



# AN ESSAY CONCERNING HUMAN UNDERSTANDING (in part)

by:  
**John Locke** (1632 - 1704)

*Modernization, additions and footnotes by Barry F. Vaughan<sup>1</sup>*

## BOOK I CHAPTER 1

### Introduction And Overview Of the Essay

**1. *An Inquiry into the understanding, pleasant and useful.*** Because the understanding sets humans above the rest of sensible beings, and gives them all the advantage and dominion which they have over them, it is certainly a subject, even for its nobility, worthy of our time and effort to investigate. The understanding is like the eye. While the eye makes us see and perceive other things, it does not see itself. And, it would require great skill, and perhaps some difficulty, to set it at a distance and observe itself. But whatever obstacles lie in the path of this investigation, whatever prevents us from understanding our own minds, I am sure that all the light we can shed upon it, all the acquaintance we can make with our own understanding, will not only be very pleasant, but it will also bring us great advantage in directing our thoughts in the search for knowledge of everything else.

**2. *Design.*** This is my purpose: to inquire into the *origin, certainty, and extent* of human knowledge, as well as the *evidence and degrees* of belief, opinion, and acceptance. Therefore, in this essay I will *not* delve into the physical components of the mind, or examine its essence. Neither will I examine how the motions of our spirits<sup>2</sup> or actions of our bodies cause experiences

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<sup>1</sup> From Project Gutenberg's [An Essay Concerning Human Understanding](#), by John Locke. This modernization/translation is my own and is based on the Project Gutenberg edition ([www.gutenberg.org](http://www.gutenberg.org)). The best source for those interested in Locke is the critical edition edited and introduced by Peter H. Nidditch, Oxford University Press, 1975.

<sup>2</sup> This is a reference to 'animal spirits' (*Lt., spiritus animalis*) which was posited by Renaissance and Modern physicians and philosophers as the substance in the nerves that communicated information between the sense organs and brain. It was thought to be one of three fluid substances which account for the function of the organs in living bodies, the others being the *vital spirit* (associated with the heart), and the *natural spirit* (associated with the liver). What is important to note here is that Locke is trying to avoid the question of Reductivism: are mental events nothing more than physical/chemical events in the brain? If the answer is yes, as Hobbes had claimed, the whole notion of personal accountability in an afterlife becomes problematical. As a physician, Locke was fully aware that

through our sense organs, or ideas in our minds, and whether or not any—or all—of those ideas depend on matter. These are speculations which I shall avoid because they are beyond the scope of my current project (no matter how curious and entertaining they might be). It will be sufficient, for the purposes of this essay, to examine the human faculties of understanding as they are focused on the objects that they are designed to illuminate. I will consider my efforts successful in this examination if I can provide a plain and historically accurate account of how the mind attains all its beliefs, and if I can demonstrate the certainty entailed by *knowledge*, as well as explain the various, different, and sometimes contradictory evidence for *belief* which we observe among people—asserted with such confidence and assurance, put forward with such fondness and devotion, held with such eagerness and resolution—which when considered rationally might cause a person to suspect either that there is no such thing as truth at all, or that humans are insufficiently equipped to achieve knowledge of it.

3. **Method.** Therefore, it is worth our effort to explore the differences between opinion and knowledge, and examine the degree to which we ought to regulate our acceptance and moderate our persuasion, regarding beliefs that do not have the certainty of knowledge. In order to achieve this goal I shall pursue the following method:

*Firstly*, I will inquire into the *origin of those ideas*, [beliefs], notions, or whatever else you want to call them, which a person observes—and is aware of—in their own mind; further, I will examine the various ways the understanding comes to have them.

*Secondly*, I will endeavor to show what *knowledge* the mind can obtain using those ideas: along with the certainty, evidence, and extent of it.

*Thirdly*, I will investigate the nature and *grounds* of ‘faith’ or ‘opinion’: by which I mean the assent which we give to any proposition as true, when the truth of the proposition has not yet, or perhaps cannot, be known for certain. And here we will have the opportunity to examine the evidence for our beliefs, and the varying degrees to which they may be justified.

## CHAPTER 2

### There Are No Innate Ideas in the Mind

1. ***A demonstration that innate ideas are not necessary for knowledge.*** There is an established opinion among some people, that there exists in the mind certain innate ideas, first beliefs, κοιναι εννοιαι (*koinai ennoiai*)<sup>3</sup>, characters, as it were, stamped upon the human mind, which the soul receives at its creation and brings into the world with it. It would be sufficient to convince unprejudiced readers that this claim is false if I were only to demonstrate—as I hope to do in the following parts of this essay—how we attain all the knowledge we have, simply using our natural faculties, without the need for any innate ideas or principles. For I believe anyone will admit that it would be ridiculous to suppose that the idea of color is innate in a being whom God has provided the power of sight, and the ability to receive it through the eyes from external

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the physiological and anatomical models of the day could no more satisfactorily answer the question than epistemological models.

<sup>3</sup> *Gk* – “commonly held beliefs”.

objects. It would also be unreasonable to think other mental phenomena innate, or natural impressions, when we are fully aware that we have faculties designed specifically to cause them in us just as easily as if they had been innate parts of the mind. However, because a person is not permitted to follow his own thoughts in search of truth whenever he departs from the popular path, I will clarify the reasons that cause me to doubt the existence of innate ideas as an excuse for my mistake—if indeed I am making one. That judgment I leave to be made by those who, like me, commit themselves to embrace the truth wherever they find it.

**2. *The Argument from Universal Consent.*** There is nothing more commonly taken for granted than that there are certain principles, both speculative and practical, (for they<sup>4</sup> speak of both), universally acknowledged by all mankind. The fact that there is universal acknowledgement of the truth of these propositions, they argue, is evidence that they must be innate beliefs which human souls receive at their creation, and which are necessarily brought into the world and are just as real as natural faculties.<sup>5</sup>

**3. *The Argument from Universal Consent is insufficient to prove innate ideas.*** This argument, based on universal consensus, has this misfortune in it: if it were in fact true that some beliefs were universally agreed to be true, that agreement would not prove they were innate, if an alternative explanation of how people arrived at a universal consensus can be demonstrated—which I presume can be done.

**4. *The laws of non-contradiction and identity are not universally acknowledged.*** But, what is worse is that this argument from universal consent (which is used to prove innate ideas), appears to me to be a demonstration that there are no innate ideas, because there are none to which all mankind give universal assent. I will begin with the greatest and the most popular examples of abstract deductive principles: "What ever is, is," and "It is impossible for the same thing to exist and to not exist [in the same way, at the same time]." I think these, of all others, have the strongest claim to be innate. These ideas have such an established reputation as universally accepted propositions that it would seem strange for anyone to challenge them. However, I take the liberty to claim that these propositions are so far from being universally believed that we can safely say there is a significant part of humanity that is not even conscious of them.

**5. *Examples of those who are not in the general consensus.*** First, it is evident that young children and those with cognitive malfunctions do not have the slightest understanding or even awareness of the aforementioned universal principles. That absence is sufficient to destroy any claim of universal agreement which would be necessary *if* innate ideas existed. To me it seems almost contradictory to claim that there are ideas *imprinted* on the soul, but at the same time claim that the soul is not aware of them: if the term 'imprinting' is to mean anything at all in this context, it must mean "to be aware of something". Thus, to *imprint* anything on the mind without the mind's awareness of it, seems to me an unintelligible claim. Therefore, if children and the cognitively deficient have souls—have minds—with those impressions in them, they must be *aware* of them, and they must necessarily *know* and *assent* to them.

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<sup>4</sup> Locke is referring to Rationalists in general, and Cartesians in particular.

<sup>5</sup> By "natural faculties" Locke here means the five bodily senses. The concept of natural faculties will later be expanded to include the mind's capacity for memory as well as its ability to reflect on and organize both sensations and ideas.

But they do not; and this is evidence that children and the cognitively deficient do not have such impressions. If so-called ‘innate’ ideas are not beliefs naturally imprinted on the mind, how can they be considered innate? And if there *are* naturally imprinted beliefs, how could they be unnoticed? To claim that an idea is imprinted on the mind, and at the very same time claim that the mind is unaware of it and has never noticed it, reduces this so-called ‘impression’ to nothing at all. One cannot consistently claim that a proposition exists in the mind if the mind did not know it, nor was ever even conscious that it existed. If it *were* rational to claim that ideas exist innately in the mind while also being unknown to the mind, then one could also claim that *every* true proposition, *every* idea the mind is capable of assenting to, is imprinted and exists in the mind *because*, saying an unknown innate idea exists in the mind could only mean that the mind is *capable* of knowing it. If this is true, one could further claim that ideas *could* be imprinted on the mind which it never *has*, nor even *can* know. Certainly, a person may live a long time and die without knowing many of the things she was capable of knowing. But if the *capacity* for knowledge is all we are talking about, then all the ideas a person ever does or could have *should* be considered innate, and this whole debate will reduce to nothing more than a verbal confusion. That is, while it *seems* we are asserting something different, we are in fact *really* agreeing with those who deny innate ideas. No one, so far as I know, has ever denied that the mind is *capable* of acquiring beliefs: the capacity is innate while knowledge is acquired. But if that is the case, why is there such a fuss over innate beliefs? If ideas can be imprinted on the mind without being noticed, I see no real difference between what the mind is *capable* of knowing, and the *source* of that knowledge: either all ideas are innate or all ideas are derived from experience. Attempting to distinguish them is useless.

Therefore, if anyone claims there are innate notions in the mind, he cannot mean (assuming he intends to make any sense at all) there exist beliefs which the mind has never noticed and is ignorant of. If the words, “to be in the understanding” have any meaning at all, they mean, “to be understood”. Thus, to be in the understanding and *not* to be understood, to exist in the mind and never be noticed, is the same as saying an idea both is, and is not, in the mind at the same time. Therefore, if the claims, “What is, is,” and “It is impossible for the same thing to both exist and not exist [in the same way at the same time]” are innate to the mind, children *cannot* be ignorant of them. Infants, and all beings with a soul, must necessarily *have* them in their minds, *grasp* that they are true, and *agree* that they are true.

## BOOK II CHAPTER 1

### What Ideas Are, and Where They Come From

**1. Ideas are the objects of consciousness.** Every person is aware that he is thinking. And, the objects which the consciousness is focused on while thinking are the ideas that are in the mind. Therefore, it is beyond doubt that people have in their minds many ideas, such as are expressed by the words ‘whiteness’, ‘hardness’, ‘sweetness’, ‘thinking’, ‘motion’, ‘man’, ‘elephant’, ‘army’, ‘drunkenness’, and others. So, the first order of business is it is to inquire, how he comes by them?

I know it is a popular view that people have native ideas, original beliefs, stamped upon their minds at their creation. I have already examined this doctrine in detail, and I suppose what I said in the previous Book will be more easily accepted after I demonstrate how the mind gets all its ideas. In what follows I will show the way ideas come into the mind, and as evidence I will appeal to every one's own observation and experience.

**2. All ideas come from sensation or reflection.** Let us hypothesize that the mind is, as one might say, white paper,<sup>6</sup> void of all marks, without any ideas: how does it come to be furnished? How does it get the vast number of ideas which the busy and boundless imagination of humanity has painted on it with an almost endless variety? How does it get all the materials of reason and knowledge? To this I answer, in one word, from **EXPERIENCE**. In that all our knowledge is founded; and from that it is ultimately derived. Our observation employed either about external sensible objects, or about the internal operations of the mind that we perceive and reflect upon, is the source which supplies our understandings with all the materials of thinking. These are the two sources of knowledge, from which all the ideas we have, or *can* naturally have, spring.

**3. Sensible objects are one source of ideas.** First, our sensory organs, capable of detecting particular sensible objects, convey into the mind several different perceptions of external objects, based on the different ways they are effected by those external objects. This is how we get ideas like ‘yellow’, ‘white’, ‘heat’, ‘cold’, ‘soft’, ‘hard’, ‘bitter’, ‘sweet’, and all the other ideas we call *sensible* qualities. When I say, “convey into the mind” I mean that external objects have the ability to cause a mental event that I call a *perception*. I use the term ‘sensation’ to designate the whole group of ideas which are entirely derived from the sensory organs.

**4. The operations of our minds are a second source of ideas.** Second, the other source from which experience produces ideas in our minds is our *awareness of the operations* of our own minds within us, as it focuses on the ideas within it. These operations, when the soul comes to reflect on and consider, furnishes the mind with another set of ideas, which could not be produced by external objects [alone]. For example, *perception, thinking, doubting, believing, reasoning, knowing, willing*, and all the other distinct [operations] of our minds—of which we are conscious and observe *in ourselves*—cause distinct ideas *of those operations* in us, similarly to how external objects cause distinct ideas in our minds. This source of ideas is completely internal to the mind, and although it has nothing to do with sensations—because it is not caused by external objects—is still very much *like* sensation and might legitimately be labeled ‘internal sensation’. However, since I labeled mental events caused by external objects ‘sensation’, I will label this set of events ‘reflection’ because the ideas it generates can only be attained by *reflecting* on the internal operations of the mind itself. Therefore, in the rest of this essay I will use the term ‘reflection’ to mean the awareness the mind has of its own operations, and their distinct qualities, that create an idea of those operations in our mind. My position is that these are the only two sources from which all our ideas arise, *viz.*, external material objects which

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<sup>6</sup> The concept Locke introduces here is known as the *tabula rasa*, or “blank slate”. Aristotle, in Περὶ Ψυχῆς (*On the Soul*) Book 3, Chapter 4 (429b31-430a2) refers to the mind as a “tablet upon which nothing is written”, which may be the earliest articulation of the empirical hypothesis in the Western philosophical tradition. The concept was later developed more fully in the works of Ibn Sina which were influential on the philosophical novel, *Hayy ibn Yaqzan* (*Alive, son of Awake*) by ibn Tufail. The Latin translation of the novel (*Philosophus Autodidactus*), published in 1671, was a significant influence on Locke’s articulation of the hypothesis in this essay.

cause *sensations*, and the operations of our own minds within, which causes *reflection*. It should be noted that I use the term ‘operation’ in a broad sense to mean *comprehending*—not just the actions of the mind regarding ideas—but also to include the affectations arising from them, for example the satisfaction or uneasiness that arises *from* a thought.

**5. *All ideas come from sensation or reflection.*** It seems to me the mind does not have the least glimmering of any ideas which it does not receive from one of these two [sources]. External objects provide the mind with ideas of sensible qualities, which are all the many different perceptions they produce in us; and the mind provides the understanding with ideas of its own operations.

When we have surveyed all our ideas, their distinct modes, combinations and the relations between them, we find a complete set, and we discover nothing in our minds which did not arise from one of these two sources. Let anyone examine their own thoughts and thoroughly investigate their own mind, and then let them tell me if they find anything other than ideas derived from their senses or the operations of their minds—which I call ‘reflection’. No matter how great a body of knowledge they find, taking this strict view, they will realize that there are no ideas in the mind that have not been imprinted by either sensation or reflection (although there may be an infinite variety composed and enlarged by the mind, as we will soon see).

**6. *What we observable in children.*** If a person carefully observes a new-born child, she will find little evidence to think the baby’s mind is full of ideas that will later develop into knowledge. Ideas develop over time. Although the ideas of obvious and common qualities are imprinted before the memory begins to make a record and keep track of them, there are few people who cannot remember their first experience with them (even though later experiences with unusual qualities may obscure their origin). And if there were some overriding purpose, it is no doubt that a child’s experience, even with ordinary ideas, could be controlled and limited until they were grown. But because when a person is born into the world they are surrounded with bodies that continually and variously affect them, a variety of ideas are imprinted on their minds whether or not it is intended. Light and colors are ubiquitous when the eye is open, sounds and tangible qualities do not fail to excite their corresponding sense organs and force entry into the mind. But I think it would be easily granted that if a child were kept in a controlled environment and never saw anything but black and white until he was grown, he would have no more idea of red or green, than someone who had never tasted an oyster or pineapple has of those exotic dishes...

## CHAPTER 8

### The Cause of Simple Ideas

**8. *Ideas and the qualities of objects.*** Whatever we are aware of in our own minds, whatever is an immediate object of perception, thought, or understanding, I label ‘idea’. And the *cause* of that cognition in my mind I call the ‘quality’ of an object (which *just is* the power of the object to cause a reaction in my mind). For example, a snowball has the *power* to produce in my mind the distinct ideas of ‘white’, ‘cold’, and ‘round’. Because the *causes* of the ideas are in the snowball, I call them *qualities of* the snowball. Because ‘white’, ‘cold’, and ‘round’ are sensations or

perceptions in the mind, I call them ‘ideas’. If I should, on occasion, accidentally refer to *ideas in objects*, let me clarify now that I am referring to the qualities (or powers) in the objects which produce ideas in the mind.

**9. *The Primary Qualities of objects.*** The qualities of particular bodies are: *Firstly*, those qualities which are inseparable from bodies, regardless of their state, regardless of the alterations or changes they undergo, no matter how much force is placed upon the body, they (the qualities) remain constant. A *primary quality* is what the senses *always find associated with a material object* whether or not it is large enough to be perceived directly. For example, take a grain of wheat and divide into two parts; each of the two parts still has *solidity, extension, shape* and *mobility*. If we divide it a second time it retains all the same qualities (i.e., solidity, extension, shape, etc.). If we continue dividing the pieces until they become too small to see, they must still retain all these same qualities. Division (which is really all a mill, or pestle, or any other cutting tool effects upon a body when it reduces it to insensible parts) cannot eliminate solidity, extension, shape, or movability from a body; it only makes two or more distinct clumps of matter out of the original one. Each of these distinct masses, understood to be nothing more than distinct bodies, composes a particular number. These are what I call ‘original’, or ‘primary’ qualities of body each of which produces a corresponding simple idea in the mind, namely, ‘solidity’, ‘extension’, ‘shape’, ‘motion/rest’, and ‘number’.

**10. *The Secondary Qualities of bodies.*** *Secondly*, those qualities which do not exist in the external object itself, but rather are the powers of primary qualities (i.e., bulk, shape, texture, motion, etc.) to cause distinct sensations in our minds, these I call ‘secondary qualities’—for example, *colors, sounds, tastes*, etc. We might also add a third sort of quality, which is just as real, but yet a different sort of power. For example, there is in the primary qualities of fire a power to produce new colors, or consistencies in wax or clay, just as it might produce in me the idea or sensation of ‘warmth’ or ‘burning’, which was not produced in me by my other experiences with bulk, texture, and motion.

**11. *How objects produce ideas in us.*** Next we must consider how bodies, or external objects, produce ideas in our minds. Obviously, the only way in which we can conceive of bodies operating is by motion.

**12. *Ideas are produced by motions, in and outside our bodies.*** If it is not the case that external objects are connected directly to the mind when they produce ideas in us, and yet we have perceptions of the qualities of external bodies from our senses, there must be some motion in our nerves, or animal spirits, through the parts of our body to the brain—or seat of sensation—which produces the ideas in our mind from them. And, since extension, figure, number and motion (in bodies large enough to be seen) are perceived at a distance by sight, it is evident that some external thing must be transmitted from the object to the eyes that then moves to the brain which in turn produces the ideas we have of the primary qualities of the object.

**13. *How secondary qualities produce their ideas.*** We can conclude that the ideas of secondary qualities are produced in the same way that the ideas of primary qualities are produced in the mind, namely, by the impact of tiny particles on our sense organs. It is obvious that there are a large number of objects that are so small we cannot directly observe their size, shape, or motion

as in the case of the particles of air and water and even smaller things (just as the particles of air and water are smaller than peas or hailstones, so too there are surely particles much smaller than air and water). Thus, let us suppose that the motions and shapes, sizes and numbers, of such particles, affecting our sense organs, produce in the mind different sensations of colors and smells. For example, a violet causes the ideas of a particular *shade of blue* and of *fragrant sweetness* in our minds by the motion of tiny particles of matter that have different shapes and sizes and are moving in different directions at different velocities. It is no less conceivable that God could have connected ideas like *color* and *fragrance* to the motion of particles—to which they have no similarity—than that He could have connected the idea of *pain* to the motion of a steel blade dividing our flesh—with which the idea has no similarity.

**14. Secondary Qualities are dependent on Primary Qualities.** What I have just said concerning colors and smells also holds of tastes and sounds, and other sensible qualities. Though we often mistakenly think these qualities really exist in external objects, they are, in truth, nothing other than the *powers* which produce sensations in us and which are dependent for their existence on the Primary Qualities of matter: size, shape, texture and motion, as I have already said.

**15. Ideas of Primary Qualities are resemblances; the ideas of Secondary Qualities are not.**

From what I have just said I think it is easy to conclude that the ideas of the Primary Qualities of external objects bear a resemblance to the properties of the object, and their patterns really exist in external material objects themselves. But our ideas of Secondary Qualities have no resemblance to external objects at all. There is nothing similar to our ideas existing in the lumps of matter themselves. The only thing that exists in the external body is the power to cause a sensation in us. What is ‘sweet’, or ‘blue’, or ‘warm’ in the idea is nothing but the particular size, shape, and motion of the insensible particles of the external object.

**16. Examples.** A flame is described as ‘hot’ and ‘bright’, snow, ‘white’ and ‘cold’, manna, ‘white’ and ‘sweet’ because of the ideas the object produces in us. These qualities are commonly believed to exist in the objects themselves as a mirror image of the ideas in our mind, and most people would find it difficult to suppose differently. However, if one were to stop and consider that the very same fire at one distance causes the sensation of warmth, and at a closer distance the very different sensation of pain, ought to wonder what reason he has to claim that warmth is in the fire, but pain—caused by the very same fire—is not. Why are the ideas ‘whiteness’ and ‘coldness’ considered to be in the snow, but ‘pain’ is not? Snow is the cause of them all, and as I have argued can only do so by the size, shape, number, and motion of its solid parts.

**17. Primary Qualities are the only real qualities.** The particular size, number, shape and motion of the parts of fire or snow really exist in their objects, whether or not anyone perceives them, and therefore, they may be rightly called *real qualities* because they really exist in material bodies. But ‘brightness’, ‘heat’, ‘whiteness’, or ‘coldness’ are no more in external bodies than are ‘sickness’ or ‘pain’ in manna.<sup>7</sup> If you take away the sensations of them—block light from the eye, block sound from the ear, taste from the palate and smell from the nose—all the ideas of

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<sup>7</sup> ‘Manna’ is an extract from the sap of the Manna Ash tree (*Fraxinus ornus*) that was used medicinally as a laxative and expectorant.

colors, tastes, odors and sounds cease to exist and vanish and are reduced to their causes (i.e., size, shape, and the motion of parts).

**18. Secondary Qualities only exist as modes of primary Qualities.** A quantity of manna, so long as it is enough to be perceived, is capable of producing the idea of a ‘round’ or ‘square’ shape in our minds, and if it is moved, the idea of ‘motion’. The idea ‘motion’ is representative of the actual motion of the manna; the same is true of ‘circle’ or ‘square’ whether we are talking about the idea or the object, what is taking place in the mind or what is taking place in the manna itself. Both motion and shape *really exist* in the manna, whether or not we notice them—everybody agrees on this. Further, these same qualities, i.e., size, shape, texture, and the motion of the parts of the manna, also contain the power that causes the sensation of nausea, and sometimes even acute pains and cramps in us. And, everyone agrees that the ideas of ‘nausea’ and ‘pain’ are not in the medicine, but rather the effects of our observation *of* the medicine; they do not exist at all if we do not feel them. Despite this, it is difficult to convince people that ‘sweetness’ and ‘whiteness’—which are nothing but the effects of the manna (via its motion, size, and the shape of its particles) on the eyes and palate—are *not* really in the manna. The experience of pain and nausea caused by our observation of the medicine is *nothing but* the effects of its [the manna’s] operations on the stomach and intestines—caused by the size, motion, and shape of its [the manna’s] insensible parts (because that is the only way bodies can operate, as has already been shown)—as if the manna could not operate on the eyes and palate to produce distinct ideas in the mind (i.e., ‘whiteness’ and ‘sweetness’) in just the same way it effects our intestines and stomach (causing cramps and nausea). Seeing that they are all ideas caused in the same way, explaining the supposed difference between ‘nausea’ and ‘cramps’—which are agreed to only exist in the mind and to be caused by our observation of the medicine—on the one hand, and ‘whiteness’ and ‘sweetness’—which are somehow supposed to exist outside the mind in the medicine itself—on the other, falls to those who insist on making such distinctions....

**21. The Water Bucket Argument.** Now that we have distinguished between the ideas of Primary and Secondary Qualities we can explain how the very same water, at the very same time, can cause the feeling of ‘hot’ in one hand and ‘cold’ in the other. If the ideas ‘hot’ and ‘cold’ existed *in* the water (and not in the mind), it would be impossible for this to happen. But if we imagine ‘warmth’ is nothing more than a kind or degree of motion in the small particles of our nerves—or animal spirits—we can understand how it is possible that the same water can, at the same time, produce the sensation of hot in one and cold in the other. This never happens with shape: the same object when touched by two hands at the same time never produces the idea of ‘cube’ in one hand and ‘sphere’ in the other. However, if the sensation of hot and cold is nothing but an increase or decrease in the motion of tiny structures in our bodies, caused by the tiny particles of an external body, it is easy to understand. If there is a different amount of motion in the nerves of our two hands, each will be affected differently when they come in contact with the same external body. The hand with a greater amount of motion in its nerves will be experience a decrease in motion, and the hand with a smaller amount of motion in its nerves will experience an increase in motion. This is the cause of the distinct sensations of hot and cold that the hands feel....

## BOOK IV

## Chapter 11

### Our Knowledge of External Objects

**1. Knowledge of finite beings is only from actual sensation.** The knowledge of our own existence is derived from intuition.<sup>8</sup> The knowledge of God's existence is clearly derived from rational argument, as I have already shown. The knowledge of the existence of anything else can *only* be derived from sensation. With the sole exception of God, there is no necessary connection between an idea in the mind and the existence of an external object. No one can know the existence of any other thing *except* when it acts upon the senses of the perceiver causing itself to be perceived. The existence of an idea in the mind provides no more proof of the existence of the object than a picture of a man provides evidence that he actually exists in the world, or that images in a dream compose an accurate account of history.

**2. Example: the whiteness of this paper.** The fact that we actually receive ideas from external objects is what causes us to be aware of the *existence* of external objects, and causes us to know that something exists—at that moment—outside ourselves and is the cause of our idea of it, even though we may not fully comprehend or even be aware of the process. But, the fact that we may not fully comprehend or even be aware of the process does not diminish the *certainty* we derive from our senses. For example, while I am writing this, I have, because the paper is affecting my eyes, the idea produced in my mind that I call 'white' (whatever object causes it). Because of this I know that the quality or accident—whose appearance before my eyes always causes the same corresponding idea—really exists independently of me. Given the capacities of my faculties, the strongest evidence I can possibly have that things exist outside me is the testimony of my eyes, which are the best and sole judges of those things. Their testimony I reasonably rely on as so certain that I can no more doubt that I see white and black while I'm writing on this paper (and that it exists outside me and causes those sensations in me), than that I can move my hand and therefore write. This is as much certainty as we are humanly capable of regarding the existence of anything except our self, or the existence of God.

**3. Awareness of sensation, though not as certain as a demonstration, may be called 'knowledge' and proves the existence of external objects.** The awareness we have of the existence of external objects via our senses deserves to be *called* 'knowledge' even though it is *not as certain* as **intuitive knowledge** or **rational deductions** from clearly defined abstract ideas. If we believe that our sensory organs accurately convey information about the existence of the external bodies that affect them, our belief is rational. I do not think anyone can be *so* skeptical as to doubt the existence of the things he sees and feels. And, anyone who *is* capable of such radical skepticism (however dubious he is regarding his own beliefs) will never have a quarrel with me since he can never be sure that I say anything contrary to his own opinion. As for myself, I am satisfied that God has given me sufficient evidence to believe in external objects since I experience both pleasure and pain—which is one of my primary concerns in this life—when I interact with them. This much is certain: our confidence that our sense organs do not deceive us is the greatest assurance we are currently capable of when it comes to the existence of external objects. We cannot act in the world except through our faculties, nor can we even

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<sup>8</sup> Locke is using the term 'intuition' in the logical or mathematical sense to mean an immediate, obvious, and uncontrovertibly truth. It is by intuition that we grasp the truth of tautological and analytical propositions.

discuss knowledge itself except through those faculties which are designed to apprehend what knowledge is.

Beyond our assurance that the senses do not lie concerning the information they give us about the external objects they interact with, there is further evidence of their reliability:

**4. *We cannot have ideas without sensation:*** *Firstly*, it is obvious that perceptions are produced in us by exterior causes affecting our sense organs because people who do not have a particular sense organ do not have the corresponding ideas in their minds. This is so obvious it cannot be doubted. Therefore, we are sure that sensations are caused by external stimulations of our sense organs and nothing else. Further, it is obvious that sensations are not caused by the sense organs *alone* because if they were, a person's eyes, in the dark, would produce colors, and their nose would smell roses in winter. But it is clear that nobody gets a desire for pineapple until he first goes to the pacific and tastes it.

**5. *Ideas from sensations are very different from memory.*** *Secondly*, sometimes I find that I cannot avoid having ideas produced in my mind. When my eyes are shut or the curtains are drawn I can easily *imagine* the ideas of 'light' or the 'sun' from my previous sensations which are stored in memory. Further, I can set these ideas aside and think of the scent of a rose or the taste of sugar. But if I turn my eyes toward the sun at noon I cannot avoid the ideas which the light or the sun produces in me. Clearly there is a significant difference between ideas in memory and those which force themselves upon me, which I cannot avoid having. If ideas were solely in memory I would have absolute power to call them up or set them aside at will. Therefore, it is necessary that there is some external cause, some object outside myself whose powers I cannot resist, that acts on my senses to produce ideas in my mind, whether I want them or not. No one fails to notice the difference between *thinking* about the sun and actually *looking* at it. These two thoughts are so different from one another that it is hard to imagine two ideas more different. Therefore, we are certain that these are not both internal actions of the mind or ideas in our memory or internal imaginations; *seeing* requires an external cause....

## CHAPTER XV

### Knowledge of Probability

**1. *Probability is the appearance of agreement based upon fallible arguments.*** A **demonstration** is an argument that shows the agreement (or disagreement) between two ideas using one or more proofs that have a constant, unchanging, and obvious connection with each other.<sup>9</sup> **Probability**, on the other hand, is establishing the *likelihood* of agreement (or disagreement) between ideas using arguments whose connections are *not* absolute and immutable—or at least it is not clear that there is an absolute connection between them.<sup>10</sup> 'Probability' refers to the *appearance* of a connection between ideas that is sufficient to induce the mind to accept that proposition *as* true or false. For example, in Geometry we can demonstrate that the interior angles of a triangle are equal to the sum of two right angles (i.e., 180°) using an argument composed of a series of statements that are obviously and unchangeably

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<sup>9</sup> In contemporary Logic this is called 'deduction'.

<sup>10</sup> In contemporary Logic this is called 'induction'.

connected to each other, from which the conclusion is derived. Thus, by intuitively grasping the agreement (or disagreement) of the intermediate ideas in each step of the argument, the whole series is considered a demonstration of the necessity of the conclusion, and thus we have certain knowledge that the conclusion is true. But suppose someone who never bothered to think through the proof for themselves heard an expert, a mathematician, assert, “the sum of the interior angles of a triangle are equal to the sum of two right angles,” and *believed* that it was true. In this case the evidence for her accepting the proposition *as* true is the *probability* of its truth, based on the testimony of the expert (whom it is *supposed* will not assert anything contrary to or beyond the scope of their knowledge of the field). It is the *supposed* honesty of the expert that causes her to accept the truth of the proposition, not her own understanding that the ideas agree, nor her own knowledge that it is true.

**2. *Probability fills in for our lack of knowledge.*** Because, as we have shown, we have very little knowledge and we find very little certainty among the ideas we have opportunity to consider, most of the propositions we think, reason, or talk about—indeed even *act* upon—fall far short of indubitable knowledge. Any yet, some of these ideas are so close to certainty that we hardly doubt them. We accept them as firmly—and we often act according to that assent—as *if* they had been demonstrated and that we had perfect and certain knowledge of their truth. However, there is a continuum between certainty and uncertainty, varying degrees of likelihood between demonstration and improbability, right down to impossibility. Similarly there are varying degrees of assent from absolute assurance and confidence, all the way down to conjecture, doubt, and distrust. Therefore, since I have already discovered the connection between human knowledge and certainty, in what follows I will examine the different degrees and evidence of probability, along with belief or ‘faith’.

**3. *Probability makes us presume things to be true, before we have knowledge.*** Probability is the likelihood that something is true; the very meaning of the word signifies a proposition for which there are arguments to make it *likely*, or be accepted *as* true. ‘Belief’, ‘assent’, or ‘opinion’ are the words which we use to indicate our mind’s accepting, admitting, or receiving any proposition *as* true, based on the arguments which persuade us that it *likely* is true—even though we do not yet *know* that it is true. Herein lies the difference between probability and certainty, between faith and knowledge: in every part of knowledge there is an immediate intuitive grasp of the necessary connection between each idea. This is not the case with belief. The evidence for belief is something separate from the idea that I believe; it is not logically connected on both sides, and therefore does not necessarily show the agreement (or disagreement) of the ideas about which I am thinking.

**4. *Two kinds of evidence for belief: conformity with our own experience, or the testimony of others' experience.*** Since the function of probability is to fill in the gaps between what we know—what we are certain of—and to guide us in the absence of knowledge, it solely deals with propositions that fall short of certainty and only have a degree of evidence that they *are likely* to be true. To put it briefly, the following are the two appropriate kinds of evidence for belief:

*Firstly*, the *conformity* of an idea with our own knowledge, observations, and experiences.

*Secondly*, the *testimony* of another person, vouching for their own observations and

experiences. When we consider the testimony of someone else we must consider:

1. the *number* of witnesses,
2. the *integrity* of the witnesses,
3. the *skill* of the witnesses,
4. the *intention* of the author (where it is testimony taken from a book),
5. the *consistency* of the testimony, and *circumstances* under which it was given, and
6. any contrary testimony that may exist.

In this, all the arguments for and against a belief ought to be examined, before we make a judgment as to the likelihood of its being true.

Probability *lacks* the direct evidence that infallibly determines conclusions and thereby produces certain knowledge; therefore, if the mind is to proceed rationally it ought to examine all the evidence which makes a belief probable, and examine how it makes the belief stronger or weaker, *before* the mind assents or dissents from it (proportionately to the preponderance of the evidence on one side or the other). For example:

If I see a man walk on the ice, it is beyond probability—it is knowledge. But, if someone else tells me he *saw* a man in England, in the middle of a cold winter, walk upon water solidified by the cold, this *so strongly conforms* with what is commonly observed that I am naturally disposed to believe it. Unless, that is, there is something clearly suspicious about the claim being made. But if the same proposition is presented to someone from the equatorial region of the planet, someone who had never seen or heard of anything like ice, then the whole probability of the belief depends on the reliability of the testimony. So long as there are numerous trustworthy witnesses with no hidden agenda or reason to lie, the belief is likely to be found credible. However, to a person who has *no common experience* and who has *never heard* of such a thing, even strong evidence is likely to be met with skepticism. This is just what happened to the Dutch ambassador, who while entertaining the king of Thailand with the unique features of his country—which he was quite interested to learn—among other things told him that the water in Holland would sometimes, in cold weather, be so hard that men walked upon it, and that it would even bear the weight of an elephant. To which the king is said to have replied, “Up till now I have believed the strange things you have told me because I thought you were an honest man, but now I am sure you lie.”