57).

Since Locke agrees that some propositions (among them those picked out by the innatists) do seem obviously true to all understanding people who consider them, and since he is sure that this is not to be explained by appeal to innate “native Inscription,” he is right, despite what Parker says, to acknowledge that he will need to provide an alternative explanation (E I.ii.11: 52–53).
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Various arguments lie behind his conviction that innateness is not the answer (see Barnes 1972). Innateness will not, or is not the only thing that will, adequately explain what it is meant to explain. It is too liberal: that "white is not black" would be readily accepted, but no one would want so specific a proposition to be innate; and it could be so only if, implausibly, its constituent ideas, "white" and "black" are innate (E I.ii.18–21: 57–60).

Different considerations are brought against the supposed innateness of practical and moral principles. People who accept them do so without question but, unlike speculative principles, they are not accepted by everyone. Anyone who is "but moderately conversant in the History of Mankind" knows this (E I.iii.2: 66). Ready acceptance by those who do accept them cannot, therefore, be explained by innateness. For the same reason, of course, it cannot be explained by the appeal, which Locke himself makes in the case of speculative principles, to some other general feature of the human mind.

What does explain people's unquestioning adherence to their moral principles, Locke thinks, is that as children they took them on trust, and then, due to laziness, lack of time, or timidity, never examined them. Moral principles are "instil[led] into the unwary, and, as yet, unprejudiced Understanding" of infants who, "as they grow up, [have them] confirmed to them, either by the open Profession, or tacit Consent, of all they have to do with" (E I.iii.22: 81), and who, as grown people "perplexed in the necessary affairs of Life, or hot in the pursuit of Pleasures" (E I.iii.25: 82), or afraid to question what is commonly accepted in their society, continue to accept them. The coda to Locke's diagnosis is the ironic twist that people forget how they came by these principles and so suppose them innate!

Though moral principles vary from group to group, and though their being unquestioned means only that they are taken blindly on trust, Locke does not think that there is no moral truth or that we cannot find it. There are moral truths but they are not to be dictated to us. They are, we shall see later, like anything else we come to know, to be worked out by "Reasoning and Discourse, and some Exercise of the Mind" (E I.iii.1: 66).

Having argued that none of our knowledge is innate or has its
origin in divine imprinting, Locke turns to give his own positive account. Since knowledge presupposes ideas, which are its materials, he first discusses them.

There is much to be said about "ideas" in seventeenth-century philosophy (see Ashworth 1972, McRae 1965, and Yolton 1975a), and Chapter 2 of this volume says much about Locke's own conception of them. Here we need only mention his major points. Having defined an idea as "whatsoever is the Object of the Understanding when a Man thinks" (E I.i.8: 47), Locke follows Descartes and uses "thinking" to cover not just reasoning but also all other mental activities such as sensing, perceiving, remembering, imagining. So ideas not only figure in thinking and the understanding of language, but are also identified with perceptions of objects and their qualities, and with sensations like pain.

We saw earlier that the origin of ideas is, without exception, "experience." So, for example, "our Senses, conversant about particular sensible Objects, do convey into the Mind, several distinct Perceptions of things ... And thus we come by those Ideas, we have of Yellow, White, Heat, Cold, Soft, Hard, Bitter, Sweet" (E II.i.3: 105). Prior to experience, the mind is "white Paper, void of all Characters, without any Ideas" (E II.i.2: 104). All the content of our thought must, in the end, be derived from experience. "All those sublime Thoughts, which towre above the Clouds, and reach as high as Heaven it self, take their Rise and Footing here" (E II.i.24: 118). This does not necessarily mean that we can have no idea of something of which we have had no experience. But such an idea must be a complex, derived by various mental operations of "Enlarging, Compounding, and Abstracting" (E II.i.22: 117) on ideas we have had from experience.

How is knowledge produced from such materials? To suppose that knowledge itself, rather than merely ideas, is "made out to us by our senses," unassisted and by themselves is, as noted earlier, "to leave noe roome for reason at all, which I thinke by a right traceing of those Ideas ... may come to ... knowledg" (Draft A 43: D I: 75). How, then, does reason produce knowledge from ideas?

Knowledge is defined as "the perception of the connexion and agreement, or disagreement and repugnancy of any of our Ideas" (E IV.i.2: 525). The basic thought of this is that some ideas are connected with others, and various truths reflect these connections.
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Knowledge of these truths consists in the "perception," the recognition by our understanding, of these connections. The angles of a triangle are equal to two right angles; and the idea of this equality is connected with the idea of the triangle's three angles. To know this truth about triangles is to "perceive" the connection between these ideas. Our knowledge consists in the "perception" "that Equality to two right ones, does necessarily agree to, and is inseparable from the three Angles of a Triangle" (ibid.).

Sometimes these connections are direct and immediate, and sometimes indirect, as in the case just now. We have intuitive knowledge when "the Mind perceives the Agreement or Disagreement of two Ideas immediately by themselves, without the intervention of any other"; so we can perceive directly "that Three are more than Two, and equal to One and Two" (E IV.ii.1: 530-31). This notion of an intuitive grasp of an immediate, direct connection between ideas that were originally derived from experience is, of course, Locke's promised replacement for the doctrine of innate knowledge. It is his explanation of our knowledge of propositions that "the Mind at very first Proposal, immediately closes with, and assents to" (E I.i.17: 56).

We have demonstrative knowledge when the connection between two ideas is indirect and mediated by other ideas. "By an immediate view and comparing them" we cannot know that the angles of a triangle are equal to two right angles. A proof is needed. Our mind has to "find out some other Angles, to which the three Angles of a Triangle have an Equality, and finding those equal to two right ones, comes to know their Equality to two right ones" (E IV.ii.2: 532). A straight line across an apex of a triangle and parallel to the opposite side will produce these "other Angles." Of the three angles on that line, which together equal two right angles, one is one of the angles of the triangle, and the others together equal the other two angles of the triangle; and so the triangle's three angles equal two right angles.

Besides the two "degrees" of intuitive and demonstrative knowledge Locke notes a third, sensitive knowledge. This is knowledge of "the existence of particular external Objects, by that perception and Consciousness we have of the actual entrance of Ideas from them" (E IV.ii.14: 537-38). Whereas (excepting the intuitive knowledge of our own existence and the demonstrative knowledge of God's) the former concern generalities (such as that triangles have angles
adding to two right angles), the latter concerns particularities (such as the reality of what is now going on before my eyes). Another, and connected, difference is that this “degree” of knowledge does not fit Locke’s official definition. Sensitive knowledge is not knowledge of some connection between two ideas, but knowledge of the existence now of something in the world corresponding to our present perceptions or ideas. It will be discussed later, when Locke’s account of the extent of our knowledge of general truths has been detailed.

These three “degrees” of knowledge cut across a fourfold classification of the agreement or connection between ideas, the perception of which constitutes knowledge, into “sorts” (E IV.i.3: 525): “Identity, or Diversity”; “Relation”; “Co-existence, or necessary connexion”; and “Real Existence.” The four sorts of proposition these generate are, respectively and roughly, propositions such as that “white is white” or that “three is more than two” (which are intuitively known); general propositions such as those about geometrical figures (which are intuitively or demonstratively known); general propositions about the properties of substances such as gold (about which, as we will see, we have little knowledge); and, leaving aside the intuitively and demonstratively known propositions that we and God really exist, propositions sensitively known.4

Now it is plausible to say of our knowledge of the properties of triangles in general that it is not “made out to us by our senses” and is based on our intellectual grasp of connections between ideas. But it is not plausible to say so of our knowledge of silver in general (that, e.g., it dissolves in nitric acid) or of gold (that it does not so dissolve). In these cases there is no discoverable connection between our ideas, and we are “left only to Observation and Experiment” (E IV.iii.28: 558). In these cases it does look as though our knowledge is “made out to us by our senses” and not by our reasoning about ideas. Locke’s position on this is, simply, that these are not cases of knowledge. Knowledge is the perception of connections between ideas, so where we do other than perceive such connections we do not have knowledge. What we do have is what he calls “belief” or “opinion” (E IV.xv.3: 655).

In the absence of intuitive or demonstrative knowledge we must exercise judgment about probabilities and what to believe, and Locke devotes a handful of chapters to this investigation of “the Grounds and Degrees of Belief, Opinion, and Assent” (E I.i.2: 43).
We do not find in these what hindsight might lead us to expect. In them Locke is not much interested in the extent to which “Observation and Experiment” justify general beliefs and expectations about the properties of material substances that go beyond that observation, nor is he interested in how we decide just which general beliefs we should form on its basis. There is, that is to say, little interest in what became known as Hume’s problem of induction, and there is nothing of the kind of the canons of inductive logic later drawn up by John Stuart Mill. He does at one point acknowledge that his experience that this piece of gold is malleable “makes me not certain, that it is so, in all, or any other” similar thing [E IV.xii.9: 644]. But his references to “common Experience” and “the ordinary course of Nature” [E IV.xvi.9: 663], and to what “our own and other Men's constant Observation has found always to be after the same manner” [E IV.xvi.6: 661], are not problematic for him in the way they would be for later philosophy. His interest, which he shares with his contemporaries, including the natural philosophers of the Royal Society, is in the rather different matter of the extent to which our own experience, the testimony of others and of written records, lend support to the probability of beliefs about the likelihood of various particular events, both ordinary and miraculous [see Shapiro 1983: Chap. 2].

There is a close relation between Locke's notion of “knowledge” and the more recent one of “a priori” or “conceptual knowledge.” He says that “in some of our Ideas there are certain Relations, Habitudes, and Connexions, so visibly included in the Nature of the Ideas themselves, that we cannot conceive them separable from them, by any Power whatsoever. And in these only, we are capable of certain and universal Knowledge” [E IV.iii.29: 559], and this runs parallel to what is said in this century in explanation of knowledge of the a priori kind such as we have in mathematics and geometry.

There is an equally close relation between Locke's notion of “belief,” which is based on “Observation and Experiment” because of “a want of a discoverable Connection between those Ideas which we have” [E IV.iii.28: 558], and the notion of “a posteriori knowledge” of the kind which we have in a systematic form in empirical sciences such as chemistry. But just as Locke would not call such empirical knowledge “knowledge,” but rather “belief,” so he would not call chemistry (and other parts of what was then known as...
"natural philosophy") "a science": a "science" is a body of "knowledge," not one of "belief." So though geometry and arithmetic are sciences for him, and though – so he says – morality could be one, "natural Philosophy is not capable of being made a Science" (E IV-xii.10: 645). These facts – that Locke is not thinking in terms of two kinds of knowledge, and that he sees geometry but not natural philosophy as a science – are symptomatic of differences underlying the similarity between his knowledge-belief distinction and the more recent distinction between a priori and empirical knowledge. These will be reviewed later.

In some cases, then, our understandings grasp necessary connections between our ideas, and in others they do not. In some cases we have "knowledge," and in others we have only "belief" or "opinion." Why is this? The briefest answer is that it is because in some cases our ideas (what Locke calls nominal essences) are ideas of (what Locke calls) real essences, and in others they are not. But this needs explaining.

In claiming that all ideas come from experience, Locke distinguished between simple and complex ideas. At the same time he categorized complex ideas into (among others) substances and modes. The first of these divisions is discussed in this volume in Chapter 2, the second in Chapter 5, but something needs to be said about them here too. They are important for Locke's theory of knowledge, as is evident from the fact that geometrical figures (about which we can have "knowledge") are modes, whereas things such as gold and lead (those things whose properties interest the natural philosopher and about which he has "beliefs") are substances.

The nominal essence of something, mode or substance, is our idea of that thing. So the nominal essence of a triangle or of gold is what we mean by the word "triangle" or "gold," in the sense of being a description or set of characteristics that something must have in order for us to count it as a "triangle" or "gold." It is, Locke says, "nothing but that abstract Idea to which the Name is annexed: So that every thing contained in that Idea, is essential to that Sort" (E III.vi.2: 439). The real essence of something is its "very being . . . whereby it is, what it is" (E III.iii.15: 417); it is that "upon which depends this nominal Essence, and all the Properties of that Sort"
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(E III.vi.2: 439), that “on which all the properties of the Species depend, and from which alone they all flow” (E III.v.14: 436–37).

The wonderfully elaborate Strasbourg Cathedral clock provides Locke with a good illustration for this distinction. In Strasbourg on market day, the “gazing Country-man” (E III.vi.3: 440) would be struck by the representation of the moving planets, the lifelike figures that moved on the hours, the mechanical cock that crowed at noon, and other such features of this famous clock. He would doubtless be inclined to accept that there must be something (probably some mechanism of some sort, he would suppose) about the clock that gives rise to all these features by which he recognizes it. But he would know nothing of the complex system of cogs and wheels, which is what the clock would be to the cathedral horologist. In effect, then, the ideas the countryman and the horologist have of the clock, their nominal essences, are importantly different. The countryman’s is of some of its observable features and characteristics; the horologist’s is of its real essence, of what gives rise to those observable features and characteristics, and so which explains the clock’s possession of them.

To allow of something that it has a real essence is to allow that there is something which it fundamentally is and which gives rise to, or explains its having, its characteristic features and properties. If we felt that all there was to it were characteristic features and did not accept that there might be something else about the thing which is basic to it and which produces or explains those characteristic features, then the notion of a real essence would have no place there.

Locke makes a relatively easy application of these thoughts to substances such as lead or gold. On the one hand there are the familiar, observable, and discoverable properties of these things – their particular color, their malleability, their solubility in some acids and not in others. On the other hand, or so it is natural to think, there is something else that lead or gold really is, something on which these properties depend and which can be used to explain why lead and gold have them. Appealing to their latest theories chemists could provide us with detail about what lead or gold is and why these substances have the properties they do. Someone less knowledgeable but not totally ignorant of natural science might well
think, somewhat vaguely, in terms of the movements of elementary particles.

Chemical theory has moved on in the three hundred years since Locke, but our thoughts about these things have a basic continuity with his. Specifically, his conception of the real essence of a substance is modeled on the workings of the Strasbourg clock. He supposes that what gold, for instance, basically is, is a collection of minute particles, "insensible Corpuscles" (E IV.iii.25: 555), which only have the so-called primary qualities of solidity, size, shape, and motion. It is in terms of the arrangement and rearrangement of these particles that the observable properties of gold, such as its malleability and solubility in certain acids, are to be explained and understood. The differences in qualities of different substances stem from differences in the shape, size, arrangement, and motion of the insensible corpuscles that make up their corpuscular "real Constitutions" (E III.ix.12: 482).

Though this is the general picture Locke provides of the real essence or inner constitution of substances, he does not think we can fill in the details [in the way chemists now think they can, or as the cathedral horologist could with the Strasbourg clock]. God can certainly fill them in and possibly the angels can too (E III.vi.3: 440), but with respect to substances we humans are all "gazing Countrymen." Our nominal essences of substances, our ideas of them, are not ideas of their real essences.

Locke's picture of matter is continuous not only with ours but also with that of the classical Greek atomists, Leucippus, Democritus, and Epicurus. Their theory of the terms in which the phenomena of the material world are to be understood was revived and revitalized in the seventeenth century by Galileo, Gassendi, and Hobbes; and, in its essentials, it was accepted by Locke. But this view of what a substance's "real essence" is like, and how it gives rise to the characteristic qualities of the substance, contrasts with and replaces a quite different view that had some currency in the seventeenth century. As Locke says, "Concerning the real Essences of corporeal Substances, . . . there are . . . two Opinions." His own, the "more rational Opinion," supposes "all natural Things to have a real, but unknown Constitution of their insensible Parts, from which flow those sensible Qualities, which serve us to distinguish them one from another, according as we have Occasion to rank them
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into sorts, under common Denominations." The other, which he reject,
supposes "a certain number of Forms or Molds, wherein all natural Things, that exist, are cast, and do equally partake" (E III.iii.17: 417-18).

This rejected account of essences belongs to the Aristotelian hylemorphic account of material things. Whereas those in the recently revived atomic tradition thought of a material thing as a collection of corpuscles, the Aristotelians thought of it as a composite of "form" \(\text{[morph\phi]}\) and "matter" [hyle] by analogy with the way a human artifact such as a bronze statue is a composite of bronze matter and of a certain shape or form. It is because some naturally occurring thing has the "form" (or "essence" or "nature") that it does that it is the kind of thing it is and has its characteristic properties. On the face of it there might seem little difference between a corpuscularian real essence and a Scholastic form. After all, they both have the role of explaining and being the source of the characteristic properties of various kinds of thing. But, at least to their opponents, the Scholastics' detailed characterizations of these forms (e.g., "man is a rational animal") seemed like mere verbal definitions, rather than descriptions of what certain things really are, an appearance that was encouraged by there being strict rules for the construction of these definitions. There was a general feeling among the "new philosophers" of the seventeenth century that the Aristotelian hylemorphic theory was useless as a means of understanding the world. It has, as Locke says, "very much perplexed the Knowledge of natural Things" (E III.iii.17: 418). The structure of material things was best seen in the terms of the atomic theory, not in those of Aristotelian hylemorphism.

We saw earlier – to turn now from substances to modes – that the nominal essence of a geometrical figure such as the triangle is our idea of such a thing. Presumably, for most people, something will count as a triangle if it is "a closed figure with three straight sides." What of its real essence? Obviously this cannot be a corpuscular constitution, or arrangement of particles – for the triangle is not a material thing but rather a shape, or way in which material things may be arranged. But it is not immediately obvious what it could be. This may partially explain why some people are less than enthusiastic about the idea of modal real essences. What also may partly explain this is that Locke sometimes speaks of modes as though
they were something other than a united whole with a mind-independent coherence – which is, it seems, what something with a real essence should be like. Thus he sometimes speaks of them as though they are simply what we, at our convenience, make them to be: they are, he sometimes says, composed of "scattered and independent Ideas" connected only by the mind (E II.xxii.1, 2, 5: 288–89, 290; and E III.v.8, 10: 433, 434). It is a mistake, however, to think that modes do not really have real essences. Locke quite plainly thinks they do, and his theory of knowledge depends on their having them. Moreover considerable sense can be made of the idea.

What is required is room for a distinction between the characteristic properties of some mode, and an essence from which those properties result. Locke plainly and plausibly thinks this requirement can be met for geometrical figures. The real essence of a triangle, he says, is "a Figure including a Space between three Lines." This is "the very Essentia, or Being, of the thing it self, that Foundation from which all its Properties flow, and to which they are all inseparably annexed" (E III.iii.18: 418). He intends a parallel between (on the one hand) gold's having certain characteristic properties and their arising from gold's being matter with a certain corpuscular constitution, and (on the other hand) a triangle's having certain characteristic properties and their arising from a triangle's being a closed three-sided figure. The cases are different only in that while we are "gazing Country-men" with respect to gold, ignorant of what precisely its real essence is, we do have knowledge of the real essence of a triangle.

This last fact is what lies behind Locke's remark that "in the Species of . . . Modes, they [sc. real and nominal essences] are always the same: But in Substances, always quite different" (ibid.). This remark should not be taken as a definition, a necessary truth about substances and modes. For, as Locke allows, it is possible to be ignorant of the real essence of an ellipse – it has to do with its relation to two points, which are called its foci – and so to have a nominal essence different from it and solely in terms of some of this mode's more obvious properties (E II.xxxi.10–11: 382).

Though considerable sense can be made of the idea of modal real essences there are problems with it. Some people feel it is arbitrary to say that "closed three-sided figure" is a triangle's real essence,
what a triangle is, and that having three angles which sum to two right angles is a property that results from that essence. Since all and only closed three-sided figures have angles summing to two right angles, the latter has, they feel, an equal claim to be the real essence. A further problem is that with other modes, such as "pro-cession" (E III.v.13: 436) and "parricide" (E II.xxii.4: 290), it is not obvious how one would even attempt to distinguish between essence and dependent properties.

In summary, then, our ideas (nominal essences) of substances are not of their real essences; our ideas (nominal essences) of modes at least often are. Why does this mean that "natural Philosophy is not capable of being made a Science" (E IV.xii.10: 645), while in geometry we can make systematic deductions? Quite simply, our idea of gold not being of its real essence from which its properties flow, there is no discernible connection between our ideas of gold and of those properties. Quite the contrary would be the case if our idea of gold were of its real essence. On the other hand, our idea of a triangle is of its real essence from which its properties flow, and so those properties are deducible from our idea of a triangle (E II.xxxi.6: 378–80).

So when our ideas are ideas of real essences, we can get "certain and universal Knowledge" (E IV.iii.29: 559) by the a priori methods of intuition and demonstration. This is why Locke says that "Moral-ity is capable of Demonstration, as well as Mathematicks" (E IV.xii.8: 643). For "the Ideas that Ethicks are conversant about" (ibid.) are, he believes, modes whose real essences we do, or could, know. By contrast, however, where, as in natural philosophy, our ideas are not of real essences, we cannot go in for demonstration and acquire real knowledge, but are dependent on beliefs formed in experience.

Substances afford Matter of very little general Knowledge; and the bare Contemplation of their abstract Ideas, will carry us but a very little way in the search of Truth and Certainty. . . . Experience here must teach me, what Reason cannot: and 'tis by trying alone, that I can certainly know, what other Qualities co-exist with those of my complex Idea, v.g. whether that yellow, heavy, fusible Body, I call Gold, be malleable, or no; which Experience . . . makes me not certain, that it is so, in all, or any other yellow, heavy, fusible Bodies, but that which I have tried. . . . Because the other
Properties of such Bodies, depending not on these, but on that unknown real Essence, on which these also depend, we cannot by them discover the rest. (E IV.xii.9: 644)

There is a contemporary context to Locke's view, that the method appropriate to natural philosophy, and to the investigation of the properties of substances, is basically that of observation. A tangible expression of this was the Royal Society of London for the Improving of Natural Knowledge, which was founded in 1660. Besides Locke, it included amongst its fellows various people who figure in histories of the development of modern science, and whom Locke refers to as "Master-Builders" of the "Commonwealth of Learning" (E Epis: 9): Robert Boyle, Christiaan Huygens, and Isaac Newton. They advocated that natural philosophy must be based on careful observation and the compilation of so-called "natural histories," accounts of observed properties - as in Boyle's General History of the Air. Thus Robert Hooke, in his account of things seen under the recently invented microscope, says that what is important in natural philosophy is "the plainness and soundness of Observations on material and obvious things" (Hooke 1665: Preface).

The Royal Society was consciously anti-Scholastic and its recommendation for natural philosophy of what Locke called the "Historical, plain Method" (E I.i.2: 44) was married to its rejection of the ultimately Aristotelian idea of scientia. According to this doctrine, scientia is knowledge structured in a certain way which gives an understanding of why certain things are necessarily so. One would have "scientific understanding" of something, say gold's being malleable, if one had demonstrated the necessity of its being so by deriving it, from first principles, as the conclusion of certain syllogistic arguments that had to be constructed according to strict canons of form. Among these first principles would be things that, so it was said, have to be known if anything is to be known - "maxims" such as that it is impossible for the same thing to be and not to be. Also among these principles would be a definition, as understood according to the hylemorphic theory, of the "form" or "nature" or "real essence" of the kind of thing whose properties were under investigation. Locke and many of his contemporaries felt that, with the possible exception of geometry, no "science" as conceived in this way ever had been or could be produced. In particular the strict
syllogistic demands placed on the structure of scientia, and its association with an unacceptable account of "real essence," did not fit it for use in the study of natural phenomena. It turned attention away from things to words.\(^6\)

We have been brought back, at this point, to the similarities between Locke's distinction between knowledge and belief and the more recent distinction between two kinds of knowledge, a priori or conceptual and a posteriori or empirical. Let us now look at the differences. According to the logical positivists of this century, all a priori knowledge is, in the end, trifling and empty of content. Locke would deny that this is true of all that he calls knowledge (E IV.viii.8: 614).

He would not deny it is true of some. Given an idea of gold as a stuff that is yellow and malleable, there is a necessary connection to be perceived between being gold and being malleable; we can be certain that gold (what we count as gold) is malleable. But, in Locke's view, not all necessary connections between ideas are of this trifling sort. The necessary connection we suppose there is between the real essence or corpuscular constitution of gold and gold's malleability, is not; nor, in his view, is that connection, which we can actually perceive, between the real essence of a triangle as a closed three-sided figure and the property of having angles equal to two right angles. The certainty that a triangle has that property is – in Locke's view – informative. It is to be contrasted with the trifling verbal certainty that three-sided figures have three sides. Whether we think Locke is right depends on how much sympathy we have with his theory of real essence, a theory with which logical positivism shows some impatience.

An antipathy to real essences underlies a further difference between the Lockean and the more recent distinction. The idea that all a priori knowledge is trifling and lacking in content has a natural affinity with the idea that the reason why the properties of substances are not known a priori, the reason why natural philosophy is not (in Locke's terms) a science, lies in the nature of things and not (as for Locke) in the nature of our understandings. To the positivists' way of thinking the natural world is contingent through and through; hence there could be no other way to acquire knowledge of it except by observation and experiment. But to Locke's way of thinking there are necessities in the world; for substances do have
real essences from which their characteristic properties flow. Our reliance on observation and experiment is a consequence simply of our ignorance of these essences.

Had we such Ideas of Substances, as to know what real Constitutions produce those sensible Qualities we find in them, . . . we could, by the specifick Ideas of their real Essences in our own Minds, more certainly find out their Properties . . . than we can now by our Senses: and to know the Properties of Gold, it would be no more necessary, that Gold should exist, and that we should make Experiments upon it, than it is necessary for the knowing the Properties of a Triangle, that a Triangle should exist in any Matter, the Idea in our Minds would serve for the one, as well as the other. (E IV.vi.i: 585)

Besides looking forward to a more recent distinction, Locke's distinction between knowledge and belief also looks back to an older one: the Aristotelian distinction between "scientific knowledge" and "opinion." Knowledge, as defined and explained in the Aristotelian tradition, has to do with what must be so and cannot be otherwise; and, for Locke too, "knowledge" is "certain and universal" (E IV.iii.29: 559). We have seen, though, that whereas for the Aristotelian knowledge has a structure arising from its development and acquisition on the basis of syllogisms that have maxims and definitions for premises, for Locke it does not. "Science" for him is a body of deductively related knowledge, but he places no particular value on syllogistic methods and abstract maxims.

As for "opinion," it has to do with contingencies on the traditional view, with things that might have been otherwise. As we have seen, however, this is not the case for Locke. It is true that, for him, natural philosophy, that collection of "beliefs" about substances and their properties, is not a science or body of knowledge. But this is because of the nature of our understandings, and not because of the nature of things. So whereas for the Scholastic tradition "opinion" concerns contingencies, for Locke it concerns what to us seem like contingencies, but what in reality may be universal certainties.

A feature of the Scholastic tradition was that the pursuit of scientia was the proper use of man's reason. Man is a rational animal, and one thing that was taken to mean is that he is a syllogistic reasoner. Opinion is not worth or even capable of serious and systematic attention. Indeed, talk of "system" is out of place in its connection, for it would imply an arrangement structured by syllogistic
demonstrations from first principles. But Locke thinks that “opinion” is worth systematically searching for and having. There can be a body of it, and it is “natural philosophy.” Even for him, it is, of course, not a “science”; and to that extent Locke is under some influence from the older tradition. But, as in the activities of many of his colleagues in the Royal Society, it can be systematically pursued; and to that extent, and as witnessed to by his occasionally calling the beliefs of natural philosophy “experimental Knowledge” (E IV.iii.29: 560; E IV.vi.7: 582), he is throwing off that influence.

Now, though we have no knowledge in natural philosophy, geometry and mathematics are not the only areas where we do have it. Commenting that it has indeed “been generally taken for granted, that Mathematicks alone are capable of demonstrative certainty” (E IV.ii.9: 534), Locke says that this assumption is false. Because the relevant ideas are modes, whose real essences we either do or might come to know, he thinks, perhaps surprisingly, that it may be possible to “place Morality amongst the Sciences capable of Demonstration: wherein I doubt not, but from self-evident Propositions, by necessary Consequences, as incontestable as those in Mathematicks, the measures of right and wrong might be made out” (E IV.iii.18: 549). This moral science would be based on two ideas. First there would be the idea of God. This idea, of “a supreme Being, infinite in Power, Goodness, and Wisdom” (ibid.), is, of course, not innate but is constructed on the basis of experience (E II.xxiii.33: 314; E IV.x.1: 619). It is a foundation for ethics because moral rules are simply the dictates of such a being: “God has given a Rule whereby Men should govern themselves . . . This is the only true touchstone of moral Rectitude” (E II.xxviii.8: 352). The second basic idea would be that of ourselves as beings with understanding and rationality, and who are created by and dependent on God. From this it self-evidently follows both that we can understand God’s will and that we should obey it: we “as certainly know that Man is to honour, fear, and obey GOD, as . . . that Three, Four, and Seven, are less than Fifteen” (E IV.xiii.3: 651).

We need to know too, of course, that, beyond our idea of Him, God really does exist; and He Himself has provided us with the means to do so, by creating us with the power of reason and so the ability to demonstrate His existence. Locke says in the Essay (E IV.x.7: 622) that the traditional ontological proof should not be used as the only
argument for such an important conclusion; later he actually re-
jected it (Deus: L II: 133–39). His objection is that the existence of
something can hardly be proved from a mere idea, but only from
the existence of other things. His preferred proof is not open to this
objection. Very briefly, starting from our intuitive knowledge of the
fact that we exist as intelligent things, he concludes that only an
eternal intelligent being could have created us (E IV.xi.1–5: 619–21).

Locke recognized that no one had yet produced a demonstrative
morality and, despite urging from his friend William Molyneux, did
not attempt it himself. But this does not mean to Locke that human
reason has failed completely in “its great and proper business of mo-
rality” (W VII: 140), for we do have some moral knowledge, acquired
in this fashion (E I.iii.1, 4: 65–66, 68; E II.xxviii.8: 352). But, as he
makes particularly clear in The Reasonableness of Christianity, this
process is not easy, and moral knowledge is hard won. There is, how-
ever, another source, alternative to our reason and understanding,
and one to which those who have neither the time nor the ability
may fortunately have recourse. “The Gospel,” Locke explains, “con-
tains so perfect a body of Ethicks, that reason may be excused from
that enquiry” (Letter 2059: C V: 595). It follows, naturally, that our
relation to any moral principles arrived at in this way, from the writ-
ten revelations of the Gospels and not by our reason and the percep-
tion of connections between ideas, can only be one of belief, not
of knowledge.

We saw that in the background to what Locke had to say about the
origin and extent of knowledge was the debate provoked by Sextus
Empiricus. It is there in the background to what he says in particular
about the place of reason in the discovery of moral and religious
truth, and the importance of the Gospels as a source. For one partic-
ular arena where that debate took place was in the religious contro-
versies of the Reformation. The view had been that religious truths
were determined by and to be sought in the traditions of the Catho-
lic church, and in the decrees of the pope and of church councils.
Martin Luther’s challenge was that they were determined by, and to
be found in the Scriptures. There is some evidence that it was this
specific question about the sources of religious and moral knowl-
edge that initially led to Locke’s writing the Essay.

In the course of his rejection of innateness Locke inveighs against
people who “taking things upon trust, misimploy their power of
Assent, by lazily enslaving their Minds, to the Dictates and Dominion of others, in Doctrines, which it is their duty carefully to examine" (E I.iv.22: 99; E IV.xx.17: 718–19). So for him, the possible sources of religious and moral truth come down to two: one's own reason and the Scriptures, "the light of Nature, or the voice of Revelation" (E II.xxviii.8: 352). The central point of his discussion of the relation between these two is that reason has supremacy over revelation. But this does not mean simply that reasoned knowledge is superior to faith, or revelation-based belief. It means also that revelation is answerable to reason.

Some moral truths are discoverable both by reason and by a reading of the Gospels (E IV.xviii.4: 690–91). But the revelations of the latter cannot make us more certain of the discoveries of reason. We need to know we are faced with a genuine revelation, and we cannot be as certain of this as we are of our reason-based knowledge. "The Knowledge, we have, that this Revelation came at first from GOD, can never be so sure, as the Knowledge we have from the clear and distinct Perception of the Agreement, or Disagreement of our own Ideas" (E IV.xviii.4: 691). Similarly, in the case of some divergence, we should follow reason rather than the supposed revelation. It "would be to subvert the Principles, and Foundations of all Knowledge . . . if . . . what we certainly know, give way to what we may possibly be mistaken in" (E IV.xviii.5: 692).

But the human understanding does have its limits, and some supposedly revealed truths (e.g., "that the dead shall rise, and live again" [E IV.xviii.7: 694]) are "above Reason" and undiscoverable by it. This still does not mean, however, that reason has no relevance for our acceptance of them. If something is a revelation from God it is bound to be true: "But whether it be a divine Revelation, or no, Reason must judge" (E IV.xviii.10: 695).

A further way in which the revelation of truths that are "above Reason" places no restriction on the supremacy of reason is that belief in them is not necessary for salvation. Anything that is necessary for salvation can be reached by our natural faculties. God, Locke says, has "given all Mankind so sufficient a light of Reason, that they to whom this written Word [the Bible] never came, could not [when-ever they set themselves to search] either doubt of the Being of a GOD, or of the Obedience due to Him" (E III.ix.23: 490).

The regulation of revelation by reason distinguishes faith from
what was called "enthusiasm" – a religious enthusiast being one who "laying by Reason would set up Revelation without it" [E IV.xix.3: 698]. Locke's rejection of enthusiasm, and his allocation of a central role to reason in morality and religion, give him a place in the history of the development of Deism. These are topics of discussion in Chapter 7 of this volume.

Our discussion of the extent of knowledge has so far had as its focus general propositions that have to do with the first three kinds of "connexion and agreement" between ideas – "Identity, or Diversity," "Relation," and "Co-existence, or necessary connexion." Let us turn now to the fourth kind of agreement, and so to our knowledge of particular "Real Existence." We have intuitive knowledge of our own existence and demonstrative knowledge of God's, but what we have of "the Existence of any other thing" is sensitive knowledge [E IV.xi.1: 630]. The poor fit here with Locke's official definition of knowledge was noted earlier. Sensitive knowledge of some real existence is not knowledge of a connection between two ideas but knowledge of the existence of something in reality corresponding to our perceptions or ideas.

There are, of course, traditional skeptical arguments against the possibility of any such knowledge. Locke rehearses them: though we may be sure that we have an idea in our minds we cannot "thence certainly infer the existence of any thing without us, which corresponds to that Idea, . . . because Men may have such Ideas in their Minds, when no such Thing exists" [E IV.ii.14: 537]. But he is unimpressed. Though he concedes that the certainty he has from "the Testimony of my Eyes" is not so perfect or absolute as that from intuition or demonstration, it yet "deserves the name of Knowledge" [E IV.xi.2–3: 631]. He appeals to us to acknowledge that the ideas we have in veridical perception just are qualitatively different from those of, for example, memory. The skeptic would feel that this begs the question, for how do we know what veridical perceptions are like when the problem is to know whether we have any veridical perceptions? To say, as Locke does, that "the actual receiving of Ideas from without . . . makes us know, that something doth exist at that time without us, which causes that Idea in us" [E IV.xi.2: 630] hardly meets the worry. How do we know we are actually receiving ideas "from without" and not dreaming? But Locke's interests and intellectual concerns are quite other than
those of the skeptics who put such questions. His response to them fits with what we noted at the outset, namely his concern with how we should live our lives: “no body can, in earnest, be so sceptical, as to be uncertain of the Existence of those Things which he sees and feels” [E IV.xi.3: 631]. Meeting the questions with sarcasm and impatience he concludes that “we certainly finding, that Pleasure or Pain follows upon the application of certain Objects to us, whose Existence we perceive, or dream that we perceive, by our Senses, this certainty is as great as our Happiness, or Misery, beyond which, we have no concernment to know, or to be” [E IV.ii.14: 537].

In Locke’s view, then, though we are fitted to know some things, we are not fitted to know everything. The most obvious and large-scale limitation is the lack of scientific knowledge in natural philosophy, but there are others that Locke cites – all of them standard and frequently cited problems in seventeenth-century philosophy. We will never know how physical changes in the body produce ideas in the mind, and we will never know how the mind acts on the body to move it – “How any thought should produce a motion in Body is as remote from the nature of our Ideas, as how any Body should produce any Thought in the Mind” [E IV.iii.28: 559]. We will never know whether an immaterial mind is required for thought or whether thinking could be an ability “given to some Systems of Matter fitly disposed” [E IV.iii.6: 540], and we are quite in the dark as to “how the solid parts of Body are united, or cohere together to make Extension” [E II.xxiii.23: 308].

But we do not just happen to have the faculties and abilities we have. They are those which God chose to give us, and we “have Cause enough to magnify the bountiful Author of our Being, for that Portion and Degree of Knowledge, he has bestowed on us” [E I.i.5: 45]. Locke does not explain why there is any need for geometry to be a science, and hence why rules of thumb such as builders use are not sufficient for practical purposes. But it plainly does not matter to him that natural philosophy will never be one. We have no need of strict knowledge of the properties and characteristics of material substances in order to acquire “whatsoever is necessary for the Conveniences of Life” [ibid.]: from “Experiments and Historical Observations ... we may draw Advantages of Ease and Health, and thereby increase our stock of Conveniences for this Life” [E IV.xii.10: 645].
There is no doubt in Locke's mind that these practical matters are important. He speaks with passion of how benighted the American Indians were who lacked the use of iron (E IV.xii.11: 646). But to want to go beyond such matters of practical importance is to want something that is “of noe solid advantage to us nor help to make our lives the happier” and is “but the uselesse employments of idle or over curious brains which amuse them selves about things out of which they can by noe meanes draw any reall benefit” (Journal 1677: B MS Locke f.2: 46).

But our aim here in this world is not merely to live a comfortable life, to have “a quiet prosperous passage through” it. This is secondary to our real concern which is to find our way into the next world. "Heaven being our great businesse and interest the knowledg which may direct us thither is certainly soe too, soe that this is without peradventure the study which ought to take up the first and cheifest place in our thoughts” (Journal 1677: B MS Locke f.2: 92–93). Men have reason to thank God too, then, “that they have Light enough to lead them to the Knowledge of their Maker, and the sight of their own Duties” (E I.i.5: 45). So it is, says Locke, that “I think I may conclude, that Morality is the proper Science, and Business of Man-kind in general” (E IV.xii.11: 646).

NOTES

1 The disagreement concerns whether Locke is to be placed in a tradition of “constructive skepticism” (see Van Leeuwen 1963: 121, 124; Woolhouse 1983: 14; and, in opposition, Ferreira 1986: 211–22).
2 Two classic discussions of this issue are Gibson 1917: 39–44 and Yolton 1956: 26–71.
3 Lowde is replying to Parker 1666.
4 Note that “co-existence” is sometimes taken to refer not only, e.g., to the universal concomitance of the properties of gold in general (about which, we shall see, we have little knowledge), but also to the coinstantiation of those of a particular piece of gold at a particular time (about which, Locke says [E IV.xii.9: 644], we do have “certain,” presumably “sensitive” [E IV.iii.29: 560], knowledge).
6 Locke’s attack on various parts of this doctrine can be found throughout
Locke's theory of knowledge

the Essay – see Woolhouse 1983: 65–80. His rejection of innate knowledge can be seen as a facet of it, for, though diverging from Aristotle in this respect, some seventeenth-century defenders of scientia thought of "maxims" or "speculative principles" as being innate.