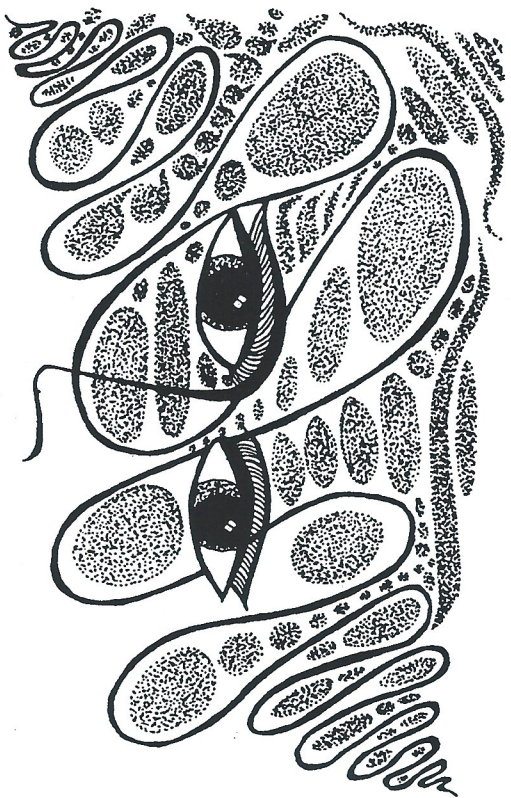


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Association, Madness, and the Measures of Probability in Locke and Hume

JOHN P. WRIGHT

While it played an important part in subsequent philosophical thought,¹ the final chapter of Book II of Locke's *Essay concerning Human Understanding* has been disregarded or disparaged by major twentieth-century Locke scholars. For example, James Gibson wrote that this chapter, which is entitled "Of the Association of Ideas,"

was only added as an afterthought, in the fourth edition of the *Essay*. The use which is then made of Association [is] as merely a principle by which we can explain some part of the oddness and extravagance of men's opinions and actions. . . .²

Gibson argues that Locke's primary interest in the *Essay* was in cognitive consciousness in so far as its "natural tendency" was "towards knowledge."³ Aaron writes in a similar vein when he claims that the chapter was not central to Locke's thinking for he "only uses it to account for aberrations from the normal."⁴ In this paper I shall take on three tasks. In the first place I shall argue that the chapter plays a more integral role in Locke's thought than is suggested by these comments of Gibson and Aaron, and by the silence of other commentators. I shall explain why, nevertheless, the chapter does appear to be at odds with a

central thesis espoused in earlier editions of the *Essay*. Secondly, I shall speculate on the sources of two of the main ideas developed in the chapter and explain Locke's own original contribution to the topics discussed. Finally, I shall show the importance of Locke's chapter for one eighteenth-century writer, namely David Hume. I shall show how their reflections on association of ideas can help us understand the relations between the epistemological writings of these authors.

THE ASSOCIATION OF IDEAS AND THE REST OF THE ESSAY

I think that Gibson and Aaron are correct in claiming that Locke's central goal was to establish those positive conditions in the mind which lead us toward knowledge and rational belief. In describing his task in the introductory chapter of the *Essay*, Locke writes that he is going

to search out the *Bounds* between Opinion and Knowledge; and examine by what Measures, in things, whereof we have no certain Knowledge, we ought to regulate our Assent, and moderate our Perswasions.⁵

His ultimate aim is to establish a normative epistemology⁶—one which tells us what exactly we can be certain about and how we *ought* to regulate our belief in those matters about which we cannot be certain. At the same time it must be recognized that the whole of the *Essay* is written against the background of Locke's conviction that nonsense, error, and ignorance are far more prevalent among men than clarity and a careful weighing of evidence. In his introductory chapter Locke also writes that he is going to set down

the Grounds of those Perswasions, which are to be found amongst Men, so various, different and wholly contradictory; and yet asserted some where or other with such Assurance, and Confidence, that he that shall take a view of the Opinions of Mankind, observe their Opposition . . . may perhaps have Reason to suspect, That either there is no such thing as Truth at all; or that Mankind hath no sufficient Means to attain a certain Knowledge of it.
(1, 1, 2)

His task is to counter a kind of skepticism which arises from a reflection on the fact that the world is full of opinions which, while mutually contradictory, are upheld by their proponents with absolute assurance. There is evidence which suggests that the whole problem of human understanding arose when Locke and some of his friends were discussing "the principles of morality and revealed religion."⁷ At least it is clear that the heated disputes of his contemporaries on these topics were never very far from Locke's mind while he was writing the *Essay*.

While Book IV of the *Essay* is primarily concerned with the establishment of a normative epistemology, the other three books include important reflections on aberrant thinking. In Book I, Locke identifies a principle—that of innate ideas—which he thinks has been used to establish the worst sorts of prejudices. In Book II, where Locke is primarily concerned to identify the source of our ideas, he includes four chapters apart from that on association in which he discusses the ways in which our ideas may be faulty.⁸ In another chapter—"Of Power"—Locke devotes a number of sections to the discussion of the errors human beings make about good and evil.⁹ In Book III and elsewhere he is concerned to identify a major source of confusion in our thinking—namely, the misuse of words. Even Book IV includes a whole chapter devoted to "Wrong Assent or Error"¹⁰ and another wholly devoted to the discussion of the delusions of religious fanatics.¹¹

The chapter on association itself has its roots in an earlier chapter of Book II, as well as in some entries in Locke's Journals for 1666, 1677, and 1678.¹² It begins with the reflection that while we find it easy to recognize what is "Extravagant in the Opinions, Reasonings, and Actions of other Men," we are often unable to recognize such extravagances in ourselves. We are able to employ the "Authority of Reason" in order to condemn the unreasonableness of others but are unable to recognize our own absurd beliefs, reasoning patterns, and behavior (2, 33, 1). Locke tells his reader that he has discovered that this blindness to reason has "the very same Root" and depends on "the very same Cause" to which he had earlier attributed madness (2, 33, 3). In the earlier chapter, "Of Discerning," Locke argued that madmen, unlike imbeciles, have not "lost the Faculty of Reasoning." In fact madmen, "having joined together some *Ideas* very wrongly . . .

mistake them for Truths; and they err as Men do, that argue right from wrong Principles." One madman wrongly fancies himself a king, but he correctly reasons that he should have "suitable Attendance, Respect and Obedience." Another believes that he is made out of glass and draws the correct inference that he should take suitable precautions to prevent his brittle body from breaking (2, 11, 13). The thesis that the madman's reason is wholly intact is clearly formulated in the 1677 *Journals*, where Locke remarks that "Madness seems to be nothing but a disorder in the imagination, and not in the discursive faculty."¹³ In both of these discussions of madness, Locke notes that many men who are sane in other respects may, on some particular topic, be "as frantick, as any in *Bedlam*." While he does not employ the term "association of ideas" for the cause, he notes that either a "sudden very strong impression" or the "long fixing his Fancy upon one sort of Thoughts" will cause "incoherent Ideas" to be "cemented together so powerfully, as to remain united." This powerful connection of ideas seems to be the source of the "wrong Propositions" which madmen mistake for truth (2, 11, 13).

However, Locke makes far stronger claims about the scope of the principle of association in the new chapter which he added to the fourth edition of the *Essay*. There he writes that it is this principle which accounts for the "Irreconcilable opposition between the different Sects of Philosophy and Religion." Such a claim is hardly insignificant given his stated aims in the introductory chapter of the book. Moreover, Locke claims that association is the source of absurdity, error, and even our inability to reason. The principle

gives Sense to *Jargon*, Demonstratation to Absurdities, and Consistency to Nonsense, and is the foundation of the greatest, I had almost said, of all the Errors in the World; or if it does not reach so far, it is at least the most dangerous one, since so far as it obtains, it hinders Men from seeing and examining. (2, 33, 18)

In short, he is claiming that it is really this cause which underlies the various forms of misguided thinking which he has identified throughout the *Essay*.

While Locke never attempts to show in detail how a wrong association of ideas underlies such sources of controversy as the "uncertain use of Words,"¹⁴ it may not be difficult to sketch such an account. One would have to show how the indeterminate use of language results

from the fact that distinct ideas are "so coupled" in men's minds "that they always appear there together, and they can no more separate them in their Thoughts, than if they were but one *Idea*" (2, 33, 18). Some such account may be illuminating in explaining, for example, the confounding of different ideas under one name which Locke discusses in chapter 29 of Book II of the *Essay*. Similarly, when Locke says that this operation of the mind prevents one "from seeing," he may mean that it stands in the way of intuitive knowledge itself; a failure to separate ideas would make one treat as identical what is really distinct. Perhaps, as has been suggested recently, this is what Locke thought the Cartesians had done with the ideas of space and body.¹⁵ Both of these explanations are quite compatible with Locke's original discussions of these topics.

Why then do we have the uneasy feeling, with Gibson and Aaron, that the chapter on association introduces a new thesis which is in some way incompatible with the rest of the *Essay*? I would suggest that it is because we see a kind of determinism underlying such a psychological explanation.¹⁶ The problem seems particularly acute in the case of Locke's discussion of belief, where he insists that "Our assent ought to be regulated by the grounds of Probability."¹⁷ As John Passmore has recently pointed out, if "ought" implies "can," then Locke's claim appears "to entail that we are free . . . to regulate, or not to regulate our assent."¹⁸ Does Locke's psychological explanation of error not tend to undermine the freedom and responsibility of those who fail to regulate their assent by the rational means of measuring probabilities?

Locke's claim that it is association which prevents us "from seeing and examining" seems to be in opposition to earlier reflections, which appear in the penultimate chapter of the *Essay*, that we ourselves are responsible for the failure to examine the evidence for any proposition. Locke wrote that

We can hinder both Knowledge and Assent, by stopping our Enquiry, and not employing our Faculties in the search of any Truth. If it were not so, Ignorance, Error, or Infidelity could not in any Case be a Fault. (4, 20, 16)

Locke also made the ability to examine evidence the crux of the account of human freedom which he developed in the revised second edition version of the chapter "Of Power":

The mind having in most cases, as is evident in Experience, a power to *suspend* the execution and satisfaction of any of its desires, . . . is at liberty to consider the objects of them; examine them on all sides, and weigh them with others. In this lies the liberty Man has; and from the not using of it right comes all that variety of mistakes, errors and faults which we run into, in the conduct of our lives, and our endeavours after happiness. (2, 21, 47)

Here Locke is claiming that our freedom lies in our ability to *examine* whether the fulfillment of a given desire will lead to true happiness. We are responsible for a misuse of this freedom which results in a failure to judge rationally. When, in the fourth edition of the *Essay*, he suggests a psychological account of our failure to pursue reason, Locke appears to be undermining our responsibility:

The problem of determining Locke's view on the relation between "error" and "will" is compounded when we consider that he also holds that we are, in an important sense, forced to believe *what is true*. This is what Gibson meant when he pointed out that, for Locke, the mind has a natural tendency toward knowledge. Locke's view here is essentially Cartesian.¹⁹ In his *Principles of Philosophy*, Descartes had written that

we are naturally so inclined to give our assent to things which we manifestly perceive that we are not able to doubt *when we perceive in this way*.²⁰

Similarly, Locke wrote that

When the Agreement of any two *Ideas* appears to our Minds, whether immediately, or by the Assistance of Reason, I can no more refuse to perceive, no more avoid knowing it, than I can avoid seeing those Objects, which I turn my Eyes to; and look on in day-light. (4, 20, 16)

For both authors the understanding wholly determines the will in those cases where we perceive some internal relation of ideas. It is this Cartesian theory that Locke extended to the realm of probabilities. By a "probability" Locke meant a proposition in which the connection of ideas is not directly perceivable; such a connection is considered *likely* to be true given certain relevant reasons or measures of probability (4, 15). Just as "we cannot hinder our Knowledge, where the Agreement is once perceived" so we cannot withhold our belief "where the Prob-

ability manifestly appears upon due Consideration of all the Measures of it" (4, 20, 16). On Locke's view a correct measure of probability compels our assent. Thus he seems committed to the view that we are forced to believe in a given proposition as "the certainty of Observations, . . . the frequency and constancy of Experience, and the number and credibility of Testimonies" (4, 15, 6) in its favor become overwhelming. Gibson seems to be right when he says that Locke assumes "a general correspondence" between "the psychological influence of the objective conditions of belief and their logical value."²¹ The attempt to give a psychological explanation of error and ignorance in terms of the association of ideas seems to be at odds with this schema. Thus Locke appears to be committed to the view that we are compelled to believe *both* in the case where overwhelming evidence leads us to truth *and* in the case where subjective factors of association lead us to embrace error. In the last section of this paper I shall argue that this fact is important in understanding Hume's development of Locke's theories.

Locke held that human freedom lies in the power to consider more evidence just in those cases in which the will is not determined by objective factors—for he wanted men to be responsible for those false beliefs which they adopt before considering the evidence. However, even in the early editions of the *Essay* Locke recognized that there are strong psychological factors which hinder a man from considering evidence. The very chapter in which Locke claims that rational grounds of belief compel assent is concerned with "Wrong Assent, or Error." In this chapter Locke lists a number of "*wrong measures of probability*." This list of factors which interfere with our ability to appreciate the evidence is hardly added as an afterthought, as some commentators have implied. The first factor which Locke mentions is the use of "principles" which are based on "doubtful and false" propositions (4, 20, 7). The specific principles which he mentions are those which form the foundations of religion, such as the "Romanist" principle that one "must believe as the Church . . . believes, or that the Pope is infallible." On the basis of such a false measure of probability a man is prepared to believe what goes against "the clear Evidence of his Senses." He will "believe that to be Flesh, which he sees to be Bread" (4, 20, 10). Or an "*Enthusiast*" who is "principled, that he or his Teacher is inspired, and acted by an immediate Communication of the Divine Spirit" will never

be able to consider rational evidence against his doctrines. Locke describes in this chapter how, through constant repetition in childhood such principles are "fastened by degrees" in the understanding and "are at last . . . riveted there by long Custom and Education beyond all possibility of being pull'd out again." The origin of such principles is not considered by adults but "they look on them as the *Urim* and *Thummim* set up in their Minds immediately by GOD Himself."²² This account, which parallels Locke's earlier discussion of supposed innate practical principles,²³ even seems to presuppose the theory of association of ideas. In these discussions Locke argues that principles of reasoning which connect truth with the authority of a church, a man, a party, or a country become the foundation for absurd beliefs which are impervious to rational evidence.

Yet it is certainly true that in the first two editions of the *Essay* Locke was hesitant to admit that such irrational beliefs were entirely beyond the responsibility of the persons who held them. While the beliefs which are based on "wrong Principles" cannot "be moved by the most apparent and convincing Probabilities" nevertheless they can be uprooted when men are "so candid and ingenuous to themselves, as to be persuaded to examine . . . those very *Principles*" (4, 20, 10). Another of the wrong measures of probability—"Predominant Passions or Inclinations"—would also appear to presuppose a form of psychological compulsion. Locke cites the case of the man who is passionately in love and is therefore unable to accept the evidence showing the infidelity of his mistress. Yet this avoidance of the evidence is still characterized as a "power" a man has to "suspend and restrain" his inquiries. Did Locke himself go against the evidence of human irrationality in order to support his theoretical conviction that men are responsible for their errors, as John Passmore has suggested?²⁴ However we answer this question, we must recognize that, in the additions he made to the fourth edition of the *Essay*, Locke acknowledges in an *unqualified* way that there are positive conditions in the human soul which restrain free inquiry.

In the chapter "Of the Association of *Ideas*" Locke presents his explanation as one which accounts for the fact that there really are men who, while they hold entirely absurd views, do not "impose willfully" on themselves "and knowingly refuse Truth offer'd by plain Reason." These men "pursue Truth sincerely; and therefore there must be

something that blinds their Understandings, and makes them not see the falsehood of what they embrace for real Truth" (2, 33, 18). In these cases there is clearly a compulsion to accept error. Moreover, it is clear that Locke holds that association does not merely distort our cognitive faculties but directly affects the will itself. For Locke writes that association accounts not only for habits of thought "in the Understanding" but also for habits "of Determining in the Will" (2, 33, 6).

It is important to note that Locke's reflections on association are fully compatible with two main concerns of his overall philosophy—namely toleration and education. The reflection that we all hold false principles which cannot be uprooted by reason should make us less eager to impose those principles on other people; it should also make us more tolerant of the irrational convictions of others.²⁵ Moreover, Locke clearly recognized that the power to eradicate such irrational beliefs lay in changing the methods of educating young children. In his *Conduct of the Understanding*, Locke writes that he "can see no other right way of principing" children whose future life will allow them to inquire into truth, "but to take heed . . . that, in their tender years, ideas that have no natural cohesion come not to be united in their heads."²⁶ In this work, as well as in his *Some Thoughts Concerning Education*,²⁷ Locke stresses the harmful effects of associations inculcated in early childhood. In the final analysis the responsibility for ridding society of erroneous beliefs lies with the educators of young children.

SOURCES OF THE CENTRAL IDEAS IN THE CHAPTER

In a letter to William Molyneux in April of 1695, Locke discusses various items he is thinking of adding to a new edition of the *Essay*:

I think I shall make some other additions to be put into your latin translation, and particularly concerning the Connexion of *Ideas*, which has not, that I know, been hitherto consider'd and has, I guess, a greater influence upon our minds, than is usually taken notice of.

This is an apparent reference to Locke's reflections on association which later appeared in the fourth edition of the *Essay* in 1700. Locke's words imply not that he is the first to consider such a connection of

ideas, but clearly that he thinks his predecessors have underestimated the extent of its influence on the mind. In the letter Locke also discusses some proposed additions on enthusiasm: these remarks anticipate the other new chapter which Locke added to the fourth edition of the *Essay*. The other discussion in the letter, which we shall find relevant, concerns Locke's criticism of Malebranche's view that we see "all things in God." Locke notes that he has almost completed his study of Malebranche's philosophy.²⁸ For my purposes it is only important to note that Locke was reading parts of Malebranche's philosophy around the time he wrote this letter to Molyneux. I believe that this letter contains some important hints about the sources of the ideas developed in the chapter "Of the Association of *Ideas*."

I have not yet mentioned what I take to be one of the most distinctive ideas developed in Locke's chapter. We have seen that even in earlier editions of the *Essay*, Locke gives education and custom as the cause of prejudice. But in the chapter on association he says that he is going to "look a little farther" in order to trace it "to the root it springs from" (2, 33, 3). He goes on to note that "Chance or Custom" produce a "Connexion of *Ideas*" which have no "natural Correspondence and Connexion one with another" (2, 33, 5). Here Locke clearly contrasts the natural connection of ideas which it is "the Office and Excellency of our Reason to trace" with the sort of incoherent connection of ideas which is, for him, the result of association. But Locke is not content merely to distinguish the faculty of mind responsible for association from the faculty of reason; he goes on to present a psycho-physiological description which, he says, "may help us a little to conceive of Intellectual Habits."

According to Locke,

Custom settles habits of Thinking in the Understanding, as well as of Determining in the Will, and of Motions in the Body; all which seems to be but Trains of Motion in the Animal Spirits, which once set a going continue on in the same steps they have been used to, which by often treading are worn into a smooth path, and the Motion in it becomes easy and as it were Natural.

He goes on to say that such a cause appears also to explain why

A Musician used to any Tune will find that let it but once begin in his Head, the *Ideas* of the several Notes of it will follow one another orderly in his Understanding without any care or attention, as regularly as his Fingers move orderly over the Keys of the Organ to play out the Tune he has begun. . . . (2, 33, 6)

I think it is clear that in this chapter, in explaining the association of ideas, Locke has set aside his original resolution not "at present" to "meddle with the Physical Consideration of the Mind" (1, 1, 2).

I do not think there can be much question about one important source for Locke's psycho-physiological account of the association of ideas. In chapter 5 of Book II of his *Recherche de la Vérité*, Malebranche discussed what he called "causes of the connection between ideas and [brain-] traces."²⁹ Malebranche went on to distinguish certain sorts of "connections which are not natural." One of the causes of such connections between brain traces and hence between their corresponding ideas is

the identity of time in which they were imprinted in the brain, for it suffices that several traces have been produced at the same time, in order that they can only be reawakened together. For the animal spirits, finding the pathways of all the traces which are made at the same time open, continue their way through them because they can pass there more easily than other places in the brain. (*Recherche*, I, p. 223)

Malebranche also noted how repetition of stimuli produces deeper traces in the brain and how this results in the easier flow of animal spirits:

we imagine things more strongly to the degree that these [brain-] traces are deeper and better engraved, and the animal spirits pass there more often and with greater violence. . . . When the spirits have passed that way several times they enter with greater facility. . . . This is the most usual cause of the confusion and falsity of our ideas. (*Recherche*, I, p. 275)

In *Eclaircissement VII*, Malebranche gave an example of the sort of "intellectual habits" which were explained by such mechanisms:

The facility to play certain instruments which certain persons acquire . . . [is formed in so far as] the pathways through which their spirits flow are smoother and more united by the habit of exercise. . . . (*Recherche*, III, p. 69)

But the pathways which the animal spirits cut through the solid substance of the brain can also be the source of mental aberrations. In the third part of Book II of the *Recherche* Malebranche writes about the "strong imagination" which results from a certain condition of the brain. This condition

makes it susceptible to very deep footsteps and traces which so fill the capacity of the soul that they prevent it from carrying its attention to other things than those which these images represent.³⁰

Some of these people are "entirely mad" and unable to converse with other people, but there are others whose ideas are less bizarre and who suffer from a less serious form of the same ailment. These theories of Malebranche closely parallel those which are to be found in Locke's chapter on association of ideas. It seems clear that Locke was not only finding material to criticize in his reading of Malebranche during the 1690s.³¹

Of course it would be wrong to say that Locke merely adopted Malebranche's theory of the association of ideas. The natural connections between ideas which Malebranche wants to contrast with these non-natural connections are those which (in Locke's words) "depend upon our original Constitution, and are born with us" (2, 33, 7). Locke allows for the existence of connections which are natural in this sense but tends to downplay their importance. He is really concerned to contrast associational connections with those which are objective and established by reason. It is these latter which *Locke* calls natural connections of ideas. This clear contrast between associational and rational connections of ideas is, it seems to me, distinctive in Locke's account. Locke, even more than Malebranche, is concerned to stress that the non-natural associational connections are the source of errors in our thinking. It is in this way that he wants to show that association has "a greater influence upon our minds, than is usually taken notice of."

Locke's reflections on the nature of madness have had any number of sources, for his basic views on this topic seem to represent those prevalent in his own day. Galen had claimed that mental derangement is usually caused by *both* "improper imagining and incorrect reasoning," but he does give one example of a man who had a severe delusion but was otherwise quite rational.³² However, Henry More reports that many physicians define melancholy in terms of deranged imagination:

it is most observable in *Melancholy* when it reaches to a disease, that it sets on some one particular absurd imagination upon the Mind so fast, that all the evidence of Reason to the contrary cannot remove it, the parties, thus affected in other things being as sober and rational as other men.³³

More notes in particular that Daniel Sennert, one of the most respected medical authorities of the day, defined melancholy "from this very Effect of it." Locke may well have directly derived his theory that madness is a disorder of the imagination (madness and melancholy were commonly conflated) from Sennert, whose collected works were in his library. More describes a number of cases of deluded imagination, derived from different authors. The case cited by Locke, that of the man who thought he was made out of glass and took all the rational precautions, appears to have its origin in the writings of the sixteenth-century French physician André du Laurens.³⁴

But Locke's own extension of the theory of madness to the more general discussion of prejudice in the chapter on association of ideas may well have been sparked by his reading of Henry More himself. Locke would probably have read or re-read More's popular *Enthusiasmus Triumphatus* in 1695 when he was working on both chapters which were eventually added to the fourth edition of the *Essay*. In this work More asks why the enthusiast's claim to divine inspiration is impervious to reason. He argues that the origin of this delusion is "the enormous strength and vigour of the Imagination" which makes "men become mad or fanatical whether they will or no." Thus the enthusiast is not really responsible for his behavior. Something "capivates [his] Imagination" and "carries it . . . out of the reach or hearing of that more free and superior Faculty of Reason" (p. 5). More goes on to reflect on the nature of madness for the specific purpose of "weakening . . . the authority of the bold Enthusiasts" (p. 9). He suggests that the reason people believe the enthusiast's claim to divine inspiration is that apart from this one delusion, he is perfectly rational. But once people realize that he is suffering from the disease discussed by Sennert and others, his authority will be undermined. More's claim that religious enthusiasm was a form of madness became a weapon in the Anglican rationalists' "attacks on Dissenters for the next one hundred years."³⁵ In his chapter "Of Enthusiasm" Locke follows More's account quite faithfully. In the chapter on association of ideas, however, he seems to want to employ More's parallel between madness and fanaticism in a more general way to undermine the authority of *any* absurd thinking patterns which are impervious to reason. He also gave a far more specific account, that which he found in Malebranche, of the mechanisms by which the absurd thinking patterns are produced.

LOCKE VS. HUME ON ASSOCIATION

In his discussion of his own book in the *Abstract of . . . A Treatise of Human Nature*, Hume wrote that

If any thing can intitule the author to so glorious a name as that of an *inventor*, 'tis the use he makes of the principle of the association of ideas, which enters into most of his philosophy.³⁶

This principle plays a key role in Book I of the *Treatise* itself, where Hume's central purpose was to "explain the principles and operations of our reasoning faculty, and the nature of our ideas."³⁷ The central aim of Hume's philosophy of the understanding was to show that our scientific reasoning processes and our judgments about the nature of reality have their roots in the principles of human nature—especially the association of ideas. He argued that *all* measures of probability—the valid as well as the invalid ones—arise from this principle. According to Hume, the very same cause which Locke used to explain error and illusion is the ultimate source of the highest degree of probability—that which is based on our belief in cause and effect.

There is, one must admit, a good deal of irony in Hume's story. Locke tried to undermine prejudice by showing that it has the same ancestry as madness. He tried to explain how they both could exist in a mind that was otherwise rational and yet not yield to the authority of reason. But Hume appears to show that what Locke really uncovered was the sordid background of reason itself. Its roots, like those of madness and prejudice, lie in custom and habit.

Let me briefly reconstruct Hume's story. In Book IV of the *Essay*, Locke had proposed a series of measures by which the "several degrees" of assent "are, or ought to be *regulated*" (4, 16, 1). The highest degree of probability is based on "the regular proceedings of Causes and Effects in the ordinary course of Nature." Locke proposed the rule that

what our own and other Men's constant Observation has found always to be after the same manner, that we with reason conclude to be the Effects of steady and regular Causes. . . . (4, 16, 6)

As we saw earlier, Locke held that correct measures of probability compel our assent. In the passage we are now discussing he goes on to

argue that "constant Observation" actually produces the belief in causation. Locke writes that

Probability upon such grounds carries so much evidence with it, that it naturally determines the Judgment, and leaves us as little liberty to believe, or disbelieve, as a Demonstration does. . . . (4, 16, 9)

Now Hume apparently asked himself *why* this should be so—why we should be forced to believe on the basis of what Locke calls constant observation or "the frequency and constancy of Experience" (4, 15, 6).

Hume's answer was that

The idea of cause and effect is deriv'd from experience, which presenting us with certain objects constantly conjoin'd with each other, produces such a habit of surveying them in that relation, that we cannot without a sensible violence survey them in any other.³⁸

Hume claims that there is a close connection between this habit of thought from which our ideas of cause and effect are derived, and the principle of association of ideas:

As the habit, which produces the association, arises from the frequent conjunction of objects, it must arrive at its perfection by degrees, and must acquire new force from each instance, that falls under our observation. . . . 'Tis by these slow steps, that our judgment arrives at a full *assurance*. (*Treatise*, p. 130; italics are mine)

According to him, our belief in the "probability of causes" increases with the frequency of observations because the latter gradually produces a stronger association of ideas.

The close connection between Hume's discussion of the probability of causes and that of Locke is indicated by his use of terms such as "assurance." Locke had used this term to mark the highest degree of probability which results from an invariant conjunction (*Essay*, 4, 16, 6). In the passage we have just quoted from page 130 of the Selby-Bigge edition of the *Treatise*, Hume clearly uses the explanatory mechanisms of Locke's chapter on association of ideas to give an account of the origin of this "assurance." It seems clear that Hume was quite self-consciously setting Locke's philosophy on its head. In the *Treatise* he argues extensively that the same principles are operating in the case of

“prejudice”—or, more generally, in the case of what he calls “unphilosophical” probabilities—as in the case of rational or “philosophical” probabilities. For Hume, the right measures of probability operate through the same principles of human nature as the wrong ones. Hume wrote that “all reasonings”—he means all probabilistic reasonings—“are nothing but the effects of custom.”³⁹

But may we not ask whether, even if Hume is right about the origins of our criteria for rational assent, this really undermines the central thesis of Locke’s *Essay*. Has Hume not merely proposed and answered a question which is different from that which interested Locke—a question about *origins* of our probabilistic reasonings? Unlike Hume, Locke was primarily interested in telling people just what they could be certain about and what criteria they ought to use to regulate their assent. Locke’s interest centered on *normative*—not naturalistic—epistemology. The *origin* of the criteria of rational assent is irrelevant to such a project. In their respective works on “human understanding” Locke and Hume were primarily engaged in very different philosophical enterprises.

Such an answer, while it is not wholly without merit, cannot be accepted without qualification. For, while we must acknowledge that the focus of the discussion in each of their books differs, it is still true that Locke tried to base his normative probabilistic epistemology on some sort of psychological foundation. We have just noted that Locke purports to establish the rational connection between constant observation and our judgments of cause and effect on the ground that the former “determines” the latter. In fact, in the same paragraph in which this discussion occurs, Locke denies that one can produce normative rules of belief in just those cases where the evidence does *not* naturally determine one’s judgment:

The difficulty is, when Testimonies contradict common Experience, and the reports of History and Witnesses clash with the ordinary course of Nature, or with one another. . . . [In such cases] ’tis impossible to reduce to precise Rules, the various degrees wherein Men give their Assent. (*Essay* 4, 16, 9)

Hence, it seems that Locke himself tried to base his normative epistemology on the psychological influence of the available evidence. But if, as Hume seems to have shown, such psychological influence is based on the same principles as lead to false measures of probability, then a

major support for Locke’s epistemology is undermined.

Moreover, it is also true that Hume attempted to found a normative epistemology on naturalistic principles and despaired at the results. While it is not always recognized, it is clear that Hume tried to establish what he called “general rules” by which to determine the relations of cause and effect in nature.⁴⁰ Such rules clearly go beyond the natural principles of the understanding, though in an important sense they are based on them. However, at the end of Book I of the *Treatise* Hume reports that a systematic application of these general rules has left him in despair. He claims to have shown that it is the enlivening of ideas, which is based on the principle of association of ideas,

which makes us reason from causes and effects; and ’tis the same principle, which convinces us of the continued existence of external objects, when absent from the senses. But tho’ these two operations be equally natural and necessary in the human mind, yet in some circumstances they are directly contrary, nor is it possible for us to reason justly and regularly from causes and effects, and at the same time believe the continu’d existence of matter. (*Treatise*, p. 266)

It is the systematic rule-governed use of our causal reasonings which, according to Hume, undermines our natural belief in the existence of matter.

Yet, at the same time, we must recognize that Hume’s despair does not arise from his naturalistic account of our causal reasonings itself. Fundamentally, Hume’s goals are fully compatible with those of Locke’s *Essay*. In spite of the fact that he sought an associational basis for our belief in causality, Hume thought that he could distinguish correct from incorrect measures of probability. In Part 4 of Book I of the *Treatise*, Hume gives a formula for distinguishing the legitimate from the illegitimate use of natural principles. Here he claims that those beliefs which arise from the observation of causal patterns in nature are based on “principles which are permanent, irresistible, and universal.” More importantly, beliefs based on these principles are required for the survival of the human species: they are “the foundation of all our thoughts and actions, so that upon their removal human nature must immediately perish and go to ruin” (*Treatise*, p. 225). When we rely on the observation of a constant conjunction *in nature*, we rely upon a principle without which human beings would not survive. On the other hand, the associations which arise from education—those which

arise from artificial conditioning—often have no survival value. They are “neither universal nor unavoidable in human nature” (*Treatise*, p. 226). Thus Hume gives us a basis to distinguish two kinds of belief which have their roots in custom—those which arise from an “artificial” occasioning cause and those which arise from a “natural” occasioning cause (*Treatise*, p. 117). It is only when it produces associations on the basis of the latter sort of cause that “custom” provides a source of legitimate beliefs. For it is only in that case that one is dealing with principles which are essential to the survival of the species.⁴¹

It is also important to stress the fact that, while Hume sought to show the origin of our scientific causal reasoning in natural principles, he thought that such reasoning transcends such principles. It is easy to lose sight of this when one reads passages of Book I of the *Treatise* like the one where Hume claims that “all reasonings are nothing but the effects of custom.” Such passages seem to suggest that all human enquiry is merely a function of the mechanistic processes of association. If his intent were really to reduce all reasoning to association, Hume would certainly be undermining that realm of freedom which always remained central in Locke’s epistemology—namely, the ability to continue our inquiry and look for more evidence in those cases where there is no compulsion to believe. On such a view the construction of rules of knowledge and belief would become irrelevant. But I think that this interpretation is based on a clear misunderstanding of Hume’s own philosophy. Like Locke, Hume recognized an important distinction between associational and rational thought. He acknowledged a use of reason which while it is, in some essential sense, dependent upon custom, is not based solely on that principle. Hume defined causality as both a natural and a philosophical relation (*Treatise*, p. 170). In so doing he recognized a distinction between a purely associational operation of the mind and one which operates reflectively and systematically by the use of established criteria. Moreover, Hume was careful—in fact more careful than Locke—to note that, in our rational scientific enquiries, we operate by means of reflective rules which can be in opposition to the most natural processes of the understanding. These rules are arrived at through reason and reflection—that is, “on our experience of [the] operations [of our understanding] in the judgements we form concerning objects.” They allow us “to distinguish the accidental circumstances from the efficacious causes” (*Treatise*, p. 149; cf.

p. 173). Hume recognized that the systematic discovery of causes in nature depends upon more than the mechanistic processes of association of ideas.

Indeed, it is clear that Hume adopted the essential features of Locke’s normative account of our probabilistic reasonings—more systematically than did Locke himself. Locke had claimed that “constant Experience makes us sensible” of the causal processes of mind and body,

though our narrow Understandings can comprehend neither. For when the Mind would look beyond those original *Ideas* we have from Sensation or Reflection, and penetrate into their Causes, and manner of production, we find still it discovers nothing but its own short-sightedness. (2, 23, 28)

Now Locke is not entirely consistent in his acceptance of this view. There are passages in the *Essay* where he appears to claim that we have some sort of *a priori* insight into the operations of matter and mind. For example, Locke claimed that “it is as repugnant to the *Idea* of senseless Matter, that it should put into it self Sense, Perception, and Knowledge, as it is repugnant to the *Idea* of a Triangle, that it should put into it self greater Angles than two right ones” (4, 10, 5). Moreover, at one point he even seems to suggest that we have some sort of insight that new motion comes into the world through the activity of minds: he tells his reader that “the active power of Moving . . . is much clearer in Spirit than Body,” and he thinks it is possible that this power of adding motion to the universe may be “the proper attribute of Spirits” (*Essay*, 2, 23, 28). The theory that new motion can only come into the world through the activity of minds was in fact central in the natural theology of Newton and Clarke—a theology which Hume sought to undermine in his famous *Dialogues Concerning Natural Religion*. Hume thought that through a systematic application of the principle that “experience alone can point out . . . the true cause of any phenomenon” we can discover that there is no more reason to think that minds are the source of new motion in the universe than that bodies are.⁴²

It is important to remember that in his *Treatise of Human Nature* Hume sought to justify the principle that constant experience provides the only basis for belief in causality by showing that the principle is firmly implanted in human nature. He argued that our probabilistic reasoning has its roots in custom and association, and claimed that we

do not need any understanding of the causal process itself in order to draw inferences from causes to effects and from effects to causes. By showing how constant experience gives us complete assurance without any *a priori* insight, Hume hoped to define, even more clearly than Locke, the bounds between knowledge and opinion. Hume hoped to show that whatever legitimacy there is in our probabilistic reasonings comes from the fact that they are rooted in human nature.

Thus, in the final analysis, we must recognize that Hume's associational account was meant to support rather than undermine our probabilistic reasonings. However, it is also clear that, since Hume's day, most of his readers have seen the negative skeptical side of his thought as predominant in his early philosophical writings. His own contemporaries, who would have read the *Treatise* with Locke's *Essay* in mind, must certainly be forgiven for having seen him as undermining rather than providing a foundation for our probabilistic reasonings. For the principle in which Hume sought to root such reasonings is the very principle which, according to his own view as well as that of Locke, is also the source of prejudice and the inability to think rationally.

NOTES

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1. See Maurice Mandelbaum, *History, Man, and Reason* (Baltimore, Maryland: Johns Hopkins University Press, 1971), pp. 147-162; and Martin Kalllich, *The Association of Ideas and Critical Theory in Eighteenth-Century England* (The Hague: Mouton, 1970). Locke's theory of association of ideas would have been known to many in the eighteenth century through its appearance under this heading in Ephraim Chambers, *Cyclopaedia: or, an Universal Dictionary of Arts and Sciences* (London, 1728). But its most spectacular eighteenth-century appearance is surely as the foundation for the thoughts of Laurence Sterne's *Tristram Shandy*. See M. V. DePorre, *Nightmares and Hobbyhorses* (San Marino, Calif.: Huntington Library Press, 1974) for a good discussion of the importance of Locke's theory in Sterne's work.
2. James Gibson, *Locke's Theory of Knowledge and its Historical Relations* (Cambridge: Cambridge University Press, 1917), pp. 235-236.
3. Gibson, p. 140.
4. Richard I. Aaron, *John Locke*, 3rd. ed. (Oxford: Clarendon Press, 1971), p. 141.

5. *An Essay concerning Human Understanding*, ed. Peter H. Niddich (Oxford: Clarendon Press, 1975), 1, 1, 3. Textual references in this form are to book, chapter, and section numbers.
6. Throughout this paper I have used the expression 'normative epistemology' even though my concern is largely with the second of Locke's goals—that which concerns probability rather than knowledge. Strictly speaking 'epistemology' means 'theory of knowledge.' Locke clearly distinguishes knowledge from probability: the latter is only "likeness to be true" (4, 15, 3) and unlike the former does not involve the perception of "a constant, immutable, and visible connexion" between ideas (4, 15, 1). I would like to say that my major concern here is with Locke's normative 'probabology'—but unfortunately (or fortunately) there is no such English word. It is also important to bear in mind that Locke has no interest in probability in its statistical sense.
7. Noted by James Tyrrell in his copy of the *Essay*, now to be found in the British Library. See Maurice Cranston, *John Locke, a Biography* (London: Longmans, 1957), pp. 140-141. Also Locke's "Epistle to the Reader," *Essay*, p. 7. In his *John Locke and the Way of Ideas* (Oxford: Clarendon Press, 1956) John Yolton has shown that the views of his contemporaries on these principles form the essential backdrop to the polemic against innate ideas in Book I of the *Essay*.
8. Chapter 29, "Of Clear and Distinct, Obscure and Confused Ideas"; chapter 30, "Of Real and Fantastical Ideas"; chapter 31, "Of Adequate and Inadequate Ideas"; chapter 32, "Of True and False Ideas."
9. *Essay*, 2, 21, 56-70.
10. *Essay*, 4, 20.
11. "Of Enthusiasm," *Essay*, 4, 19.
12. See the transcription of Locke's Journal entry for Friday, 5 November 1677, in Kenneth Dewhurst, *John Locke (1632-1704), Physician and Philosopher* (London: Wellcome Institute, 1963), p. 89. Compare the entry for Saturday, 22 January 1678 (Dewhurst, pp. 100-102).
On page 70 Dewhurst interprets Locke's entry for Wednesday, 15 July 1676 (MS. Locke f. 1, p. 320), as follows: "Query whether mania be not putting together wrong ideas and so making wrong propositions from them, notwithstanding the reason be right? But madness is a fault in the faculty of reasoning." Thus it appears that Locke held the opposite of his later view of madness. But, as Henry Schankula has pointed out to me, this interpretation of Locke's entry (which was partly written in shorthand) is quite misleading. The word Dewhurst has given as "madness" is in fact "fatuitas," which should be translated as "stiltiness" or "folly." Hence, the entry is fully compatible with Locke's later views. On page 20 of *Nightmares and Hobbyhorses* Michael DePorre has been misled by Dewhurst's mis-translation.
13. Dewhurst, p. 89.
14. In the addition to his "Epistle to the Reader" in the fourth edition of the *Essay*, Locke had claimed that "the greatest part of the Questions and Controversies that perplex Mankind [depend] on the doubtful and uncertain use of Words" (p. 13). At first sight, Locke appears to be making irreconcilable claims about the fundamental cause of error: I am suggesting here that the psychological account in terms of association may well be the more basic.

15. H. A. S. Schankula, "Locke, Descartes, and the Science of Nature," *Journal of the History of Ideas*, 51 (1980), 477.
16. See DePorte, *Nightmares*, pp. 23-24.
17. This is Locke's marginal summary of *Essay* 4, 16, 1.
18. "Locke and the Ethics of Belief," *Proceedings of the British Academy*, 64 (1980), 186. This paper, which was given as the Dawes Hicks Lecture in 1978, contains a fascinating discussion of Book IV of the *Essay*. I am indebted to Passmore's study for my own reflections in this part of the paper.
19. Gibson (note 2) says that "Locke is at every point in disagreement" with Descartes's theory (p. 138). He is clearly wrong here. For a good account of Descartes's theory of judgment see Hiram Caton, "Will and Reason in Descartes's Theory of Error," *Journal of Philosophy*, 72 (1975), 87-104. It is certainly true that Descartes insists that the will is required in order to affirm any proposition. Nevertheless when we *choose* between two contraries, this is only the lowest form of liberty; on the other hand, he writes that "if I were always to know clearly what is true and what is good, I would never have any difficulty deciding what judgment and what choice I ought to make; and thus I would be entirely free, without being indifferent." See his *Meditations de Prima Philosophia*, in *Oeuvres de Descartes*, ed. Charles Adam and Paul Tannery, new presentation by C.N.R.S. (Paris, 1973), vol. VIII, p. 58; vol. IX-1, p. 46; Meditation 4. For Descartes, the highest freedom arises when I am self-determined by what he calls "natural knowledge."
20. *Principia Philosophiae*, in *Oeuvres de Descartes*, vol. VIII-1, p. 21; vol. IX-2, p. 43; Principle I-43.
21. Gibson, p. 140. From a twentieth-century point of view, it would have been more accurate to speak of "epistemological" rather than "logical" value here (see note 6). However, as James G. Buickerood's paper, "The Natural History of the Understanding: Locke and the Rise of Facultative Logic in the Eighteenth Century," *History and Philosophy of Logic*, 6 (1985), 157-190 shows us, the eighteenth-century sense of the word "logic" encompasses theory of knowledge.
22. See *Essay*, 4, 20, 9. The Urnim and Thummim are to be found on the breastplate of the high priest as symbols of judgment. They are supposed to provide Divine guidance in times of national crisis. See Exodus 28, 30.
23. See *Essay*, 1, 3, 25-27. Here Locke regards as especially harmful the principle "That Principles [themselves] ought not to be questioned." In his *Conduct of the Understanding*, originally intended as an additional chapter to the *Essay*, Locke gave the following list of first principles commonly appealed to by men: "the founders or leaders of my party are good men, and therefore their tenets are true; it is the opinion of a sect that is erroneous, therefore it is false; it hath been long received in the world, therefore it is true; or it is new, and therefore false." See *Locke's Conduct of the Understanding*, ed. Thomas Fowler, 2nd ed. (rpt. New York: Lenox Hill, 1971), Section VI, p. 16.
24. See Passmore, 201-202. Passmore tends to concentrate on the case of the passionate man and examines with care the chapter "Of Enthusiasm." He argues that Locke ultimately concludes that the irrational man must be blamed for his lack of love of truth. But this solution does not seem possible in the light of what Locke says at *Essay* 2, 33, 18. Here he clearly asserts that such a man does not intentionally deceive himself.
25. Locke's first *Letter Concerning Toleration* was published in 1689, one year before the first edition of his *Essay*. Locke's main aim was to encourage the toleration of those who differ from oneself in matters of religion.
26. Locke, *Conduct*, Section XLI, p. 89.
27. See *The Works of John Locke*, (London, 1823; rpt. Darmstadt, 1963), IX, Section 138, pp. 129-130. In this work Locke discusses the inculcation of the belief that evil spirits come out when it is dark, an example he also employed in the *Essay* (2, 33, 10).
28. *The Correspondence of John Locke*, ed. E. S. De Beer (Oxford: Clarendon Press, 1979), V, pp. 350-353. Locke's study of Malebranche was posthumously published under the name "An Examination of P. Malebranche's Opinion of Seeing All Things in God."
29. Nicolas Malebranche, *Recherche de la Verité*, ed. G. Rodis-Lewis, in *Oeuvres de Malebranche*, ed. André Robinet, volumes I-III (Paris, 1962), vol. I, p. 216. Hereafter this work will be referred to as *Recherche* with the volume number and the page. All translations from the *Recherche* are my own.
30. *Recherche* I, 323. The word I have here translated as "footsteps" is "vestiges" in the original. In A. Boyer's *The Royal Dictionary Abridged* (London, 1700; rpt. Menston: Scolar Press, 1971), the French "Vestige" is translated as "step, foot-step, vestiges, . . . sign, mark, remain, vestige."
31. Michael DePorte suggests another possible source for Locke's psychological account, namely Thomas Willis's *Two Discourses Concerning The Soul of Brutes* (which was first published in 1672, two years before the first edition of Malebranche's *Recherche*). See *Two Discourses*, trans. S. Portage (London, 1683; rpt. Gainesville, 1971), pp. 201-202; also *Nightmares and Hobbyhorses*, pp. 50-51, n. 54. The attribution of the error to custom seems to be common to Locke and Malebranche, but not to Willis (at least in the passage to which DePorte calls our attention). The talk of a "smooth path" and "easy" motion in Locke also seems clearly to be derived from Malebranche. But most importantly, while both Locke and Malebranche stress that the animal spirits move in an *ordered* way in producing absurd and erroneous connections of ideas, Willis stresses their *disordered* movements. He thinks that the animal spirits produce "unaccustomed notions" (p. 202) because they are "driven beyond their orders and wonted passages" (p. 203). Both Locke's language and central thought seem to me to be closer to Malebranche than Willis. Malebranche clearly read Willis (see *Recherche* I, 193, where he discusses Willis's views on the location of the common sense, memory, and imagination), but Willis's own views on the role of the animal spirits and the formation of corporeal ideas are likely to be derived either directly or indirectly from Descartes's *Traité de l'Homme* (which was first published posthumously in 1662). See René Descartes, *Traité de l'Homme*, ed. and trans. Thomas S. Hall (Cambridge, Mass. Harvard University Press, 1972), pp. 86ff.
32. Claudii Galeni, *De Symptomatum Differentiis*, in *Opera Omnia*, ed. C. G. Kuhn (Leipzig, 1824; rpt. Hildesheim, 1965), VII, pp. 60-61. I am indebted to Paul Potter for finding and translating the relevant passage of Galen for me.

33. Henry More, *Enthusiasmus Triumphatus; or a Brief Discourse of the Nature, Causes, Kinds, and Cure of Enthusiasm* (London, 1662; rpt. with an introduction by M. V. DePorte, Los Angeles: Clark Memorial Library, 1966), p. 8.
34. More, p. 9. Both of Locke's examples which I cited on page 106 were given by Descartes in his first Meditation. Descartes writes of those whose "brain is so troubled and obscured by the black vapours of bile that they assure us constantly they are kings, though they are very poor" and of those who "imagine" that they "have a body which is made out of glass." See *Oeuvres de Descartes*, vol. IX-1, p. 14. While Descartes does not explicitly note that the faculty of reason of madmen is intact, the distinction between the faculties of reason and imagination is very important in his philosophy. It is interesting to note that Robert Burton, a well-known early seventeenth-century writer on melancholy, claims that the primary disorder of imagination affects reason when the disease lasts for any time. See his *The Anatomy of Melancholy*, ed. Holbrook Jackson (London: Dent, 1932), I, pp. 171-172.
35. See DePorte's introduction to *Enthusiasmus Triumphatus*, p. vi, and *Nightmares and Hobbies*, pp. 38ff. Also see Phillip Harth's *Swift and Anglican Rationalism: The Religious Background of a Tale of a Tub* (Chicago, Ill.: University of Chicago Press, 1961), and Roy Porter, "The Rage of Parry: a Glorious Revolution in English Psychiatry?," *Medical History*, 27 (1983), 35. Henry Schankula has called my attention to the fact that Locke's reflections on the close connections among enthusiasm, imagination, and madness go back to his 1682 Journal. (See the entry for Sunday, February 19, MS Locke, f.6, 1682, pp. 20-24.)
36. David Hume, *An Abstract of a Book lately Published: Entitled, A Treatise of Human Nature, &c.: Wherein the Chief Argument of that Book is farther Illustrated and Explained*, in *A Treatise of Human Nature*, ed. L. A. Selby-Bigge, rev. P. H. Niddich, 2nd ed. (Oxford: Clarendon Press, 1978), pp. 661-662. For a discussion of the reasons for attributing this anonymous work to Hume, see P. H. Niddich, *An Apparatus of Variant Readings for Hume's Treatise of Human Nature* (Sheffield: University of Sheffield, 1976).
37. David Hume, *A Treatise of Human Nature*, p. xv.
38. *Treatise*, p. 125.
39. *Treatise*, pp. 143-155, esp. p. 146 and p. 149. When he speaks strictly about the highest degree of certainty—that which arises from an invariant conjunction of causally related items—Hume speaks of *proofs* as opposed to *probabilities*. He criticizes Locke for adopting a twofold distinction between demonstrative and probable reasoning, but his objection does not reach beyond the verbal impropriety of saying "that it is only probable all men must die, or that the sun must rise tomorrow" (See *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*, ed. L. A. Selby-Bigge, rev. P. H. Niddich, 3rd ed. [Oxford: Clarendon Press, 1975], p. 56fn. and *Treatise*, p. 124). For Locke himself had written that "these Probabilities rise so near to *Certainty*, that they govern our Thoughts as absolutely, and influence our Actions as fully, as the most evident demonstration" (*Essay*, 4, 16, 6). Hume adopts the essence of Locke's view when he distinguishes two kinds of relations between objects—those which are discoverable merely by a comparison of ideas and those which cannot be so discovered (*Enquiry*, p. 25). In the *Treatise* Hume clearly adopts Locke's distinction between demonstration, which involves the discovery of "a constant, immutable
- ... connection" between the intermediate ideas, and probability, which involves the discovery of an intermediate connection which is "not constant and immutable, or at least is not perceived to be so" (*Essay*, 4, 15, 1 and 3, and *Treatise*, pp. 69-73).
40. *Treatise*, pp. 173-175. See Tom L. Beauchamp and Alexander Rosenberg, *Hume and the Problem of Causation* (New York: Oxford University Press, 1981), pp. 52ff.
41. For a more extended discussion of Hume's use of this argument and its historical roots see John P. Wright, *The Skeptical Realism of David Hume* (Minneapolis: University of Minnesota Press, 1983), pp. 221ff.
42. *Dialogues Concerning Natural Religion*, ed. Norman Kemp Smith, 2nd ed. (Edinburgh: Nelson, 1947), p. 146. Also see Wright (note 41), especially section 16, pp. 161-174.