The Powers we have by means of our External senses

No. 2 of *Essays on the Intellectual Powers of Man*

Thomas Reid

[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 between brackets in normal-sized type.

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Chapter 12: Hume's views

Two volumes of the *Treatise of Human Nature* were published in 1739 and the third in 1740. The doctrine contained in this *Treatise* was published in a more popular form in Hume's *Philosophical Essays*, of which there have been several editions. [Hume died about eight years before the present work appeared.] What other authors from Descartes on had called 'ideas' Hume distinguishes into two kinds:

> •impressions, including all our sensations, passions, and emotions; and
>
> •ideas, including the faint images of impressions when we remember or imagine them.

He sets out with a principle that he doesn't offer to prove because he thinks it doesn't need one, namely:

> All the perceptions of the human mind come down to these two kinds—•impressions and •ideas.

This proposition is the foundation on which the whole of Hume's system rests, and from which it is built with great acuteness and ingenuity; so we might wish that he had told us what his authority was for it. But ·he doesn't; he· leaves us to *guess* whether it is offered as a self-evident first principle or rather is to be accepted on the authority of philosophers.

Locke had taught us that all the immediate objects of human knowledge are ideas in the mind. Berkeley working from this same basis easily demonstrated that there is no material world. He thought that for the purposes both philosophy and religion we would find no loss but great benefit in getting rid of the material world. But. . . .he was unwilling to give up the world of ·minds or· spirits. He clearly saw that ideas are no more fit to represent minds than they are to represent bodies. Perhaps he saw that if we perceived only *ideas of* minds, we couldn't infer their real existence from the existence of their ideas, any more than we can infer the existence of matter from the idea of it; and so, while he gives up the material world in favour of the system of ideas, he gives up half of that system in favour of the world of minds; and maintains that we don't need ideas to think, speak, and reason intelligibly about minds and their qualities and operations.

Hume shows no such bias in favour of the world of minds. He adopts the *whole* theory of ideas, ·not just Berkeley's half of it·; and that enables him to 'show' that the universe contains no matter *and no minds*—nothing but impressions and ideas. What we call a 'body' is only a bundle of sensations; and what we call the 'mind' is only a bundle of thoughts, passions, and emotions, without any subject. ·i.e. without any *thing that has* the thought, passion or emotion·. . . .

When a system of consequences is intelligently and soundly inferred from a few very abstract principles, that is of real utility in science and may be a help towards gaining real knowledge; and this is true even if the inferred system is in itself absurd. Hume's metaphysical writings have this merit in high degree. . . .

It is amusing to consider that while philosophers have been labouring by means of 'ideas' to explain perception and the other operations of the mind, those ideas have gradually usurped the place of perception, object, and even the mind itself, supplanting the very things they were introduced to explain! Descartes reduced all the operations of the understanding to •perception, which is natural for someone who believes that those operations are only different ways of •perceiving ideas in our own minds. Locke runs •ideas

together sometimes with the •perception of an external object and sometimes with the •external object itself. In Berkeley's system the idea is the only object, and yet it is often run together with the perception of it. But in Hume's system the idea—or the impression, which is only a more lively idea—is mind, perception, and object all in one! So that by the term 'perception' in Hume's system we must understand

> •the mind itself; •all its operations, both of understanding and will; and •all the objects of these operations.

With 'perception' taken in this sense, he divides perceptions into our more lively perceptions, which he calls impressions, and the less lively ones, which he calls ideas. For comments, look back at what I said in Essay 1, chapter 1 about the meanings of the words 'perceive' [item 6], 'object' [item 9] and 'impression' [item 11].

Philosophers have differed greatly with regard to the origin of our ideas, the sources from which they are derived. The Aristotelians held that all knowledge initially comes from the senses, and this ancient doctrine seems to be revived by some recent French philosophers and by Hartley and Priestley among the British. Descartes maintained that many of our ideas are innate. Locke energetically opposed the doctrine of innate ideas, employing the whole of *Essay* I against it. But he allows two different sources of ideas, sensation and reflection. . . . The main purpose of *Essay* II is to show that absolutely *all* our simple ideas come from the one or other or both of these sources. This leads Locke into some paradoxes, although in general he doesn't care for paradoxes. And if he had foreseen all the consequences that can be inferred from his account of the origin of our ideas, he would probably have examined it more carefully!

Hume adopts Locke's account of the origin of our ideas, and infers from it that we have no idea of substance, bodily or mental; no idea of power; no idea of *cause of x* except the idea of something that occurs before x does and is constantly conjoined with it; in short that we can have no idea of anything except our sensations and the operations of mind that we are conscious of.

He doesn't grant to the mind any power in forming its ideas and impressions; and that's not surprising, because he holds that we don't have any idea of power, and the mind is nothing but the sequence of impressions and ideas of which we are intimately conscious.

So he thinks that our impressions arise from unknown causes, and that the impressions are the causes of their corresponding ideas. All he means by this is that they always go before the ideas; for ·according to him· that's all that is needed to constitute the relation of cause and effect.

As for the order and succession of our ideas, he thinks that that is governed by •three laws of attraction or association, which he takes to be basic properties of the ideas—properties that lead ideas to attract (so to speak), or associate themselves with, other ideas that either •resemble them or •have been contiguous to them in time and place or •are related to them by the relations of cause and effect. (Actually, the second of these seems to include the third, since according to Hume causation implies nothing more than contiguity in time and place.). . . .

Chapter 13: Arnauld's views

In this sketch of philosophers' opinions about ideas we must not omit Antoine Arnauld, doctor of the Sorbonne, who in the year 1683 published his book *True and False Ideas* in opposition to the system of Malebranche that I have described. I couldn't find this book until about ten years ago; I believe it is rare.

Though Arnauld wrote before Locke, Berkeley and Hume, I have kept until last my account of his views, because I find it hard to determine whether he •adopted the common theory of ideas or whether he is on his own in rejecting it altogether as a fiction of philosophers. ['Common theory' is explained on page 56.]

The controversy between Malebranche and Arnauld inevitably led them to consider what kind of things ideas are—a point on which other philosophers had very generally been silent. Both of them proclaimed the universally accepted doctrine •that we don't perceive material things immediately, •that the immediate objects of our thought are their ideas, and •that it is in the idea of any thing that we perceive its properties.

I should explain at the outset that both these authors use 'perception' as Descartes had done before them—namely, to signify every operation of the understanding. 'To think, to know, to perceive, are the same thing', says Arnauld. I should also note that they both call the various operations of the mind 'modifications' of the mind. ['Modification' means 'state or quality or property'. The force of saying that thinking is a modification of the mind is that the rock-bottom truth about a given mind's thinking has the form *it thinks*, not *it performs a thought*, suggesting that the mind stands in a certain relation to something other than itself.]. . . .

·ARNAULD'S TARGET: MALEBRANCHE·

The things that the mind perceives, says Malebranche, are of two kinds: they are either •in the mind itself or •external to it. The things in the mind are all its different modifications—its sensations, imaginations, pure thinkings, passions, and affections. These are immediately perceived: we are conscious of them, and have no need of ideas to represent them to us.

Things external to the mind are either bodily or mental, With regard to mental objects of thought, he thinks it possible that in another state ·after death· minds may become immediate objects of our understandings, and thus be perceived without ideas; and that ·even now higher-than-human· spirits may immediately perceive each other and communicate their thoughts back and forth without signs and without ideas.

But leaving this as an open question, he holds it to be undeniable that material things can't be perceived immediately but only by the mediation of ideas. He thought it likewise undeniable that the idea must be immediately present to the mind, that it must touch the soul (as it were) and affect its perception of the object.

These principles force us to choose: either the idea is some modification of the *human* mind or it is an idea in the *divine* mind that is always intimately present to our minds. Having reached this parting of the ways, Malebranche first considers all the possible ways such a modification may be produced in our mind as the item we call an 'idea of a material object'—always taking it for granted that it must be an •object that is perceived, something different from the mind's •act in perceiving it. He finds insuperable objections

against every hypothesis about how such ideas might be produced in *our* minds, and therefore concludes that the immediate objects of perception are the ideas in *the mind of God*.

·ARNAULD ATTACKS THE TARGET·

Against this system Arnauld wrote his book *True and False Ideas*. He doesn't bring objections against Malebranche's parting of the ways, but he maintains •that ·at this fork in the road Malebranche took the wrong direction, i.e. •that· ideas are modifications of *our* minds. And when he looks for a modification of the human mind that could be called 'idea of an external object', the only one he can find is *perception*.

> I take the •idea of an object and the •perception of an object to be the same thing. There may be other things to which the name 'idea' could also be given. But it is certain that there *are* ideas in this sense of 'idea', and that these ideas are either attributes or modifications of our minds.

This, I think, attacked Malebranche's system on its weak side, which was also the side on which an attack was least expected. Philosophers had been so unanimous in maintaining that we don't perceive external objects immediately, but only by certain representative images of them called 'ideas', that Malebranche might well think his system was safe on that flank, and that the only remaining question was: In what subject—·what thinking substance·—are those ideas located—the human mind or God's mind?

But, says Arnauld, those 'ideas' are mere chimeras—fictions of philosophers; there are no such things in Nature; so that no question arises as to whether they are in the divine or in the human mind. The only true and real ideas are our *perceptions*, which all philosophers (including Malebranche) agree are acts or modifications of our own minds. . . .

Of all the powers of our mind, the external senses are thought to be the best understood and their objects are the most familiar. Hence we think of other powers in terms of the external senses, and transfer to other powers the language that properly belongs to them. ·Here is an example of such a transfer·. An object of the senses can't be perceived unless it is •present to the ·relevant· sense or •within its sphere. This leads us to say, by analogy, of anything that we are thinking about that it is 'present' to the mind or is 'in' the mind. But this 'presence' is only metaphorical or analogical; and Arnauld calls it 'objective presence' to distinguish it from the local presence that is required in objects that are perceived by sense. But because both are called by the same name, they come to be run together, and things that belong only to real or local presence are attributed also to the metaphorical 'presence'. [In this context, 'objective' is used in a sense that it did once have, to mean something like 'representative'—something is 'objectively present in the mind' if the mind is thinking about it. (See page 80.) 'Local presence' is just presence in the most literal sense, in which something's being present to my mind depends on *where* it is, its *location*.]

Similarly, we are accustomed to seeing objects by their images in a mirror or in water; which leads us by analogy to think that objects can be presented to the memory or imagination in some similar manner, through images that philosophers have called 'ideas'.

By such prejudices and analogies, Arnauld thinks, men have been led to believe that the objects of memory and imagination must be presented to the mind by images or ideas; and philosophers have been more carried away by these prejudices than even the vulgar, because they could use this theory to 'explain' the various operations of the mind—a matter in which the vulgar take no interest.

But he thinks that Descartes overcame •these prejudices, and that he used 'idea' to signify the same thing as

'perception', so he was surprised that an admiring disciple of Descartes such as Malebranche was carried away by •them. It is strange indeed that the two most eminent disciples. of Descartes and his contemporaries should differ so crucially regarding his doctrine about ideas.

I shan't try to tell you how this controversy between those two acute philosophers developed in the subsequent defences and replies, because I haven't been able to see them. ·All I know about them is that· after much reasoning and some animosity, each continued in his own opinion and left his antagonist where he found him. Malebranche's view that we see all things in God soon died away of itself; and Arnauld's notion of ideas seems to have been given less attention than it deserved by the philosophers who came after him—perhaps in part because he seems in a way to have relinquished it by trying to reconcile it to the common doctrine concerning ideas.

[Reid then spends more than a page giving textual evidence of Arnauld's trying to reconcile his position with 'the common doctrine'. He ends the chapter thus:]

Summing up: If Arnauld had taken his stand on his doctrine that ideas considered as representative images of external objects are a mere philosophers' fiction, and had boldly rejected •the doctrine of Descartes as well as of the other philosophers concerning those fictitious beings and •all the ways of speaking that imply their existence, I would have thought him more self-consistent, and his doctrine concerning ideas more rational and intelligible, than that of any other author I know of who has discussed this subject.

Chapter 14: Thoughts about the common theory of ideas

After such a long account of the views of philosophers ancient and modern concerning ideas, it may seem presumptuous to question whether ideas exist! But no philosophical opinion, however ancient and however generally accepted, ought to rest on authority. It isn't presumptuous to require evidence for it, or to let our belief be governed by the evidence we can find.

Please bear in mind: If by 'ideas' are meant only the •acts or operations of our minds in perceiving, remembering, or imagining objects, I am far from questioning their existence; we are conscious of those •acts every day and every hour of our lives, and I don't think any sane man ever doubted the real existence of the mental operations of which he is conscious. Nor is it to be doubted that the faculties God has given us enable us to conceive things that are absent as well as to perceive things that are within the reach of our senses, and that such conceptions can be more or less distinct, and more or less lively and strong. We have reason to ascribe to God distinct conceptions of all things existent and possible, and of all their relations; and if these conceptions are called his eternal 'ideas', there ought to be no dispute among philosophers about a word. The 'ideas' of whose existence I require proof are not •the operations of any mind but the supposed •objects of those operations. . . .

Nor do I dispute the existence of what the vulgar call 'objects of perception'. Everyone who acknowledges the existence of these calls them 'real things', not 'ideas'. But philosophers maintain that in addition to these there are immediate objects of perception in the mind itself, ·and that is what I am disputing·. . . . [Then a paragraph making the same point about objects of remembering and imagining. Then:]

My first thought about this philosophical opinion is that it is directly contrary to the sense of *everyone* who hasn't been instructed in philosophy. When we see the sun or moon, we have no doubt that the very objects that we immediately see are far from us and from one another, and that this is the sun and moon that God created some thousands of years ago and that have continued to move around in the heavens ever since. How astonished we are when the philosopher tells us that we are wrong about all this, that the sun and moon that we see are. . . .in our own mind, and that they didn't exist before we saw them and won't exist after we stop perceiving and thinking about them!. . . .

If a plain man uninstructed in philosophy has faith to accept these mysteries, how astonished he must be! He is brought into a new world where everything he sees, tastes, or touches is an idea—a fleeting kind of thing that he can conjure into existence or annihilate in the twinkling of an eye.

After he has calmed down, it will be natural for him to ask his philosophical instructor: 'Please, sir, are there then *no* substantial and permanent things called the "sun" and "moon", things that continue to exist whether or not we think about them?'

Here the philosophers differ. Locke and his predecessors will answer: 'Indeed there are substantial and permanent beings called the "sun" and "moon"; but they never appear to us in their own right, but only through their representatives—the ideas in our own minds—and we know nothing about them except what we can gather from those ideas.'

Berkeley and Hume would give a different answer to the question. They would assure the questioner that it is a vulgar error, a mere prejudice of the ignorant and uneducated, to think that there are any permanent and substantial beings called the 'sun' and 'moon'; that the heavenly bodies, our own bodies, and all bodies whatsoever, are nothing but ideas in our minds; and that ·they can't •represent anything outside us because they can't •resemble anything outside us, because· nothing can be *like* the ideas of one mind but the ideas of another mind. . . .

In this representation of the theory of ideas I don't think I have exaggerated or misrepresented anything; and surely that is enough to show that to the uninstructed in philosophy the theory must appear extravagant and visionary and utterly contrary to the dictates of common understanding.

There is little need for any further proof of this because it is amply acknowledged by Hume:

> It seems clear that we humans are naturally, instinctively inclined to trust our senses, and that without any reasoning—indeed, almost before the use of reason—we take it that there is an external universe that doesn't depend on our perceiving it and would have existed if there had never been any perceiving creatures or if we had all been annihilated. Even the animals are governed by a similar opinion, and maintain this belief in external objects in all their thoughts, plans and actions.
>
> It also seems clear that when men follow this blind and powerful instinct of Nature they always suppose that •the very images that their senses present to them *are* •the external objects that they perceive;

> it never crosses their minds that •sensory images are merely *representations* of •external objects. This very table that we see as white and feel as hard is believed to exist independently of our perception, and to be something external to our mind that perceives it. Our presence doesn't bring it into existence, and our absence doesn't annihilate it. It stays in existence (we think), complete and unchanging, independent of any facts about intelligent beings who perceive it or think about it.
>
> But the slightest philosophy is enough to destroy this basic belief that all men have. For philosophy teaches us that images (or perceptions) are the only things that can ever be present to the mind, and that the senses serve only to bring these images before the mind and cannot put our minds into any immediate relation with external objects. (*Enquiry Concerning Human Understanding*, section 12)

So Hume acknowledges that there is a natural instinct or assumption, a universal and basic opinion of all men, a primary instinct of Nature, that what we immediately perceive by our senses are not images in our minds but external objects, and that their existence is independent of us and our perception.

In this acknowledgement Hume seems to me more *giving* and even more *honest* than Berkeley, who tries to persuade us that his opinion doesn't oppose the vulgar opinion but only that of the philosophers; and that the external existence of a material world is a philosophical hypothesis and not the natural dictate of our perceptive powers. **Bishop** Berkeley is nervous about confronting such an adversary as a primary and universal opinion of all men, and tries to persuade it to support him. But **philosopher** Berkeley boldly defies this antagonist, and seems to glory in a conflict that was worthy of his arm. . . . After all ·that fuss·, I suspect that a philosopher who wages war with *this* adversary will find himself in the same fix as a mathematician trying to demonstrate that there is no truth in the axioms of mathematics.

My second thought on this topic is this: The authors who have discussed ideas have generally taken their existence for granted, as something that couldn't be called in question; and such arguments as they have casually introduced in order to prove it seem too weak to support the conclusion.

Locke in the introduction to his *Essay* tells us that he uses 'idea' to signify whatever is the immediate object of thought, and then he adds: 'I presume it will be easily granted me that there *are* such ideas in men's minds; everyone is conscious of them in himself, and men's words and actions will satisfy him that they are in others as well.' (*Essay* I.i.8) I am indeed 'conscious of' perceiving, remembering, imagining; but I am *not* conscious that the objects of these operations are images in my mind. I am satisfied by men's words and actions that they often perceive the same objects that I perceive, which they couldn't do if the objects I perceive were ideas in my own mind.

[Then a paragraph reporting on and criticising Norris's four arguments for the thesis that material things *couldn't* be perceived immediately. Reid says that they are respectively 'lame', unintelligible, irrelevant, and 'mysterious'. Then:]

An argument that is hinted at by Malebranche and by several other authors deserves to be more seriously considered. I find it most clearly expressed and most strongly urged by Clarke; so I shall give it in his words:

> The soul could not possibly perceive anything without being present to an image of it. A living substance can't perceive •anywhere unless it is present •there—present either to the things themselves, as the omnipresent God is to the whole universe, or to the

> images of things, as the soul is in its sensorium, ·i.e. in the part of the brain where it is located·. (Leibniz-Clarke Correspondence, Clarke's second reply)

Newton expresses the same opinion, though with his usual reserve he expresses it only as a question.

The ingenious William Porterfield adopts this opinion with more confidence:

> Nothing can *act or be acted on* at a place where it doesn't *exist*; therefore our mind can never perceive anything but its own states and the various states of the sensorium to which it is present. So what our mind perceives are not the external sun and moon up in the sky but only their image or representation impressed on the sensorium. How the soul sees these images—how it receives those ideas from such agitations in the sensorium—I don't know; but I am sure that it can never perceive the external bodies themselves, bodies to which it is not present. (*Medical Essays and Observations*, vol. 3)

These are indeed great authorities, but in matters of philosophy we should be guided not by authority but by reason. . . . I think we must accept that

> •Nothing can act immediately in a place where it doesn't exist;

for I agree with Newton that •power without substance is inconceivable, from which it follows that •nothing can be acted on immediately at a place where the agent—·the substance that acts·—is not present. To reach the conclusion of the ·Clarke-Porterfield· argument, however, another premise is needed, namely:

> •When we perceive objects, either they act on us or we act on them.

This doesn't look self-evident, and I have never seen any argument for it. I shall briefly present the reasons why I think it ought not to be accepted.

When we say that x 'acts on' y, we mean that x exerts some power or force that produces or tends to produce a change in y. . . . So there seems to be no reason to say that in perception either (1) the object acts on the mind or (2) the mind acts on the object.

(1) An object in being perceived doesn't *act* at all. I perceive the walls of the room I am sitting in; but they are completely inactive, and therefore are not acting on my mind. *Being perceived* is what logicians call an 'external denomination', ·a purely relational property·, which implies neither action nor quality in the object perceived. ·Something can go from *being perceived* to *not being perceived* without undergoing any change in itself—like an author's going from *being neglected* to *not being neglected* simply because his works have started to attract attention on the other side of the world without his even knowing about it·. No-one would have bought into this notion that perception arises from the perceived object's acting on the mind if we weren't so prone to form our notions of the mind on the basis of some similarity we think it has to bodies:

> •thought in the mind is thought of as analogous to motion in a body;
> •what starts a body moving is its being acted on by some other body;

so we are inclined to infer, analogically, that

> •what starts the mind perceiving is some impulse it receives from the object.

But reasonings drawn from such analogies ought never to be trusted. They are indeed the cause of most of our errors regarding the mind. We might as well conclude that minds can be measured in feet and inches, or weighed by ounces or grams, because bodies can!

(2) I see as little reason to believe that in perception the mind acts on the object: perceiving an object is one thing; acting on it is another, and isn't any *part* of perceiving. To say 'I act on the wall by looking at it' is a meaningless misuse of language. . . .

So we have no evidence that in perception the mind acts on the object or vice versa, but strong reasons to the contrary; so Clarke's argument against our immediately perceiving external objects collapses.

Like many other prejudices, this notion that in perception the object must be contiguous to—·spatially right up against·—the percipient seems to be borrowed from analogy. In all the external senses there must be some impression made on the organ of sense by the object itself or by something coming from it [see chapter 2]; and an impression requires contiguity. So we are led by analogy to conceive something similar in the operations of the mind. Many philosophers analyse almost all operations of the mind into 'impressions' and 'feelings'—words that are obviously borrowed from the sense of touch. And it is very natural to think that there must be contiguity between the thing that makes the impression and the thing that receives it, between the thing that is felt and the thing that feels. No philosopher these days will offer to justify such analogical reasoning as this, but it still has a powerful influence on our judgment. . . .

When we set aside those analogies and reflect *attend to* our perception of the objects of sense, we must admit that though we are conscious of perceiving objects we are ignorant of *how* this happens. . . . And if we do admit an image in the mind or right up against it, we have no more idea of •how perception could be produced by this image than we have of •how it could be produced by the most distant object. . . .

I have been able to find only one other argument against our perceiving external objects immediately. It is proposed by Hume, who accepts that all men have a basic belief that we perceive external objects immediately, and then adds this:

> But the slightest philosophy is enough to destroy this basic belief that all men have. For philosophy teaches us that images (or perceptions) are the only things that can ever be present to the mind, and that the senses serve only to bring these images before the mind and can't put our minds into any immediate relation with external objects. The table that we see seems to shrink as we move away from it; but the real table that exists independently of us doesn't alter; so what was present to the mind was not the real table but only an image of it. These are the obvious dictates of reason; and no-one who thinks about it has ever doubted that when we say 'this house' and 'that tree' the things we are referring to are nothing but perceptions in the mind—fleeting copies or representations of other things that are independent of us and do not change. To that extent, then, reason compels us to contradict or depart from the basic instincts of Nature, and to adopt a new set of views about the evidence of our senses. (*Enquiry* 12)

This puts all mankind into a remarkable conflict between two contradictory opinions. On one side stand *all* the vulgar—·*all* the men in the street·—who are unpractised in philosophical researches and are guided by the uncorrupted basic instincts of Nature. On the other side stand *all* the philosophers, ancient and modern—every single man who reflects. In this division I find to my great humiliation that I am grouped with the vulgar!

The passage quoted above is the only one I have found in Hume's writings on this point; and there is indeed more reasoning in it than I have found in any other author; so

I shall examine it in detail. ·My examination will have five main points·.

(1) He tells us that 'the slightest philosophy is enough to destroy this basic belief that all men have. For philosophy teaches us that images (or perceptions) are the only things that can ever be present to the mind'. The phrase 'be present to the mind' has some obscurity, but I think he means 'is an immediate object of thought'—for instance an immediate object of perception or memory or imagination. If this is the meaning (and it's the only relevant one I can think of), then all this passage does is to *assert* the proposition to be proved and *assert* that philosophy teaches it. If that is right, I beg leave to dissent from philosophy until it gives me some *reason* for what it teaches. •Common sense and my •external senses demand my assent to their dictates on their own authority, but •philosophy is not entitled to this privilege! Still, I don't want to dissent from such a grave personage as Philosophy without giving a reason, so I give this reason: I see the sun when it shines, and I remember the battle of Culloden; and neither the sun nor the battle is an image or perception.

He tells us in the next place that 'the senses serve only to bring these images before the mind'. I know that Aristotle and the schoolmen taught that images or 'species' flow from objects, are let in by the senses, and strike on the mind; but this has been so effectively refuted by Descartes, Malebranche, and many others that nobody now defends it. Reasonable men regard it as one of the least intelligible and least meaningful parts of the ancient system. Then what makes modern philosophers—not just Hume—so prone to slide back into this hypothesis as though they really believed it? I think it is because *images in the mind* and *images let in by the senses* are so nearly allied and so strictly connected that they must stand or fall together. The ancient system consistently maintained both, whereas the new system has rejected the doctrine of images let in by the senses while still holding that there are images in the mind. Then, once they have made this unnatural divorce of two doctrines that ought to stay married, the one they have retained often leads them back involuntarily to the one they have rejected—·and so we find them writing as though they were Aristotelians·.

Hume surely didn't seriously believe that an image of sound is let in by the ear, an image of smell by the nose, images of hardness and softness by the ·sense of· touch. For one thing, this is just *absurd*, as I have shown repeatedly. And anyway Hume and all modern philosophers maintain that the images that are the immediate objects of perception don't exist when they are not perceived; but if they were *let in by the senses* they would have to exist *before* being perceived, and would have an existence independent of the perceiving mind.

Hume tells us further that philosophy teaches that 'the senses can't put our minds into any immediate relation with external objects'. I still want to know what *reasons* philosophy gives for this; for it seems to me that I immediately perceive external objects, and I take it that this is the 'immediate relation' that Hume is talking about.

(2) So far I don't see anything that can be called an *argument*. Perhaps the passage was intended only for illustration. The argument—the *only* argument—is this:

> The table that we see seems to shrink as we move away from it; but the real table that exists independently of us doesn't alter; so what was present to the mind was not the real table but only an image of it. These are the obvious dictates of reason.

To judge the strength of this argument we must attend to the technical distinction between •real and •apparent size. The real size of a line is measured by some known measure

of length, such as inches, feet, or miles. The real size of a surface or of a solid is measured by known measures of area or volume. This size is an object of touch only, and not of sight; and we couldn't even have had any conception of it without the sense of touch, which is why Berkeley calls it 'tangible size'.

Apparent size is measured by the angle that an object subtends at the eye. Suppose that two straight lines are drawn from the eye to the extremities of the object, making an angle at the eye: the apparent size ·of the object· is measured by this angle. It is an object of sight and not of touch; Berkeley calls it 'visible size'.

> The apparent size of the sun's diameter is about 31 minutes of a degree.
>
> The real size of the sun's diameter is N thousand miles or K times the earth's diameter.

This shows clearly that apparent size and real size are utterly different things, though each is called a 'size'. The first is measured by an angle, the second by a line. The first pertains only to two dimensions (surfaces), the second to three dimensions (solids).

All this makes it *obvious* that the •real size of a body must continue unchanged while the body is unchanged. But is it also obvious that the •apparent size must stay the same while the body is unchanged? Far from it! Anyone who knows *anything* of mathematics can easily show that the same individual object, remaining in the same place and not altering, *must* vary in its apparent size according to the distance from which it is seen. . . . This is as certain as the principles of geometry.

There is also this point: Although the real size of a body is basically an object of touch, not of sight, we learn by experience to judge many real sizes by sight. We learn by experience to judge the approximate distance of a body from the eye, and from its distance and apparent size taken together we learn to judge its real size. And this kind of judgment, by being repeated every hour and almost every minute of our lives, eventually comes to us so easily and habitually that it greatly resembles the original perceptions of our senses, and can reasonably be called 'learned perception' ·as distinct from 'original perception·' [Reid often calls it 'acquired perception', evidently meaning the same as 'learned perception'. This version will stay with 'learned' throughout, in the interests of clarity.]. . . . It is evident that by means of this we often discover by •one sense things that are properly and naturally the objects of •another. So I may correctly say 'I hear a drum' or 'I hear a big bell', though the shape or size of the sounding body is not originally an object of hearing. . . .

If these things are borne in mind, it will appear that Hume's argument has no force to support his conclusion—indeed that it leads to the opposite conclusion. Here is the argument:

> •The table we see seems to shrink as we move away from it—i.e. its apparent size lessens.
>
> •The real table undergoes no alteration—i.e. there is no change in its real size.

Therefore

> •What we see is not the real table.

I accept both the premises in this syllogism, but I deny the conclusion. The syllogism has *two* middle terms (as the logicians call them), ·whereas its validity requires there to be only *one*·. *Apparent* size is the middle term in the first premise, *real* size in the second. Therefore, according to the rules of logic, the conclusion is not validly inferred from the premises. Anyway, setting aside the rules of logic let us examine it by the light of common sense.

Suppose for a moment that it *is* the real table we see. Mustn't this real table seem to shrink as we move away from

it? It is demonstrable that it must. Well, then, how can this apparent shrinking be evidence that it is *not* the real table?. . . .

I remarked that Hume's argument actually leads to the opposite opinion to his, i.e. leads to the conclusion that it *is* the real table that we see. The reason why is very plain: the •table we see has precisely the apparent size that the •real table must have when placed at that distance.

This argument is made much stronger by considering this:

> The real table can be placed successively at a thousand different distances, and at every distance in a thousand different orientations; and its apparent size and apparent shape in each of those ·one million· distances and orientations can be determined demonstratively by the rules of geometry and perspective. Give the table, successively, as many of those different distances and orientations as you will—or all of them!—and for each of them open your eyes and look. You'll see a table with precisely the apparent size and apparent shape that the real table must have at that distance and with that orientation.

Isn't this a strong argument that it *is* the real table you see?

In short, the appearance of a visible object is infinitely diversified according to its distance and orientation. The visible appearances are innumerable for any one object, and when many objects are involved the number of different appearances is multiplied accordingly. Clever men have been theorizing about those appearances at least since the time of Euclid. They have accounted for all this variety on the supposition that the objects we see are external and not in the mind itself. The rules they have demonstrated about

•the various projections of the sphere,

•the appearances of the planets when they seem to go forward, to stop, and to go backwards, and

•all the rules of perspective

are built on the supposition that the objects of sight are external. Each rule can be tried in thousands of instances. In many arts and professions, innumerable trials are made every day, and they have never been found to fail in a single instance. Shall we say that a false supposition invented by the rough and primitive vulgar has had that much luck in explaining an infinite number of phenomena of Nature? This would surely be a greater feat than philosophy ever put on! And don't forget that on the supposition that the objects of sight are internal—·are in the mind, not in the external world·—*no* account can be given of any one of those appearances. . . .

Now I have considered every argument I have found advanced to prove the existence of ideas or images of external things in the mind. If no better arguments can be found, I can't help thinking that the whole history of philosophy has never provided another instance of an opinion so unanimously accepted by philosophers on such slight grounds.

(3) Although philosophers are unanimous as to the existence of ideas, they don't agree much about anything else concerning them. If ideas weren't a mere fiction, we'd be better placed to know about them than about anything else; yet there is nothing about which men differ so much.

Some have held them to be •self-existent, others to be •in God's mind, others •in our own minds, and others again •in the brain or sensorium. . . .

Some philosophers insist that our ideas—or some of them—are innate, others that they are all caused from outside ourselves. Some derive them from the senses alone, others from sensation and reflection. As for how they are made, there are adherents of the views that

- they are manufactured by the mind itself,
- they are produced by external objects,
- they come from the immediate operation of God,
- impressions cause ideas, and we don't know what causes impressions.

Some think that we have ideas only of material objects, but none of minds, of their operations, or of the relations of things; others think that the immediate object of *every* thought is an idea. Some think we have abstract ideas, and that this is what chiefly marks us off from the brutes; others maintain that there can't be any such thing as an abstract idea. For some philosophers ideas are the *immediate* objects of thought, while for others they are the *only* objects of thought.

(4) Ideas were first invented, probably, as an aid to helping us understand some of the operations of the mind. Well, *they don't*!

We are at a loss to know how we perceive distant objects, how we remember past things, how we imagine things that don't exist. Ideas in the mind—·ideas that represent distant things, past things, non-existent things·—*seem* to account for all these operations, by reducing them all to a single operation. The operation is a kind of feeling or immediate perception of things that are present and in contact with the percipient; and *feeling* is an operation so familiar that we think it doesn't need explanation but can help to explain other operations.

But this feeling or immediate perception is as hard to understand as the things it is said to explain. Two things can be in contact without any feeling or perception; so ·when there *is* some feeling or perception, there must be more than mere contact·—the percipient must have a power to feel or to perceive. How this power is produced, and how it operates, is quite beyond the reach of our knowledge. Nor can we know whether this power must be limited to things that are present and in contact with us. No-one can claim to prove that God, who gave us the power to perceive things that are present to us, may not give us the power also to perceive things that are distant, to remember things past, and to conceive things that never existed. . . .

(5) Finally, the natural and necessary consequences of this theory ·of 'ideas'· rightly turn people against it—I mean people have a proper regard for the common sense of mankind.

It led the Pythagoreans and Plato to imagine that we see only the shadows of external things, and not the things themselves. It gave rise to the Aristotelian doctrine of 'sensible species', one of the greatest absurdities of that ancient system. And consider what has come of it since it was revived by Descartes. That great reformer in philosophy saw the absurdity of the doctrine about ideas •coming from external objects, and refuted it effectively after it had been accepted by philosophers for thousands of years; but he still retained ideas •in the brain and •in the mind. This is the foundation on which all our modern systems of the powers of the mind are based; and the tottering state of those structures, though they were built by skillful hands, can make us strongly suspect that the foundation is unsound.

It was this theory of ideas that led Descartes and his successors to think they needed philosophical arguments to prove the existence of material objects. Anyone can see that philosophy makes a fool of itself in the eyes of sensible men when it goes to work rounding up metaphysical arguments to prove that there is a sun and a moon, an earth and a sea! Yet we find these truly great men—Descartes, Malebranche, Arnauld, and Locke—seriously employing themselves in this argument. . . .

I might mention several paradoxes that Locke—no friend of paradoxes—was led into by this theory of ideas:

- The secondary 'qualities of bodies' are really just sensations of the mind.
- The primary qualities of body resemble our sensations.
- We have no notion of duration except from the succession of ideas in our minds.
- Personal identity consists in consciousness, so that the same individual thinking being can make several persons, and several thinking beings can make one person.
- Judgment is nothing but a perception of the agreement or disagreement of our ideas.

I shall examine most of these paradoxes when their turn comes.

Even these consequences of the doctrine of ideas were tolerable compared with the ones that were discovered later by Berkeley and Hume:

- There is no material world.
- There are no abstract ideas or notions.
- The mind is only a sequence of related impressions and ideas, without any *thing* that has them.
- There is no space or time.
- There is no body or mind—only impressions and ideas.

And the bottom line:

- There is no probability, even in demonstration itself, and no one proposition is more probable than its contrary.

These are the noble fruits that have grown on this theory of ideas since it began to be cultivated by skillful hands. It's no wonder that sensible men should be disgusted with philosophy, when such wild and shocking paradoxes pass under its name. However, just because these paradoxes have been inferred from the theory of ideas with great acuteness and ingenuity and by valid reasoning, they must at last bring *this* advantage: Positions so shocking to the common sense of mankind, and so contrary to the decisions of all our intellectual powers, will open men's eyes and break the force of the prejudice which has held them entangled in that theory.

Chapter 15: Leibniz's system

There is one more theory of perception of which I shall give some account because of the fame of its author. It is the invention of the famous German philosopher Leibniz who, while he lived, held the first rank among the Germans in all parts of philosophy as well as in mathematics, in jurisprudence, in the knowledge of antiquities, and in every branch both of science and of literature. [Leibniz died about 70 years before this work appeared.]. . . . The famous controversy between him and the British mathematicians about whether he or Newton was the inventor of. . . .the differential calculus engaged the attention of mathematicians in Europe for several years. He also had a controversy with the learned

and judicious Samuel Clarke about several points in the Newtonian philosophy that he disapproved of.

[Reid then sketches the main lines of Leibniz's metaphysics, focussing on his view that x's perceiving y is an upshot of a universe-wide 'harmony' in which *every* state of *every* simple substance is reflected or echoed in the states of *every* other. Reid impatiently rejects this in its entirety, objecting with special fierceness to Leibniz's view that every state of any simple substance is a perception. Thus:] As consciousness is the only power by which we discern the operations of our own minds, or can form any notion of them, an operation of our mind of which we are not conscious is—who knows what? To call such an operation a 'perception' is a misuse of language. No-one can perceive an object without being conscious that he perceives it. No man can think without being conscious that he thinks. So anything that men are not conscious of can't properly be called either perception or thought of any kind.

[The rest of Reid's attack on Leibniz is not very instructive, but its closing paragraphs should be noted. Thus:]

My final remark about this system—and about all the others as well—is that it is *all hypothesis*, made up of unproved conjectures and suppositions. •The Aristotelians **supposed** that 'sensible species' are sent out by the objects of sense. •The moderns **suppose** that there are ideas in the brain or in the mind. •Malebranche **supposed** that we perceive the ideas of God's mind. •Leibniz **supposed** monads and a pre-established harmony; and because these monads are creatures of his own making, he is free to give them whatever properties and powers his imagination may suggest. Similarly, the Indian philosopher **supposed** that the earth is supported by a huge elephant and that the elephant stands on the back of a huge tortoise (Locke, *Essay* II.xxiii.2).

Such suppositions, when no proof of them is offered, are nothing but fictions of the human fancy, and we oughtn't to believe them any more than we believe Homer's fictions concerning Apollo's silver bow or Minerva's shield or Venus's girdle! In poetry such fictions are agreeable to the rules of the art. They are intended to please, not to convince. But the philosophers want us to *believe* their fictions. . . .

Men begin to have a true taste in philosophy only when they learn to regard hypotheses as negligible, and to consider them as theorizers' day-dreams that will never have any similarity to the works of God.

God has given us some information about his works through •what our senses inform us concerning external things and •what our consciousness and reflection inform us concerning the operations of our own minds. Whatever can be validly and soberly inferred from these ordinary informations is true and legitimate philosophy. But anything that we add to this from conjecture is all spurious and illegitimate.

After this long account of the theories that philosophers have put forward to account for our perception of external objects, I hope you now see that. . . .none of those theories gives a satisfying account of this power of the mind or makes it more intelligible than it is without their aid. . . . Perception, consciousness, memory, and imagination are all basic simple powers of the mind, built into its constitution. That is why, though I have tried to show that the theories of philosophers on this subject are ill-grounded and insufficient, I don't try to replace them by some other theory.

Everyone feels that perception gives him an unconquerable belief in the existence of the things he perceives, and that this belief is not the effect of reasoning, but the *immediate* consequence of perception. When philosophers have wearied themselves and their readers with their speculations

on this subject, they can't strengthen this belief or weaken it; nor can they show how it is produced. The belief puts the philosopher on a level with the peasant: neither of them can give any reason for believing his senses except that he finds it impossible not to.

Chapter 16: Sensation

Having said what I wanted to regarding the act of mind that we call 'perception of an external object', I proceed to consider another act of the mind which our make-up links with perception and indeed with many other mental acts. I refer to *sensation*. See my explanation of the word 'sensation' in Essay 1, chapter 1 [item 12].

Almost all our •perceptions have corresponding •sensations that constantly accompany them, and that fact makes us very apt to confuse the two. And we shouldn't expect the sensation and its corresponding perception to be distinguished in ordinary language, because the purposes of everyday life don't require it. . . . A •perceived quality and the •sensation corresponding to that perception often go under the same name.

This makes the names of most of our sensations ambiguous, which has created tangles and difficulties for philosophers. I'll have to give some examples to illustrate the distinction between our sensations and the objects of perception.

When I smell a rose, this involves both sensation and perception. The pleasant odour I feel, considered by itself and not in relation to any external object, is merely a sensation. It affects the mind in a certain way, and this state of the mind can be conceived without any thought of the rose or of any other object. This sensation can't *be* other than it is *felt to be*. Its very essence consists in being felt, and when it isn't felt it doesn't exist. There is no difference between •the sensation and •the feeling of it—they are one and the same thing. That is why I remarked earlier [Essay 1, chapter 1, item 12] that in sensation there is no •object distinct from •the act of the mind by which it is felt; and this holds true with regard to all sensations.

Now let us attend to the perception that we have in smelling a rose. Perception always has an external object, and in our present case the object of my perception is the quality in the rose that I detect by the sense of smell. Observing that the pleasant sensation occurs when the rose is near and stops when it is removed, I am led by my nature to conclude that some quality in the rose is the cause of this sensation. This quality in the rose is the object I perceive; and the act of my mind by which I have the conviction and belief in this quality is what in this case I call 'perception'.

Notice, though, that •the sensation I feel and •the quality in the rose which I perceive are both called by the same name—'the smell of a rose'. So this phrase has two meanings; and distinguishing them removes all the tangles, and enables us to give clear and distinct answers to questions about which philosophers have held much dispute.

For example, 'Is the smell •in the rose or •in the mind that feels it?' The answer is obvious; 'the smell ·of the rose·' can stand for either of two different things, one of which is •in the mind and can't exist except in a sentient being, while the other is truly and properly •in the rose. The sensation that I feel is in my mind, and neither it nor anything like it could be in the rose, because the rose is not sentient. But this sensation in my mind is occasioned by a certain quality in the rose; the quality has the same name as the sensation, not because they are *alike* (which they aren't) but because they constantly go together.

The names we have for smells, tastes, sounds, and the various degrees of heat and cold are all ambiguous in the same way; and what I have said about 'the smell of a rose' can be applied to them too. They signify both a •sensation and a •quality perceived by means of that sensation—a •sign and •something that is signified. Because they are conjoined by Nature, and the purposes of daily life don't require them to be separated in our thoughts, they are both called by the same name. And this ambiguity occurs in all languages because the reason for it extends to all.

The same ambiguity is found in the names of diseases that are indicated by a particular painful sensation, such as 'toothache', 'headache'. 'Toothache' signifies a painful sensation that can only exist in a sentient being; but it also signifies a disorder in the body, which is in no way similar to the sensation but is naturally connected with it.

Pressing my hand **with force** against the table, I •feel pain and I •feel the table to be hard. The pain is a sensation of the mind, and there's nothing like it in the table. The hardness is in the table, and there's nothing like it in the mind. We say that I 'feel' both, but that involves two senses of 'feel'—a word that is applied to the •act of sensation and to the •act of perceiving by the sense of touch.

I touch the table **gently** with my hand, and I feel it to be smooth, hard, and cold. These are qualities of the table that I perceive by touch; but I perceive them by means of a sensation that indicates them. Because this sensation is not painful, I usually pay no attention to it. It carries my thought immediately to the thing signified by it, and is itself forgotten as though it had never existed. But by repeating it, turning my attention to it, and abstracting my thought from the thing signified by it, I find it to be merely a sensation, with no similarity to what it signifies—the hardness, smoothness, and coldness of the table.

It is difficult at first to attend separately to things that have always come as a pair, and to reflect on something for the very first time; but making the effort and putting in the practice will enable you overcome this difficulty, if you are one of those who have acquired the habit of reflecting on the operations of their own minds.

There are *many* mental operations to which we give one name, and think of as one thing, though they are really complex in their nature and made up of several simpler ingredients—sensation often being one of the ingredients. I shall give some instances of this. This takes us outside the over-all topic of this chapter, which requires us only to consider sensations that we have through our external senses. But this extension of our range will serve to illustrate things I have been saying, and I also think it is of importance in itself.

The appetite of hunger includes •an unpleasant sensation and •a desire of food. Sensation and desire are different acts of mind; desire must have an object, whereas sensation has no object. These two ingredients can always be thought about separately; perhaps sometimes one of them occurs without the other; but the term 'hunger' covers both.

Benevolence towards our fellow-creatures includes •a pleasant feeling and also •a desire for the happiness of others. The ancients commonly called benevolence a 'desire'. Many moderns choose rather to call it a 'feeling'. Both are right; and if there's any error here it is the error of those who select one ingredient and exclude the other. Are these two ingredients necessarily connected? That may be hard for us to determine, because there are many necessary connections that we don't perceive to be necessary; but ·even if they are necessarily linked·, we can separate them in thought. They are different acts of the mind.

•An unpleasant feeling and •a desire are in the same way ingredients of malevolent states such as malice, envy, revenge. *Fear* includes an unpleasant sensation or feeling and a belief that one is in danger; and *hope* is made up of the opposite ingredients. When we hear of a heroic action, it causes in our mind something made up of various ingredients—a pleasant feeling, a benevolent affection towards the person, and a judgment or opinion about his merit.

If we analyse the various operations of our minds in this way, we'll find •that many of them that we think of as perfectly simple because we have been accustomed to call them by one name are made up out of simpler ingredients, and •that sensation (or feeling, which is only a more refined kind of sensation) is one of the ingredients not only in the perception of external objects but in most operations of the mind.

[We are about to encounter the word 'sentiment'. In Reid it usually means 'view' or 'opinion', and up to here has been translated thus in the present text; but it can also mean 'feeling'; in the present context the word is left alone in all its ambiguity, for the obvious reason.] A very little reflection can show us that the number and variety of our sensations and feelings is enormous. Our moral sentiments and sentiments of taste, and even our external senses, provide a great variety of sensations of different •kinds and, within almost every kind, an endless variety of •degrees. (Not to mention all the sensations that accompany our appetites, emotions, and affections.) Every discrimination that we make with regard to taste, smell, sound, colour, heat, cold, and the tangible qualities of bodies is indicated by a sensation corresponding to it.

The most general and most important classification of our sensations and feelings is into •pleasant, •unpleasant, and •neutral. Everything we call pleasure, happiness, or enjoyment (on the one hand) and everything we call misery, pain, or unpleasure (on the other) is a sensation or feeling. For no-one can be happier or more miserable at a given time than he then feels himself to be. He can't be deceived about the enjoyment or suffering of that moment.

But I realize that besides the sensations that are either pleasant or unpleasant there are many more that are neutral. We attend so little to these that they have no name, and are immediately forgotten as if they had never existed. To be convinced of their existence we have to *attend* to the operations of our minds.

[Then a paragraph giving examples of such neutral sensations, and reasons for thinking there are countlessly many of them. Then:]

Neutral sensations are by no means useless. They serve as signs to distinguish things that are unalike, and the information we get concerning external things comes through them. Thus, for someone who wasn't able to get •pleasure from the harmony or melody of sounds, ·or to get •unpleasure from noises of any sort·, the sense of hearing would still be extremely useful. . . . And the same thing holds for the sensations we have by all the other senses.

Sensations and feelings that are pleasant or unpleasant differ greatly not only in •degree but also in •kind and in •dignity. Some belong to the animal part of our nature, and we share them with the brutes—they are more properly called 'sensations'. Others belong to our rational and moral part, and are more properly called 'feelings'.

The intention of Nature in them is mostly obvious and well worth attending to. . . . In his distribution of pleasant and painful feelings, God has wisely and benevolently aimed at the good of the human species, and has even shown us by the same means how we ought to behave. •Painful sensations of the animal kind are warnings to avoid what would hurt us; and pleasant sensations of that same kind encourage us to act in ways that are required to preserve the individual or the species. •By the same means, Nature invites us to engage in moderate bodily exercise—telling us to avoid idleness and inactivity on the one hand, and excessive labour and fatigue on the other. •The moderate exercise of all our rational powers gives pleasure. •Every species of beauty is beheld with pleasure, and every species of ugliness with disgust; and we shall find that everything we find beautiful is either admirable or useful in itself or a sign of something that is admirable or useful. •The benevolent affections are all accompanied by a pleasant feeling, and the malevolent ·attitudes· with an unpleasant one. •The highest, noblest, and most durable pleasure is that of doing well and acting as we should; and the most bitter and painful sentiment is the anguish and remorse of a guilty conscience. . . .

I shall end this chapter by remarking that just as

> **confusing** our sensations with the perception of external objects that is constantly conjoined with them has given rise to most of the errors and false theories of philosophers concerning the senses,

so also

> **distinguishing** these operations seems to me to be the key that leads to a right understanding of both ·sensations and perceptions·.

'Sensation' doesn't in itself imply a conception of or belief in any external object. It implies a sentient being, and a certain way in which that being is affected, and that is *all* it implies. 'Perception' implies an immediate conviction and belief in something external—something different both from the mind that perceives and from the act of perception. Things that are intrinsically as different ·as perception and sensation are· ought to be distinguished; but we are so built that in us they are always united. Every perception comes along with its own special kind of sensation. The sensation is the sign, the perception is the thing signified. They coalesce in our imagination. They are given a single name, and are thought of as one simple operation. The purposes of everyday life don't require them to be distinguished.

The philosopher—and he alone—does have reason to distinguish them when he wants to analyse the compound operation that they make up. But he has no suspicion that there *is* anything compound here, and to learn that there is requires a degree of reflection that has been too little practised, even by philosophers.

In the ancient philosophy, sensation and perception were completely run together. A 'sensible species' coming from the object and impressed on the mind was the whole ·story·—and you could call it 'sensation' or 'perception' as you pleased.

Descartes and Locke, paying more attention to the operations of their own minds, say that the sensations that tell us of secondary qualities are not like anything that pertains to body; but they didn't see that this can just as well be said about primary qualities. Locke maintains that the sensations we have from primary qualities *are* like those qualities. This shows how grossly the cleverest men can go wrong with

regard to the operations of their minds. I don't deny that it is much easier to have a clear notion of the sensations belonging to secondary qualities than of those belonging to primary qualities; I'll explain why this is so, early in the next chapter.

But if Locke had attended carefully enough to the sensations that he was receiving from primary qualities every day and every hour, he would have seen that they can't resemble any quality of an inanimate thing, any more than pain can resemble a cube or a circle.

Berkeley saw clearly the thing that the able Locke had missed. He had a correct notion of •sensations, and saw that no quality of an insentient thing could possibly resemble •them—a truth that is so evident in itself that it is amazing that it was for so long unknown.

Let us attend now to the consequence of this discovery. Philosophers as well as the vulgar had been accustomed to giving one name to sensation and perception, and to regard them as a single simple operation. Philosophers, even more than the vulgar, gave the name 'sensation' to the whole operation of the senses, and all the notions we have of material things were called 'ideas of sensation'. This led Berkeley to take one ingredient of a complex operation to be the whole operation; and having clearly discovered the nature of sensation, and taking it for granted that the senses present to the mind only *sensation*, which can't resemble anything material, he concluded that there is no material world.

If the senses provided us with no materials of thought except sensations, his conclusion would be right; for no sensation can give us the conception of material things, let alone any argument to prove their existence. But if in fact our senses give us not only a variety of •sensations but also a •conception of external objects and an immediate natural •conviction that they exist, he reasons from a false supposition and his arguments fall to the ground.

Chapter 17: Objects of perception, starting with primary and secondary qualities

The objects of perception are the various qualities of bodies. Intending to treat of these only in general, and chiefly with a view to explain the notions which our senses give us of them, I begin with the distinction between primary and secondary qualities. These were distinguished very early. The Aristotelian system confounded them and left no difference. The distinction was revived by Descartes and Locke, and a second time abolished by Berkeley and Hume. If the real foundation of this distinction can be pointed out, that will enable us to account for the various revolutions in the sentiments of philosophers concerning it.

Everyone knows that Locke gave the name 'primary qualities' to extension, divisibility, shape, motion, solidity, hardness, softness, and fluidity; and that he called sound, colour, taste, smell, and heat or cold 'secondary qualities'. Is there a sound basis for this distinction? Is there anything that is true of all the 'primary' qualities and none of the 'secondary' ones? And what is it?

I answer that there seems to me to be a real basis for the distinction; namely this:

- •Our senses give us a direct and distinct notion of the primary qualities, and inform us what they are in themselves.
- •But our senses give us only a relative and obscure notion of the 'secondary' qualities. They inform us only that they are qualities that affect us in a certain way, i.e. produce in us a certain sensation; but our senses tell us nothing about what the secondary qualities are in themselves.

Any thinking person can easily satisfy himself that he has a perfectly clear and distinct notion of extension, divisibility, shape, and motion. A body's *solidity* means merely that it prevents other bodies from occupying the place it is in while it is there. Hardness, softness, and fluidity are different degrees of cohesion in the parts of a body: the body is fluid when it has no detectable cohesion, soft when its cohesion is weak, and hard when it is strong. We don't know what causes this cohesion, but we do understand the cohesion itself, being immediately informed of it by the sense of touch. . . .

And, as I noted, our notion of primary qualities is direct, not merely relative. A relative notion of a thing is strictly speaking not a notion of the thing at all, but only of some relation which it bears to something else.

Thus 'gravity' sometimes signifies the •tendency of bodies ·to move· towards the earth, and sometimes signifies the •cause of that tendency. When it means the •tendency, I have a direct and distinct notion of gravity—I see it and feel it and know perfectly what it is. But this tendency must have a •cause. We call the cause 'gravity' too, and people have thought and theorized about what it is. Now, when we think and reason about this cause, what *notion* of it do we have? Obviously, we think of it as *an unknown cause of a known effect*. This is a relative notion, and it is bound to be obscure because it gives us no conception of what the thing is but only of what relation it has to something else. . . . There are many objects of thought and of discourse of which our faculties can give us no better than a relative notion.

That explanation makes it clear that our notion of primary qualities is *not* of this relative kind. We know what the primary qualities are, not merely how they relate to something else.

It is otherwise with secondary qualities. 'What *is* that quality or state of a rose that you call its smell?' I am at a loss to answer directly. On reflection I find that I do have a distinct notion of the sensation that the quality in question produces in my mind; but there can't be anything like this sensation in the rose, because it is not sentient. What that quality *is* I don't know. . . . And the same line of thought applies to every secondary quality.

Thus I think it appears that there is a real basis for distinguishing primary from secondary qualities. The account I have given of this distinction isn't founded on any hypothesis. That our notions of primary qualities are direct and distinct, while those of the secondary qualities are relative and obscure, are matters of fact that you can know for sure by attentively reflecting on them. Here, now, are some thoughts on this subject.

1. The primary qualities are not sensations or like sensations. This strikes me as self-evident. I have a clear and distinct notion of each of the primary qualities. I have a clear and distinct notion of sensation. When I hold them together in my mind I can't detect any resemblance. Sensation is the act or the feeling (never mind which) of a sentient being. Shape, divisibility, solidity are not acts or feelings. A sensation must be had by a sentient being, for 'a sensation that is not felt by some sentient being' is an absurdity. Shape

and divisibility must be had by something that is shaped and divisible, but not by something sentient.

2. We have no reason to think that any of the secondary qualities resemble any sensation. The absurdity of this notion has been clearly shown by Descartes, Locke, and many modern philosophers. It was a tenet of the ancient philosophy, and many ·philosophers· attribute it to the vulgar even today, but only as a vulgar *error*. That the vibrations of a bell don't resemble the sensation of sound, and that the little particles emanating from a piece of cheese don't resemble the sensation of smell—these truths are too obvious to need proof.

3. The distinctness of our notions of primary qualities prevents all questions and disputes about their nature. There are no differences of opinion about the nature of extension, shape, or motion, or about the nature of any ·other· primary quality. Their nature is manifest to our senses, and no-one can be ignorant of them or mistaken about them, though their causes may admit of dispute.

The primary qualities are treated in the mathematical sciences, and the distinctness of our notions of them enables us to reason demonstratively about them to a great extent. Their various modifications [= 'special cases', e.g. circularity is a modification of shape] are precisely defined in the imagination, which enables us to compare them and establish their relations with precision and certainty.

It is not so with secondary qualities. . . . Our feeling informs us that the fire is hot, but it doesn't tell us what that heat of the fire *is*. 'Isn't it a contradiction to say we •know that the fire is hot but •don't know what that heat is?' I answer that there is the same appearance of contradiction in many things that are certainly true. We •know that wine has an inebriating quality; but we •don't know what that quality is. Of course, if we didn't have *any* notion of what is meant by 'the heat of fire' or by 'an inebriating quality', we couldn't meaningfully affirm anything of either of them. But we *do* have a notion of each, but it is only a relative notion. We know that they are the causes of certain known effects.

4. The nature of secondary qualities is a proper subject of philosophical inquiry, and philosophy has made some progress on this topic. It has been discovered that

- •the sensation of smell is occasioned by particles emitted by bodies,
- •the sensation of sound is occasioned by bodies' vibration, and that
- •the sensation of colour is occasioned by bodies' disposition to reflect a particular kind of light.

Interesting and surprising discoveries have been made concerning the nature of heat, and a rich field of ·further· discovery about these subjects lies open.

5. We can see why our attention is drawn to the sensations belonging to secondary qualities but not to the sensations that belong to the primary qualities.

[Reid in this next paragraph writes a little confusingly, referring to a secondary *quality* as 'the *object*'. This will be avoided by expressing his point in terms of a single secondary quality, namely heat.] The sensation belonging to the secondary quality *heat* is not only a sign of heat—it forms a large part of the notion we have of heat. We think of heat only as *what occasions such and such a sensation*, so we can't think about it without thinking of the sensation that it occasions. We have no other mark by which to distinguish it. ·Generalizing now·, the thought of any secondary quality always carries us back to the sensation that it produces; we give the same name to both, and are apt to run them together.

But having a clear and distinct conception of primary qualities, we can think of them without recalling their sensations. When a primary quality is perceived, the sensation

immediately leads our thought to the quality signified by it, and is itself forgotten. We have no reason afterwards to reflect on it, and so we come to be as little acquainted with it as if we had never felt it. Nature intended the sensations belonging to primary qualities only as signs; and when they have served that purpose they vanish.

The only exception is when the sensations are so painful or so pleasant as to draw our attention. When a man bangs his hand against a pointed hard body, he feels pain, and can easily believe that this pain is a sensation and that there is nothing resembling it in the hard body; at the same time he perceives the body to be hard and pointed, and he knows that these qualities belong to the body only. In this case it is easy to distinguish •what he feels from •what he perceives—·i.e. to distinguish •his pain from •the body's hardness and pointedness·. . . .

·The vulgar versus the philosophers·

We are now to consider the opinions both of the vulgar and of philosophers on this subject. It is not to be expected that the vulgar should make distinctions that have no connection with ordinary everyday life, which is why they don't distinguish primary qualities from secondary ones, but speak of both as being equally qualities of the external object. They have a distinct notion of the primary qualities, because these are immediately and distinctly perceived by the senses. Their notions of the secondary qualities are ·less satisfactory, but they· aren't *erroneous*, merely confused and indistinct. A secondary quality is the unknown cause or occasion of a well known effect, and the cause and the effect are given the same name. Now, sharply distinguishing •the different ingredients of a complex notion and, at the same time, •the different meanings of an ambiguous word, is the work of a philosopher; and we can't expect the vulgar to do it when they have no practical need to.

. . . .There seems to be a contradiction between the vulgar and the philosopher on this subject, and each accuses the other of a gross absurdity. The vulgar say: 'Fire is hot, snow is cold, sugar is sweet; and to deny this is a gross absurdity that contradicts the testimony of our senses.' The philosopher says: 'Heat and cold and sweetness are nothing but sensations in our minds; and it is absurd to think of these sensations as being in the fire, the snow, or the sugar.'

I think that this contradiction between the vulgar and the philosopher is more apparent than real; and that it arises from a misuse of language on the part of the philosopher and from unclear notions on the part of the vulgar. The philosopher says 'There is no heat in the fire', meaning that the fire doesn't have the sensation of heat. What he means is right, and the vulgar will agree with him as soon as they understand what he means. But his language is improper; for there really *is* a quality in the fire of which the proper name is 'heat'; and this name 'heat' is given to this quality—both by philosophers and by the vulgar—much more frequently than to the sensation of heat. . . .

·History of views about the distinction·

As I have already remarked, there have been different phases in the opinions of philosophers about primary and secondary qualities. They were distinguished long before Aristotle's time by the atomists, among whom Democritus looms large. Back then the name 'quality' was applied only to the ones we call 'secondary' qualities, because primary qualities being considered as essential to matter, and were not called 'qualities'. Those philosophers had no doubt that the atoms that they held to be the basic sources of things were extended, solid, shaped, and movable, but there was a question as to whether they had •smell, taste, and colour (or, in the terminology they used, whether they had •*qualities*.) The atomists maintained that they didn't, and

that the qualities were not in bodies but were an effect of the action of bodies on our senses.

It would seem that when men began to think about this subject the primary qualities appeared so clear and obvious that the thinkers couldn't doubt that they existed wherever matter existed; but the secondary were so obscure that they didn't know where to locate them. They used this comparison: as •fire is produced by the collision of •flint with •steel without being in either of them, so also •the secondary qualities are produced by the impact of •bodies on •our senses without being in either of them.

Aristotle disagreed. He thought that taste and colour are substantial forms of bodies, and that their 'species' as well as those of shape and motion are received by the senses. [Reid has explained 'substantial form' on page 63, and the present sense of 'species' = 'sensible species' in Essay 1, chapter 1, middle of item 10.]

In believing that what we ordinarily call 'taste' and 'colour' is something really inherent in body, and doesn't depend on its being tasted or seen, Aristotle followed •Nature. But in believing that our sensations of taste and colour are the 'forms' or 'species' of those qualities, received by the senses, he followed •his own theory which was an absurd fiction. Descartes not only showed the absurdity of 'sensible species received by the senses' but gave a sounder and more intelligible account of secondary qualities than had been given before. Locke followed him, and took a lot of trouble with this subject. I think it was he who first called them 'secondary qualities', a name that has been very generally adopted. He distinguished •the sensation from •the quality in the body which is the cause or occasion of that sensation, and showed that there isn't and can't be any similarity between them.

This account clears the senses of the charge of lying to us: the sensation is real, with nothing erroneous about it; the quality in the body that causes or occasions this sensation is also real, though its nature isn't manifest to our senses. If *we* deceive *ourselves* by confusing the sensation with the quality that occasions it, this comes from rash judgment or weak understanding, not from false testimony of our senses.

I regard this account of secondary qualities as very sound; and if Locke had stopped here, he would have left the matter very clear. But he thought he had to introduce the theory of ideas to explain the distinction between primary and secondary qualities, and by that means I think he tangled and darkened it.

When philosophers speak about 'ideas', we're often at a loss to know what they mean by that word, and may well suspect that ideas are mere fictions. The philosophers have told us that by 'the ideas that we have immediately from our senses' they mean *our sensations*. These are indeed real things, not fictions. By attending to them carefully we can completely know their nature; and if philosophers kept to this meaning of 'idea' when applied to the objects of sense they would at least be more intelligible. Let us hear how Locke explains the nature of those ideas when applied to primary and secondary qualities:

> To reveal the nature of our ideas better, and to talk about them intelligibly, it will be convenient to distinguish them •as they are ideas or perceptions in our minds, and •as they are states of matter in the bodies that cause such perceptions in us. That may save us from the belief (which is perhaps the common opinion) that the ideas are exactly the images and resemblances of something inherent in the object. ·That belief is quite wrong·. Most ideas of sensation are (in the mind) no more *like* a thing existing outside us than the names that stand for them are *like* the ideas themselves. (*Essay* II.viii.7)

This way of distinguishing a thing—first as what it is, then as what it is not—strikes me as a very extraordinary way of revealing its nature. If ideas are •'ideas or perceptions in our minds' and at the same time •'the states of matter in the bodies that cause such perceptions in us', it won't be easy to talk about them intelligibly!

The account of the nature of ideas is carried on in Locke's next section in an equally extraordinary manner:

> Whatever the mind perceives in itself—whatever is the immediate object of perception, thought, or understanding—I call an *idea*; and the power to produce an idea in our mind I call a *quality* of the thing that has that power. Thus a snow-ball having the power to produce in us the ideas of white, cold, and round, the powers to produce those ideas in us, as they are in the snow-ball, I call *qualities*; and as they are sensations or perceptions in our understandings, I call them *ideas*. If I sometimes speak of 'ideas' as in the things themselves, please understand me to mean to be talking about the *qualities* in the objects that produce them in us. (II.viii.8)

These are the distinctions that Locke thought would help to 'reveal the nature of our ideas' of the qualities of matter better, so that we could 'talk about them intelligibly'! I think it will be hard to find two other paragraphs in the *Essay* as *un*intelligible as these. Does this come from •the intractable nature of ideas or from •Locke's drowsy inattention (a fault of which he is very rarely guilty)? Judge for yourself. Several other passages in that chapter are also obscure in the same way, but I shan't dwell on them. Locke's bottom-line conclusion is that primary and secondary qualities are distinguished by this:

> •The ideas of the primary qualities resemble or copy the qualities.
>
> •The ideas of the secondary qualities do not resemble or copy the qualities.

There are two things I want to say about this doctrine.

(1) Taking it for granted that by the 'ideas' of primary and secondary qualities he means the sensations they arouse in us, I remark that it appears strange that a sensation should be the idea of a quality in body to which it is admitted to have no resemblance. If the •sensation of sound is the idea of the •vibration of the bell that occasions it, a •surfeit may for the same reason be the idea of a •feast!

(2) When Locke affirms that the ideas of primary qualities—i.e. the sensations they arouse in us—resemble those qualities, he seems not to have attended properly either to (a) *those* sensations or to (b) the nature of sensation in general.

(a) Press your hand against a hard body and attend to the sensation you feel, excluding from your thought everything external, even the body that is the cause of your feeling. This abstraction ·or exclusion· is indeed difficult, and it has hardly ever been done. But it *is* possible, and it is obviously the only way to understand the nature of the sensation. Properly attending to this sensation will satisfy you that •it is no more like •hardness in a body than the •sensation of sound is like •vibration in a bell.

The only ideas I know of are my *conceptions*. My 'idea of hardness in a body' ·in that sense· is the conception of

> a body's having parts that cohere [= 'hold together'] so that a great deal of force is needed to pull them apart.

When I have a •sensation of pain from pressing my hand against a hard body, I have at the same time both the •conception of and the •belief in this quality in the body. My constitution conjoins the •sensation with the perception—·and thus with the •conception and •belief involved in perception·—but I'm sure they are in no way alike. The

only basis for calling one the 'idea of' the other would be an equally good or bad basis for calling every natural effect the 'idea of' its cause—·e.g. for clling an over-full stomach the 'idea of' the preceding feast·.

(b) When Locke said that the sensations aroused by primary qualities (which he called the 'ideas of' the primary qualities) resemble those qualities, he hadn't attended adequately to the nature of sensation in general. The proposition

> There can't be anything like sensation in an insentient being, or anything like thought in an unthinking being

is *self-evident*, and Berkeley has shown that all thinking people accept it. Yet it was unknown to Locke! It is a humbling fact that in subjects of this kind self-evident truths can be hidden from the eyes of the ablest men. But we have consolation in the fact that when such truths are revealed they shine by their own light—light that can't be extinguished again. . . .

Berkeley adopted the common philosophical view about the ideas we have by our senses, namely that they are all sensations; but then he saw more clearly ·than his predecessors had done· what follows from this doctrine, namely that there is no material world, and that there are no primary or secondary qualities and thus no basis for any distinction between them. He exposed the absurdity of the view that our sensations resemble *any* quality—primary or secondary—of a substance that is supposed to be insentient. Indeed, if you allow that the only role of the senses is to provide us with sensations, you'll find it impossible to make any distinction between primary and secondary qualities, or even to maintain the existence of a material world.

From the account I have given of the various turns in the opinions of philosophers about primary and secondary qualities, I think it appears that all the darkness and complexity that thinking men have found in this subject, and the errors they have fallen into, have come from the difficulty of clearly distinguishing sensation from perception, what we feel from what we perceive.

[Then two paragraphs that repeat things that have already been said more than once in this Essay. Ending with:] The progress made in correctly analysing the operations of our senses has been very slow. The theory about 'ideas'. . . .has greatly held back this progress; we might hope for a quicker advance if philosophers could humble themselves enough to believe that in every branch of the philosophy of Nature the productions of human fancy and conjecture will be found to be •dross; and that the only pure •metal that will stand up to testing is what is discovered by patient observation and properly conducted induction.

Chapter 18: Other objects of perception

Besides primary and secondary qualities of bodies there are many other immediate objects of perception. Without claiming to offer a complete list, I think they mostly belong to one or another of the following five classes:

(1) Certain states or conditions of our own bodies.
(2) Mechanical powers or forces.
(3) Chemical powers.
(4) Medical powers.
(5) Powers of plants and animals.

·I shall discuss the first two of these and sketchily allude to the other three·.

(1) No-one would deny that we perceive certain disorders in our own bodies by means of unpleasant sensations that Nature has attached to them. Of this kind are toothache, headache, gout, and every illness and physical injury that we feel. The notions that our senses give of these have a strong analogy to our notions of secondary qualities. The two kinds of notions are built up in the same way, and can be analysed along similar lines. Also, they throw light on one another.

In toothache, for instance, there is *first* a painful feeling and *secondly* a conception of and belief in something wrong in the tooth that is believed to be causing the unpleasant feeling. The first is a •sensation, and the second is •perception because it includes a conception of and belief in an external object. But although these two things are of different natures, they are so constantly conjoined in our experience and in our imagination that we think of them as one, and call them both 'toothache', which is the correct name both for the pain and for the disorder in the tooth that causes the pain. Is the *toothache* in the mind that feels it or in the tooth that has something wrong with it? A great deal could be said on each side of this question if it isn't noticed that 'toothache' has two meanings. . . .

We say that we *feel* the toothache, not that we *perceive* it. On the other hand we say that we *perceive* the colour of a body, not that we *feel* it; yet in each of these there is sensation and perception conjoined. Can any reason be given for this difference of terminology? I answer Yes, the reason being this:

- •In the toothache, the sensation is very painful and strongly calls attention to itself; and this leads us to speak of it as if it were only *felt* and not *perceived*.
- •In seeing a coloured body, the sensation is neutral and doesn't attract our attention. The quality in the body that we call its 'colour' is the only object of attention; and so we speak of it as if it were *perceived* and not *felt*.

Though all philosophers agree that seeing colours involves sensations, it isn't easy to persuade the vulgar that when they see a coloured body in a moderate light and with a healthy eye they have any sensation or feeling at all.

Some sensations are very often felt yet never attended to or thought about. We have no conception of them, and so we have no name for them and no turns of phrase that imply their existence. Such are the sensations of colour, and of all primary qualities; and therefore those qualities are said to be perceived but not to be felt. Taste and smell and heat and cold have sensations that are often strongly pleasant enough, or strongly unpleasant enough, to draw our attention to them, and they are sometimes said to be 'felt' and sometimes to be 'perceived'. . . .

[Then more than a page on issues related to 'I feel a pain in my toe'. Reid insists that this can be a perfectly good thing to say; it can report a real fact, in language that is correct because universally accepted and understood. It is for the philosophers to analyse 'pain in my toe', and Reid shows how to do this. He deals similarly with the phenomenon of feeling a 'phantom pain' in a leg that has been amputated, and goes on to discuss supposed 'deceptions of the senses'. In every such case, Reid says, the senses deliver a sensation which doesn't imply anything and therefore can't be deceptive; but there may be, associated with the sensation, a perception—a conception and belief—and *this* can be and sometimes is deceptive. Then:]

(2) Let us next consider the notions our senses give us of the attributes of bodies called 'powers'. There's a special need to look into this topic, because 'power' seems to imply some activity, yet we consider body as a dead inactive thing which doesn't act but can be acted on.

Of the mechanical powers ascribed to bodies, let us start with the one called their *vis inertia* [= 'power of not moving']. This means merely that bodies never change their state *themselves*—whether starting to move, stopping moving, or changing speed or direction. Any such change must come from some force impressed on them ·from the outside·; and the change that is produced is exactly proportional to the strength and direction of that external force.

That all bodies have this property is a matter of fact that we learn from daily observation as well as from the most precise experiments. It seems clear that this ·property· doesn't imply any *activity* in body, but rather the contrary. Activity in a body would be involved in its having a power to •change its state rather than its •continuing in the same state. So this property of bodies, despite its name, does not imply any 'power' properly so-called.

Now consider the power of gravity. It is a fact that all the bodies of our planetary system gravitate towards each other. This has been fully proved by the great Newton. But he doesn't think of this gravitation as a power inherent in bodies, which they exercise of themselves; rather, he takes it to be a force imposed on them, to which they must necessarily yield. We don't know whether this force is imposed on them by some superfine ether, or by the power of God or of some subordinate spiritual being; but all sound natural philosophy, especially Newton's, takes it to be a force that is imposed on bodies and not inherent in them.

So when bodies gravitate they don't strictly speaking *act*, but are *acted on*. They only succumb to an impression that is made on them. We ordinarily express by active verbs many changes in things in respect of which they are merely passive. And this way of speaking is used chiefly when the cause of the change is not obvious to the senses. Thus we say that a ship 'sails' when every man of common sense knows that it has no inherent power of motion and is only driven by wind and tide. Similarly, when we say that the planets 'gravitate' towards the sun, all we mean is that some unknown power pulls or pushes them in that direction.

What I have said about the power of gravitation can be re-applied to other mechanical powers such as cohesion, magnetism, electricity; and also to chemical and medical powers. By all these, certain effects are produced when one body is applied to another. Our senses discover the effect, but the power is hidden. We know there must *be* a cause of the effect, and we form a relative notion of it from its effect; and very often the same name is used to signify the unknown cause and the known effect.

We ascribe to plants the powers of drawing nourishment, growing, and multiplying their kind. Here too the effect is manifest but the cause is hidden from the senses. So

these powers, like the others that we ascribe to bodies, are unknown causes of certain known effects. It is the business of philosophy to investigate the nature of those powers as far as we can, but our senses leave us in the dark. We can see a great similarity in the notions that our senses give us of

- •secondary qualities,
- •the disorders we feel in our own bodies, and
- •the various powers of bodies that I have listed.

They are all obscure and relative notions—each being a conception of some unknown cause of a known effect. They mostly have a single name for the effect and for its cause; and they are a proper subject of philosophical discussion. It wouldn't be wrong, I think, to call them *occult* qualities.

This label has indeed fallen into disgrace since the time of Descartes. The Aristotelians are said to have used it to cloak their ignorance and to stop all enquiry into the nature of the qualities they called 'occult'. So be it. Let those who were guilty of this *mis*use of the word answer for their crime! To call a thing 'occult', if we attend to the meaning of the word, is not to cloak one's ignorance but rather to own up to it modestly. It is to point the thing out as a proper subject for the investigation of philosophers, whose business it is to better the condition of humanity by discovering what was before hidden from human knowledge.

So if I were to offer a classification of the qualities of bodies in terms of how they appear to our senses, I would divide them first into •manifest and •occult. The **manifest** qualities are those that Locke calls 'primary'—such as extension, shape, divisibility, motion, hardness, softness, fluidity. The nature of these is manifest even to our senses; and the business of the philosopher with regard to them is not •to find out their nature (because that is already well known) but •to discover the effects that are produced by their various combinations, and with regard to those of them that aren't essential to matter •to discover their causes as far as he can.

The **occult** qualities can be subdivided into various kinds:

- •the secondary qualities;
- •the disorders we feel in our own bodies;
- •the qualities we call 'powers of bodies', whether mechanical, chemical, medical, animal, or vegetable; and
- •any others there may be that aren't already covered.

The *existence* of these ·isn't hidden; it· is manifest to our senses; but their *nature* is occult; and here the philosopher has an ample field ·of inquiry open before him·.

God in his generosity has made manifest to all men what we need for the conduct of our animal life. But there are many other precious secrets of Nature the discovery of which enlarges man's power and raises his state. These are left to be discovered by the proper use of our rational powers. They are hidden not so that they'll always be concealed from human knowledge, but so that we may be stimulated to search for them. This is the proper business of a philosopher, and it is the glory of a man and the best reward of his labour to discover what Nature has thus concealed. [Reminder: 'philosopher' here includes the meaning of 'scientist'.]

Chapter 19: Matter and space

The objects of sense that we have considered up to here are *qualities*. But any quality must have a subject, ·i.e. some *thing* that *has* the quality·. We give the names 'matter', 'material substance' and 'body' to the subject of sensible qualities, and the question arises: What *is* this matter?

In a billiard ball I perceive shape, colour, and motion; but the ball is not shape, is not colour, is not motion, nor is it all three of these taken together; it is something that *has* shape and colour and motion. This is a dictate of Nature, and is what everyone believes.

As to the nature of this 'something', I'm afraid I can give little account of that except to say: It *has* the qualities that our senses discover.

'How do we know that they are qualities, and that they can't exist without a subject?' I admit I can't explain how we know that they can't exist without a subject, any more than I can explain how we know that they exist. Nature tells us that they exist, and I think it also tells us that they are qualities.

The belief that shape, motion, and colour are qualities and require a subject must be either •a judgment of Nature, or •revealed by reason, or •a prejudice with no solid basis. Some philosophers maintain that it is a mere prejudice; that a body is nothing but a collection of what we call 'sensible qualities', and that they don't have any subject and don't need one. This is the opinion of Berkeley and Hume; and they were led to it by finding that they didn't have in their minds any idea of substance. It couldn't be an idea of sensation or of reflection.

But to me nothing seems more absurd than to suppose there is extension without anything extended, or motion without anything that moves; but I can't give *reasons* for my opinion because it seems to me self-evident and an immediate dictate of my nature.

And it is also the belief of all mankind; this is shown by the structure of all languages, in which we find adjectives used to express sensible qualities. It is well known that every adjective in language must belong to some substantive expressed or understood; that is every quality must belong to some subject.

[Then two paragraphs developing the thesis that it is a 'judgment of Nature' that the things we immediately perceive are qualities that must be qualities *of* something. Then:]

In this ·intellectual area·, the philosopher seems to be no better placed than the vulgar. They perceive colour and shape and motion by their senses as well as he does, and they are as certain as he is that there is a subject of those qualities. Furthermore, the notions they have of this subject are no more obscure than his. When the philosopher calls it a 'substratum' and a 'subject of inhesion', those learned words mean only what every man understands and expresses by saying in common language that it's an extended and solid and movable *thing*.

The *relation* that sensible qualities have to their subject—i.e. to the body that has them—is not so dark that it can't be easily distinguished from all other relations. Everyone can distinguish it from the relation of effect to cause, of means to end, of a sign to the thing it signifies.

I think it requires some maturity of understanding to distinguish •the qualities of a body from •the body. It may be that brute animals and human infants don't make this distinction; and if you think that this distinction is made not

by our senses but by some other power of the mind, I shan't dispute the point—as long as you grant me that men when their faculties are mature have a natural conviction that sensible qualities can't exist by themselves without some subject to which they belong.

I do indeed think that some of the views about matter that we arrive at can't be deduced solely from the testimony of sense, and must be assigned to some other source.

·DIVISIBILITY OF BODY·

It seems to be utterly evident that all bodies must consist of parts, and that every part of a body is itself a body—a distinct being that can exist without the other parts—and yet I don't think this conclusion is deduced solely from the testimony of sense. For one thing: the divisibility of all body is a necessary truth, and therefore not something learnable from the senses. Also: there is a limit to how fine a division of a body we can perceive; eventually the parts become too small to be perceived by our senses; but we are still quite sure that the body could be further divided while still continuing to be a body. We carry on the division and subdivision *in our thought*, far beyond the reach of our senses, and we can find no end to it. I think indeed that we plainly discern [Reid's word] that there can't be any limit to how far the division can be carried. ·Here is an argument for this conclusion·. If there is a limit to this division, then either division can bring us to

> •a body that is extended but has no parts and is absolutely indivisible,

or it can bring us to

> •a body that is divisible but will stop being a body the moment it is divided.

Both of these positions seem to me absurd, yet the truth of one or the other of them is the necessary consequence of supposing a limit to the divisibility of matter.

On the other hand, if it is admitted that the divisibility of matter has no limit, it will follow that no body can be called *one* individual substance. You may as well call it *two* or *twenty* or *two hundred*. For when it is divided into parts, every part is a being or substance distinct from all the other parts, and was so even before the division. Any one part could continue to exist even if all the other parts were annihilated.

There is indeed a principle, long accepted as an axiom in metaphysics, which I can't reconcile with the ·endless· divisibility of matter. It is the principle:

> Every being is one—*omne ens est unum* [Latin].

I take this to mean that every thing that exists must either be one indivisible being or be composed of a determinate number of indivisible beings. Thus an army can be divided into regiments, a regiment into companies. and a company into men. But here the division has its limit, for you can't divide a man without destroying him, because he is an individual; and according to this axiom everything must be an individual or be made up of individuals.

There can be no doubt that this axiom holds with regard to an army, and with regard to many other things. But what evidence is there that it holds for all beings whatsoever?

Leibniz, conceiving that all beings must have this metaphysical unity, was led to maintain that matter and indeed the whole universe is made up of 'monads', i.e. •simple and indivisible substances.

It may have been the same line of thought that led Boscovich into his hypothesis, which seems to me much more ingenious than Leibniz's, namely that matter is composed of a definite number of •mathematical points that are endowed with certain powers of attraction and repulsion.

The divisibility of matter without any limit seems to me more tenable than either of these hypotheses. As for the

metaphysical axiom ·about **unity** that led to them·: I don't attach much weight to that, considering its origin. Metaphysicians thought they should develop a science devoted to the attributes that are common to all beings. It must be pretty hard to find out such attributes! After racking their brains, they specified three—**unity**, truth, and goodness—the basis for this list, I think, was not any clear evidence that those three are universal but rather a sense that three was a good-looking number.

There are other views about matter that I think are not based solely on the testimony of sense. For example, it is impossible

- •for two bodies to occupy the same place at the same time,
- •for one body to be in different places at the same time,
- •for a body to be moved from one place to another without passing through some connected intermediate series of places.

These seem to be necessary truths, so they can't be conclusions of our senses; for our senses testify only to what *is*, not what *must be*.

·SPACE·

Our next topic is our notion of *space*. Notice first that although space that is empty of matter isn't perceived through any of our senses, when we perceive any of the primary qualities space presents itself as a necessary concomitant. There has to be space if there is to be extension, motion, shape, division, or cohesion of parts.

The notion of space enters into the mind through only two of our senses—namely touch and sight. If someone lacked both of these senses, I don't see how he could ever have any conception of space. And even with both these senses, he still can't have any notion of •space until he sees or feels other •objects . Space has no colour or shape to make it an object of sight; and it has no tangible quality to make it an object of touch. But other objects of sight and touch carry the notion of space along with them. And not only the notion but also the belief in it: a body couldn't exist if there was no space to contain it, and it couldn't move if there was no space ·for it to move through·. Its location, its distance from other bodies, and every other relation it has to other bodies, all presuppose space.

But though the notion of space seems not to enter the mind until it is introduced by the proper objects of sense, once it *has* been introduced it stays with us as something we conceive and in which we believe, even if the objects that introduced it have been removed. We see no absurdity in supposing a body to be annihilated while the space that contained it remains; and to suppose *that* to be annihilated seems to be absurd. •Empty space is so much allied to •nothing or •emptiness that it seems incapable of being annihilated or created.

As well as keeping a firm hold on our belief even when we suppose all the objects that introduced it to be annihilated, space swells to an infinite size. We can't set any limits to how far it spreads or how long it lasts. Hence we call it

> infinite, eternal, immovable, and indestructible.

But it is only

> an infinite, eternal, immovable, and indestructible *void* or *emptiness*.

Perhaps we can say of it what the Aristotelians said of their 'prime matter', namely that whatever it is, it is potentially only, not actually.

When we consider parts of space that have a definite size and shape, there is nothing we understand better, nothing about which we can reason so clearly and to such a great extent. *Extension* and *shape* are circumscribed parts of space, and are the subject-matter of geometry—a science in

which human reason has the widest field and can go deeper and with more certainty than in any other science. But when we try to grasp the *whole* of space, and to trace it to its origin, we get lost. The deep theorizings of able men on this subject differ so widely that we may well suspect that the line of human understanding is too short to reach the bottom of it.

I think Berkeley was the first to point out that •the extension, shape, and space that we talk about in ordinary language, and that geometry treats of, are basically perceived only by the sense of touch, but that •there is a notion of extension, shape, and space that can be acquired through sight without help from touch. To distinguish these he calls the first 'tangible extension', 'tangible shape', and 'tangible space', and the others 'visible extension' etc.

Because I think this distinction is very important in the philosophy of our senses, I shall adopt the names used for it by its discoverer, Berkeley, bearing in mind my previous point that *space*, whether tangible or visible, is not strictly speaking an object of sense but rather something that necessarily accompanies the objects both of sight and touch.

Please note also that when I use the names 'tangible space' and 'visible space' I don't mean to follow Berkeley to the point of thinking that these are really •different things and altogether unalike. I take them to be •different conceptions of the same thing—one very partial and the other more complete, but each clear and sound as far as it goes.

Thus, when I see a spire at a very great distance it seems like the point of a needle; there appears to be no weather-vane at the top, no angles. But when I see the same spire from close up, I see a huge pyramid with several angles and a vane at the top. Neither of these appearances is erroneous. Each is what it ought to be—what it *must* be for that sort of object seen at that distance. These different appearances of a single object illustrate the different conceptions of space—the conception based on the information of sight alone, and the conception drawn from the additional information of touch.

Our sight alone, unaided by touch, gives a notion of space that is very partial but clear. When space is considered according to this partial notion, I call it 'visible space'. The sense of touch gives a much more complete notion of space, and when space is considered according to *this* notion I call it 'tangible space'. There may be thinking beings of a higher order ·than us·, whose conceptions of space are much more complete than those we have from sight and touch combined. Another sense added to sight and touch might, for all I know, give us •conceptions of space that differed as much from •the ones we can now attain as •tangible space differs from •visible space; and those further conceptions might solve many knotty problems which we, because of the imperfection of our faculties, can't possibly solve.

Berkeley acknowledges the visible shape and size of objects corresponds exactly with their tangible ·shape and size·, and that every detail in either of them has a corresponding detail in the other. He acknowledges also that Nature has established such a connection between the **(1)** visible shape and size of an object and **(2)** its tangible shape and size that we learn by experience to know **(1)** from **(2)** .We have been doing this all our lives, and we come to be so good and quick at it that we think we are seeing the tangible shape, size, and distance of bodies when really we only infer those tangible qualities from the corresponding visible qualities that are their natural signs.

[Then three paragraphs in which Reid likens the situation regarding how •visible shape etc. relates to •tangible shape etc. to the situation regarding how •our sensations relate to •the primary qualities with which they are connected. In each case, we are confronted by item x, which carries our mind immediately to item y, whereupon x is forgotten. Then:]

Visible shape or size was never made an object of thought among philosophers until Berkeley gave it a name and pointed out •how it corresponds to and is connected with tangible size and shape, and •how the mind gets the habit of passing from visible shape as a sign to tangible shape as the thing signified by it, doing this so instantaneously that the visible shape is perfectly forgotten.

Visible shape, extension, and space can be made a subject of mathematical theorizing as well as tangible shape etc. can. Here are some differences between them:

Visible: two dimensions
Tangible: three dimensions

Visible: size measured by angles
Tangible: size measured by lengths of lines

Visible: every part is some definite proportion of the whole
Tangible: no part bears any proportion to the whole because the whole is immense [= 'infinite']

Such differences in their properties led Berkeley to think that visible size and shape are totally different from tangible size and shape—different and dissimilar, and not possibly belonging to the same object.

This dissimilarity is the basis for one of the strongest arguments in support of his system. It goes like this:

> If there are external objects that have a real extension and shape, it must be either
>
> •tangible extension and shape, or
> •visible extension and shape, or
> •both tangible *and* visible extension and shape.
>
> The third option seems absurd; and no-one has ever maintained that a single object has two utterly dissimilar kinds of extension and shape. So only one of the two is really in the object, while the other extension and shape are ideal—·i.e. are in the mind and not in the object·. But ·which of the two should be awarded the reality prize? There is no basis for any answer·. No reason can be given for •selecting the perceptions of sight as real and declaring that those of touch are only ideal, *or* for •selecting the perceptions of touch as real and declaring those of sight to be only ideal. Anyone who is convinced that the objects of sight are only ideas has just as much reason to believe the same of the objects of touch.

But this argument loses all its force if something that I have already hinted at is true, namely that visible shape and extension are only a •partial conception, and tangible shape and extension a •more complete conception, of that ·unique and •complete· shape and extension that is, ·in all its •completeness·, really in the object.

Berkeley very thoroughly showed that sight alone, unaided by information from the sense of touch, gives us no perception of the **distance from the eye** of any object—indeed, it doesn't even give us the *thought* of such a distance. But he wasn't aware that this very principle overturns the argument for his system based on the difference between visible and tangible extension and shape. For supposing that external objects do exist, and have the tangible extension and shape that we perceive, it follows rigorously from the principle I have just mentioned that objects' visible extension and shape must be just what we see it to be—·or, more accurately, it follows not from the principle that

> sight, unaided, doesn't yield the concept of distance from the eye,

but rather from the facts about how we *do* get the concept of distance from the eye, given that we *don't* get it from unaided sight·.

The rules of perspective. . . .are demonstrable. They presuppose the existence of external objects that have tangible

extension and shape; and on that basis the rules demonstrate what the visible extension and shape of such objects *must be* when they placed in such-and-such an orientation at such-and-such a distance.

So it becomes obvious that the visible shape and extension of objects, far from being •incompatible with tangible shape and extension, is a •necessary consequence of it in beings who see as we do. The correspondence between visible and tangible isn't arbitrary, like the correspondence between words and the things they signify, as Berkeley thought. [Berkeley held that our visual states constitute a *future-tense conditional language* in which God tells us what we shall feel if we move thus and so.] Rather, the visible/tangible correspondence results necessarily from the nature of the two senses. Furthermore, this correspondence is always found in experience to be exactly what the rules of perspective say that it ought to be if the senses give true information; and that is an argument for both the truth of the rule and the truth of what our senses tell us.

Chapter 20: The evidence of the senses, and belief in general

It is obvious *why* Nature gave us the powers that we call the 'external senses'. They are intended to give us such information about external objects as God saw to be appropriate for us in our present state; and they give to all mankind the information needed for survival, without reasoning or skill or investigation on our part.

The most uneducated peasant has as clear a conception of, and as firm a belief in, the immediate objects of his senses as does the greatest philosopher; and he is satisfied with this, not being interested in *how* he came by this conception and belief. But the philosopher is eager to know how his conception of external objects and his belief in their existence is produced. I'm afraid that this is hidden in impenetrable darkness. But the lack of *knowledge* leaves all the more room for *conjecture*; and philosophers have always been very liberal with *that*!

Plato's dark cave and shadows, Aristotle's '·sensible· species', Epicurus's films, and the modern philosophers' ideas and impressions are all products of the human mind, successively invented to satisfy philosophers' eager desire to know how we perceive external objects; but they all lack the two essential characters of a true and philosophical explanation of the phenomenon. [See the 'first rule of philosophising' laid down by 'the great Newton', Essay 1, late in chapter 3.] •We have no evidence that they exist, and •even if they did exist it can't be shown how they would produce perception.

I have pointed out that this operation of perception contains two ingredients—•the conception or notion of the object, and •the belief in its present existence—and neither can be explained.

Most enlightened philosophers today, I think, agree that we can't assign any adequate cause for our first conceptions of things. We know that we are built in such a way that in certain circumstances we have certain conceptions; but we

don't know *how* they are produced any more than we know how *we* were produced.

Once we have acquired through our senses conceptions of external objects, we can analyse them in our thought into their simple ingredients; and we can built those ingredients into various new compound forms that the senses never presented. But it is beyond the power of human imagination to form *any* conception whose simple ingredients aren't provided by Nature in some manner that we can't explain.

inner: We have a conception of the operations of our own minds,
outer: We have a conception of external objects,

inner: we have it immediately,
outer: we have it through our external senses,

inner: combined with a belief in their existence.
outer: combined with a belief in their existence.

inner: We call this ·combination of conception and belief· 'consciousness'.
outer: We call this ·combination of conception and belief· 'perception'.

But in each case we are only *naming* one of our sources of knowledge; we aren't ·*explaining* it, i.e.· revealing its cause.

We know that when certain •impressions are made on our organs, nerves, and brain, certain corresponding •sensations are felt and certain objects are both •conceived and believed to exist. But in this sequence of operations Nature works in the dark. We can't discover the cause of any one of them, or any necessary connection of one with another. Are they connected by some necessary tie or merely conjoined in our constitution by God's will? We don't know.

It seems very absurd to suppose that any kind of impression on a body should be the efficient cause of a sensation. Nor can we see any necessary connection between sensation and the conception of and belief in an external object. For all we can tell, we might have been constituted in such a way that we had all the sensations that we do actually have by our senses, without any ·preceding· impressions on our organs and without any ·following· conception of any external object. For all we know, we might have been made so as to perceive external objects without any impressions on bodily organs or any of the sensations that invariably accompany perception in us as we are actually constituted.

If our conception of external objects is inexplicable, the conviction and belief in their existence which we get by our senses is no less so.

'Belief', 'assent', 'conviction' are words that I don't think admit of logical definition because the mental operation that they signify is perfectly simple, and of its own kind. But they don't *need* to be defined, because they are common words and well understood.

[Reid and his contemporaries understood a 'logical definition' as one in which something complex is displayed in terms of its simpler ingredients, as in:

> 'circle' = '•plane figure that is •bounded by a line all the points on which are equidistant from a single point'.

Reid holds that 'belief' can't be logically defined because the concept of belief is 'simple'—it has no simpler ingredients that could be spread out in a definition.]

Belief must have an object: someone who believes must believe *something*; and this something is called the 'object' of his belief. Of this object of his belief he must have some conception, clear or obscure; for although there can be a clear and distinct conception of an object without any belief in its existence, there can't be a belief without a conception.

Belief is always expressed in language by a proposition [= 'sentence' here and nearly everywhere in Reid] in which something is affirmed or denied. This is the form of speech that in all

languages is assigned to that purpose; and if there were no belief there couldn't be affirmations or denials, and we wouldn't have any form of words to express either. Belief can be of different strengths, ranging from the slightest suspicion right up to the fullest assurance. These things are obvious to anyone who ever reflects; it would be an abuse of your patience if I went on about them.

I remark next that there are many operations of mind in which, when we analyse them as far as we can, we find belief to be an essential ingredient. A man can't be conscious of his own thoughts without believing that he thinks. He can't perceive an object of sense without believing that it exists. He can't clearly remember a past event without believing that it did occur. Thus, belief is an ingredient in consciousness, in perception, and in remembering.

Belief is an ingredient not only in most of our •intellectual operations but also in many of the •active principles of the human mind. Joy and sorrow, hope and fear, imply a belief about good or ill either present or in expectation. Esteem, gratitude, pity, and resentment imply a belief about certain qualities in their objects. Anyone who acts for an end must believe that his act is likely to achieve that end. Belief has such a large a share in the sources of our intellectual operations, and in the operations themselves, that just as faith in God is represented as the mainspring in the life of a Christian, so also belief in general is the mainspring in the life of a man.

Men often believe things that there are no good reasons to believe, and are led by this into hurtful errors—that is too obvious to be denied. On the other hand, there *are* good reasons for some beliefs—that can't be questioned either, except by someone who is a complete sceptic.

We label as 'evidence' anything that is a ground for belief. To believe without evidence is a weakness that every man has good reason to avoid and that every man wants to avoid. And it isn't in a man's power to believe anything for which he doesn't *think* he has evidence. [In Reid's time, 'evidence' could mean what it does to us, which is also what it seems to mean through much of this chapter. But sometimes in the chapter there are signs of the word's being used in its other then-current meaning, namely *evidentness*: Reid's phrase 'the evidence of reasoning' could mean 'the evidentness that a proposition can have through being reached by reasoning'. Which meaning is involved in a given passage in this chapter is not always a clear-cut question; answering it is left to you.]

What this evidence *is* is more easily felt than described. Those who have never reflected on its nature still feel its influence in governing their belief. It is the logician's business to explain its nature and to distinguish its various kinds and degrees; but every intelligent man can judge concerning it, and he commonly judges rightly when the evidence is fairly laid before him and his mind is free from prejudice. A man who •knows nothing of the theory of vision may •have a good eye; and a man who •never theorized about evidence in the abstract may •have good judgment.

Everyday concerns lead us to distinguish evidence into different kinds, to which we give names that are well understood—such as

evidence of the senses,
evidence of memory,
evidence of consciousness,
evidence of testimony,
evidence of axioms,
evidence of reasoning.

All men of ordinary intelligence agree that each of these kinds of evidence can provide good grounds for belief, and they pretty much agree about what details in a piece of evidence would strengthen or weaken it.

Philosophers have tried by analysing the different sorts of evidence to discover some common nature in which they all share, thereby to reducing them all to one. This was the aim of the schoolmen in their intricate disputes about the criterion of truth. Descartes placed this criterion of truth in *clear and distinct perception*, and laid it down as a maxim that

> •whatever we clearly and distinctly perceive to be true is true;

but what he means by 'clearly and distinctly perceive' in this maxim it's hard to say! Locke placed the criterion in a perception of the agreement or disagreement of our ideas, this perception being •immediate in •intuitive knowledge, and •by the intervention of intervening ideas in •reasoning.

I think I have a clear notion of the different kinds of evidence I have listed, and perhaps of some others that I needn't list here; but I have to say that I can't find any nature that is common to them all, defining a common kind to which they all belong. They seem to me to agree only in this: they are all fitted by Nature to produce belief in the human mind, some of them in the highest degree (which we call 'certainty'), others in various degrees according to circumstances.

I shall take it for granted that the evidence of the senses, when the proper circumstances are in place, is good evidence and a sound basis for belief. My intention here is only to set it alongside the other kinds that I have listed, so that we can judge whether it is a special case of any of them or rather is a nature special to itself.

Evidence of **the senses** seems to be quite different from the evidence of **reasoning**. All •good evidence is commonly called 'reasonable' evidence, and rightly so, because •it ought to govern our belief as reasonable creatures. And in line with this label I think that the evidence of the senses is just as 'reasonable' as the evidence of demonstration. If Nature informs us about things that concern us, by means other than reasoning, reason itself will direct us to accept that information gratefully and to make the best use of it.

But when we speak of 'evidence of reasoning' as a particular *kind* of evidence, we are talking about the evidence of propositions that are inferred by reasoning from propositions already known and believed. Thus the evidence of the fifth proposition of the first book of Euclid's *Elements* consists in its being shown to be the necessary consequence of the axioms and preceding propositions. In all reasoning there must be one or more premises and a conclusion drawn from them. And the premises are called 'the reason why' we must believe the conclusion which we see to follow from them.

That the evidence of the senses is of a different kind from this needs little proof. No-one looks for a *reason* for believing what he sees or feels! And if someone *did*, it would be hard to find one. But though a man can give no reason for believing his senses, his belief remains as firm as if it were grounded on demonstration.

Many eminent philosophers have thought it unreasonable to believe when they couldn't show a reason, and this has led them to work to provide us with *reasons for believing our senses*. But their reasons are very weak, and won't bear examination. Other philosophers have shown very clearly the defects of these reasons, and have (so they think) discovered invincible reasons *against* •this belief ·in the senses·; but they have never been able to shake •it off in themselves, or to convince others. The statesman continues to plot, the soldier to fight, and the merchant to export and import, without being in the least moved by the demonstrations that have been offered of the non-existence of the things they are so seriously employed about. You have as much chance of arguing the moon into leaving its orbit as you have of destroying by argument anyone's belief in the objects of the

senses. [Reid wrote 'the stateman continues to plod'; but in his day one of the meanings of 'plod' was *plot*.]

[Then three paragraphs arguing against the thesis that 'the evidence of the senses is the same as the evidence of **axioms** or self-evident truths'. This, Reid says, misuses the word 'axiom' and ignores the fact that sense-attested propositions, however secure, are not 'necessary and immutable'. Then:]

There is no doubt an analogy between the evidence of the senses and the evidence of **testimony**. That is why we find in all languages such analogical expressions as 'the testimony of our senses', 'of giving credit to our senses', and the like. But there is a real difference between the two as well as a similarity. When we believe something on the basis of someone's testimony, we rely on that person's authority. But we have no such authority for believing our senses.

Shall we say then that this belief is God's inspiration? I think there is a sense in which that is true, because I take the belief in question to be the immediate effect of our constitution, which is God's work. But if 'inspiration' is understood to imply a conviction that it comes from God, our belief in the objects of the senses is *not* inspiration; for a man would believe his senses even if he had no notion of any god. Someone who is convinced that he is the workmanship of God, and that it is a part of his constitution to believe his senses, may think *that* to be a good reason to *confirm* his belief. But ·it won't be the *basis* for the belief, because· he had the belief before he could give this or any other reason for it.

If we compare the evidence of the senses with that of **memory**, we find a great resemblance but still some difference.

memory: 'I clearly remember dining yesterday with Mr Stewart'—what does that mean?
senses: 'I see a chair to my right.' What does that mean?

memory: It means that I have a distinct conception of and firm belief in this past event—not by reasoning, not by testimony, but immediately from my constitution.
senses: It means that I have by my constitution a distinct conception of and firm belief in the present existence of the chair in that place.

memory: I give the name 'memory' to the part of my constitution by which I have this kind of conviction regarding past events.
senses: I give the name 'seeing' to the part of my constitution by which I have this immediate conviction.

The two operations agree in the immediate conviction that they give. They agree also in that the things believed are not necessary but contingent and limited to time and place. But they differ in two respects. (1) The object of memory must have existed at some •past time; but the object of sight—and of all the other senses—must be something that exists at •present. (2) I see only *by my eyes*, and only when they are directed to the object and when it is illuminated; but my memory isn't tied down to any bodily organ that I know of, or limited by light and darkness—though it does have limitations of another kind.

These differences are obvious to all men, and very reasonably lead them to consider seeing and remembering as operations of fundamentally different kinds. But the nature of the evidence they give has a great resemblance. A comparable difference and a comparable resemblance obtains between the evidence of the senses and the evidence of **consciousness**; I leave this for you to work out for yourself.

As for ·Locke's· opinion that evidence consists in a perception of the agreement or disagreement of ideas, I may have occasion to consider it in more detail in another place. All I will say here is that this thesis, when taken in its most favourable sense, does fit the evidence of reasoning and the evidence of some axioms. But I can't see how it can be applied in *any* sense to the evidence of consciousness, or of memory, or of the senses.

When I compare the different kinds of evidence that I have listed, I have to say that the evidence of •reasoning and of some •necessary and self-evident truths seems to be the least mysterious, the most completely understood; so I am not surprised that philosophers should have tried to reduce all kinds of evidence to these.

When I see that a proposition is self-evident and necessary, and that its subject is plainly included in its predicate, I seem to have everything I need to understand why I believe it. And when I see that a consequence necessarily follows from one or more self-evident propositions, that is all I need for believing that consequence. The light of truth so fills my mind in these cases that I can't want or ·even· conceive anything more satisfying.

When I clearly remember a past event or see an object before my eyes, this commands my belief just as much as an axiom does. But when as a philosopher I reflect on this belief, and want to trace it to its origin, I can't resolve it into necessary and self-evident axioms or into conclusions that necessarily follow from them. It seems that I don't have *that* kind of evidence—the kind that I can best comprehend and that gives perfect satisfaction to an inquisitive mind—and yet it would be ridiculous to doubt, and anyway I find that *I can't* doubt. Trying to throw off this belief is like trying to fly—ridiculous and impracticable.

To a philosopher, one who has long thought that his knowledge is chiefly due to the acquisition of the reasoning power that he is so proud of, it is no doubt humiliating to find that his reason can lay no claim to the greater part of what he knows. Through his reason he can discover certain abstract and necessary relations of things; but his knowledge of what really does or did exist comes though another channel—one that is open to those who cannot reason. He is led to it in the dark, and doesn't know how he got there.

It's not surprising that the pride of philosophy should lead some philosophers to invent empty theories in order to account for this knowledge; and that others, who see that this can't be done, spurn a ·kind of· knowledge they can't account for, and vainly try to get rid of it as a reproach to their understanding. But the wise and the humble will receive it as the gift of heaven, and try to make the best use of it.

Chapter 21: Improving the senses

Our senses can be thought of in two ways—(1) as givers of pleasant or unpleasant sensations, and (2) as givers of information about things that concern us.

[Reid then devotes about a page to saying that the senses in the first of their two roles can't be improved and don't need to be. Some of his points: •Nasty sensations are Nature's way of warning us of impending trouble. •It can happen that an intensely nasty kind of sensation, when repeated often enough, flattens out to being tolerable and eventually neutral. Similarly with a pleasant kind, flattening out into 'insipid' and perhaps even worse. This is in contrast to 'our active and perceptive powers', which intensify with frequent use. •If you try 'by a soft and luxurious life' to develop your capacity for pleasant sensations, you'll do the same for your capacity for unpleasant ones; and you will 'encourage many diseases that cause pain'. Then:]

The improvement of our external senses in their role as givers of information is a subject more worthy of our attention. The external senses aren't the noblest and most exalted powers of our nature, but they aren't the least useful. All that we can know about the material world must be based on information that they give, and everyone—the philosopher as well as the day-labourer—must be indebted to them for most of his knowledge.

Some of our perceptions by the senses could be called •'**original**' ·or 'basic'·, because they don't require any previous experience or learning; but ever so many more of our perceptions are •**acquired** ·or **learned**·, and are the fruit of experience.

[Reid applies this distinction to the senses of smell, taste, and hearing, repeating some of what he has said earlier about secondary qualities. Then:]

We know *much* more about the world through the other two senses. By sight we learn to distinguish objects by their colour, in the same way that we distinguish them by their sound, taste, and smell. By this sense we perceive visible objects to have •extension in two dimensions, •visible shape and size, and •a certain angular distance from one another. These I take to be the **original** perceptions of sight.

By the sense of touch we not only perceive whether bodies are hot or cold (which are secondary qualities), but we also perceive **originally** their •three dimensions, their •tangible shape and size, their •distance from one another, and their •hardness or softness or fluidity. We **originally** perceive these ·primary· qualities by touch alone, but through experience we **learn** to perceive most of them by sight.

We **learn** to perceive by one sense what **originally** could have been perceived only by another, doing this by finding a connection between the objects of the different senses. The original perceptions or the sensations of one sense become *signs* of whatever has always been found connected with them; and from the sign the mind passes immediately to the conception of and belief in the thing signified. And although the connection in the mind between the sign and the thing signified by it is an effect of custom—·which means that it has been **learned**·—this custom becomes second nature, making it hard to distinguish from the **original** power of perception.

For example, if a sphere of one uniform colour is placed in front of me, I easily perceive by my eye its spherical shape and its three dimensions. Everyone will agree that just by looking and without touching I can be certain that it is a

sphere; but it is equally certain that by the **original** power of sight I couldn't perceive it to be a sphere and to have three dimensions. The eye originally could only perceive two dimensions and a gradual variation of colour on the different sides of the object.

It's from experience that we **learn** that the variation of colour is an effect of the spherical shape and of the distribution of light and shade. But our thought moves so fast from the effect to the cause—·from the colour-variation etc. to •the object's being a three-dimensional sphere·—that we attend only to •the cause and can hardly be persuaded that we don't *immediately* see the three dimensions of the sphere. . . .

[Reid proceeds to re-tell this story in terms of *signs* and *things signified*. Then:]

Those who have had their eyesight from infancy come to have **acquired** perceptions so early that they can't remember ever *not* having them; so they don't distinguish them from their **original** perceptions; and can't be easily persuaded that there is any solid basis for such a distinction. . . .

This power that we **acquire** of perceiving through our senses things that **originally** we wouldn't have perceived is not the effect of any reasoning on our part. It's the result of our constitution—·the way we are made·—and of the situations in which we happen to be placed. We are made in such a way that when two things are found to be conjoined in certain circumstances, we are prone to believe that they are connected by Nature and will always be found together in similar circumstances.

This belief isn't intuitively obvious, nor do we get it through reasoning; I think it is an immediate effect of our constitution. So it is strongest in infancy, before our reasoning power appears, before we are able to draw a conclusion from premises. Suppose a child *once* burns his finger in a candle: from that single event he connects the pain of burning with putting his finger in the candle, and believes that these two things must go together. This part of our constitution is obviously very useful to us before we come to the use of reason. . . .

No doubt someone's being *perfectly rational* would show in his having no beliefs except ones based on intuitive evidentness or on sound reasoning. But man is not perfectly rational, and Nature doesn't intend that he should be so at every moment of his life. We come into the world without the use of reason; before we are •rational creatures we are merely •animal; and our survival depends on our believing many things before we can reason. . . . Our beliefs at that time are not governed by chance. They are regulated by certain principles that are parts of our constitution. Call them 'animal principles' or 'instinctive principles' or what you will; the name doesn't matter; what matters is that they are different from the faculty of reason. They do the work of reason while it is in its infancy. . . .

From what I have said you will see that our original powers of perceiving objects by our senses are greatly improved by use and habit. . . . This is the greatest and most important improvement of our external senses. . . .

Besides this •natural improvement of our senses, there are various •artificial ways in which they can be improved, or their defects remedied. (1) By proper care of the organs of sense, this being a medical matter. . . .

(2) By accurate attention to the *objects* of sense. [In this passage, 'artist' refers to anyone who practises a skill or technique—a painter, a physician, a plumber, etc. And similarly with 'art'.] In every art we can see how such attention improves the senses. The artist, by giving more attention to certain objects than others do, comes to perceive many things in those objects that others don't. And many people who happen to be deprived

of one sense make up for that defect to a large extent by attending more carefully to the objects of the senses they do have. The blind have often been known to acquire unusual sharpness in distinguishing things by touch and hearing; and the deaf are better than the rest of us at reading men's thoughts in their faces.

(3) Our senses can be improved also by additional artificial organs or instruments. . . .

(4) Information acquired by our senses can be improved by discovering how Nature has connected objects' sensible qualities with their more hidden qualities. . . . I am taught that bodies belonging to a certain species have certain hidden qualities, but how am I to know that *this* individual belongs to *that* species? Only through the sensible qualities that characterise the species; I must know that this is bread and that is wine before I eat the one or drink the other. . . .

It is *one* branch of human knowledge to •know the names of the various species of natural and artificial bodies, and to •know the sensible qualities by which things are recognized as members of them. It is *another* branch of knowledge to •know the hidden qualities of the various species, and the uses to which they can be put. Someone who possesses both these branches is informed by his senses of countless important things that are hidden from those who possess only one, or neither. . . .

Chapter 22: The deceptiveness of the senses

Complaints that our senses are deceptive have been very common in ancient and in modern times, especially among philosophers. If we accepted everything they have said on this subject, it would seem natural for us to conclude that

> some malignant demon gave us our senses so as to delude us,

rather than that

> our senses were formed by God, who is wise and beneficent, so as to give us true information about things we need to know for our survival and happiness.

The whole sect of atomists. . . .maintained that all the qualities of bodies that the moderns call 'secondary qualities'. . . .are mere illusions of sense and have no real existence. Plato maintained that we can get no real knowledge of material things, and that eternal and unchanging ideas are the only objects of real knowledge. The. . . .sceptics anxiously hunted up arguments to prove the deceptiveness of our senses, in support of their favourite doctrine that we ought to withhold assent even in things that seem most evident.

Among the Aristotelians we find frequent complaints that the senses often deceive us, and that their testimony is suspect when it isn't confirmed by reason, which can correct the errors of the senses. They supported this complaint by many everyday examples, such as the crooked appearance of an oar in water; objects being magnified and their distance mistaken in a fog; the sun and moon appearing to be about a foot or two in diameter, when really they are thousands of miles ·across·; a square tower being taken at a distance to

be round. They believed that *the deceptiveness of the senses* sufficed to explain these appearances and many others like them. So they were using 'the deceptiveness of the senses' as a decent cover to conceal their ·shameful· ignorance of the real causes of the phenomena—the same role that had been found for 'occult qualities' and 'substantial forms'.

Descartes and his followers joined in the same complaint. [Reid then brings in the Cartesian philosopher le Grand, from whom he quotes a passage about the deceptiveness of the senses, ending with this:] 'The senses are given by Nature for just one purpose, namely to warn us of what is useful and what is hurtful to us. We pervert the order of Nature when we put them to use in another way, namely as a means to knowledge of truth.'. . . .

It seems to taking a poor view of God's workmanship to think that he has given us one faculty (our senses) to deceive us and another faculty (reason) to detect the deception!

So we ought to consider whether the ·belief in the· deceptiveness of our senses isn't rather a common error that men have been led into in an attempt to conceal their ignorance or to apologise for their mistakes.

There are two powers that we owe to our external senses—•sensation and •the perception of external objects. There can't be anything deceptive in sensation, because we are *conscious* of all our sensations, and ·therefore· they can't be different in kind, or more or less intense, than we feel them to be. A man can't possibly be in pain when he doesn't feel pain; and when he feels pain it is impossible that his pain shouldn't be real and be as intense as he feels it to be; and the same thing goes for every sensation whatsoever. A pleasant or unpleasant sensation may be forgotten when it is •past, but when it is •present it can't be other than what we feel.

So if there is anything deceptive in our senses, it must be in the perception of external objects, which is my next topic.

Our powers of perceiving external objects aren't the best *conceivable*; perhaps beings of some higher order have more perfect powers than ours. We can perceive external objects only by means of bodily organs; and these are liable to various disorders that sometimes affect our powers of perception. The nerves and brain, which are interior organs of perception, are also as liable to disorders as every part of the human frame is.

But it's not only our powers of perception that are all liable to be hurt or even destroyed by disorders of the body; the same thing is true of the imagination, the memory, and the powers of judging and reasoning—but that doesn't lead us to call *them* deceptive!

Our senses, our memory, and our reason are all limited and imperfect. That is the human fate. But they are such as God saw to be best fitted for us in our present state. Superior beings may have intellectual powers that we don't have at all, or have ones that we also have but less perfectly than they do and more liable to accidental disorders than theirs are. But we have no reason to think that God has given deceptive powers to any of his creatures. This would be to think dishonourably of our maker, and would lay a basis for universal scepticism.

The appearances commonly imputed to the deceptions of the senses are many and various, but I think they can be placed in the four following classes.

(1) Many things called deceptions of the senses are only conclusions rashly drawn from the testimony of the senses. In these cases, the testimony of the senses is true but we rashly draw from it a conclusion that doesn't necessarily follow. We are disposed to blame our errors on false information rather than on inconclusive reasoning, blaming our senses for the wrong conclusions we draw from their testimony.

[Reid illustrates this at some length, e.g. by the example of someone who is taken in by a counterfeit coin. And then moves on to something that seems to be of intrinsic interest to him, not merely—not even *mainly*—as raising issues about the deceptiveness of the senses. Thus:]

Many false judgments that are regarded as deceptions of the senses arise from our mistaking •relative motion for •real or absolute motion. These mistakes *can't* be deceptions of the senses because:

> by our senses we perceive only the relative motions of bodies; it is by reasoning that we infer real ·or absolute· motion from the relative motion that we perceive.

A little reflection can satisfy us of this.

I noted earlier that we perceive extension to be *one* sensible quality of bodies, which inevitably leads us to conceive *space*, though space itself isn't an object of sense. When a body is moved out of its place, the space that it filled remains empty until it is filled by some other body; and if it were never filled in that way it would remain empty forever. Before any bodies existed, the space they now occupy was *empty space*, capable of receiving bodies; for no body can exist where there is no space to contain it. Thus, there is space wherever bodies exist or *can* exist.

This makes it obvious that space can't have any limits. It is equally obvious that space is immovable. Bodies *in* space are movable, but the place where they are can't be moved—we can no more think of •one part of space as moving nearer to or further from another than we can think of •a thing as being moved away from itself!

This unlimited and immovable space is what philosophers call 'absolute space'. •Absolute or real motion is a •change of place in absolute space.

Our senses don't inform us of the absolute motion or absolute immobility of any body. When one body moves away from another, this can be picked up by the senses; but we don't perceive by our senses whether any body keeps to the same part of absolute space. When one body seems to move away from another, we can infer with certainty that absolute motion has occurred; but our senses don't tell us whether the absolute motion was in this body or that body or both.

[Reid then introduces the formerly widespread belief that 'the earth keeps its place unmoved'; says that it would be interesting to have an explanation of its popularity and of people's tendency to cling to it even in times when we all know better; says explicitly that such an explanation 'is not our present business'; and proceeds with the supposedly more limited project of showing that this popular error 'cannot justly be called a deception of the senses'. Thus:]

All motion must be estimated from some point or place that is supposed to be at rest. We don't perceive the points of absolute space from which real and absolute motion must be reckoned. And there are obvious reasons why mankind in a state of ignorance should make the earth the fixed place from which to estimate the various motions they perceive. The practice of doing this from infancy, and of constantly using a language that supposes the earth to be at rest, may perhaps be the cause of the general prejudice in favour of this opinion. ['not our present business'!]. . . .

(2) Another class of errors that are blamed on the deceptions of the senses are the ones we are liable to in our *learned* perceptions. [Reid repeats his earlier explanation of 'learned perceptions'. Then:] Whether this learned perception •is a process of reasoning that we no longer remember (as some philosophers think) or rather •results from some part of our constitution distinct from reason (as I believe), is not

relevant to our present topic. If the former view is right, the errors of learned perception belong in class (1) that I have already discussed. If not, they are in a distinct class of their own. Either way, the errors of learned perception are not deceptions of our senses.

[Reid then gives several examples, including the example of the sphere. The closing paragraphs of this segment of the chapter explain why it is good for us to have learned perceptions, especially in childhood—which Reid describes with great charm and insight. Thus:]

We come into the world ignorant of everything, and exposed by our ignorance to many dangers and to many mistakes. The regular sequence of causes and effects that God in his wisdom has established, and that directs every step of our adult conduct, is unknown until it is gradually discovered by experience.

We must learn a lot from experience before we can reason, so we are likely to make many errors. Indeed I think that in our early years reason would do us much more harm than good. If we were aware of our condition in that period of life, and could reflect on it, we would be like a man in the dark surrounded with dangers, where every step he takes may be into a pit. Reason would direct him to sit down and wait until he could see around him.

Similarly, if an infant were endowed with reason it would direct him to do nothing until he knew what could be done safely. He can know this only by trying things out, and experiments are dangerous. Reason directs that dangerous experiments shouldn't be conducted unless there is a very urgent reason. So reason, ·if the infant had it·, would make him unhappy and would get in the way of his learning through experience.

Nature has followed another plan. The child, unaware of danger, is led by instinct to exert all his active powers to •try everything without the cautious warnings of reason, and to •believe everything he is told. Sometimes his rashness brings him harm that reason would have prevented. But his suffering is itself a useful discipline, leading him to avoid in future whatever caused it. Sometimes •his credulity leads to his being misled, but •it is infinitely beneficial to him on the whole. His activity and credulity are more useful qualities, and better instructors, than reason would be: they teach him more in a day than reason would do in a year; they provide a stock of materials for reason to work on; they make him relaxed and happy at a time in his life when reason could only serve to suggest a thousand tormenting anxieties and fears. And even when he •does things and •believes things that reason wouldn't justify, he is acting ·and believing· in conformity with Nature's intention and with the constitution it gave him. So that the wisdom and goodness of the author of Nature can be seen just as clearly in withholding the exercise of our reason in infancy as in bestowing it when we are ready for it.

(3) A third class of errors ascribed to the deceptions of the senses proceeds from ignorance of the laws of Nature.

The laws of Nature (I mean physical laws, not moral ones) are learned either from our own experience or from the experience of others who have had the opportunity to observe the course of Nature.

Ignorance of those laws, or inattention to them, is apt to lead to false judgments concerning the objects of the senses, especially those of hearing and of sight. Those false judgments are often called 'deceptions of the senses', but that is not what they are.

Sounds affect the ear differently depending on whether the bell (for example) is in front of us or behind, on the right hand or on the left, near or far away. We learn to judge where the bell is on the basis of how its sound affects

the ear, and in most cases we judge correctly. But we are sometimes deceived by •echoes that bounce the sound back, or •whispering galleries that alter its direction, or •speaking trumpets that convey it across a distance without lessening.

Ventriloquists are people who have acquired the art of modifying their voice so that it affects the hearer's ear as if it came from another person or from the sky or from under the earth. The deception they produce is still greater ·than those I have just listed·, because it is less common than they are.

Well, the deception they are *said to* produce! I never had the good fortune to hear one of these artists at work, so I can't say how perfect their art has become. [In Reid's time an 'art' was any human activity involving techniques or rules or skills, including medicine, farming, painting—and ventriloquism!] I suspect that it is very imperfect imitation, and not apt to deceive anyone who isn't inattentive or flustered. If ventriloquism could be carried to perfection, the ventriloquist would be a very dangerous man in society. . . . And if the ventriloquists have all been too virtuous to use their talent to the harm of others, we might at least expect that some of them would use it for their own benefit. If it could be brought to any significant degree of perfection, it seems to be as legitimate a device for getting money as conjuring or rope-dancing. But I have never heard of any exhibition of this kind, which inclines me to think that it is too crude an imitation to stand being publicly exhibited, even to the vulgar.

Some people are said to have the art of imitating the voice of someone else so exactly that in the dark they might be taken for the person whose voice they are imitating. I am apt to think that the stories told about this art are also exaggerated—as amazing stories are apt to be—and that an attentive ear would be able to distinguish the copy from the original.

Here is a wonderful example of how accurate [here = 'fine-grained', 'sensitive'] as well as of how truthful our senses are in matters that are of real use in life: we can distinguish all the people we know by their faces, voices, and hand-writing, although we are often unable to *say* what tiny differences we are going by when we identify them; and we are hardly ever deceived in matters of this kind, when we give proper attention to what the senses tell us.

But when it *does* happen that sounds produced by different causes are not distinguishable by the ear, this may prove that our senses are •imperfect but not that they are •deceptive. The ear may not be able to draw the right conclusion, but it's only our ignorance of the laws of sound that leads us to a wrong conclusion.

Deceptions of •sight arising from ignorance of the laws of Nature are more numerous and more remarkable than those of •hearing.

The rays of light that are our means of seeing travel in straight lines from the object to the eye when they aren't obstructed, and we are naturally led to conceive the visible object to be in the direction of the rays that reach the eye. But the rays can be reflected, refracted, or inflected [= 'bent'] in their journey from the object to the eye, according to certain fixed laws of Nature, and this can change their direction, thereby changing the apparent place, shape, or size of the object.

Thus, a child sees himself in a mirror and thinks he sees another child behind the mirror imitating all his motions. But even a child soon gets the better of this deception and knows that he sees only himself.

All the deceptions made by telescopes, microscopes, camera obscuras, and magic lanterns are of the same kind, though less familiar to the vulgar. Ignorant people may be deceived by them; but to those who know the principles of

optics they give solid and true information, and the laws of Nature by which they are produced bring infinite benefit to mankind.

(4) There remains one further class of errors commonly called 'deceptions of the senses'—these are the only ones that I think can properly be given that label. I mean the deceptions that come from some disorder or abnormal state either of the •external sense-organ or of the •nerves and brain that are internal organs of perception.

In a delirium or in madness, perception, memory, imagination, and our reasoning powers are strangely disordered and confused. There are also disorders that affect some of our senses while others are sound. Thus, a man can feel pain in his toes after the leg has been cut off. If you hold a small ball between your crossed fingers, you may feel it as two balls. You may see an object double by not directing both eyes properly to it. By pressing the ball of your eye you can see colours that are not real. Someone with jaundice in his eyes may mistake colours. These are more properly called 'deceptions of the senses' than any of classes (1) through (3).

We have to accept that it comes with *being human* that all our faculties are liable, through accidental causes, to be hurt and wholly or partly unfitted for their natural functions. But as this imperfection is common to •all our faculties, it provides no sound basis for picking out •some of them as deceptive.

Summing up: it seems to have been a common error of philosophers to regard the senses as deceptive. And to this error they have added another: that one use of reason is to detect the deceptions of the senses.

From what I have said I think it appears that there is no more reason to account our •senses as deceptive than our •reason, our •memory, or any other •faculty of judging that Nature has given us. They are *all* limited and imperfect, but are wisely suited to the present condition of man. We are liable to error and wrong judgment in the use of them all; but no more in the information provided by the senses than in the deductions of reasoning. And the errors we fall into regarding objects of the senses are corrected not •by reason but •by more accurate attention to the input we get from our senses themselves.

Perhaps philosophers' *pride* gave rise to this error ·of thinking that reason has the task of correcting the supposed deceptions of the senses·. They think that *reason* is what puts them on a higher level than uneducated people. The testimony of the senses are common to the philosopher and to the most illiterate. They put all men on a level, and so they're apt to be undervalued ·by educated people·. But we are indebted to the testimony of the senses for most of our knowledge, and for the most interesting part of it. The wisdom of Nature has made the most useful things the most common, and their commonness shouldn't lead us to despise them. Nature also pressures us to believe the testimony of the senses, and philosophy's attempts to weaken that force are all fruitless and vain.

One last remark on this topic: There seems to be a contradiction between •what philosophers teach concerning ideas and •their doctrine of the deceptiveness of the senses. We are taught that the role of the senses is only to give us the *ideas of* external objects. If that is right, there can't be any deceptiveness in the senses: ideas can't be true or false; if the senses don't testify anything they can't give false testimony; if they aren't judging faculties, no judgment—whether true or false—can be attributed to them. So there is a contradiction between •the common doctrine concerning ideas and •the common doctrine concerning the deceptiveness of the senses. Both could be false, as I believe they are; they can't both be true.