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**John Locke on real and nominal essence**

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**City University of New York, 1990**

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JOHN LOCKE ON REAL AND NOMINAL ESSENCE

By  
James P. Danaher

A dissertation submitted to the Graduate Faculty  
in Philosophy in partial fulfillment of the  
requirements for the degree of Doctor of  
Philosophy, The City University of New York.

1990

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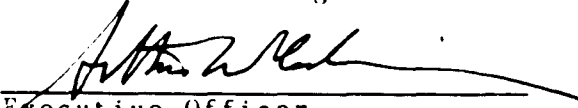
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This manuscript has been read and accepted for the Graduate Faculty in Philosophy in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

JOHN LOCKE ON REAL AND NOMINAL ESSENCE

BY

JAMES P. DANAHER

Adviser: Professor Charles Landesman

In his Essay concerning Human Understanding, John Locke claimed that sensations enter the mind as unmixed simple ideas. Because we don't observe the necessary connections which unite such simple ideas into the complex ideas we have of substances, Locke concluded that such complex ideas must be constructed by our minds rather than given by nature. Since our ideas of substances, and the consequent ideas of essences that are abstracted from them, are not given by nature but constructed out of judgment and opinion, those essences and the species we derive from them are merely nominal and not real.

Locke did believe, however, that there were real essences, and, in the case of material substances, those real essences amounted to the arrangements and motions of the insensible particles that made up the internal

structures of material substances. Such real essences were of course unknown in Locke's day, but many scholars have contended that Locke believed such an ignorance was temporary and would be overcome in time as science developed powerful enough instruments to peer into the microscopic world. The major thesis of this dissertation is that such a position is incorrect, and the consequence of all that Locke says is that the real essences of substances will never be known in spite of whatever instruments are developed. Furthermore, this dissertation also questions whether any real essences (other than those of simple ideas) are knowable given Locke's epistemology and rejection of the Aristotelian position that real essences are given in experience.

Lastly, this dissertation focuses on the consequences of Locke's position concerning our ignorance of real essences. In particular it examines the logical consequences of Locke's idea of essence upon the notions of science and human understanding in general.

ACKNOWLEDGEMENTS

I would like to thank professors Arthur Collins and Martin Tamny whose recommendations and suggestions have greatly enhances this project.

A special thanks to my advisor Charles Landesman whose expert knowledge of Locke and general encouragement was indispensable in guiding my research, and without whom this entire effort would have been impossible.

And finally I would like to thank my wife for her great patience and unselfish support throughout this endeavor.

Contents

|                                                                                         | <u>Page</u> |
|-----------------------------------------------------------------------------------------|-------------|
| Contents                                                                                | vii         |
| Introduction                                                                            | 1           |
| Part I - <u>The Origin and Context of Locke's Idea of Essence.</u>                      |             |
| 1. The Importance of Language in Locke's Philosophy.                                    | 9           |
| 2. Locke's rejection of the Aristotelian notion of essence.                             | 24          |
| 3. The formation of nominal essences.                                                   | 51          |
| 4. Locke's notion of real essence and the corpuscular philosophy.                       | 65          |
| 5. Essence and the idea of substance.                                                   | 87          |
| Part II - <u>Problems with Locke's Idea of Essence.</u>                                 |             |
| 6. Why is the nominal rather than the real essence the source of our idea of species?   | 101         |
| 7. The relationship between real and nominal essence and the question of natural kinds. | 126         |
| 8. The essences of mixed modes and relations.                                           | 151         |
| Part III - <u>Locke's Idea of Essence and Human Knowledge.</u>                          |             |
| 9. Essence and Locke's idea of science.                                                 | 170         |
| 10. The new probable science and Locke's idea of species.                               | 188         |
| 11. Conclusion.                                                                         | 204         |
| Bibliography.                                                                           | 207         |

Introduction

In the winter of 1670-71 there met in John Locke's chambers five or six friends who had gathered for the sake of discussing questions of morality and religion. The discussions seem to have centered primarily upon the matter of whether Christianity was rational, and whether we are capable of having knowledge (knowledge in the strict sense of being absolutely certain) of its truths (Biddle 411-13). It seems that in the course of these discussions, Locke came to the realization that such a question could only be answered if we first understood what was and was not within the proper scope and limit of human knowledge.

Were it fit to trouble thee with the History of this Essay, I should tell thee that five or six Friends meeting at my Chamber, and discoursing on a Subject very remote from this, found themselves quickly at a stand, by the Difficulties that rose on every side. After we had a while puzzled ourselves, without coming any nearer a Resolution of those Doubts which perplexed us, it came into my Thoughts, that we took a wrong course; and that, before we set our selves upon Enquiries of that Nature, it was necessary to examine our own Abilities, and see, what Objects our Understandings were, or were not fitted to deal with. (Locke, Essay 7)

In wanting to clarify the truths of morality and religion Locke had come to realize that at least part of the difficulty involved arose from our lack of knowledge concerning what was and was not within the scope of our own limited understanding. Thus Locke thought that before we pursue knowledge in such areas we should first inquire into the scope and limitation of our understanding.

If by this Enquiry into the Nature of the Understanding, I can discover the Powers thereof; how far they reach; to what things they are in any Degree proportionate; and where they fail us, I suppose it may be of use, to prevail with the busy Mind of Man, to be more cautious in meddling with things exceeding its Comprehension; to stop, when it is at the utmost Extent of its Tether; and to sit down in a quiet Ignorance of those Things, which, upon Examination, are found to be beyond the reach of our Capacities. (I. i. 4)

By setting forth the bounds of human understanding, or what objects "[we]...were, or were not fitted to deal with;" (Locke, Essay 7) Locke found that the essences proposed by the Aristotelian scholastics were one class of things which were not within the scope of human understanding. This discovery was not only to have a profound effect in shaping Locke's own philosophy, but was also a major force in shaping the context and scope of human understanding for the entire modern era.

Throughout the Middle Ages nearly all schools of thought accepted the notion that a thing was determined to be of a particular sort or species by its form or essence. This not only organized the world into sorts or natural kinds, but, because these forms or essences were thought to be knowable, our knowledge of these essences gave us an understanding of the actual way in which the world was organized. Thus the orderly division of things that were studied by the medievals were thought to be the actual sorts that existed within nature. With Locke's examination concerning the scope of human understanding, however, the presupposed knowledge of essence came under scrutiny, and upon examination it was Locke's determination that this medieval notion of essence was in fact unintelligible, and thus such essences fell outside the scope of human understanding. Thus upon finding the traditional notion of essence unintelligible, but still wanting to retain at least some aspects of the idea of an essence, Locke was forced to resort to an entirely new concept concerning the idea of essence. As we will see, his idea of essence would cast human understanding in a new light. Indeed, instead of continuing in the medieval search after the ultimate reality of nature, Locke instead established a conventionalist context for human understanding.

It is the purpose of this study to examine that new idea of essence, including the philosophical difficulties entailed by this notion, and the logical consequences which

that idea of essence had both upon Locke's own philosophy, and the future of modern scientific and philosophical thought as well. In particular we will focus on the fact that in his examination of the traditional notion of essence, Locke had found that the essence we use to organize particular material substances into sorts or species is of our own making and not given in nature. And equally, that the real essence of a thing, and that which makes a material thing have the qualities it does, is not knowable. A central concern of this dissertation is the claim that the unknowable nature of the real essences of things leads to the consequence that the essences and species required by our understanding will have to be man-made rather than natural. As a further consequence, the science which explores these essences and species will also be a human rather than natural science.

Many Lockean scholars have supposed that Locke's scepticism toward our ability to know the real essences was the product of the limits of Seventeenth Century science. Since Locke embraced the corpuscular philosophy which claimed that a corpuscular structure is the real essence of material substances, and the cause of the sense qualities we find within substances, couldn't we come to know such real essences in time? If the real essence was made up of the then insensible particles of the corpuscular philosophy couldn't such real essences be known in time as technological advancement brings about improved microscopes

that could make such insensibles particles sensible?

The primary thesis of this dissertation is that our ignorance of the real essences of material substances is intrinsic and not something to be overcome in time. Indeed, our ignorance of the real essence must be permanent if Locke's claim that the connections which join qualities or simples together into substances are not observed, and thus must be provided by human judgment and conjecture, is true. Although Locke speaks of this inability to observe the connections between qualities or simples in regard to the formation of substances, it must also be true that on the microscopic level as well we don't observe connections, and even if we did have sensations of the simples that exist on that level, we would still need to form judgments concerning what qualities or simples we should join and which we should refrain from joining. Thus even when peering into the microscopic world it is not the real essences that we discover. Even on that level the essences would be nominal and the product of human judgment and conjecture.

We will also explore other factors which further substantiate the fact that, as a consequence of the position Locke takes, the real essences of all things, save for simples, are unknowable and thus outside of our grasp. The essences which are the objects of our understanding will always be less than real and merely nominal. Of course Locke claimed that we are able to achieve knowledge

in areas where mixed modes or relations are the subject of our inquiry (e.g. ethics) because with such things we do know the real essences. We will consider the real essences of modes and relations in order to see how they are different, in terms of our understanding, from those of substances. We shall see that the distinction is not as great as Locke supposes and, because many of the same problems exist for modes and relations as exist for substances, their real essences are in at least some sense less than knowable as well.

The consequence of all this, at least in terms of material substances where the real essences are definitely beyond our understanding, is that the species which we study as the object of human inquiry, being based forever upon nominal rather than real essences, will yield a different understanding of the world than that sought by the science of the ancients and medievals who believed the essences and species of their study were real and knowable. Locke, therefore, because of the impossibility of ever knowing these real essences, must fashion a new notion of what will count for a human understanding. If we are unable to know the actual substances and species of nature because we can't know the real essence, but nevertheless need an understanding of that world, we need to ask what possibly could be the basis for that understanding.

Thus Locke truly ushers in a conventionalist view of

science that certainly represents a radical break from the traditional notion of science. Because of his findings concerning the unknowable nature of the essence of material substances, Locke concludes that knowledge (in the strict sense of knowing nature as it is or as God created it) is not possible, and thus our understanding of natural philosophy must constitute something less than knowledge.

Before beginning, however, we need first sort out a basic understanding of Locke's position on this matter of essence, and consider his idea of essence in the context in which that idea developed. In particular we need to examine and understand what it was about the medieval Aristotelian notion of essence that Locke found so unacceptable that he sought to replace it with not one but two new notions of essence (i.e. a nominal essence and a real essence). Equally, in order to understand the problems and consequences of this new notion of essence, we need also to understand it in the context of other aspects of Locke's philosophy namely in the context of such things as Locke's idea of substance and his belief in the corpuscular philosophy. But perhaps it is best to begin with an understanding of Locke's philosophy of language, for it is the context of language that is perhaps most basic and fundamental to this new idea of essence.

As a final remark, I should inform the reader that the strategy of this inquiry is to lay out the context for Locke's notion of essence, and deal with such contextual

matters separately in several early chapters before actually getting to the core questions and problems which are involved in the notion of essence itself. I apologize to the reader for not getting right to the heart of the matter, and spending so much time on what might seem peripheral. But the strategy employed here seems to be the most efficient and comprehensive way of dealing with the necessary relevant factors that must be understood in order to come to grips with Locke's notion of essence.

Chapter 1  
The Importance of Language  
in Locke's Philosophy

In "The Epistle to the Reader" which Locke uses as an introduction to An Essay Concerning Human Understanding, Locke indicates that he sees himself not as a master-builder of science and human knowledge as were Boyle, Sydenham, Huygenius or Newton, but rather his ambition is merely to be "...an under-labourer in clearing ground a little, and removing some of the rubbish, that lies in the way to knowledge..." (Locke, Essay 10). Now this "rubbish" that needs clearing away in order for knowledge to go forward specifically refers to language and the use of words. Locke says that knowledge would be

...very much more advanced in the World, if the Endeavours of ingenious and industrious Men had not been much cumbred with the learned but frivolous use of uncouth, affected, or unintelligible Terms, introduced into the sciences.... Vague and insignificant Forms of Speech, and Abuse of Language, have so long passed for Mysteries of Science; And hard or misapply'd Words, with little or no meaning, have, by Prescription, such a right to be mistaken for deep Learning, and height of Speculation, that it will not be easie to persuade, either those who speak,

or those who hear them, that they are but the  
Covers of Ignorance, and hindrance of true  
Knowledge. (Locke, Essay 10)

In order to understand why Locke thought that words were in such wide misuse and therefore language in need of reform, we need first to begin with an understanding of what Locke thought was the basic nature of words and language.

In explaining his idea of language, Locke says that language is not the mere framing of articulate sounds which even parrots can do. Nor is it merely that human beings use words "...as Signs for internal Conceptions" (III. i. 2). Both of these conditions, although necessary, are not sufficient in themselves to give us language as we know it. Indeed, there is a third factor which must be present in order to establish human language, that factor being the ability to use words to stand, not merely for a concept of one particular thing, but to stand for, or "...to comprehend several particular Things" (III. i. 3). As Locke points out, if language were not able to have words represent or stand as signs for groups of particulars, there would be only proper nouns; and such a language which had a word for every particular thing, and only words for particular things, would be of little use to us. So for Locke, general words, or words which represent sorts or species of things, are especially essential to language. As we will see, it is this matter of general words, and

their relationship to language, that causes language to occupy such an important place in Locke's philosophy. In order to explore these general words and their relationship to language, however, we must begin by considering Locke's belief in the empirical basis for ideas, for it is out of this empiricism that the matter of the importance of general words arise.

For Locke all our ideas have their origin in either external sensible experience or the experience of our own mind's internal operations.

...we having, as has been proved, no Idea at all, but what originally come either from sensible Objects without, or what we feel within our selves, from the inward Workings of our own Spirits, which we are conscious to our selves of within. (III. i. 5)

Now by taking this position that all ideas ultimately originate in experience, Locke, as a consequence, must equally admit that all ideas are, at least initially, particular; for all experiential things which produce such ideas are individual and particular. There are of course general ideas, but such ideas have their origin in particular ideas, and are merely made general by the mind through a process of abstraction. Locke explains in detail this process by which ideas that begin as particulars are made general or universal. He says that if we carefully observe the workings of the mind, we will note that the

mind, in order to store information which it deems possibly of future use, strips the idea down to an essence which might be present in other ideas encountered in the future, and then attaches a name, which serves as its sign, and stores it in memory.

If therefore we will warily attend to the Motions of the Mind, and observe what Course it usually takes in its way to Knowledge, we shall, I think, find, that the Mind having got any Idea, which it thinks it may have use of, either in Contemplation or Discourse, the first Thing it does, is to abstract it, and then get a Name to it; and so lay it up in its Store-house, the Memory, as containing the Essence of a sort of Things, of which the Name is always to be the Mark. (II. xxxii. 7)

This being Locke's explanation of the origin of general ideas, we can immediately see that "...universals, whether Ideas or Terms, are made" (II. xi. 9) by the mind and not given by nature. Consequently, for Locke universals have no existence in any other reality beyond ideas or language.

Now although these universals can exist as either ideas or words, there does seem to be a major difference depending upon whether they are ideas or words. Indeed, it is only as words, rather than ideas, that such universals or general words become intersubjective; that is, as mere abstract ideas they are purely personal and without any

existence outside the mind of the individual.

Man, though he have great variety of Thoughts, and such, from which others, as well as himself, might receive Profit and Delight; yet they are all within his own Breast, invisible, and hidden from others, nor can of themselves be made appear. The Comfort, and Advantage of Society, not being to be had without Communication of Thoughts, it was necessary, that Man should find out some external sensible Signs, whereby those invisible Ideas, which his thoughts are made up of, might be made known to others. For this purpose, nothing was so fit, either for Plenty or Quickness, as those articulate Sounds, which with so much Ease and Variety, he found himself able to make. Thus we may conceive how Words, which were by Nature so well adapted to that purpose, come to be made use of by Men, as the Signs of their Ideas.... (III. ii. 1)

Or as he says at the end of Book IV,

And because the Scene of Ideas that makes one Man's Thoughts, cannot be laid open to the immediate view of another, nor laid up any where but in the Memory, a no very sure Repository: Therefore to communicate our Thoughts to one another, as well as record them for our own use, signs of our Ideas are also necessary. Those

which Men have found most convenient, and  
therefore generally make use of, are articulate  
Sounds. (IV. xxi. 4)

So for Locke it is language which brings ideas out of the purely subjective realm of man's own mind, and into the more substantial realm of the intersubjective human community. Indeed, for Locke, universals, having no reality apart from mind where they are created by abstraction, can only find an intersubjective reality in language and not in things themselves. Even in the case of particular substances, as we will see later, the ideas we derive are not purely a product of nature, but are at least partially produced by mind (1), and thus subjective but for the fact that language brings them into the intersubjective realm.

Locke points out that men are reluctant to admit that their ideas (i.e. their ideas of universals) refer to less than the reality of things, but in fact, claims Locke, they do.

Because Men would not be thought to talk barely of their own Imaginations, but of Things as really they are; therefore they often suppose their Words to stand also for the reality of Things.

But...that it is a perverting the use of Words, and brings unavoidable Obscurity and Confusion into their Signification, whenever we make them stand for any thing, but those ideas we have in

our own Minds. (III. ii. 5)

Here when Locke speaks of words as standing not for things but only for ideas within our own minds he clearly means general words and even says that this relates "...more particularly to Substances, and their Names..." (III. ii. 5), for surely in the case of proper nouns like "Bill," we do refer to a particular thing rather than an idea. In the case of a general word like "tree," however, I am forced to refer to an idea because of the absence of a universal tree existing in any reality but that of ideas. So for Locke our ideas (at least in the case of universals or general ideas), being products of the mind through abstraction (2), are without a basis within any reality beyond our own individual mind. Such ideas are therefore purely personal and subjective, except that they are part of language and as such have an intersubjective existence. This intersubjective reality established by language is not, however, a reality in the sense of being natural, but is rather of a conventional nature. Indeed, through communications our words are shaped and our language made to conform to the conventions of men. But language, being the product of common men intent upon expressing mundane and ordinary matters, is often crude and less than logically precise. Such a language is of course fine for simple conversation, but when it comes to trying to understand the world in any exact or precise way (III. ix. 3), such a language is certainly crude and inadequate for

the job.

Some gross and confused Conceptions Men indeed ordinarily have, to which they apply the common Words of their Language, and such a loose use of their words serves them well enough in their ordinary Discourses and Affairs. But this is not sufficient for philosophical Enquiries. (III. x. 22)

Thus because of its conventional and common nature, Locke sees the need for the improvement of language. This is particularly true not so much for the sake of common communication, but because the conventional nature of words shapes our ideas, and in particular our ideas of sorts or species which are the subject matter of human knowledge and science (III. ix. 15). Because of this, Locke's interest concerning the improvement of language, must focus particularly upon our use of general terms which designate sorts or species. Since, as we will see later, Locke rejects the idea that the real essences of things are knowable or given by nature, the species or sorts we study will not be based upon real essences within nature, but rather nominal essences which are the products of our own mind. Therefore these nominal essences which are the product of our minds rather than nature will have their only intersubjective existence within language. If the subject of study for natural philosophy is to have no other intersubjective reality than that found in language, it is

obviously essential to get language, and particularly these general words, correct and precise. This nominal nature of sorts or species and its effect upon Locke's ideas of natural philosophy and human knowledge in general will certainly be one of the major concerns and points of inquiry throughout this text, but for now let us conclude our examination of Locke's notion of language by taking up the question of why Locke conceived of language as he did, and in particular why he took a nominalist position.

It is of course difficult to isolate a single reason behind Locke's nominalism, but we should at least be able to point to some considerations whose logical force must have influenced him in the direction of nominalism. The first of these clearly seems to have been the corpuscular philosophy which Locke embraced. In a later chapter we will deal with the corpuscular philosophy in much greater depth, but for right now, in order to see the effect of the corpuscular philosophy on language, such an in-depth analysis is not necessary. Our purpose here only requires that we have an elementary understanding, and it is enough for now that we merely understand its basic claim that underlying the material world lie corpuscular structures whose arrangements and motions make up the reality of material things.

Now obviously if the corpuscular philosophy is true, our language certainly doesn't reflect that reality, for indeed the words of our language, at least in regard to

physical bodies, for the most part refer to substances which are made up of composites of sense qualities. By contrast to Locke, the Aristotelian scholastics (3) thought that these sense qualities and substances represented reality as it ultimately was, but as we can see for Locke and those who believed in the corpuscular philosophy, the sense qualities of our experience are merely the products of arrangements and motions of atomic corpuscles (Givner 341) and not the ultimate reality themselves (4). So by the corpuscular philosophy pointing to another reality apart from, and more basic than, the reality of sense qualities, the reality of our language is undermined.

In order to more fully understand how this undermining takes place let us begin with the fact that in the medieval tradition of the Aristotelian scholastics the idea of essences, to which were attached the general words that represented species or sorts, was established on a basis of the distinction between essential and accidental characteristics. In other words, of all the sense qualities that appear within a particular kind of thing some were thought to be essential (meaning that a change in such characteristics would constitute a change in the kind or sort of thing that entity was), while others were deemed accidental (in which cases such characteristics could change without constituting a change in the species of the thing). So essences and the general ideas of species which rested upon those essences were made up of essential rather

than accidental qualities. Furthermore, many a medieval in the Aristotelian tradition claimed that our active intellect had the power to discern the essential form of a thing and distinguish it from a thing's accidental qualities (Kreyche 65). This of course brought the reality of essential forms and species within the scope of human knowledge (5).

Now if by contrast Locke and the other corpuscularians were right, then all sensible qualities were caused by the activity, motion or arrangement of tiny insensible particles. If this were true, then these insensible particles would constitute the ultimate reality of material things, and it would be hard to see how we could make a real distinction between essential and accidental sense qualities. Indeed, if the corpuscular philosophy were correct, all sense qualities would be equally subordinate to the ultimate reality of the corpuscular structures, and thus the essential/accidental distinction would be contrived at best and hardly natural. Such a distinction would clearly be for the sake of human understanding, and would not reflect any ultimate reality as it had for the Aristotelians.

Thus with the corpuscular hypothesis language loses the natural foundation it had for the Aristotelians, and becomes man-made. For the Aristotelians, language, and in particular those general words and the ideas they represented, was believed to be the result of the mind's

ability to pick out the essential characteristics which were the basis for the natural divisions of species or sorts. Thus the way language divides up the world is the same way that nature is divided, and we have a language that mirrors or is based in nature. The corpuscular philosophy, however, changed all that. With the new philosophy the arrangements of insensible corpuscles were what would make up the true divisions within nature, and such a natural reality is hardly reflected in our language or words.

Similarly, Locke also makes a distinction between primary and secondary qualities which further undermines the reality of the traditional Aristotelian notion of essence. This distinction, which Locke as well as other corpuscularians embraced, maintained that not all the sense qualities which we may think exist within a thing do in fact actually exist therein. For example, just as we suppose that the pain I sense from the fire when it burns my hand is not an attribute of the fire itself (i.e. pain is not a characteristic of fire), but rather that there is merely a power within the fire that is able to produce that sensation within me, so too Locke claimed that many a quality are of just such a nature. Thus the smell of the rose or the color of the sea are not as such within the rose or sea, but rather the arrangements and motions of the insensible particles of their internal constitutions have the power to create those sensations within us. Now most

qualities are of this secondary nature, and few are primary or actually exist as such within the thing itself. In fact, the primary qualities which actually do exist within the thing itself as they appear to our senses are limited to solidity, extension, figure, motion or rest, and number; so all other qualities that a thing might possess including its smell, color, sound, taste, etc. are secondary, and in fact not existent as they appear to our senses within the thing itself.

With this distinction between primary and secondary qualities it is easy to see why Locke would consider the traditional Aristotelian scholastic's notion of essence as meaningless. For the Aristotelians' claim that certain qualities were essential and others accidental seems a wrong distinction in light of this theory of primary and secondary qualities. Indeed, what the Aristotelians claimed to be essential rather than accidental were often qualities which Locke saw as secondary, and in fact not even as such actually within the thing itself. How could such secondary qualities, which didn't exist as such within the thing itself be considered the essence of that thing?

For Locke the "real" essence of the thing would have to be composed of the arrangement of the insensible primary qualities that actually do exist within the thing and make up its corpuscular structure, and not certain sense qualities as the Aristotelians believed. For Locke, such sense qualities were, for the most part, secondary; and

although such secondary sense qualities may have made up the idea of essence for the Aristotelians, they were for Locke merely nominal essences, and less than the real essence of material things.

Thus Locke resorted to his nominalism at least partially because the Aristotelian notion of essence was unintelligible, or at least less than real, in the light of the corpuscular philosophy and its distinction between primary and secondary qualities (Sloan 17-20). Of course Locke found other problems with the Aristotelians on this matter of essence, but that is to be the topic of our next chapter which examines the Aristotelian scholastic notion of essence, and why Locke rejected that notion.

Endnotes

1. We will see in a later chapter that in the case of simple ideas, the ideas are given directly by external reality, and thus have their basis within that reality and not merely language; but all other ideas are only partially given at best.
2. This matter of abstraction and the fact that such ideas are the products of mind will be fully explained in a future chapter.
3. In the next chapter we will explore the Aristotelian scholastic position in considerable depth in order to understand exactly what that position was. For right now it is enough that we understand that term to refer to the dominant philosophical position of Locke's day, and the one against which he is taking opposition.
4. As we will see later in this chapter many of the sense qualities (secondary qualities) which the scholastics saw as essential, the followers of the corpuscular philosophy didn't admit to actually existing within the thing itself, but were rather seen as sensations that were produced in us by the arrangements and motions of a thing's corpuscular structure.
5. In the next chapter we will explore the notion of the Aristotelian scholastics concerning universals or species, and how they were discerned by the mind.

Chapter 2Locke's Rejection of the Aristotelian Notion of Essence

In Locke's school days at Oxford his studies were dominantly Aristotelian. The Aristotle of Locke's studies, however, was not the ancient pagan philosopher, but rather an Aristotle who had been Christianized by the Middle Ages. This is not to say that Locke didn't read the actual Aristotelian corpus, but rather that those writings as they were taught at Oxford in Locke's day were filtered through the medieval Christian interpretation of the scholastics. This should not, however, mislead us into thinking that the Aristotle of Locke's studies at Oxford was the scholastic Aristotle of the thirteenth-century. Indeed, Oxford was one of the first universities to begin to move away from the Thomist tradition in favor of Ockhamism in the fourteenth century (Copleston 257-60). Furthermore, in the fifteenth century the influence of humanism as represented by figures like More and Erasmus, moved the University still further away from the old scholasticism (Hargreaves-Mawdsley 13). And of course Oxford was not much affected by the Jesuit's efforts to resurrect Thomas Aquinas as part of the Counter-Reformation. The Renaissance of course did bring about a new interest in Aristotle and the Greeks in general. Not only were there produced new editions of the Greek texts, but also new editions of ancient Greek commentaries as well (Lohr 81).

This revived interest in the Greeks may have helped to keep Aristotelian studies alive, and as late as Locke's day a form of Aristotelian scholasticism still remained at Oxford although it hardly occupied the place of dominance it had enjoyed in the thirteenth-century. Neither was it any longer the unified Aristotelianism produced by the Middle Ages (Lohr 97). Indeed, rather than being a specific philosophical position or doctrine, the Aristotelianism that remained at Oxford, and to which Locke took opposition, was more a conceptual framework or way of thinking about the world that had simply hung on. In other words, the old Aristotelian molds of thinking were slow to die. The language and philosophical problems, as well as their solutions, simply remained Aristotelian. But that Aristotelian influence should not be over-emphasized. True, Oxford did tend to cling to the authority of the past (Mallet 148), and the restoration may have brought about an additional desire to return to the safety of ancient authorities (Mallet 463), but that should not be understood to mean that Oxford was backward in comparison to the other universities of Europe. Indeed, in many ways Oxford was at the front of the movement into the emerging modern age, and in fact the Aristotelians were in the minority and basically confined to the theology faculty which was headquartered at Christ Church (Hargreaves-Hawdsley 37). Of course Christ Church was Locke's college, and thus Locke perhaps felt the Aristotelian influence more than students

at other Oxford colleges.

Locke was well versed in that Aristotelian tradition, and "...went through the regular course in the Aristotelian Logic, Metaphysics, Physics and Ethics; and even for a time gave instruction in the later-named subject" (Gibson 184). But Locke certainly didn't look upon his education fondly. Quite the contrary, Locke found such a curriculum less than stimulating. Not that Aristotle himself was unworthy of study, but the way in which the Aristotelian subject matters were taught by rote was little more than exercise in memory, and hardly the kind of meat that would satisfy a thinker like Locke.

The Aristotelian logic was particularly debased and hardly a viable means of inquiry. Indeed, Locke himself wrote in Thoughts concerning Education (1693):

I have seldom or never observed any one to get the skill of reasoning well or speaking handsomely by studying those rules which pretend to teach it.

(qtd in Hargreaves-Mawdsley 99)

Or as Francis Bacon had complained a generation before, such a watered-down rendering of Aristotelian logic reduced

the gravest of sciences [logic] to childish sophistry and ridiculous affectations. (qtd. in Hargreaves-Mawdsley 99)

Such an education produced a strong reaction within Locke. Indeed, the Aristotelianism to which Locke was exposed in his early days at Oxford, and in particular the

way in which that Aristotelianism was dogmatically presented and defended, must have been an influential factor in making Locke into one leery of learning based purely upon the authority of others, and instead brought him to primarily trust in his own inquiries (1). Even his admiration of the "master builders" Newton and Boyle was not so much an admiration for the body of knowledge they produced, in the way that past generations had admired Aristotle, but rather for their spirit of free inquiry and allegiance to truth rather than some ancient authority. Locke truly was in that same spirit a freethinker who relied more upon his own capacity to observe and reason than the authority of others. If one considers the number of times in the whole of the Essay that Locke makes reference to someone else as a source of authority in order to support the truth of a claim (2), we can see that he is not one to seek the truth in the authority of others.

This should not be taken to mean, however, that Locke was not influenced by the thinking of others. He was a great lover of books and extremely well-read, and such resources, although not often cited in his writings, must certainly have had their effect. As we mentioned above Newton and Boyle certainly influenced and encouraged Locke's development as a freethinker, but even before their influence his desire to break from the imposed Aristotelianism of Oxford and pursue his own inquiries, if not initiated, was at least fueled, by the writings of

Bacon (3) and Descartes.

Bacon, who was perhaps the most outspoken opponent of traditional learning of his time and the founder of the scientific movement in England, certainly had a liberating effect upon all of English scientific thought. Locke in particular, having been a medical student, must have been effected by Bacon. It was Bacon who had urged that the study of medicine, instead of being based on a priori reasoning, should be based on empirical data and the collection of observable facts from which general explanations could be formulated. Such advice had been accepted and implemented at Oxford by the time of Locke's arrival at the university (Dewhurst 5), so the Baconian empirical method certainly had a direct effect upon Locke. Furthermore, Locke was also personally familiar with the writings of Bacon (Harrison 24), and it is difficult to imagine his own empirical leanings developing without any Baconian influence.

Descartes also was of great influence, and Locke himself acknowledges that it was Descartes who first aroused within him an interest in philosophical thinking (4).

Furthermore, Locke's close personal friendship and professional comradery with contemporaries like Boyle and Newton certainly had an enormous influence as well. But, as mentioned above, the influence of his contemporaries, like that of his predecessors, was not the influence of

authorities whose body of knowledge influenced him the way Aristotle had influenced past ages, but rather Locke was more influenced by their spirit of free inquiry after truth. Indeed, what Locke revered most in his contemporaries, as well as his immediate predecessors, and the great influence they had upon him, was their zealous desire to throw off the shackles of past learning and seek after truth. This was a new age and Locke was typical of the new man who, unlike the men of past ages, no longer revered the wisdom and learning of the past, but rather saw the authority of such thinkers (especially Aristotle, who stood as the last word on a variety of subjects) as the very thing that often stood in the way of learning. He says, in speaking of the wrong ways to measure probable truth, that what keeps us in ignorance more than anything else is the acceptance of something because

The Tenet has had the attestation of reverend Antiquity, it comes to me with the Pass-port of former Ages, and therefore I am secure in the Reception I give it....A Man may more justifiably throw up Cross and Pile for his Opinions, than take them up by such measures. (IV. xx. 17)

This is not to say that Locke was unaffected by the substance of the Aristotelian corpus. Certainly the Aristotelian view of the world weighed heavily in the shaping of Locke's thought, especially in regard to perception and knowledge. So although Locke would

radically depart from the general Aristotelian view, he found himself in agreement on several major points as well. Like the Aristotelian scholastics, Locke took an empiricist position and held that experience was the ultimate source of all ideas (Adams 72-74). Even concerning the matter of essence, Locke agreed that there are essences within things, which, although of a different sort than the Aristotelians imagined, are what cause a thing to have the qualities, features, and powers it does, and thus be what it is, just as the scholastic essence had done (Blackie, Problems 86).

Beyond this point, however, Locke parts company with the Aristotelian scholastics particularly on this issue of essence, and instead offers an opinion quite contrary to the Aristotelian notion.

Concerning the real Essences of corporeal Substances, (to mention those only,) there are, if I mistake not, two Opinions. The one is of those, who using the Word Essence, for they know not what, suppose a certain number of those Essences, according to which, all natural things are made, and wherein they do exactly everyone of them partake, and so become this or that Species. The other, and more rational Opinion, is of those, who look on all natural Things to have a real, but unknown Constitution of their sensible Parts, from which flow those sensible Qualities, which serve

us to distinguish them one from another, according as we have Occasion to rank them into sorts, under common Denominations. (III. iii. 17) (5)

So we see in the above statement (in which the first opinion is clearly that of the Aristotelians, and the second opinion that of Locke himself), that Locke has a considerably different notion than that of the Aristotelian scholastics on this notion of essence. But before pursuing these differences further we might do well to first establish what exactly was the Aristotelian scholastic position.

To begin with, the Aristotelian scholastics, although differing on more subtle points, nearly all agreed that within nature things were of definite sorts or species, and that these sorts were established by essences which made a given piece of matter be of the form or sort that it was. Now this essence or form was made up of different qualities found within a thing. It was not the totality of those qualities, however, but rather was made up only of the essential qualities within a thing. The belief was that within a natural substance there is a distinction between essential qualities or characteristics, which are present in every member of the species, and accidental characteristics which are unique to the individual and adds diversity among the members of a particular species (6). Now beyond this point the scholastics, for the most part (7), followed the moderate realism of Aquinas who believed

that these essences were universals, and although formally existing only within the mind, they had their basis or foundation within the thing itself (De Wulf 106-08). To explain this more fully, Thomas Aquinas had claimed that the idea of essence could be considered in three distinct ways: as an individualized existence within nature, as an essence itself abstracted from that individual existence, and as a universal as it is conceived in relation to other members of the same species (De Wulf 133). Now given this threefold existence, and also the fact that the essence as a universal has its foundation in the thing itself, the question that most concerns us, and equally most concerned Locke, was the question of how these essences came to be constituted as universals within the mind. If the foundation of the universal is the actual essence of the thing, how or in what fashion is that essence given to the understanding in order to produce the universal? The medieval notion that nothing is in the intellect which is not first in sensation, leads one to believe that these universals had to somehow originate within sensation, but how?

In answer to this question both Aquinas and Duns Scotus claimed that sensible reality acts upon the passive intellect which receives the appearance or sensation, at which point the active intellect then strips the phantasm of its individualizing features, and thus what is left is the universal or what is common to the entire species (De

Wulf 131-34).

In considering Locke's criticism concerning this traditional notion of essence, his attack primarily focuses on two points. The one concerns the nature of an essence as a fixed and precise form within nature, and the other is the question of how something like the Aristotelian notion of essence is knowable and within the scope of human understanding.

Now on this first point concerning the fixed or immutable nature of the forms, Locke certainly questions whether there are such hard and fast boundaries within nature which forever separate things into particular species (III. vi. 14-19). In keeping with the alchemistic tradition of his day, he personally held that matter was not frozen, so to speak, within immutable forms (8).

It should be noted at this point that this idea that there are within nature precise and immutable forms is at best a distortion or unfair assessment of Aristotle or the major scholastic thinkers, and they nowhere put forth the position Locke criticizes here. But it seems to be not so much a distortion on Locke's part, but rather that Locke is in this instance not attempting to criticize Aristotle or the scholastics as much as the common notion of his day. By common notion I refer not to any particular scholar or group of scholars, but rather to the general educated population who in all ages often misinterprets or misunderstands a popular theory. For example, today the

common consensus concerning what Marx or Darwin said is often a far cry from what was their actual position, but it is nevertheless a position often more popular and generally accepted than the original. I believe it is just such a situation that Locke is addressing here. Indeed, he refers not to Aristotle or a particular scholastic interpretation, but the "crude sense" in which the idea of essence is usually proposed. Furthermore, he says of that "crude sense," that it is in need of "some better explication, before it can fully be assented to" (III. vi. 15). It is hard to imagine such a criticism being leveled against Aristotle or Aquinas. It certainly seems more likely a criticism against the way in which the scholastic tradition was commonly and poorly interpreted.

In fact the notion of precise and immutable species seems more the product of common theological thinking than a somehow watered-down Aristotelian philosophical position. Indeed, as late as Linnaeus in the eighteenth-century, most biologists agreed that there were as many species as God established at creation, and thus species were precisely and immutably established by God. Such a view seems to be more the product of Christianity rather than Aristotle, but I have never been able to find why the idea of immutable species is part of Christian theology. It would seem that although it may be imperative for Christians to accept an original set of God-created species, I have never been able to find any Scriptural or

logical reason for believing that those original God-created species must be immutable. But whatever its origin, such a belief has generally accompanied Christian thinking and need not be attributed to Aristotle or the scholastics.

As Locke continues in his particular criticisms of the notion of precise and exact forms or essences, which establish equally precise species, he brings up the matter of the crossbreeding of animals and the cases of "...irregular and monstrous Births" (III. vi. 16). Indeed, the simplistic common view which held that all things conform to fixed and precise forms would have had difficulty in either declaring such monstrosities to be new species, or trying to fit such creatures into the fixed and rigid notions of existing species.

Additionally, Locke also believed that strange cross-breeds could be and had been produced.

...the mixture of a Bull and a Mare, are so frequent in the World. I once saw a Creature, that was the Issue of a Cat and a Rat, and had the plain Marks of both about it; wherein Nature appear'd to have followed the Pattern of neither sort alone, but to have jumbled them both together. (III. vi. 23)

As strange as this statement sounds such beliefs seem to have been quite common to the seventeenth-century (9), and at least for Locke who obviously believed it to be true

it certainly discredited the common notion of fixed and precise essence or species.

In another criticism, which we can take more seriously, Locke argues against the notion of a reality composed of clear-cut species by asking what alterations can or cannot be made within a thing, without altering its species identification. In other words, at what exact point in altering the various qualities of a thing does that thing cease being of one species and become another?

And I demand what are the alterations which may, or may not be made in a Horse or Lead, without making either of them to be of another Species?

In determining the Species of Things by our abstract Ideas, this is easy to resolve: but if any one will regulate himself herein, by supposed Real essences, he will, I suppose, be at a loss: and he will never be able to know when anything precisely ceases to be of the Species of a Horse, or Lead. (III. iii. 13)

Locke's criticism here indicates his belief that with the common notion of essence, and belief in the reality of universals, there is a real difficulty in saying with what alteration a thing ceases to be of a given species, while with his own nominalism and notion of essence merely as an abstract idea there is no such problem. Since the common notion, in keeping with the major trend of scholasticism, supposed that a species had its basis within an essence

which existed within nature, we must discover that exact essence upon which the separation of species depends. With Locke's own view, however, no such discovery is needed because the essence which determines the point of division doesn't exist within nature, but rather merely within our ideas or words, as we will see in the next chapter.

Of course the defenders of the common notion had a proposed solution to this problem and claimed that we did indeed have knowledge of the boundaries that constitute species.

This brings us to Locke's second point of criticism concerning whether such a traditional notion of essence is knowable. This question is certainly very appropriate given the fact that the general thrust of the Essay was to analyze and determine the scope and bounds of human understanding. Furthermore, with this criticism Locke is more directly challenging a genuine position that was held by the best of the Aristotelian scholastics, and not merely a common or crude notion of immutable species.

In considering this second point of Locke's opposition to the traditional notion of essence let us begin by examining a bit more closely the position of the Aristotelian scholastics on this matter of knowing these natural essences and species. Now in terms of knowing these essences, the scholastics (with the exception of the Ockhamists) maintained, much as Locke did, that essences were established within the mind through a process of

abstraction. For example, in the case of material substances, the particular aspects of a substance which made it unique and different from the other members of its species were stripped away by the active intellect in order that only an essence or that which was universal or common to the entire species remained. On this point of abstraction there is little difference between Locke and his scholastic predecessors. Locke of course didn't believe that an active intellect had the power to pick out the sense qualities which were naturally essential. According to Locke, we pick out the characteristics or qualities we choose to be essential and it is not a natural activity of an active intellect. In fact, Locke didn't believe any sense qualities were essential because of the corpuscular philosophy as we will see later.

Furthermore, the scholastics believed that this process of abstraction was performed upon material substances which were as much given in experience as sense qualities. Locke, on the other hand, although admitting that sense qualities were given in experience, believed that substances or the unions of those sense qualities were not given, as the scholastics had believed, but were at least to some extent (we will see later to what extent) produced by an operation of the mind apart from perception. So the point of contention was the fact that the scholastics believed that not only were the sense qualities known through experience, but so were the substances or

composites of sense qualities known in the same way. In other words the scholastics believed that a substance such as a tree is given through experience just as are the sense qualities which made up that substance. True, a substance is not an object of sensation in the sense that we cannot separate a substance from the sense qualities that accompany it, but according to the scholastics that doesn't mean that it does not come by experience. According to the scholastics sense qualities are not given to us singly or separated one from another (10), but rather we experience them joined together as composites of sense qualities, and these composites are what we know as substances. Since in the scholastic view substance is a given reality, the essence which we abstract from it is also real. Locke's substances, however, as we will see, are not a given reality, but are rather produced by the mind, and thus the essences which we abstract from them turn out to be nominal and less than real.

The scholastics also believed that these substances are known not merely through sensation but through intellect as well. Furthermore, for the scholastics, the two levels of knowledge (sensation and intellection) do not operate to the exclusion of one another. Thus every sensory perception in the case of human beings is different from the perceptions of brutes because human sensory perception is accompanied by an intellectual grasp which is lacking in the case of brutes. So our human perceptions, especially

those of substances, are not purely sensory but products of the intellect as well, which adds still further to the scholastic claim that substances were things that were known through experience.

Now Locke found reasons for believing in the idea of substance, but he rejected the idea of a true knowledge of particular substances because of the very fact that our ideas of sense qualities don't come joined together in unions as substances, but rather individually and without connections.

Though the Qualities that affect our Senses, are, in the things themselves, so united and blended, that there is no separation, no distance between them; yet 'tis plain, The ideas they produce in the mind, enter by the Senses simple and unmixed.  
(II. ii. 1)

This is certainly a strange claim, for if the ideas we have in our minds are "simple and unmixed," on what basis does Locke say that in the things themselves they are "united and blended?" If the ideas of the sense qualities are separated as they enter our mind, how does he know they are united in the thing itself? It would seem that it is impossible for Locke to have any real knowledge of this by his own standards, and he is here only speaking of a belief and not something he knows. Indeed, as we will see, according to Locke's analysis concerning the scope and bounds of human understanding, we have something less than

a true idea of that union of qualities, and thus something less than a true knowledge of substances. So although Locke grants existence to the idea of substance as understood by the Aristotelians, it is a thing "I know not what," and the traditional notion of their essence turns out to be "wholly unintelligible, and whereof we have scarce so much as any obscure, or confused Conception in general" (III. vi. 10).

The scholastics themselves of course attempted to substantiate their claim that the mind has the ability to discern essential forms, and that such essences come to us through experience. One of these arguments was that through careful observation and philosophical reflection, we can inductively move from the examination of particulars to conclusions concerning what is essential to the entire species. In other words, when we examine the particular things that have been joined together into a species, we see that there are essential characteristics which run throughout all the members of that species.

Such a claim, however, was merely explanatory of the boundaries that we have obviously already supposed. In other words, once I accept the species "tree," I can then inductively, through observation and reflection, determine the essential characteristics; but those characteristics can only be discovered in reference to my idea of the species "tree," and therefore, because I must first suppose the species "tree," they cannot be the source of my idea of

that species (Copi 178). This would seem to be Locke's point when he says,

What is sufficient to make an essential difference in Nature, between any two particular Beings, without any regard had to some abstract Idea, which is looked upon as the Essence and Standard of a Species? All such Patterns and Standards, being quite laid aside, particular Beings, considered barely in themselves, will be found to have all their Qualities equally essential; and every thing, in each Individual, will be essential to it, or, which is more true, nothing at all.

(III. vi. 5)

Locke's claim that without an idea of a species all qualities become equally essential, is certainly true. Indeed, in the light of Locke's criticism we see that the whole idea of the essence/accident distinction is circular. True, if I am familiar with the species "dog," then I can pick out the essential and accidental characteristics of particular dogs; but if essential characteristics are the very things that make up the species, then how do I pick out such essential characteristics prior to knowing such a species? If essential characteristics are only essential in reference to some species, they can't exist prior to the establishment of that species and serve as the basis for it (Ayers, Locke Verses Aristotle 261). If the essence can

only be determined after the species has been determined, then how can that essence serve as the basis of the idea of species? In other words, unless we have the species to begin with, how could we ever identify the essence?

If we were given a group of things that constitute a species, we could then extract from that grouping certain characteristics essential to that group, but first we would need that group in order to establish the essence, and we couldn't use the essence to originally establish the group or species. For example, if we were to group together a telephone pole, my wife's mahogany rolling pin, and the wine bottle on the table, we could extract from that grouping common characteristics without which we would claim that things could not be members of the species, "dark cylindricals." In particular we could say that the essential characteristics of this species were that something be cylindrical and dark in color. But is the fact that we can extract an essence from a specific grouping a proof or means of validating that grouping as an actual species? Surely we could come up with what seem to be essential characteristics in order to explain many particular groupings, but we could not then turn around and claim that such an essence was the basis for our grouping. Indeed, an essence can only be extracted after the species or grouping has been established, and thus cannot be the basis for establishing the species in the first place (Ayers, Locke Versus Aristotle 260).

The scholastics of course didn't see it that way, and their typical solution to this problem was to say that we simply have the ability to apprehend such essences through experience, and the philosophical reflection which explains these essences merely confirms that ability of the mind to pick out the essences. Now some scholastics did exaggerate our ability to discern essences intuitively, but even the best of scholastics maintained that an apprehension of essence was possible through experience and that careful examination reveals that ability we have to apprehend and classify (Kreyche 65-8). Thus the mind is able to classify according to essences, and philosophical reflection merely explains and confirms those classifications.

A further scholastic support for such a claim concerning our knowledge of essence rests in the scholastic notion of causality which supposed that if a sensible form existed in the mind, then that form must have been caused by, or originated from, an object which had that form. Thus the form which exists within the object must be the same as the form of the idea, because it was the form within the object that ultimately caused the form of the idea (Adams 73-4).

With corpuscularians such as Descartes and Locke, however, this was no longer true, and ideas (at least in the case of ideas that arise from secondary qualities) are produced not by similar forms within objects, but by the arrangements and motions of insensible particles within

those objects. Thus unlike the scholastics whose notion of causality gave them an assurance that what they had ideas of through perception were replicas of what existed within the external world of material objects, the corpuscularians had no such assurance, for indeed the sensible ideas we receive through perception (again, at least in the case of those ideas that arise from secondary qualities (12)) are not at all like the corpuscular arrangements that cause them.

But even with the corpuscular philosophy aside, the big problem for Locke with the scholastic theory of causality was, as we had mentioned earlier, the matter of accepting what the scholastics claimed was given in perception. We will remember that Locke accepts that simple ideas, or the simple and unmixed sensations we have of the world (13), are given to us in perception, and so such simples are real and established in us by nature, but he denies that anything more than simples are given. Indeed, Locke claims that since we don't observe necessary connections between the individual qualities that come to us as simple ideas, things beyond the ideas of simples, like the idea of substances (which combine numerous simple ideas), are not given in perception; thus the unions of simples which make up the complex ideas of substances must be joined together by mind. Hence we have no assurance that the substances of which we have ideas exist within the material world and apart from our mind.

According to the scholastics, however, such ideas of material substances were given, and if I had the idea of a horse it must have been caused by such an actual substance having been given in experience. But Locke, because of his claim that the ideas of sense qualities enter the mind singly and unconnected, cannot use the scholastic notion of causality to be assured that the complex ideas we have of substances are the result of just such substances existing within the world of material objects. This certainly weighs heavily upon Locke's notion of essence, for unlike the scholastics whose essences were abstracted from what they believed to be real substances given by nature, Locke cannot make such a claim, and therefore without the assurance that our ideas of substance reflect a reality about objects, neither can the essences which we abstract from such substances be considered real either. So the scholastics, unlike Locke, enjoyed a neat match between the substances and essences that we conceive, and those that exist within nature.

Locke, on the other hand, because of the corpuscular philosophy, and more importantly because of his claim that ideas enter the mind as simples which are unconnected, must reject the scholastic theory of causality, and therefore cannot claim that the substances and consequent essences that we conceive are the same as those which exist within nature. Thus, although Locke believed that there were God-made or nature-made essences which make things be as

they are, he did not believe that those essences were the intelligible forms or essences that our minds possess. Indeed, for Locke the real essence of a thing, or that which makes a thing be as it is, at least in terms of material bodies, is found within the complexity of its minute inner structure which goes beyond the capacity of our mind to comprehend.

What is that Texture of Parts, that real Essence, that makes Lead, and Antimony fusible; Wood and Stone not? What makes Lead, and Iron malleable; Antimony, and Stone not? And yet how infinitely these come short, of the fine Contrivances, and unconceivable real Essences of Plants and Animals, everyone knows. The Workmanship of an All-wise, and Powerful God, in the great Fabrick of the Universe, and every part thereof, further exceeds the Capacity and Comprehension of the most inquisitive and intelligent Man, than the best contrivance of the most ingenious Man, doth the Conceptions of the most ignorant of rational Creatures. Therefore we in vain pretend to range Things into sorts, and dispose them into certain Classes, under Names, by their real Essences, that are so far from our discovery or comprehension.

(III. vi. 9)

So Locke's essences are unknowable, but, on the other hand, Locke has within his mind the same ideas of

substances and their essences (e.g. the idea of "trees" or "horses") that the Aristotelians had. Locke even admits that such forms or essences are the very things upon which rest our ideas of species by which we sort and denominate the objects of experience. What he denies is that these essences are more than nominal. Indeed, for Locke such essences have no reality apart from our mind and language. Thus although Locke admits that there are real essences of material substances which are the insensible particles that make up the micro-structure of the thing, and makes that thing have the qualities it does, such insensible particles are unknowable, and thus nominal essences have to be introduced in order for our understanding to organize and denominate species. So for all his opposition to the Aristotelian essence, Locke accepts both the idea that there are real essences (although Locke's real essences are certainly different from those of the scholastics), and the idea that there is an essence (nominal essence) that serves as the basis of our idea of species. What of course Locke rejects is the Aristotelian notion that these two ideas refer to the same essence.

Endnotes

1. Indeed, many a modern seems to have been brought to the idea that a total break from past learning was necessary because of the way in which seventeenth-century scholastics held so dogmatically to the monument of Aristotle. By denying any alteration in Aristotle, even in the face of scientific discoveries that presented empirical evidence to the contrary, they caused many a modern to see the need for a clean sweep of the old philosophy. So although Locke's criticism of the Aristotelians at times seems harsh, and even exaggerated in places, such criticism might at least in part be a reaction to the Aristotelian's dogmatic and unyielding stand (De Wulf 151-52).

2. The exception seems to be that Locke does cite the authority of travel books. For instance when Locke argues that there are no innate moral rules, he refers to other cultures which practice, without any guilt of conscience, things that might be supposed to be innately known to be wrong, but are obviously not because such cultures have no such ideas of the wrongness of such practices. For example, at (I. iii. 9) Locke quotes from Baumgarten at considerable length.

3. We will consider the influence of Bacon in some depth when we examine Locke's notion of science in Chapter 9.

4. See Lady Masham's letter to Leclerc, also Locke's first letter to Stillingfleet. These references are made in Ware's article (page 216), but there is an insufficient amount of bibliographic information given there to locate the original. I have tried to locate both sources in various editions of Locke's works but have been unsuccessful.

5. Notice that there are indeed three and not two notions of essence in this quote. The first is Aristotle's notion of essence, the second Locke's notion of real essence, and the third Locke's notion of nominal essence.

6. This does not mean, however, that the accidental characteristics or qualities individualize a thing and give it a particular identity. Indeed the matter becomes complicated at this point by the fact that although I have a specific form which makes me a human being, I am uniquely who I am not because of my accidental characteristics, but because of a second individual form or soul that was unique not to my species but to me as an individual. So it is not, as it is often thought, a simple case of form or essence establishing the species of a thing, and matter or accident establishing the individuation.

7. The exception to this were the fourteenth-century nominalists who followed Ockham.

Endnotes

8. Locke's belief in the mutable nature of forms is at least partially a result of his belief in the corpuscular philosophy. Indeed, as we will see in Chapter 4, if the nature of things is determined by the arrangement or structure of their insensible particles, it should be possible to rearrange that structure in order to change the form of a thing.

9. Such outlandish beliefs seem common to the seventeenth century. Perhaps because so many reports from the New World of bizarre and unbelievable biological and botanical phenomena were true, it made it easy to believe in a host of strange claims, many of which of course were not true.

10. Locke of course by contrast did believe that the sense qualities which produced simple ideas did come to us through perception singly and not in connection with one another.

11. We will see in chapter 5 why Locke believes that, although our ideas of the qualities are given separately and unmixed, the qualities are united in the things themselves.

12. We will see later when we consider the corpuscular philosophy in more depth (Chapter 4), that our ideas of primary qualities, in contrast to secondary qualities, did resemble the actual qualities within the thing itself.

13. We will deal more extensively with this notion of simple ideas in the next chapter.

Chapter 3

The Formation of Nominal Essences and Their  
Distinction from Real Essence

As we saw in the last chapter, in spite of Locke's break from the Aristotelian scholastics on the matter of essence, there was much that he retained concerning the notion of essence. Indeed, he thought that things do in fact have essences, and although these essences are not of the scholastic type, they are the things

...from which flow those sensible qualities

Qualities, which serve us to distinguish them one from another, according as we have Occasion to rank them into sorts, under common Denominations.  
(III. iii. 17)

Locke's notion of essence, however, is distinguished from the scholastic's notion in that the Lockian essence (i.e. real essence), although producing the sense qualities that a thing has, are not the basis for the divisions into sorts or species the way the scholastic essence was. Since at least in the case of material substances, the real essence is made up of the arrangements and motions of insensible particles that make up the internal constitution of the thing, and such internal constitutions were at least in Locke's day unknown, they cannot serve as the basis for denomination or divisions into species. For that Locke introduces the idea of the nominal essence and

distinguishes it from the real essence; thus using two essences to do the work that had previously been done by the single Aristotelian notion (1). In Book 3 of the Essay, Locke explains these two distinctive notions of the idea of essence.

First, Essence may be taken for the very being of anything, whereby it is, what it is. And thus the real internal, but generally in Substances, unknown Constitution of Things, whereon their discoverable Qualities depend, may be called their Essence. This is the proper original signification of the Word, as is evident from the formation of it; Essentia, in its primary notation signifying properly Being. And in this sense it is still used, when we speak of the Essence of particular things, without giving them any Name.

Secondly, the Learning and Disputes of the Schools, having been much busied about Genus and Species, the Word Essence has almost lost its primary signification; and instead of the real Constitution of things, has been almost wholly applied to the artificial Constitution of Genus and Species. 'Tis true, there is ordinarily supposed a real Constitution of the sorts of Things; and 'tis past doubt, there must be some real Constitution, on which any Collection of

simple Ideas co-existing, must depend. But it being evident, that Things are ranked under Names into sorts or Species, only as they agree to certain abstract Ideas, to which we have annexed those Names, the Essence of each Genus, or Sort, comes to be nothing but that abstract Idea....

And this we shall find to be that, which the Word Essence imports, in its most familiar use. These two sorts of Essences, I suppose, may not unfitly be termed, the one the Real, the other the Nominal Essence. (III. iii. 15)

Now Locke says that with simple ideas, which are the simple and unmixed sensations we have of either the external world or of the mind's own workings, the nominal and the real essence are the same. In order to understand why he takes this position with simples, we need to first recall Locke's position that although the sense qualities that are in things and affect us are numerous, they enter our minds as ideas that are simple, distinct and unmixed. Locke uses the example of a piece of ice which contains a variety of qualities (III. vi. 13), but produces in us simple ideas of coldness, hardness and wetness that are unique and separate from one another. Now the mind can, and does, put these simple ideas together into complex ones, but they enter through the senses as simples, and as such there is no distinction between their real and nominal essence.

For simple Ideas are all from things themselves;  
and of these the Mind can have no more, nor other  
than what are suggested to it. It can have no  
other Ideas of sensible Qualities, than what comes  
from without by the Senses.... (II. xii. 2)

When it comes to the complex ideas of material  
substances, which are the composites of simple ideas, that  
composition, although aided by experience, has to be  
accomplished by mind. Now whether the ideas we combine are  
the same as are combined by nature, we cannot be completely  
sure. Thus while with simples the real and nominal  
essences are always the same, that is not the case with the  
complex ideas of substances (III. iii. 18).

With regard to these complex ideas of material  
substances, the nominal essence which provides a basis for  
our idea of species is not only different from the real  
essence, or internal constitution of a thing, but is as  
Locke says above, a mere "abstract idea." Indeed, they are  
truly abstract ideas in that the very process by which such  
ideas are formed, and made to represent an entire kind or  
species, is a process of abstraction.

...the Mind makes particular Ideas received from  
particular Objects, to become general; which is  
done by considering them as they are in the Mind  
such Appearances, separate from all other  
Existences, and the circumstances of real  
Existence, as Time, Place, or any other

concomitant Idea. This is called ABSTRACTION, whereby Ideas taken from particular Beings, become general Representatives of all of the same kind.... (II. xi. 9)

Thus, according to Locke, an operation of the mind creates an abstract idea by abstracting or removing from the idea we have of a thing all that would make it particular. That which makes a thing particular, claims Locke, is basically the particular time and place at which a particular exists. So by removing the time and place of a particular existent thing, and the circumstances and characteristics that accompany that particular time and place, we have an idea which has become general. Now such general ideas, because they don't represent any particular individual, are able to represent many different individuals, and consequently those individuals, because they conform to that abstract or general idea, are thought to be of the same sort or species. In Book 3, Locke further explains this process of abstraction whereby:

Words become general, by being made the signs of general Ideas: and Ideas become general, by separating from them the circumstances of Time, and Place, and any other Ideas, that may determine them to this or that particular Existence. By this way of abstraction they are made capable of representing more Individuals than one; each of which, having in it a conformity to that abstract

Idea, is (as we call it) of that sort. (III. iii.  
6)

So for Locke abstraction (which incidentally is not unique to Locke but is an idea borrowed from the scholastics) is the means by which an idea is able to represent more than one individual. But the big question in this matter of abstraction is how we know what to strip away from a particular idea in order for it to be made to represent an entire sort or species. Locke says that we strip from them "the circumstances of Time, and Place, and any other Ideas, that may determine them to this or that particular Existence." But given an idea of a particular thing, how am I able to know what are the circumstances of that idea that make it particular and therefore need to be stripped away? Locke's answer to this is that experience would tell us what characteristics need to be stripped away, and what characteristics should be retained in order to make up the abstract idea which will represent the species. Locke explains how such a process occurs by use of the example of a child who first experiences mother, father and nurse as particulars, but then as the child grows and comes to experience a great variety of other people as well he/she comes to frame the idea of "man," not by some new and unique experience, but by leaving

...out of the complex Idea they had of Peter and James, Mary and Jane, that which is peculiar to each, and retain only what is common to them all.

## (III. iii. 7)

But this only partially accounts for the formation of general ideas, and there is a more elementary step involved in their formation. This more elementary step is necessitated by the previously mentioned fact that in Locke's epistemology what is given through the senses from the outside world, are no more than simple ideas. Now a substance such as a tree possesses a multitude of simple ideas or sense qualities, and the question that Locke must answer is how are such qualities joined together since such a unity is not given. It is up to Locke to explain how such simple ideas are put together to form the complex ideas of substances in the first place, before any process of abstraction can take place. Once we have the idea of a particular tree, we can get a general idea of "tree" by abstraction, but the original idea of the particular tree came initially from simple ideas or sense qualities which had to be bound somehow together in order to form the complex idea of that particular tree. But how are such unions formed?

Locke does seem in places to say that such sense qualities simply "go constantly together..." and are "...presumed to belong to one thing" (II. xxiii. 1). But even among those qualities that are found constantly together, we need to ask which ones should be separated in order to form different substances, and which should we refrain from separating in order that such qualities remain

parts of the same substance? For example, we join together tree trunks and branches into the idea of "tree" because they are constantly found together within nature. But roots and soil are also constantly found together within nature, so why aren't they joined together into the idea of a "blankwick"?

Locke seems to be aware of this problem, for in places he admits that when we go beyond such simple ideas we fall into ignorance.

For whensoever we would proceed beyond these simple Ideas, we have from Sensation and Reflection, and dive farther into the Nature of Things, we fall presently into Darkness and Obscurity, Perplexedness and Difficulties; and can discover nothing farther, but our own Blindness and Ignorance. (II. xxiii. 32)

In other places, however, he seems to say that we do discover such connections and boundaries through the observation of nature.

But though these nominal Essences of Substances are made by the Mind, they are not yet made so arbitrarily, as those of mixed Modes....the Mind in making its complex Idea of Substances, only follows Nature; and puts none together which are not supposed to have a union in Nature. (III. vi. 28)

Or as he says in the next paragraph,

...the Mind of Man, in making its complex Ideas of Substances, never puts any together that do not really, or are not supposed to co-exist; and so it truly borrows that Union from Nature.... (III. vi. 29)

Notice, however, that in both statements they are "supposed" or hypothetical unions (2). In spite of Locke saying that the mind makes only those unions that "really" exist within nature, the situation is a bit more complicated than it might at first appear. We will recall that according to Locke's claim, simples enter the mind singly and not in union with one another, and so the unions of simples are accomplished by an operation of the mind and not given by nature. We will see later that we have some reason for believing in the unions that we do form, but they are nevertheless unions we form, and therefore although we may have a belief in their reality, we do not have a knowledge of it. Locke is certainly aware that we have no more than beliefs and not knowledge of such unions, for when he uses the word "really" to describe how these simples co-exist, he quickly qualifies it and refers to their co-existence as "supposed." That Locke is well aware of this supposed or hypothetical rather than real nature of these unions, is also evidenced in other places where he is very explicit about our being unable to know such boundaries.

Wherein then, would I gladly know, consists the

precise and unmovable Boundaries of that Species?  
Tis plain, if we examine, there is no such thing  
made by Nature, and established by Her amongst  
Men. (III. vi. 27)

So then the question for Locke concerns how such simple ideas do come together in order to give us the idea of a particular substance from which we can begin our process of abstraction. As mentioned before Locke is not always clear on this but he does say that they are united by the mind's "power of composition." In explaining the origins of collective ideas of substances like the idea of an army which unites a great many distinct substances, Locke says they are united by the same power of the mind by which particular substances are made.

...the Mind makes by its power of Composition, and uniting severally either simple or complex Ideas into one, as it does, by the same Faculty make the complex Ideas of particular substances.... (II. xxiv. 2)

Then are such unions of simple ideas which form our complex ideas of substances, and which are then abstracted in order to form our ideas of species, purely man-made, and without any basis at all within nature? It is certainly true that one group of people may choose to distinguish enough essences or substances from among the composite of simple ideas we call "snow" to make seventeen different kinds or sorts of the stuff, while another group fails to

make more than one. It is even conceivable that there may be a group who have but a single word and idea for any precipitation whether it be rain, sleet or snow, and thus are without any understanding of the essential characteristics of snow, and thus for them no such substance exists.

In light of this it may appear that substances, and consequently species, are totally arbitrary. But for Locke such is certainly not the case. There are objective criteria, and it surely isn't a matter of putting simple and complex ideas together in any way we wish. Indeed, according to Locke, substances and their species are not totally random or arbitrary as we will see (Squadraro 138), but neither are they exact replicas of what exists within nature as they were for the scholastics who preceded him. For Locke they are products of both mind and nature.

I do not deny, but Nature, in the constant production of particular Beings, makes them not always new and various, but very much alike and of kin one to another: but I think it is nevertheless true, that the boundaries of the Species, whereby Men sort them, are made by Men.... (III. vi. 37)

So Locke would agree that although we can only work with what nature has given us, and we can't join the smell of a skunk with the cylindrical shape of a tree branch, we do draw lines from among what is given; and those boundaries create divisions and unions among both simple

and complex ideas, and as a result such composites of ideas create the complex ideas of material substances from which the ideas of species are then abstracted. Equally, he would say that in drawing such lines we follow natural seams; that is, we draw the lines according to the divisions we find within nature (3). But what Locke would deny is that from the above facts we could conclude that our drawing of these lines produces natural or God-made sorts or species. He would agree that there is an objective reality, and it contains something like natural seams along which we make divisions in order to create substances and, then through abstraction, sorts or species, but he does not agree that these are necessarily the natural or actual species created by nature. His argument is simply that nature provides us with a far greater number of seams than we need (Mackie, Problems 136). So the big problem for Locke, and one which we will be much concerned with later, is the question of which divisions or seams do we select and use in order to divide up the world of experience, and which do we ignore.

At this point, however, our concern is merely to establish the basic nature of the nominal essence which seems to have a unique dual foundation in both nature and mind. The scholastic essence of course had a dual existence as well, and existed in both nature and mind; but the scholastic essence was not of a dual origin the way Locke's nominal essence is. With the scholastic essence

there was a single origin within nature, and the mind simply shared in that essence in that it had a knowledge of it. For the scholastics, the mind could hardly be considered a contributor to the creation of that essence. For Locke, on the other hand, the mind is a major contributor to the creation of the nominal essence, and it would seem that the mind plays as much a role as does nature.

Thus far our attention has centered on Locke's nominal essence, but we must also consider that Locke does admit the existence of real essences, which, at least in regard to material substances, are not man-made but natural. Unlike the scholastic essence, however, which although being natural was also knowable, Locke's real essence is natural but unknowable. Such a situation raises the obvious question of how Locke can know of such essences if they are unknowable (4)? Certainly Locke is not always clear about what he means by real essence, and his explanation is rather brief (Odegard 225), but in regard to material substances the idea of a real essence is certainly tied to the corpuscular philosophy (5), so in order to understand what Locke has in mind with his idea of real essence we need to understand it in the context of the corpuscular philosophy.

Endnotes

1. Locke does this not merely because his notion of the real essence is unknowable, but equally because he is a nominalist, and as a nominalist his species have no reality beyond that of words. If indeed the real essence was the basis for species he would be admitting a reality for species beyond that of mere words.
2. We will see later when we consider Locke's ideas concerning taxonomy, that since substances and their species are not given by nature as they were for Aristotle, we need hypothesize certain unions of simples into substances, and then experience will have to guide us in order to reveal whether such unions in fact give us reasonable or probable substances and consequently species.
3. These natural seams are of course created by simple ideas. Since these ideas are given singly, we observe the separations or boundaries between them.
4. We will raise this question again in Chapters 4 and 7, and will attempt to answer it there.
5. In things other than material substances such as mixed modes it is more difficult to say exactly what real essences are, as we will see in Chapter 8.

Chapter 4Locke's Notion of Real Essence  
and the Corpuscular Philosophy

Locke believed that, in terms of material substances (1), the real essence was the internal structure or real constitution of a thing and that which served as the foundation and cause of all of the qualities that a thing possessed.

It's true, I have often mentioned a real Essence, distinct in Substances, from those abstract Ideas of them, which I call their nominal Essence. By this real Essence, I mean, that real constitution of any Thing, which is the foundation of all those Properties, that are combined in, and are constantly found to co-exist with the nominal Essence; that particular constitution, which every Thing has within it self, without any relation to anything without it. (III. vi. 6)

For example, although a particular piece of gold has a nominal essence composed of the sense qualities that a close examination would reveal, there is also an ultimate structure or real constitution which underlies the sense qualities, and indeed causes those sense qualities to be present in that piece of gold.

...the nominal Essence of Gold, is that complex Idea the word Gold stands for, let it be, for

instance, a Body yellow, of a certain weight, malleable, fusible, and fixed. But the real Essence is the constitution of the insensible parts of that Body, on which those Qualities, and all the other Properties of Gold depend. (III. vi. 2)

Furthermore, it would seem that unlike the scholastic notion of a thing's constitution which amounted to the particular composite of sensible parts, Locke says the real or ultimate constitution of a thing is made up of the "insensible parts". But how can Locke speak of insensible parts? Wouldn't such insensibles be in principle unknowable? And if unknowable what could Locke have to say about such things? In order to answer these questions and understand what Locke has in mind when he speaks of insensible parts, we need to consider the corpuscular philosophy to which Locke was committed, and see how that corpuscular philosophy plays a part in Locke's notion of essence.

Locke, like Descartes, Boyle and Newton, was a believer in the corpuscular philosophy.

I have here instanced in the corpuscularian Hypothesis, as that which is thought to go farthest in an intelligible Explication of the Qualities of Bodies; and I fear the Weakness of humane Understanding is scarce able to substitute another, which will afford us a fuller and clearer

discovery of the necessary Connexion, and  
Coexistence, of the Powers, which are to be  
 observed united in several sorts of them. (IV.  
 iii. 16)

How much Locke's belief in the corpuscular hypothesis was influenced by the great thinkers of his day (many of whom embraced the corpuscular philosophy), is hard to say; but that influence must have been considerable (Alexander, Ideas 88). Indeed, in "The Epistle to the Reader", Locke shows his reverence for such men and acknowledges the great debt we owe to the likes of Boyle, Newton, Huygenius, and Sydenham; as the

...Master-Builders, whose mighty Designs, in  
 advancing the Sciences, will leave lasting  
 monuments to the Admiration of Posterity....  
 (Locke 9)

So Locke certainly held such men and their accomplishments in high esteem, and for many a good reason, but perhaps what he most especially revered about their contribution to science and what he saw as their most "lasting monument" was the corpuscular philosophy (Alexander, "Boyle and Locke" 53).

But what exactly was the corpuscular philosophy, and why did Locke see it as such a monumental contribution? To begin with, the corpuscular philosophy represented a radical break from the scholastic notion of substantial forms which maintained that objects were of the sort they

were because of specific forms or molds into which matter was cast. So it was the formal or qualitative factor which made a thing be what it was, and matter was of little significance in determining the specific nature of a thing, but instead mainly served to individuate and distinguish between different members of a species. By contrast the corpuscular philosophy contended that the only true essential forms were not the Aristotelian forms which represented the myriad of all known qualities and substances, but instead were the properties of matter. In other words, the qualities that make up matter are the only things that are ultimately qualitatively different, and the differences that we detect among things in everyday experience are the result of different arrangements and motions of the same matter. Thus matter is what is ultimately fundamental and the determinator of all things.

But the sum of the controversy betwixt us and the schools is this: whether or no the forms of natural things (the souls of men always excepted) be in generation educed, as they speak, out of the power of the matter, and whether these forms be true substantial entities, distinct from the other substantial principle of natural bodies, namely matter. (Boyle 53-54)

So just as Galileo had freed himself from the Aristotelian forms by explaining the macroscopic world in terms of matter and motion, the corpuscular philosophy

sought the same type of explanation (i.e. using only matter and motion) in order to explain the microscopic world (Boas, Boyle & Seventeenth-Century Chemistry 78).

Such a material explanation of the world was certainly attractive, for by explaining the world in purely material terms our understanding of the world could be made mechanical and thereby mathematized. For the Aristotelians, the world was qualitative and known predominantly through a biological paradigm which saw nearly everything as moved by anima or soul. Things were the way they were, and changed the way they did, because of the individual life within them. Everything had its own specific form or nature and behaved according to it. For the Aristotelians, since everything had its own nature, things had to be studied and understood according to their individual species or forms.

With the materialism of the modern era a mechanical paradigm began to replace the biological one. It was no longer that the world was full of a vast variety of things all with their own nature. Instead the world was a clockwork whose parts didn't move according to a life and individual nature within themselves, but rather because of overriding mechanical laws to which all things conformed. Such a mechanical rather than biological paradigm certainly made the world much more conducive to being quantified by universal mathematical laws, and many of the moderns from Galileo and Descartes onward were attracted to the idea of

such a mechanical and quantitative understanding of the world. This interest in the new paradigm certainly brought opposition to the traditional qualitative understanding of the Aristotelians, but in order to overthrow the traditional paradigm and replace it with a mechanical one, an alternative to the Aristotelian notion of the forms would have to be found. Of course the alternative that was found was strangely what had been the very opposite of the forms, namely matter. This matter which was to replace the Aristotelian notion of the forms was certainly of a new and different sort than it had been for the Aristotelians. With the new philosophy, matter is no longer indeterminate as it was for the Aristotelians, but now has an essence or nature of its own. It is no longer a mere part of a substance, and unable to exist on its own independent of form. Indeed, with the new philosophy matter is the very basis of a thing's essence or nature. There is now only matter, and the qualities that appear to our senses are no more than different arrangements, shapes, sizes and motions of matter (Ayers 250).

This new philosophy, however, is not completely quantitative and without any qualitative element. Indeed, there are qualities, but unlike the Aristotelians who had an enormous number of qualities or forms (i.e. enough to represent all the different types of qualities within the sensible world), the new philosophy limited the number of qualities to those few properties that made up matter. For

Boyle those properties included local motion, rest, bulk, figure, situation and texture. For Locke the list was slightly different.

These I call original or primary Qualities of Body, which I think we may observe to produce simple Ideas in us, viz. Solidity, Extension, Figure, Motion, or Rest, and Number. (II. viii. 9)

So unlike the Aristotelians whose matter didn't possess any form or qualities, and merely was the stuff upon which the forms were imprinted, the new corpuscular philosophy had nothing but the qualities or forms that were found in matter. So for Boyle and Locke matter is not molded into specific substances by immaterial forms. Rather it is the arrangement, motion and interaction of insensible particles of this essential matter that creates the substances that we encounter in everyday experience (Sloan 16).

Such a philosophy would eventually lead to the idea of modern chemistry, but even in such an early and primitive form as expressed by Boyle and other seventeenth-century corpuscularians, it was certainly an idea that had the power to change the way people thought about the world, and in particular it was certainly an idea that had a great influence upon Locke as he attempted to explain the nature of essence. But before we can consider Locke's notion of essence in the context of the corpuscular philosophy, we need first to consider the distinction made by Locke concerning primary and secondary qualities, and the role

that distinction played in the corpuscular philosophy.

To begin with, sense qualities for Locke, although not being the stuff of which real essences are made, are nevertheless, as they were for the Aristotelians, extremely crucial to his philosophy. In speaking of sense qualities he says,

...the Power to produce any Idea in our mind, I call Quality of the Subject wherein that power is. Thus a Snow-ball having the power to produce in us the Ideas of White, Cold, and Round, the Powers to produce those Ideas in us, as they are in the Snow-ball, I call Qualities.... (II. viii. 8)

Locke goes on, however, to distinguish two unique kinds of qualities. He finds, in tracing back our ideas to their origins in the sensations that come from objects, that some sensations actually resemble the qualities from which they come, while other sensations do not resemble anything within the things themselves. In regard to this second kind of sensation, although there is nothing which resembles the sensation in the thing itself, there is a power within the thing which is capable of producing the sensation within us. In other words, although the object has the power to create that sensation within me, nothing like that sensation exists within the object itself.

The particular Bulk, Number, Figure, and Motion of the parts of Fire, or Snow, are really in them, whether any one Senses them or no: and therefore

they may be called real Qualities, because they really exist in those Bodies. But Light, Heat, Whiteness, or Coldness, are no more really in them, than Sickness or Pain is in Manna. Take away the Sensation of them; let not the Eyes see Light, or Colours, nor the Ears hear Sounds; let the Palate not Taste, nor the Nose Smell, and all Colours, Tastes, Odors, and Sounds, as they are such particular Ideas, vanish and cease.... (II. viii. 17)

Throughout the Chapter Locke articulates the distinction between these two classes of qualities. In paragraph 9, he points out that when we divide the primary qualities of extension, solidity, figure and mobility, there is no change in the ideas or sensations we have of such qualities other than they are now "...two, or more distinct separate masses of matter, of that which was but one before..." (II. viii. 9). The situation, he claims, is quite different with secondary qualities which produce within us the ideas or sensations of taste, color, smell, etc. Locke considers an almond whose primary qualities (i.e. its extension, solidity, shape, etc.), when divided, are not changed but merely made into smaller parts; but with the secondary qualities of the almond, the ideas or sensations are actually changed by the division.

Pound an Almond, and the clear white Colour will be altered into a dirty one, and the sweet Taste

into an oily one. (II. viii. 20)

But is this true in all cases? If we divide or separate other substances their color or taste may well remain the same. Also with many a primary quality division would produce a qualitative change just as there is in the above example of the almond. Consider the primary quality of shape. When we divide a square it can produce two triangles and not merely smaller squares.

At any rate, Locke's example of the almond certainly doesn't demonstrate that secondary qualities change under division, while primary qualities remain unchanged. Nor does it substantiate Locke's claim and distinction that our ideas of primary qualities resemble something within the thing itself, while our ideas of secondary qualities resemble nothing in the thing itself. But how could Locke substantiate such a claim? Certainly if we had eyes able to peer into the microscopic world, we could perhaps perceive whether the primary and secondary qualities do or do not resemble the ideas or sensations they create within us. But since it is impossible to make such observations (at least in Locke's day), Locke must argue by analogy that with primary qualities the idea that we have of a thing's bulk, texture, shape, and motion resembles the actual bulk, texture, shape, and motion that exists within the thing itself, while in the case of secondary qualities the ideas we have "...are nothing in the object themselves, but powers to produce various sensations in us..." (II. viii.

10). Locke's argument from analogy takes the example of fire which produces in us sensations of warmth and pain. Locke says,

And yet he, that will consider, that the same Fire, that at one distance produces in us the Sensation of Warmth, does at a nearer approach, produce in us the far different Sensation of Pain, ought to bethink himself, what Reason he has to say, that his Idea of Warmth, which was produced in him by the fire, is actually in the Fire; and his Idea of Pain, which the same Fire produced in him the same way, is not in the Fire. (II. viii. 16)

In the case of pain it is quite obvious that such a sensation is in us, and we would have difficulty imagining the pain that we feel from the fire as being a quality or attribute of the fire itself. Now when we consider warmth, because it is produced presumably by the same qualities as the pain (pain resulting from no more than an increase of that warmth), Locke thinks that we should have the same difficulty imagining it as existing apart from our sensation of it, as we did in the case of pain. So Locke argues from analogy that warmth is no more a quality of the thing itself than is pain, and similarly, all such **qualities, save for the primary qualities of bulk, texture, shape, and motion, are merely the power within the thing to produce that sensation within us.**

To conclude, beside those before mentioned primary Qualities in Bodies, viz. Bulk, Figure, Extension, Number, and Motion of their solid Parts; all the rest, whereby we take notice of Bodies, and distinguish them one from another, are nothing else, but several Powers in them, ...capable of producing Ideas in us.... (II. viii. 26)

These powers then, while not being anything that resembles the sounds or smells that we sense, are instead produced by the arrangement and motion of the insensible corpuscles which constitute the thing's internal structure. In other words, because those corpuscular particles, which are made up of the primary qualities of bulk, figure, extension, number and motion, are arranged and move in particular ways they produce sensations in us. So the thing, not having anything that resembles the sound or smell itself, has the power to produce the idea or sensation of that particular sound or smell within us.

Of course because these secondary qualities are dependent upon the primary qualities, they thereby do have a basis in reality, and are not purely within us. True, the secondary qualities do not exist in the thing itself the way primary qualities do, but the sensations that they produce in us are causally traceable to the motion, shape, and interaction of the insensible particles of primary qualities.

After the same manner, that the Ideas of these

original Qualities are produced in us, we may conceive, that the Ideas of secondary Qualities are also produced, viz. by the operation of insensible particles on our Senses. For it being manifest, that there are Bodies, and good store of Bodies, each whereof is so small, that we cannot, by any of our Senses, discover either their bulk, figure, or motion, as is evident in the Particles of the Air and Water, and other extremely smaller than those, perhaps, as much smaller than the Particles of Air, or Water, as the Particles of Air and Water, are smaller than Pease or Hail-stones. Let us suppose at present, that the different Motions and Figures, Bulk, and Number of such Particles, affecting the several Organs of our Senses, produce in us those different Sensations, which we have from the Colours and Smells of Bodies, v.g. that a Violet, by the impulse of such insensible particles of matter of peculiar figures, and bulks, and in different degrees and modifications of their Motions, causes the Ideas of the blue Colour, and sweet Scent of that Flower to be produced in our Mind. (II. viii. 13)

At this point we should now be better able to see the significance of the corpuscular philosophy upon Locke's notion of essence, and we should better understand the

dependent connection that the nominal essence has upon the real essence in the case of material substances. Given his belief in the corpuscular philosophy, the real essences of material substances are the structures of the insensible corpuscles whose arrangements and motions produce sensations or ideas within us from which we form our ideas of nominal essences. Thus the nominal essence truly is based upon the real essence, in that the real essence is what ultimately causes the ideas which we form into the complex idea of the nominal essence to be what they are. If the nominal essence is made up of a composite of simple ideas which originated in sense qualities, and those sense qualities are produced, in turn, by powers within the real essence, which turns out to be the configuration, arrangement and interaction of insensible particles; then the ideas of sense qualities, which make up the nominal essence, are ultimately caused by the arrangement and motion of those primary qualities which make up the real essence.

But the real essences must not be limited to the atomic particles of the corpuscular philosophy. Locke must have something broader in mind than just the atomic particles when he speaks of real essences, for in the case of spiritual substances the corpuscular philosophy obviously cannot be used to explain the real essence. Equally, in the case of simple ideas and mixed modes, Locke says the real and nominal essences are identical, and if the real

essence were no more than the atomic particles, then the real and nominal could hardly be identical. Furthermore, in the case of mixed modes there is no matter and thus no atomic particles, so the real essence must be something other than such particles. So although Locke's notion of real essence could be equated in certain instances with the atomic particles, it need not be in others, and it would seem that Locke's notion of real essence must be broader, and include more, than simply the notion of atomic corpuscles.

There is, however, another interesting question concerning these atomic particles of the corpuscular philosophy. The question involves Locke's empirical leanings and whether there is an inconsistency between his empiricism and his belief in the insensible corpuscles of the new mechanical philosophy.

It would certainly seem that a knowledge of such insensibles is inconsistent with a strict empiricism that would limit knowledge to the realm of sensation. But suprisingly it was more the Aristotelian scholastics than Locke who embraced such a strict allegiance to sensation. Contrary to the common notion that the modern era left the wild and unfounded speculation of medieval philosophy for the firmer ground of sensory experience, the truth seems quite the opposite. Indeed, it was the Aristotelian scholastics who insisted that knowledge must have a basis within sensation. Because of that stand, however, they

found it impossible to account for occult or hidden qualities which weren't manifest to the senses. If only those things that were sensed were knowable, then we could not claim to know a variety of things of which we have no sensation, but of which we could have indirect evidence. Thus although the Aristotelian scholastics' science was essentially the study of causes, things like gravity or magnetism could never be the subject matter of inquiry for their science because the causes of such things were occult or beyond the realm of sensation (Hutchison 236) (2).

By contrast the corpuscular philosophy did offer a way of dealing with such occult or hidden causes, and because of that it was seen, by its proponents, as an advance over scholastic science (Hutchison 235). But it was not as if the corpuscular philosophy of the modern era was the simple abandonment of sensory experience in favor of the occult. True, with the corpuscular philosophy there certainly was an element of scepticism concerning sensory experience in general, but this scepticism was based on the fact that if the motion and arrangement of insensible particles are the cause of much of what we receive through sensations, then those sensations (at least those of secondary qualities) do not have an existence apart from our perception. Without having an independent existence apart from our perception, it is hard to consider such sensations as real in the sense of being grounded in some objective reality apart from ourselves. So the corpuscular philosophy undermined the

reality of all sensations (or at least those of secondary qualities) in that qualities resembling our sensory ideas (e.g. the smell of a rose) were no longer thought to exist within reality apart from our sensations of them. Thus the distinction the scholastics had made between manifest qualities (which were those that were given in sensation) and occult qualities (which were not given in sensation) was no longer of much concern, for in the light of the corpuscular philosophy even the most manifest of qualities was often not something that existed in any objective reality, but was merely a part of human perception. By showing that our ideas of secondary qualities, which the scholastics had considered manifest qualities, to be founded in less than objective reality, the idea of manifest qualities was undermined. If our ideas of what had been considered manifest qualities turned out to be caused by insensible particles, aren't manifest qualities then ultimately occult? With the corpuscular philosophy, even the most manifest sensation of material reality has occult and insensible causes. Much of what was considered manifest is now seen as occult or hidden. Consequently, in the light of this scepticism in regard to how much of reality we are able to know through sensation, the scholastic ideal of a definitive science of ultimate reality was abandoned, and a science of mere appearances and effects came to be seen as the highest attainable goal (Hutchison 242-49).

But all this should not be taken to mean that supporters of the corpuscular philosophy like Boyle and Locke were out to reject an empiricist basis for natural philosophy. Indeed, both were deeply committed to the idea that our inquiries must be empirical, so the question remains, how did they justify the corpuscular hypothesis in experience if the corpuscles themselves are insensible?

One empirical aspect of the corpuscular philosophy was that although such insensibles are obviously not directly experienced, what is supposed about the nature of insensible bodies (corpuscles) is no different than what we observe to be true of the medium-sized bodies we encounter in everyday experience. So by supposing that nature is universal and uniform, and what is true of a body of one size is true of a body of another, we can go from one level of observed experience to another level, which, although unobserved, is assuredly like the level of observed experience (Alexander, "Boyle & Locke" 59). This of course is not completely true especially when we consider the case of secondary qualities in which there is a great difference between what we observe on one level and what we observe on another. But it does appear true in the sense that the same natural and mechanical laws apply and bodies have the same primary qualities at all levels of reality.

This is a minor point, however, and of little consequence concerning the question of there being an inconsistency between Locke's empiricist ideals and the

corpuscular philosophy. By comparison the major factor concerning this issue is the fact that the corpuscular hypothesis is just that -- an hypothesis, and neither Locke nor Boyle accept the corpuscular hypothesis as something of which we have knowledge, but merely as an hypothesis which is judged on a basis of its explanatory powers (Alexander, "Boyle & Locke" 64). Boyle makes the claim that the corpuscular hypothesis is but one way of explaining the qualities of bodies, and as such he need only show that such an hypothesis has explanatory powers (3). Its success then rests in its ability to explain and predict phenomena. If it is successful in that, no more should be needed or required as a defense for the corpuscular hypothesis.

Now the ability or inability of the corpuscular philosophy to offer explanatory or predictive accounts of phenomena is judged on an empirical basis, and it is this, more than anything else, that establishes the empirical nature of the corpuscular hypothesis. So the empiricism of Boyle and Locke in regard to the corpuscular philosophy is not the limited sensory empiricism of the scholastics, but a broader empiricism which requires that the explanations or predictions that a theory makes be verifiable in experience. But it does not require that the theory would have been developed on a basis of direct observation or experience.

For that matter, however, the Greek gods could be put

to such a test as well, and we could measure with what degree prayers and sacrifices to such gods were answered. Furthermore, if we did so and found that the degree of probability was higher than the degree of probability with which the corpuscular hypothesis allowed us to predict, the fact that one was more similar to the rest of our experience should be of little consequence.

It would seem that what we are after is a theory that would allow us to explain natural phenomena, and predict the future behavior of that phenomena. But if the predictive aspect of science is what is important, it shouldn't matter if a theory involves a description of the world which is similar to the world as we experience it or not. Indeed, Einstein's hypothesis didn't seem natural or similar to the rest of our experience of nature. In fact, many of the grand theories of science have been quite contrary to what we already knew from experience, or at least what we thought we knew from experience, but they were accepted purely on the basis of their explanatory powers and judged by their ability to make probable predictions. Such predictions are of course then judged on a basis of experience, and in that sense the theories are empirical, but the experiential element is after the fact and not the source of the theory itself. In other words, experience may validate the theory but it certainly isn't necessary to originate it. Consider for example the case of Copernicus, or Darwin's notion that nature (and

evolution) are without any teleological design. These notions were originally believed to be contrary to experience, but were accepted nevertheless because of their explanatory powers.

For Locke, however, who is on the threshold of moving into this new notion of a probable rather than necessary science which will judge theories based upon their predictive ability, there is still a lingering commitment to the Baconian notion that the exploration of nature must be based on experience and theories must directly reflect the reality of that experience. Locke is truly a man caught in an age of transition, but we will have to wait until a later chapter to see how Locke negotiates the polar influences of a future probable science (which he had a major hand in ushering in), and his commitment to a more traditionally empirical natural philosophy.

Endnotes

1. In things other than substances such as mixed modes it is more difficult to say exactly what real essences are as we will see in Chapter 8.

2. Thomas Aquinas did admit the existence of some insensible phenomena like magnetic attraction, but he contended that such phenomena were not open to explanation (Hutchison, 237).

3. Robert Boyle, Mechanical Origin and Production of Qualities (London, 1675) from "Advertisements Relating to the Following Treatise." Quoted in Marie Boas Hall, Robert Boyle on Natural Philosophy (Bloomington: Indiana University Press, 1966), p. 234.

Chapter 5Substance

Thus far in our examination of Locke's notion of essence we have exclusively considered the idea of essence in regard to substance, and specifically material substance. In a later chapter we will consider the essence of mixed modes and relations, and contrast it with that of substance. At this point, however, we need to consider the idea of substance itself which is certainly a critical concept in regard to Locke's idea of essence. We will remember from our previous discussion in Chapter 3, that before the idea of a nominal essence can be obtained through abstraction, we first need the idea of a particular substance from which we could abstract its time and place in order to make it universal or general. Therefore the idea of an essence is dependent upon the more fundamental idea of a substance.

On this subject of substance Locke admits that our idea of it is very unclear.

So that of Substance, we have no Idea of what it is, but only a confused obscure one of what it does. (II. xiii. 19)

What's more, the situation is made even more difficult by the fact that Locke uses the term to refer to three different and distinct ideas. The first idea that the word signifies is the idea of a composite of sense qualities or

"...a Collection of a certain number of simple Ideas,  
considered as united in one thing" (II. xxiii. 14).

Secondly, we use the term to refer to substance-in-general or a substratum, or "...the idea of something underlying and supporting the several distinct qualities that go to make up an individual object and causing them to be united in that thing..." (Von Leyden 226). And thirdly, Locke says we also use the word "substance" to refer to the three principle classes of things. Namely we use the word substance to refer "...to the infinite incomprehensible GOD, to finite Spirits, and to Body..." (II. xiii. 18).

Now in regard to our inquiry into Locke's notion of essence, this third notion of substance doesn't much concern us, and is actually a different use of the term substance entirely, but the first two certainly do concern us, and are relevant to our examination of the idea of essence.

Concerning this first notion of substance as an individual distinct entity, Locke not only says that men use the term to refer to the composite of simple ideas that constitute distinct objects or things, but he believes they are justified in doing so because God or nature has not merely produced individual qualities, but has also joined those qualities together into things or substances. Thus there are in Locke's world individual substances, as there are for the Aristotelian scholastics. But for the scholastics our ideas of individual substances are hardly

as problematic as they are for Locke. For the scholastics (as was mentioned earlier (1)) the complex ideas or unions of simple ideas which we deem material substances are given in perception. For Locke on the other hand, the situation is quite different and the ideas we have of sense qualities are not joined in perception but are joined by a judgment of the mind. His belief that the union of sense qualities into substances is not something that is given, may at first appear to result from his considering exclusively secondary qualities. Indeed, there isn't any apparent necessary connection between the whiteness and smell of a lily, but aren't at least the primary qualities of the lily spatially connected? In other words, aren't the motion, extension and shape of a thing inseparable? That may well be so, but since Locke has claimed that the simples are given separately in perception, we have great multitudes of boundaries, indeed, as many boundaries as there are simples. But although these boundaries between simples are given, there are no given boundaries between substances. The boundaries between things or substances therefore are in actuality merely the boundaries between simples but they are being used in a different way in order to distinguish substances. Of course the matter of whether these simple boundaries are used to distinguish substances or not is largely a matter of judgment or conjecture on our part. The simple idea of the whiteness of a cloud and the shape that accompanies it is separated from the blueness of the

surrounding sky, and we choose to use that simplistic boundary to distinguish the one thing (sky) from the other (cloud). But we choose not to use the patch of gray within the cloud (whose color and shape create another boundary) to distinguish another thing or substance. Plainly the consequence of Locke's claims that sense qualities enter as unmixed simples, and that we don't observe the connections which unite simples into our ideas of substances nor do we observe the boundaries which separate one substance from another, is that the choice concerning which simplistic boundaries we use or do not use to distinguish substances is largely a matter of our choice. In a very real sense there are as many things or substances as we choose to distinguish.

In the previously mentioned case of the tree, why do we stop its extension at the roots and not include the soil? The fact that certain qualities are found constantly together doesn't exclude the qualities that make up the soil from being included in the extension of a substance like a tree. Again, given Locke's claim that sense qualities enter the mind singly as simples, and that we don't observe the unions which join such simples into substances but must choose to draw the substantial boundaries that unite or cluster simples into substances, Locke's idea of an individual substance is considerably more problematic than it was for the scholastics. Unlike the scholastics, Locke's idea of a substance is something

less than natural or real because we make up the boundaries for the complex ideas we have of substances. That doesn't mean that Locke doesn't believe in the reality of substances. He accepts the idea of real individual substances as the scholastics had. The reason for Locke's belief, however, is different from that of his predecessors who believed that not only were simple ideas given in perception, but so also were the complex ideas of things like substances. For Locke, although the unions that join simples into the ideas of substances are not given in perception, they nevertheless exist within nature, and are accomplished by the real essences of those substances. To better understand this link between the individual substance and the real essence, and why Locke's idea of individual substance is tied to the real essence, we need to recall the position Locke takes concerning our ideas of secondary qualities. These secondary qualities, although constituting a major part of what makes up the appearance of a thing, don't resemble anything within the substance itself, but instead merely exist as a power within the thing which is able to create a sensation within us. Such a position necessarily supposes that there must be some ground or basis for these powers. For Locke that basis is the internal constitution or real essence. So Locke causally links the sense qualities that make up the individual substance with the real essence (Mackie, Problems 76).

...every Substance that exists, has its peculiar Constitution, whereon depend those sensible Qualities, and Powers, we observe in it. (III. vi. 13)

By linking the idea of individual material substance with the idea of an internal structure or real essence, Locke joins the idea of a material substance to the corpuscular hypothesis, and provides a means of accounting for the reality of substances. So although he denies that sense qualities are united into substances by perception, they are united into substances by the corpuscular philosophy. Thus Locke uses the corpuscular philosophy to ground his sense qualities and unite them into the idea of substance. So Locke's idea of substance as a collection of sense qualities plus some other unknown element, is perhaps not as mysterious as it might at first have appeared, for it seems, at least in regard to material substances, that that unknown element turns out to be the corpuscular philosophy (Yolton, Science of Nature 184).

The corpuscular philosophy is then that which justifies his belief in the idea of individual material substances. So although we don't see any necessary connections between the sense qualities, or even are unable to say why we join some qualities together into the idea of a particular substance but refrain from joining other qualities together, we are justified in our thinking there are individual substances by the corpuscular hypothesis.

Although we don't observe connections between the simple ideas that come from sense qualities, such qualities are united because they are caused by the same internal, albeit unobserved, structure. Thus the unknown element within a substance which unites the sense qualities is unknown because the internal structure of things (i.e. the insensible particles of the corpuscular philosophy) is unknown.

Now having seen that Locke believed that material substances had real essences in the form of the corpuscular hypothesis, and that such an internal corpuscular structure is what unites the sense qualities and thus justifies our belief in particular individual substances, is there any need for the second notion of substance-in-general, or substance as a substratum? If something like the corpuscular hypothesis grounds and unites the sense qualities, is there any need for the notion of substance as a substratum to unite the qualities? Strangely, Locke does admit just such a scholastic notion, and in places indicates that such a substratum is necessary to accomplish the union of simple ideas.

...not imagining how these simple Ideas can subsist by themselves, we accustom our selves, to suppose some Substratum, wherein they do subsist, and from which they do result, which therefore we call Substance. (II. xxiii. 1)

On the basis of this statement it looks as though Locke

endorses and accepts such a supposition and makes it part of his philosophy (2). In the next paragraph, however, he casts doubt upon that very notion.

So that if any one will examine himself concerning his Notion of pure Substance in general, he will find that he has no other Idea of it at all, but only a Supposition of he knows not what.... (II. xxiii. 2)

So although admitting that people do make such a supposition, he casts doubt on it as well, and it is even "...possible to suggest that occasionally Locke treats this notion as a 'fiction'" (Von Leyden 225). Furthermore, he refers to such a substratum as a "we know not what".

...we have no such clear Idea at all, and therefore signify nothing by the word Substance, but only an uncertain supposition of we know not what...." (I. iv. 18)

Indeed, if Locke does accept such an idea, it is certainly presented in a weak way. In fact so weak that his adversaries from both sides considered that he had in effect abandoned the idea of substance as a substratum entirely.

...both Locke's traditionally minded adversary Bishop Stillingfleet, and also his more radically minded adversary, Bishop Berkeley, thought that he had gone so far as to 'discard' or 'banter' the idea of substance. (Von Leyden 225)

Thus, although he admits the existence of a substratum, when we consider what he has to say about it, it appears empty of any meaning. It has existence but nothing else. So why does he make mention of it at all?

One explanation might be that, like so many other writers of his day, he didn't want to appear too radical in his departure from tradition. Indeed, there is probably some element of truth in this, but it should not be weighted too heavily, simply because if that were a major concern regarding this matter of substance, he would not have gone as far as he did. Although he refrains from an outright rejection of substance, he does go far enough to challenge tradition and shed serious doubt upon the idea, which, if he sought to avoid trouble, was already going too far.

Another possibility is that he feared that the rejection of the idea of substance would result in an idealism not unlike Berkeley's. Thus his want to retain a reality apart from mind caused him to posit a substratum in spite of a lack of evidence. There may be an element of truth in this. Locke certainly wishes to retain a basis within reality, but is a substratum necessary to do so? As we have seen, the corpuscular philosophy provides for Locke that which the scholastics sought from the idea of a substratum. For Locke the corpuscular hypothesis provides a basis within reality from which sense qualities emanate, and equally it is the corpuscular philosophy which binds

such qualities together.

Another possibility is that Locke may have thought that the idea of an individual substance was dependent upon the more general notion of substance as a substratum.

An obscure and relative Idea of Substance in general being thus made, we come to have the Ideas of particular sorts of Substances, by collecting such Combinations of simple Ideas, as are by Experience and Observation of Men's Senses taken notice of to exist together.... (ll. xxiii. 3)

Is the idea of an individual substance then dependent upon the idea of substance-in-general as the above passage loosely indicates? Certainly the two notions of substance are related. Could it be that the nature of that relationship is a dependent one in which it is first necessary to have some substratum in order to provide a basis upon which to unite the sense qualities together into individual substances (or perhaps in Locke's case to provide a stratum upon which the particles of the corpuscular philosophy would rest)? In terms of the corpuscular philosophy, perhaps what is needed is not something to join the qualities and powers together into substances (the corpuscular philosophy does that), but more primarily something to cement the atomic corpuscles or particles.

Many philosophers have of course supposed such a substratum of one form or another to be necessary in order

to found sense qualities or substances (Hackie, Problems 82-3), but whether Locke is among their number is hard to say.

Alexander for one argues that Locke does suppose that substance-in-general is necessary as such a basis or substratum. Of course, Locke's notion of substance-in-general is certainly different from what the scholastics conceived. Indeed, what Alexander thinks Locke had in mind by the idea of substance-in-general is matter.

Matter is a solid stuff which is what, in material bodies, is qualified by specific shapes, sizes and mobilities. My suggestion is that this is what Locke meant by substance-in-general for material things. (Alexander, Ideas, Qualities and Corpuscles 224)

If this is indeed true and what Locke had in mind, then a neat fit is made between this substratum and the particular substance. If a particular substance is reducible to, or has its origin in, its real essence, and in regard to material substances that real essence is its atomic corpuscular structure, then there does indeed seem to be a dependency of the particular substance upon substance-in-general or matter. Indeed, with the notion of the corpuscular philosophy particular substances are qualitatively different simply because of differences in the arrangement, number and motion of their most basis parts which turn out to be no more than different

arrangements and motions of matter. Thus hydrogen and gold are ultimately different not because of any formal difference, but because of a material difference or a difference in the arrangement and motion of the matter at the core of the corpuscular structure. This being the case, then particular substances need substance-in-general in the sense that what a substance is is dependent upon the arrangement, number and motion of that substance-in-general or matter.

But if Locke does mean substance-in-general to be matter, why isn't it mentioned in the Essay? One possible reason for such a silence (if in fact he did see substance-in-general as matter) is that as mysterious as Locke thought the scholastic notion of substance to be, the notion that matter and matter alone can account for the qualitative differences we find between qualities and ultimately substances was even less appealing to most of his contemporaries. Indeed, writing before Dalton and the advent of modern chemistry it would certainly be difficult for Locke to express such a modern notion.

But perhaps Alexander is simply wrong about matter being the stuff that Locke has in mind when he speaks of substratum. Possibly what Locke truly has in mind is something much more mysterious than common matter. One reason for believing that it is not matter that serves as the ultimate substratum which provides the basis for the cohesion of particles that make up the extension of body is

that even if that were the case, and Locke did intend matter to be the substratum for material bodies, he still is at a loss to say what provides the ultimate basis for the union of qualities within spiritual substances. Since he says that the qualities of material substances are as mysteriously joined as the qualities of spiritual substances (ii. xxiii. 23-27), it is hard to imagine that he was sincere about spiritual qualities being mysteriously joined, but had the less-than-mysterious notion of matter as the substratum which joins the material particles into the primary qualities that make up body. It would rather seem that he is in fact genuine about the mysterious nature of the substratum. Indeed, it seems to be more than mere matter and truly an "I know not what," but nevertheless a concept that Locke retained from the scholastics.

Endnotes

1. See Chapter 2 (pp. 24, 29-32).
2. Also see (III. vi. 21).

Chapter 6

Why is the Nominal and Not the Real Essence  
the Source of Our Idea of Species

Locke says that our idea of species or sorts (at least in regard to the species of material substances) is based on the nominal rather than real essence. Hence we attach the species names not to our idea of the real essence, but to our idea of the nominal essence.

...our ranking and distinguishing natural  
Substances into Species consists in the Nominal  
Essences the Mind makes, and not in the real  
Essences to be found in Things themselves....  
(III. vi. 11)

For Locke the real essence is unknowable, and therefore the nominal essence must be the source of our idea of species.

Nor indeed can we rank, and sort Things, and consequently (which is the end of sorting) denominate them by their real Essences, because we know them not.... Therefore we in vain pretend to range Things into sorts, and dispose them into certain Classes, under Names, by their real Essence, that are so far from our discovery or comprehension. (III. vi. 9)

It would seem that with the real essence eliminated, the nominal essence would have to serve as the basis for

our idea of species, even if it would be preferable to base species upon the real essence.

'Tis true, the names of Substances would be much more useful, and Propositions made in them much more certain, were the real Essences of Substances the Ideas in our Minds, which those words signified. And 'tis for want of those real Essences, that our Words convey so little Knowledge or Certainty in our Discourses about them.... (III. x. 18)

In other words, Locke thinks that the idea we have of the word "water" would be a much more useful idea (and the propositions made about that idea would be more certain) if the idea I had of water was not the idea of its nominal essence (i.e., the idea of something being wet, clear and potable), but the idea of H<sub>2</sub>O or the internal structure which produces those sense qualities or simples that make up the nominal essence. Imagine our idea of gold being an idea of a certain number, arrangement and motion of minute particles instead of the composite of sensible characteristics like its color, weight and malleability. It is certainly difficult to imagine what it would be like if our words and ideas referred to such internal structures rather than the composites of sense qualities, but Locke's point is that if such were the case our understanding would be much improved. Unfortunately, because it is not possible to attach the species name to such a real essence,

Locke is forced to settle for the nominal essence. But the matter is not that simple. To begin with the unknowable nature of the real essence is not the only reason Locke offers to support the use of the nominal essence as the basis of species. Locke offers several arguments, many of which center upon examples or instances where we do in fact use the nominal essence as that to which we attach the species name, and can't, or obviously shouldn't, do otherwise. The first of these arguments appears at (III. vi. 8), and begins with the claim that the sense qualities that a thing possesses are dependent upon their internal constitution or real essence. Now we often notice that things of the same species have very different qualities (e.g., different colors, weights, shapes, etc.). If the qualities are different, however, and equally are dependent upon the internal structure or real constitution of the thing, then the internal structure of the thing must be different as well; and if different, then how could such internal structures serve as the basis of the same species? The other side of this problem is that if things of the same species had the same internal structure there would be no variation within those species.

But if things were distinguished into Species, according to their real Essences, it would be as impossible to find different Properties in any two individual Substances of the same Species, as it is to find different Properties in two Circles....

(111. vi. 8)

Thus every dog or tree would have to be a species unto itself because of the obvious differentiation that must exist within each internal structure. But this is a strange argument, for why would Locke eliminate the internal structure or real essence of a thing as the basis for our idea of species merely because there is differentiation within that internal structure? There is certainly differentiation among the sense qualities from which we make up the nominal essence to which we do attach the species name, so why would the differentiation within the internal structure prevent it from being used as the source of our idea of species? If the differentiation within the sense qualities does not eliminate the nominal essence from being used as the basis for our idea of species, why should differences in the internal structure eliminate the real essence from being used? Certainly the answer is that with our ideas of sense qualities from which we get our idea of the nominal essence, some sense qualities are seen as accidental or unique to the individual, while others are essential. Thus there can be differentiation among the accidental characteristics without causing a change of species, but a change in the essential characteristics would constitute a change of species. Certainly this distinction between essential and accidental characteristics is necessary in order to have differentiation among individuals which belong to the same

species.

But if Locke did choose to use the internal structure (whatever it might be) as the basis for the idea of species, couldn't he do as we do with nominal essences and designate some qualities or elements from among what we find within the internal structure of the thing as accidental or less than essential to the internal structure, while other elements would be essential and necessary in order to claim species membership (Fales 74)? It certainly seems that this is the logical move to make for it would allow us to base the idea of species on the internal constitution of a thing while at the same time allowing for some differentiation within the internal structure and consequently differentiation among members of that species. Clearly there could be nonessential characteristics within the internal structure just as there is on the nominal level. Take for example the minerals in water which are seen as nonessential in comparison to the two units of hydrogen and one unit of oxygen. In this instance there can be considerable variation among the microscopic composition without affecting the species identification of water.

Locke must have been aware that if we did choose, at some future point when technology permitted, to use the internal structure to denominate species, we could designate essential and nonessential characteristics from among what we find within the microscopic world. True, in

this instance (III. vi. 8) he doesn't allow for the designation of essential and nonessential elements within the internal structure, but rather he simply takes the whole of the internal structure to be the real essence, but this is certainly not necessary. We surely could choose to designate essential and nonessential qualities from among what we find on the microscopic level, as we do on the level of everyday experience. What's more, in other places Locke gives evidence that he must have been aware of just such a thing. He says,

I do not deny, but Nature, in the constant production of particular Beings, makes them not always new and various, but very much alike and of kin to one another: (III. vi. 37)

Now if nature makes certain individuals "kin one to another" or of the same sort, and things have the characteristics they have because of their internal constitution, then there must be some element within the internal constitution of the thing which makes them alike. That element would obviously be an essential element in comparison to other elements within the internal structure that produce qualities which are not shared by other members of the species. If we knew everything there was to know about the internal components of things, we could distinguish between these essential and nonessential elements of that internal structure. Of course there is the question of the criterion for establishing what is

essential and nonessential within that internal structure, but we will deal with that question a bit later (1).

Another argument Locke uses to support the idea of the nominal essence as the source of our idea of species concerns the examples of spiritual substances and even God. In these instances nominal essences are clearly used claims Locke because

...the Mind getting, only by reflecting on its own Operations, those simple Ideas which it attributes to Spirits, it hath, or can have no other Notion of Spirit, but by attributing all those Operations, it finds in it self.... (III. vi. 11)

According to Locke, we know only about the functioning of our own mind, and the ideas we attribute to other spirits, including God, are no more than an unlimited degree of what we find within ourselves and thus we certainly lack a knowledge of the real essence of God. So in the case of God or spirits, the idea to which we attach the name is not the idea of a real essence or real constitution, but rather a nominal essence.

In this instance Locke may be correct, but the argument that he raises at (III. vi. 13) is not so obvious. Locke uses the example of ice and water, and asks if they are one or two distinct species.

If I should ask any one, whether Ice and Water were two distinct Species of Things, I doubt not but I should be answered in the affirmative: And

it cannot be denied, but he that says they are two distinct Species, is in the right. But if an English-man, bred in Jamaica, who, perhaps, had never seen nor heard of Ice, coming into England in the Winter, find, the Water he put in his Bason at night, in a great part frozen in the morning; and not knowing any peculiar name it had, should call it harden'd Water; I ask, Whether this would be a new Species to him, different from Water? And, I think, it would be answered here, It would not to him be a new Species, no more than congealed Gelly, when it is cold, is a distinct Species, from the same Gelly fluid and warm; or than liquid Gold, in the Fornace, is a distinct Species from hard Gold in the Hands of a Workman. And if this be so, 'tis plain, that our distinct Species, are nothing but distinct complex ideas, with distinct names annexed to them. (III. vi. 13)

This is an interesting example and gives us a unique insight into why Locke thinks the nominal rather than the real essence serves as the basis for our idea of species. he says that everyone would agree that ice and water are of different species. Now according to today's atomic theory both ice and water would possess the same internal structure, and only differ in the motion of those internal particles. Equally, the corpuscular philosophy of Boyle

would have made a similar claim. So concerning their internal structure or real essence there is no difference, other than the motion of their insensible particles. There is, however, in this instance, a considerable difference in regard to their sense qualities. Thus if we do consider them of different species, as Locke says we do, we must use the sense qualities of the nominal essence for such a distinction, and not the real constitution of water. Locke introduces here a strange example of someone unfamiliar with ice and the distinction we make between it and water. Such a person, says Locke, being unfamiliar with the fact that we make such a distinction, would naturally refer to ice as hardened water if he observed the transformation from water to ice. But such a person unfamiliar with our custom or way of determining species would be mistaken if he followed his natural inclination to label the ice as merely water that had been hardened. What Locke is saying is that our natural inclination is to suppose that nothing has essentially changed within the real constitution of the thing. Therefore it is still of the same species even though there has been a change in the sense qualities upon which we base our idea of the nominal essence. But to follow such a natural inclination and base our ideas of species upon considerations of whether or not the thing has substantially changed in its real essence, would be a mistake.

...if we suppose it to be done by their real

internal Constitutions, and that Things existing are distinguished by Nature into Species, by real Essences, according as we distinguish them into Species by Names, we shall be liable to great Mistakes. (III. vi. 13)

It seems at least in this example, however, that to determine water by its real rather than nominal essence would be a mistake for no other reason than that we simply don't do it that way. Culturally our language is in fact not divided according to nature or real essences. With this example Locke is not saying that we should organize species according to nominal essences, but merely that we in fact do so. Thus although our natural inclination may be to organize species based upon our ideas of real constitutions or essences, as in the case of the uninitiated individual who classified ice as hardened water, in fact we simply don't do it that way. So to conform to the conventional nature of language, we need to resist our natural inclination and accept that we do base our idea of species upon nominal rather than real essences. So it isn't that in this instance Locke is endorsing the use of the nominal essence as the source of our idea of species, but merely acknowledging it as a cultural reality. In fact, with this example Locke is demonstrating our natural inclination to act contrary to our culture and base species identification on something like a real essence. Indeed, elsewhere he makes a similar

claim and says that men

...secretly in their Minds referr that name, and  
suppose it annexed to a real immutable Essence of  
a thing existing, on which those Properties  
depend. (III. x. 19)

But although Locke points out this natural inclination  
of basing our idea of species upon real rather than nominal  
essences, he equally tells us that this should not be taken  
to mean that such an inclination is superior to the  
convention of using the nominal essence. Because the  
science of Locke's day did not have a knowledge of the real  
constitution or essence of material substances, he suggests  
not venturing beyond what is known (i.e., not beyond the  
nominal essence) in an attempt to base species upon unknown  
real essences. Nevertheless, Locke does lament the fact  
that we don't know the real essence. Clearly, he knew that  
it was because we lack a knowledge "...of those real  
essences, that our Words convey so little knowledge or  
certainty..." (III. x. 18). Just as clearly, however, he  
recognizes that without a knowledge of the internal  
constitution of things it is wise to accept a nominal  
essence as the source of our idea of species.

In paragraphs 14-19 of Chapter 6, Locke turns his  
attention to the traditional notion of a real essence as  
put forth by the scholastics. He lists a series of  
conditions, all of which would have to be met in order for  
the scholastic essences or fixed forms to be the basis for

the denomination of species. The first condition Locke says is that we must be

"...assured, that Nature, in the production of things, always designs them to partake of certain regulated established Essences, which are to be the Models of all Things to be produced." (III. vi. 15).

This would seem to be a big point. It not only brings into question the specific nature of the scholastic essence as a substantial form, but also challenges the basic notion of a real essence as something within a thing which makes the thing be as it is. In that sense this criticism challenges not only the scholastic essence, but Locke's own notion of real essence as well. Indeed, it challenges the basic supposition that there is something which caused a thing to be of a specific sort.

Since Locke himself was a believer in the corpuscular hypothesis, and saw in it the source of the real essence for material substances, we must ask why he says that we would have to be assured that such real essences exist. This seems to indicate that we lack an adequate assurance that there is a real essence. Two possibilities exist. The one is that since it is merely an hypothesis, Locke perhaps feels that something of greater certainty is needed for us to be truly assured of real essences. The second is that Locke is speaking of those who don't accept the corpuscular hypothesis, and therefore lack assurance

because they lack the corpuscular hypothesis. This second possibility is the more likely, for he does seem to be criticizing a specific form of real essence, and perhaps in another form (e.g., the corpuscular hypothesis) there would be no problem of being assured of its existence. This should be evident from the fact that Locke quickly qualifies what he says and adds that the idea of a real essence would need a better explication than it generally receives in order to be accepted.

this, in that crude sense, it is usually proposed, would need some better explication, before it can fully be assented to. (III. vi. 15)

So it is the traditional form of the essence that Locke is criticizing rather than the idea of a real essence or internal constitution in general (2). This is further evidenced by the fact that he is criticizing only the idea of real essence in its "crude sense." So perhaps this is not so much of an obstacle for someone like Locke. He has already better explicated the real essence through the corpuscular philosophy, and thus overcome the "crude sense" in which the idea of the real essence is usually presented.

In the next paragraph Locke raises the question concerning whether or not "...Nature always attains that essence it designs in the production of Things" (III. vi. 16). Even if there are real essences, they could only serve as the basis for species if they were attained, or if we knew whether or not that essence was attained. Hence we

would have to know enough about the nature or internal constitution of things to tell if that constitution was or was not achieved in a particular individual in order to tell whether the particular thing was of that species or not. The science of Locke's day cannot make a claim to such knowledge and therefore, thinks Locke, should content itself with species based upon nominal rather than real essences.

Locke's next point (III. vi. 17) is that even if we did have a sufficient knowledge of the internal constitution of things to determine whether or not something qualified as a member of a given species, we would still be faced with the problem of what to do with monstrosities? Certainly they are different from other members of the species, but that could indicate that their internal constitution was different as well. If their internal constitution was different, however, then must they not be of a different species? If we use real essences to distinguish species, and in the case of a monstrosity we have a creature with a different real essence, is it then a species unto itself? With monstrosities do we have a situation where nature has created a new species? Locke seems to think that would be the case if we were to use real rather than nominal essences to serve as the basis for our idea of species.

This is certainly a strange argument, for the same problem exists with monstrosities when nominal essences are

used to determine species. If a creature doesn't conform to what we think is essential concerning a given species, but doesn't have the essential characteristics of any other species either, we have a monstrosity and must ask if that creature is a species unto itself. When nature creates monstrosities is it creating new species? Clearly there is a problem here in the case of monstrosities, but it is a problem whether we use real or nominal essences to determine species. We are no better off if we use the nominal essence rather than the real essence, except for the fact that because it is nominal and thus man-made, we can make the determination as we wish and don't have to duplicate nature. This must be what Locke has in mind, for clearly things can be monstrosities just as easily by not conforming to the composite of sense qualities which make up the nominal essence, as they can by not conforming to the real internal structure of a thing. In attempting to determine the species of monstrosities, we have the same problem on either level.

In the next two paragraphs Locke returns to the argument that the real essences are unknowable, which he first introduced in paragraph 9. This point, although certainly not Locke's only argument for opting to attach the species name to the nominal rather than real essence, is certainly the most central and that upon which the others hinge. Certainly if our ignorance were overcome and the real essences were known, Locke's other objections

would be insignificant in the light of such knowledge.

Tis true, the names of Substances would be much more useful, and Propositions made in them much more certain, were the real Essences of Substances the Ideas in our Minds.... (III. x. 18)

If such knowledge was established, any remaining objections to using the real essence as the source of the idea of species would pale by comparison to the advantages that could be had by knowing and using the real essences as the basis for our idea of species. So Locke thinks that species based on real essences would be of great advantage, but only if the real essences were truly known (Mackie, Problems 97). Hence a big question is whether or not Locke thought the real essences were knowable.

Earlier we had said that Locke's belief in the corpuscular hypothesis was certainly genuine, and, as a believer in that philosophy, he was assured there were real essences in regard to material substances, but whether or not Locke thought such real essences could be known is quite another question. They were certainly unknown in Locke's own day, but did Locke believe that the real essences would be at some point knowable?

In places he says that concerning our knowledge of the real essence of material substances it is an "incurable Ignorance" (IV. iii. 25), and the minute and intricate inner nature and workings of material substances are beyond the mind of man to know. Based on this it would seem we

have no hope of ever having a true and certain idea of the real essences (Mackie, Problems 100). But does Locke really think that they can never be known? Can't such complexity and minute detail be understood in time? Won't the technology of the future allow scientific exploration to peer into recesses and depths never imagined? Locke was certainly aware of this future direction of scientific exploration, for even in his day microscopes were coming into use and Locke was well aware of them.

The little Bodies that compose that Fluid, we call Water, are so extremely small, that I have never heard of any one, who by a Microscope, (and yet I have heard of some, that have magnified to 10000; nay, to much above 100,000 times,) pretended to perceive their distinct Bulk, Figure, or Motion.  
(Il. xxiii. 26)

So knowing of the recent advances concerning such scientific instruments, didn't Locke believe that in time the ever-greater perfection of these instruments would overcome our ignorance of the minute workings of the microscopic world?

Although this issue seems much in debate, a considerable amount of scholarship on the issue seems to side with the view that Locke did think that this ignorance concerning the real essences was only temporary and could be overcome in time. This position supposes that the only thing which prevents our ignorance from being overcome is

that the real properties of bodies are inaccessible due to the weakness of our senses. Therefore, if we could increase the power of our senses with microscopes or other instruments that would allow us to peer into that microscopic world, the problem of our ignorance would be overcome. In places it does seem that this truly is Locke's own position.

Had we Senses acute enough to discern the minute particles of Bodies, and the real Constitution on which their sensible Qualities depend, I doubt not but they would produce quite different Ideas in us; and that which is now the yellow Colour of Gold, would then disappear and instead of it we should see an admirable Texture of parts, of a certain Size and Figure. (II. xxiii. 11)

I am not convinced, however, that this statement should be taken to mean that Locke was optimistic about our future knowledge concerning real essences. True, he does say that if we did have senses or instruments acute enough to allow us to peer into the microscopic world of the ultimate internal structures of substances, what we observe would certainly produce in us quite different ideas than we have now. Some would take that to mean that we would then actually be able to see the real essences of bodies (Garber 177). But I think that would be a mistake.

Certainly if we could look into the microscopic world, we would have produced in us different ideas than we have

now, but whether those ideas would represent the true or real essences of things is another matter. Even at that level of observation we would still only observe, from amidst those minute particles, sense qualities which produce in us a variety of simple ideas. For those simple ideas to form the complex ideas of real essences, we would have to decide which simple ideas should be joined, and which we should refrain from joining. In other words, we could observe a variety of shapes, textures, colors or movements, but what is it that we are observing? On what basis do we begin to assemble the simple ideas into complex ones and then in turn essences. Some theory concerning what we observe is necessary to make sense of our observations. At first sight, without such a theory such observations would be meaningless. Until we begin to construct a meaning for ourselves from among the simples we are given, no meaning exists. Indeed, we need to draw boundaries by which we unite some simples together and divide others.

Recall the first time you peered through a microscope. If that first observation was without any prior instruction concerning what you were supposed to observe, the observation was meaningless beyond that you noted certain shapes, textures and perhaps motions. It might be compared with the first time you observed an abstract painting whose shapes and colors appeared meaningless until someone pointed out (or you began to speculate yourself) what

meaning those different shapes and colors had. Imagine being the first one to make an observation into the microscopic world. Who is to instruct you concerning what you should see? You would truly be on your own to find meaning from among what is given in the observation.

Is it possible for two people to see different things, or find different meanings from amidst what is given? True, the meanings we come up with are based on observation, and we can't stray from what is given in those observations, but because we are unable to observe necessary connections between the simple ideas there is a considerable liberty in the meanings we attribute to our observations.

So even with powerful enough microscopes which would allow us to peer into that otherwise insensible world, we would observe no more than simples. The ideas of real essences would need to be constructed and choices made from among the simple ideas that are given by the microscopic sense qualities. Just as we construct from among what is given in observation on the level of everyday experience to form substances and nominal essences, so would we have to construct real essences from among what is given on the microscopic level (Ayers 259).

Now whether Locke had considered this point or not is hard to say (there is no direct mention of it), but if he did it would seem that he would be forced to concede that the ignorance we experience concerning real essences is

permanent. Indeed our inability to know the real essences is not so much the result of being technologically backward and unable to peer into the microscopic world, but rather stems from the problem concerning our inability to know the boundaries that unite and separate simple ideas into the complex ideas of things like substances and consequently sorts or species. As we had seen earlier with the substances of everyday experience with which we need to join and separate hosts of simple ideas in order to establish boundaries because none are given us by nature (or more precisely too many boundaries are given by nature), so is the case with real essences. As in the world of everyday experience where we need to join certain simple ideas while refraining from joining others in order to make the substances from which we abstract the nominal essences, the same is true of what we observe within the microscopic world. There too we observe no necessary connections or boundaries. Thus what is joined and separated on that level is done so by mind. As it is in the world of everyday experience, where nature only instructs us concerning what cannot be joined (i.e., we cannot join the fin of a shark with the trunk of a tree because they are not found together within nature), but gives us a variety of choices concerning what can be joined, it is the same on the microscopic level. There too we would need to join our ideas of sense qualities together into something like microscopic substances, and then in

turn species could be created by the same process of abstraction that takes place at the level of everyday experience. From the microscopic substances we create, we would abstract that which is common or essential among members of the same sort in order to form ideas of microscopic species.

So if Locke is true to all that he says, the fact that a future science could peer into the microscopic internal structure of substances should not impress Locke. Indeed, the fact that a future science can examine the previously insensible microscopic realm should no more mean that such a science has a knowledge of real essences than the claim of the Aristotelians that they had a knowledge of the true essences of everyday substances. If Locke rejected the Aristotelian claim that they had a knowledge of the boundaries that unite and separate the sense qualities into the actual substances of nature, why shouldn't he equally reject the claim of a future science that it has a knowledge of the boundaries that unite and separate what we observe on the microscopic level?

Thus it should be for Locke that the idea of the real essence as well as the idea of the nominal essence is man-made, or constructed by mind out of what is given. Whether on the level of everyday experience, or on the microscopic level, in terms of our understanding, we need to construct and unite simple ideas into ideas of substances and essences. In other words, although it is

true that a thing has an internal structure which is not of man's creation, the idea of that internal structure is an idea or a conceptualization of man. Therefore, we can't ever know the real essences, and this should be the ultimate reason why Locke resorts to nominal rather than real essences as the basis for species. For even if we were to attach the name to internal conditions rather than external sense qualities, we still are employing a nominal rather than real essence.

This idea that there are real essences, but they can't be known, and thus the essences of our understanding will forever be nominal, parallels Locke's claim that on the level of everyday experience there are real substances but whether the ideas we form of those substances actually match the substances that exist within nature, we have no way of knowing. On the microscopic level as well, because we don't observe necessary connections, we must put the simples we do observe on that level together by judgment and conjecture. As on the level of everyday experience, whether or not we put the simples together in our mind in the same way as the qualities are truly joined in nature we can never be certain. Thus the essences of which we have knowledge will always be nominal and never real.

So Locke's belief in nominal essences as the basis for our idea of species is not relative to seventeenth-century science, for regardless of how deep future technology allows us to peer into the internal microscopic structures

of the world, we still find, at whatever level, a world in need of boundaries which man must supply. Thus the future development of the corpuscular philosophy cannot be one which holds the hope of an eventual discovery of the ultimate internal structure of things. Indeed, the best that we can do, even when we have a technology that can explore the ultimate depths of the microscopic world, is to invent or create boundaries from among what we find at that level. True, often the boundaries do appear natural (indeed, the boundaries between simples are natural), but as Locke says nature gives us many more possible boundaries than we can use, so choices must be made from among what is given. Clearly then the boundaries are made by man and not given by nature.

Endnotes

1. Later in this chapter we will take up the question of how essential and nonessential components of the internal structure are determined. The problem will also be taken up again in Chapter 7.

2. As mentioned earlier Locke's criticism of the scholastics is not so much an attack upon thinkers like Aquinas and Duns Scotus as upon the crude and often exaggerated and incorrect common interpretation of such philosophers. Much in the same way a contemporary writer may criticize an aspect of evolution without addressing Darwin, but rather the way Darwin is commonly interpreted or even misinterpreted.

Chapter 7The Relationship Between the Real and Nominal Essence,  
And the Question of Natural Kinds

Locke says that in regard to material substances the nominal essence is dependent upon the real essence.

This, though it be all the Essence of natural Substances, that we know, or by which we distinguish them into Sorts; yet I call it by a peculiar name, the nominal Essence, to distinguish it from that real Constitution of Substances, upon which depends this nominal Essence, and all the Properties of that Sort; which therefore, as has been said, may be called the real Essence....

(III. vi. 2)

But how can Locke claim that the nominal essence is dependently related to the real essence if the real essence is unknowable? One might immediately think that the answer to such a question lies in his belief in the corpuscular philosophy, but the question here is a deeper one. In fact, it is a question which can be levelled against the basic supposition of the corpuscular philosophy itself. The question is why do we suppose that sense qualities, of which we do have ideas, are the result of some internal structure within things, of which we have no idea. On first consideration such a notion might seem obviously acceptable, for even if we don't know the actual nature of

the real essence, we generally suppose that the sense qualities or observable characteristics of a thing are caused by, or have their origin within some internal structure or constitution. The question is, however, why do we make such a supposition? The answer to this question is certainly different for us today than it would have been for Locke in the seventeenth century. Today such a supposition is reinforced by a modern chemistry which supposes just such a thing and puts forth an elaborate theory based on that supposition. Locke, on the other hand, was without that influence and support. Even though he believed in the corpuscular philosophy, and that belief was reinforced by the fact that Boyle and Newton were also believers, no one had advanced such a philosophy to the point of theoretically describing such insensible particles and showing how their particular arrangements and motions produced sensible qualities. True, Newton had offered such an explanation in regard to light, and Boyle offered some speculation as well concerning the hidden microcosmic world, but such were nothing in comparison to today's chemistry which offers a comprehensive and exhaustive description of the inner workings of the microscopic world. Such an elaborate contemporary theory which is so universally accepted certainly makes it seem natural to accept the suppositions upon which such a theory rests. But unlike ourselves, whose science makes it easy for us to accept that supposition, why does Locke accept such a

thing? Why does he suppose that the nominal essence is dependent upon the real essence in spite of the fact that the real essence is known only as an untested hypothesis.

In Locke's day the corpuscular philosophy was hardly a worked out explanation which accounted for all of the phenomena within the material world, and it was certainly more speculative than we might at first think (1). Indeed, the original supposition of the corpuscular philosophy that the causal factors behind observable qualities exist at the microscopic level was, at least at the outset, purely speculative.

Certainly Locke and the other corpuscularians hadn't made observations which revealed a corpuscular structure at work within the internal make-up of a thing. It was rather that they had supposed that if no acceptable explanation could be given for why certain qualities manifest themselves within a thing from what is observed, then perhaps the cause of such manifestations lie at a level that we can not observe. Furthermore, if their speculations about such insensible structures and their effects upon sense qualities offers an explanation which squares with what we observe in experience, no more should be needed to validate such a theory. This of course is the theoretical context of the corpuscular philosophy, and that which provides one of the bases for Locke's belief that the nominal essence is dependent upon the real essence.

In order to consider the several interesting questions

which surround this speculation of the corpuscular philosophy that behind sensible phenomena lie atomic particles which are the ultimate cause of that phenomena, let us begin by examining, as Mackie does, the case of diseases (Mackie, Problems 99-100). If we consider a cold, we suppose that there is an internal condition that goes beyond our normal abilities of observation, and that such an internal condition is the cause of the outward manifestation or symptoms which make up the nominal essence to which we attach the name. It does seem obvious that there is such an internal condition at the core of cold symptoms, but should it be so obvious? Take as another example the case of schizophrenia or bi-polar disorders. Do we make the same assumption concerning the internal constitution or real essence of such maladies? If a person has enormous mood swings is that the result of some internal condition? It well may be, but is there necessarily an internal condition responsible? If someone acts strange and psychotic, is that necessarily traceable to an internal condition or couldn't there be some other possible explanation? Take as another example the case of mid-life crisis. If a man in mid-life begins to manifest certain behaviors which have been linked together into a nominal essence, and then the name "mid-life crisis" attached to it, do we suppose that the cause of those behaviors is an internal and unobserved condition (real essence) which produces those symptoms or nominal essence?

Today's man in the street well might claim just such a thing because of the previously mentioned influence of modern chemistry, but a bit of critical reflection should reveal that one might well be wrong to make such a supposition, for indeed there may not be anything materially within the individual's internal structure that causes such a thing. Indeed, the outward manifestations or nominal essence may be all there is behind the name schizophrenia or mid-life crisis.

In such a case where there is no internal structure or real essence responsible for the outward manifestation, is that evidence that the thing in question doesn't exist as a substance? If schizophrenia isn't a substance, however, is it then a mode? In the case of modes there needs be nothing more than the nominal essence (i.e., the nominal essence is the real essence as we will see later). But what then is the case with a cold? In one sense a cold is a modification of a substance, namely a human being. If it is a mode, however, then it doesn't have a real essence apart from its nominal essence (i.e., its symptoms). Of course we generally do suppose that a cold does have a distinct real essence apart from its symptoms, but why? Certainly it isn't because it is unquestionably a substance. So why do we suppose there is a real essence underlying the symptoms of a cold?

Admittedly, it is easier to imagine the absence of a real essence with schizophrenia than it is with those

things that we more readily accept as substances and believe have real essences like gold or water. But I would argue that much of the reason for that lies simply in the fact that the symptoms that have been put together in order to form the nominal essence to which the name schizophrenia has been attached, has been done so only recently in comparison to the long standing nominal essences of gold or water, and thus is more obviously of a man-made nature and thus perhaps without any real essence or substantial reality.

In order to understand this, remember that for Locke the nominal essence is the product of mind, and even in the case of material substances, where we can be assured that the qualities which make up the nominal essence are given by nature, we have no certain assurance that the unity of the qualities that make up our idea of a substance exist within nature. So the idea of a tree is no less a product of mind than the idea of schizophrenia, except that the qualities which make up the nominal essence of a tree have not been recently assembled but are of such long standing that we suppose them to be a natural union.

Certainly Locke does say that with something like a tree the qualities are found constantly together. Thus we have at least a hint concerning their union, even though we don't observe the necessary connections which unite those qualities into a unity. But the same thing can be said of schizophrenia. When we observe bizarre behavior, including

all the characteristics we attribute to the nominal essence of schizophrenia, we label the composite of those characteristics "schizophrenia," just as we label the composite of qualities that make up limbs, trunks and roots "trees." True, limbs, trunks and roots are connected spatially, but so are roots and soil as we had seen earlier. In the same way the behavioral components of schizophrenia must be connected spatially (i.e., in the same person), but we decide to exclude other types of behavior within the same person from the idea of schizophrenia, just as we exclude soil from the idea of a tree even though it is spatially connected.

Take for example another material substance like water which possesses the qualities of being clear, wet, and potable. Now these qualities are often found together within nature, but often they are not found together as well. We find many things that are clear and wet but not potable, or wet and potable but not clear. Similarly, we often find the characteristics that make up schizophrenia together, but often such characteristics are found separate and apart from one another. So why do we suppose water to be more natural and less a product of mind than schizophrenia whose symptoms or behavioral qualities are equally often found together? If we can suspect schizophrenia of being artificial and of our own creation (as we certainly can), why not suspect water of being equally artificial and without a real essence (2)?

One might think that Locke's distinction between substances and modes would settle this question, but as we have seen from the above examples of diseases, it is not so easy to distinguish one from the other. Indeed, if we don't know the real essences of a substance, how do we know they have one at all? In the examples of diseases, because we can't say whether they are substances or modes, we equally can't say whether they have real essences which are distinct from their nominal essence. Obviously, it is not always easy to distinguish between substances and modes, but if such a distinction is blurred, then how do we know if a thing does have an unknown real essence that is unique and apart from its nominal essence? Locke does offer a criterion to distinguish substances from modes.

These mixed Modes being also such Combinations of simple Ideas, as are not looked upon to be the characteristical Marks of any real Beings that have a steady existence, but scattered and independent Ideas, put together by the Mind, and thereby distinguished from the complex Ideas of Substances. (II. xxii. 1)

But how can the fact that mixed modes are put together by mind distinguish them from substances? As we have seen, substances are themselves constructed by mind with nature only providing prohibitions concerning what can't be joined, and a host of simple ideas which, based on our judgment, could possibly be joined. Indeed, to say that

substances are "real beings that have a steady existence," is to raise the question of what constitutes a real being. Is schizophrenia a real being with a steady existence? It seems that it is impossible to tell from the complex of simples that make up the nominal essence. Perhaps, however, there is a real being with a steady existence at the root of schizophrenia. Perhaps schizophrenia has as its real essence some microscopic organism or biological reality underlying and producing its symptoms or nominal essence, the way the symptoms of a viruse has a real essence that is a real being with a steady existence. If that were the case, however, then we would have to claim that whatever has a real essence is a substance, and whatever doesn't isn't a substance. But if we don't know whether something does or does not have a real essence, how would we be able to say whether it is or isn't a substance.

In Locke's day the internal structure of gold or water was as unknown as schizophrenia is today, so Locke's supposition that gold had a real essence was as speculative as someone today supposing that schizophrenia has a real essence (3). Just as someone today could be wrong about schizophrenia having a real essence (say it turned out that it is just an invented and artificial composite of behaviors that has no single cause but perhaps several), Locke too could be wrong about gold having a single internal structure or real essence upon which depends its nominal essence. It is quite possible that several

different internal conditions or real essences could have produced the same sense qualities or nominal essence. Take again the case of schizophrenia. It is quite possible that the composite of behavioral characteristics that we call schizophrenia are caused, not by a single internal condition, but by many different internal conditions, any one of which could be the cause of the behavior which makes up the nominal essence of schizophrenia. So why suppose that a single real essence lies behind all substances? Isn't it possible that the nominal essence of water could be achieved not only by a single real essence, but equally could be achieved by some other internal constitution as well? Of course, there would then be the big question of whether such a thing deserved the name water, but we are only concerned here with whether the nominal essence of water could be achieved by some other real essence, and that certainly is imaginable.

Thus Locke's belief that there is one rather than several real essences responsible for producing the observable qualities that make up a nominal essence is certainly less than axiomatic and more a matter of speculation or opinion. Indeed, just as we could imagine that several different real essences could be responsible for causing the qualities that appear within a festering sore on the skin, so we should be able to imagine that a particular substance could possibly have more than a single real essence responsible for the qualities it manifests.

The supposition that there is a single real essence underlying the qualities that a particular thing demonstrates, rather than several, does, however, have the advantage of being simpler and perhaps more convenient for our understanding, but beyond such a heuristic advantage there doesn't seem to be any other basis for such a supposition.

Again, we see that the idea of a single real essence as the cause of the sense qualities that make up the nominal essence is the product of conjecture and opinion. Indeed, not only is the specific form of the internal constitution a matter of opinion and beyond the scope of knowledge, but even the general idea that there is a single real essence of whatever form is a matter of opinion as well.

Another interesting aspect concerning this issue of the dependency of one essence upon the other lies in the fact that although Locke says that the nominal essence is dependent upon the real essence, the real essence must equally be dependent upon the nominal essence (Odegard 225). Indeed, for the real essence to be an essence, rather than merely the totality of the internal structure of a thing, it must be related to a species, which of course for Locke is based upon the nominal essence.

By this real Essence, I mean, that real constitution of any Thing, which is the foundation of all those Properties, that are combined in, and are constantly found to co-exist with the nominal

Essence.... But Essence even in this sense, relates to a Sort, and supposes a Species: For being that real Constitution, on which the Properties depend, it necessarily supposes a sort of Things, Properties belonging only to Species; and not to Individuals.... (III. vi. 6)

In order to understand Locke's position here we should first understand that what he means by properties are those sense qualities that are produced by the real essence. It appears obvious from the above statement that not all of the sense qualities that a thing possesses are products of the real essence. True, the real essence is the internal constitution, but it can't simply be the whole of the internal condition, for Locke says that "...essence, even in this sense, relates to a Sort, and supposes a species (III. vi. 6)." Now in order for the real essence or internal constitution to relate to a species or sort it must relate to the nominal essence upon which the idea of species rests. Thus the real essence is not merely the totality of the internal condition, but that within the internal condition which produces the properties or the specific qualities or simples that make up the nominal essence. True, all of the sense qualities are produced by some internal condition, but, if the real essence truly is an essence, as Locke says, then it must specifically be that within the internal condition which produces the qualities or properties that make up the nominal essence.

It should be noted that for Locke (unlike the scholastics who had not only specific essences to distinguish one species from another, but individual essences as well to distinguish one individual from another within that species) there are only specific essences. Thus, for Locke an essence cannot exist independently within a particular individual alone, but is only an essence in so far as it is a characteristic of an entire species. Therefore, the real essence of a thing like water is not simply the entire internal composition of all that is found microscopically to exist within water, but rather only that within the internal composition which is essential (i.e. those characteristics within the thing which cause the thing to be of the sort it is). To modern science such an essential nature of water would be the two atoms of hydrogen and one atom of oxygen, and not the microscopic bacteria and minerals found within it. But what is the basis for claiming that hydrogen and oxygen are essential and not the bacteria or minerals found within water? It is of course that a change in the hydrogen or oxygen would constitute a change in the species, while a change in the bacteria or minerals would not constitute such a specific change. But what determines a change of species? For Locke, who claimed that the species is determined by the nominal essence, it would obviously be a change in that nominal essence to which we attach the species name.

But whether one, or both these differences be essential, or specifical, is only to be known to us, by their agreement, or disagreement with the complex idea that the name... stands for. (III. vi. 39)

So if the real essence, in order to be essential, must refer to a species, and our idea of species is based upon a nominal essence, then the real essence must be, in a sense, dependent upon the nominal essence. Or to look at it in a slightly different way, since our idea of the nominal essence is the source of our idea of species, changes in the internal structure of a thing mean nothing specifically, unless those changes affect our idea of the nominal essence. The species changes only as there is occasioned a change in the nominal essence. So whatever change in the internal structure causes a change in the nominal essence, and thus species, that change constitutes an essential change in the internal structure. On the other hand, whatever change in the internal structure did not cause a change in the nominal essence would not constitute an essential change. So it is the nominal essence that determines what is, and what is not essential within the internal structure of a thing. Indeed, the nominal essence determines the real essence, and therefore the real essence depends upon the nominal essence for its essential nature.

Why then does Locke call the real essence "real?" We

will recall that in the formation of our idea of a material substance, although we observe natural boundaries between the simples which are given, many more boundaries exist than we can ever use in the formulation of our idea of a particular substance. We thus need to make choices about where we divide and separate in order to make these ideas of substances. Consequently, these substances, and the nominal essences we abstract from them are at best probable and products of mind rather than nature. So how can the real essence be considered real if the real essence is, as we have seen, dependent upon the nominal essence which is a product of mind and not nature? Wouldn't such real essences equally be mind dependent, simply because they are determined by the nominal essence which is the product of mind rather than nature. One possible answer is that in spite of this dependence, real essences are real in the sense that they really do exist within the internal structure of a thing, and to that extent have a real existence.

This is of course true, but are they real in terms of being essences, or perhaps we should ask are they essential (Atherton, "Inessentiality of Essences" 290-93)? As we saw in the last chapter, if the nominal essence is what determines the species, it must determine the real essence as well because Locke says that all essences relate to or suppose a species (III. vi. 6). In other words, if the internal structure creates the external sense qualities,

then what is essential or nonessential about the internal structure is established by what external qualities we decide are going to be essential or nonessential. For example, if we decide that sense qualities like metallic, malleable and gold in color are essential characteristics of a given nominal essence and thus species, then what will be essential within the internal structure of the thing are those internal conditions that produce those sense qualities. If, on the other hand, we pick out merely the qualities metallic and malleable upon which to base our nominal essence and attach the species name "softmetal," we will certainly have a different real essence which will only include those internal conditions that produce those sense qualities. So what we decide to be the nominal essence will in turn pick out one real essence rather another. Therefore, being dependent upon the nominal essence, the internal essence is neither real nor essential in the way the scholastic essence, being believed to be God created, was real and essential.

In spite of all this, however, Locke does seem to want to connote, with his idea of real essence, something more than essences that are dependent upon man-made nominal essences. Indeed, Locke does seem to want to maintain that his real essences are both real and essential, and therein establish something like natural kinds.

I would not here be thought to forget, much less to deny, that Nature in the Production of Things,

makes several of them alike: there is nothing more obvious, especially in the Races of Animals, and all Things propagated by Seed. (III. iii. 13) (4)

Or as he says later,

...Nature works regularly in the Production of Things, and sets the Boundaries to each of those Species, by giving exactly the same real internal Constitution to each individual, which we rank under one general name. (III. x. 20)

Here Locke certainly acknowledges the independent reality of the real essence and even that species are dependent upon them. So Locke's intention isn't to abandon the notion that there are natural or God created species.

...a faithful Creator and a bountiful Father, who disposes not of his Creatures according to our narrow Thoughts or Opinions, nor distinguishes them according to Names and Species of our Contrivance. (IV. iv. 14)

This admission of a "creator and a bountiful father," as well as the above statements concerning nature's production of things not all different but of the same sort, certainly indicates that Locke believes there are more than mere nominal, man-made essences and their species. Indeed, if God doesn't distinguish according to our "Names and Species" as the statement above claims, then either He doesn't distinguish at all, or he distinguishes according to His own ideas concerning species. If the

latter is the case, then those God established species, and the essences they are founded upon, must be the real essences and species. Furthermore, since those God or nature established essences and species are unknown to us, and since our understanding of the world is based upon our own notions of essences and species, which may well be different from God's which are the real essences and species, can we then call our understanding "real?" Perhaps Locke does believe that an understanding of our nominal essences is a real understanding, but if so, it is a new and different form of realism than what his predecessors had known. Indeed, the scholastics who preceded him believed that the essences, and therefore species, that they studied were the same species that God or nature had established, but this is no longer a claim that Locke can make.

In light of this, Locke had several options. He could simply deny the existence of God altogether, in which case the nominal essence would be all the essence that exists, and thus there would be nothing greater or more real than a knowledge of nominal essences. Indeed, by eliminating God the nominal essence would no longer be a poor but necessary substitute for our not being able to know the real essences. Instead, in the absence of a God, the nominal essence and its species would be all the essence and species there is. What we declare to be essential, either among a things internal structure or outward

manifestations, would be as real an essence or species as exists. Although this is certainly an option, and one which many a twentieth century philosopher will take, it clearly isn't a possibility that Locke entertains.

Another option is to admit the existence of God, but claim that He has no need to organize things into species or sorts according to essences the way such organization is necessary for human understanding. Locke does speak of a God whose creation goes beyond the likes of our understanding.

The Workmanship of the All-wise, and Powerful God, in the great Fabric of the Universe, and every part thereof, farther exceeds the Capacity and Comprehension of the most inquisitive and intelligent Man, than the best contrivance of the most ingenious Man, doth the Conceptions of the most ignorant of rational Creatures. (III. vi. 9)

So perhaps God's creation goes so far beyond the likes of our ability to understand, that God can create and understand a universe composed of an infinite number of species -- indeed as many species as there are substances or even atoms. Our minds, on the other hand, being unable to conceive the world in such a way are forced to organize things into a limited number of species or sorts. In such a case the idea of essence would be purely human. Such a view, however, is hardly the position Locke takes. Indeed, we will remember that Locke did admit natural or God-made

divisions, and even claimed that such divisions were knowable. These knowable natural divisions are of course the divisions between the sense qualities and consequently the divisions that appear to us between the simple ideas

...which by the Wisdom and Will of our Maker they are ordained and adapted to. From whence it follows, that simple Ideas are not fictions of our Fancies, but the natural and regular productions of Things without us.... (IV. iv. 4)

But the question is does God make divisions beyond these simples? Has God organized the world into substances and species according to essences?

As we have seen, Locke certainly admits that God's understanding of his own creation is not limited to our finite abilities to divide up the world, but does God divide up the world at all? And if he does, is it possible that man could stumble upon the actual essences or bases upon which God makes his own divisions? Although at times Locke does speak as if there are God-made natural divisions which constitute species or sorts (5), and even that we may, at some point in the future, discover the real essences of those God-made species, he more often takes a position which admits ignorance and acknowledges our inability to know such things.

...I cannot see how it can be properly said, that Nature sets the Boundaries of the Species of Things: Or if it be so, our Boundaries of Species,

are not exactly conformable to those in Nature.

(III. vi. 30)

From this it would seem that Locke is in doubt concerning both whether God in fact sets boundaries beyond simples, and if such bounds do exist, he doubts whether we can know them. Now on this second point Locke appears certain that our knowledge of specific boundaries could not match those of nature even if such boundaries did exist, but on the first issue he is not so certain that such things don't exist. Indeed, in addition to this passage where he admits such divisions are at least possible, in other places he affirms that possibility and says that God indeed has ordered the world by grouping individuals together into something like species or sorts.

Nature makes many particular Things, which do agree one with another, in many sensible Qualities, and probably too, in their internal frame and Constitution: but tis not this real Essence that distinguishes them into Species...

(III. vi. 36)

Perhaps the best support, however, for the argument that Locke believed in natural species or sorts lies not so much in what he says, but in what he doesn't say. The belief in natural species or sorts had of course been a major supposition of western thought, and if Locke was breaking from that tradition, such a monumental position should have appeared in his writings. But there is no

mention of such a unique stand either in his formal writings or correspondences, and neither do any of his associates or friends ever mention Locke approaching such a position which would certainly have been note worthy if he had in fact taken such a position. So because Locke never denies such a belief in natural sorts and there is no mention by anyone else that he ever held such a position, I think it is safe to suppose that Locke retained the unquestioned supposition of his age that a rational creator had made a world composed of species or natural sorts which were of that creator's design.

Therefore, it would appear that even though Locke's epistemology forced him to claim that man doesn't have knowledge of such natural species, he believed that they do nevertheless exist at least within the mind of God. This point is of interest because throughout the Essay there is a tension or discrepancy between the position Locke takes epistemologically, and his implicit ontological stand. Indeed, what most of Locke's contemporary critics found objectionable was the theoretical implications of his epistemology upon traditional notions of ontology and theology (Yolton, Way of Ideas 139-40). Certainly the major focus of the Essay was not theoretical but practical, and Locke consistently demonstrates a general lack of interest concerning the implications his epistemology had in the area of ontology. But although it is certainly true that Locke was not much interested in making considerations

from other than an epistemological focus, it is also true that his epistemology nevertheless did have consequences. So even if Locke was not interested in or affected by the theoretical implications that his epistemology had upon ontology and theology, that epistemology, as we will see more fully in the next chapter, was at odds with traditional notions of ontology and theology. Indeed, it was at odds with Locke's own ontology and theology, for he believed that things like the traditional notions of God-established substance and species truly do exist on some ontological level. What he did not believe, however, is that such things were knowable. So although such things exist ontologically, in terms of Locke's epistemology such things are outside the scope of human knowledge.

Therefore, in spite of the fact that Locke believes that there are natural boundaries which separate substances and species, he is forced to concede that beyond the boundaries that are given with simples, we have no actual knowledge of such substantial or specific divisions, and thus whatever boundaries we do suppose beyond such simples are just suppositions, and at best only probable.

By having rejected the scholastic notion of knowable boundaries for substances and species, Locke is unable to claim that we have a true knowledge of the substances and species into which God has organized and shaped the world. In spite of this, however, he doesn't take the position that there are no God established substance or species.

Like his predecessors, Locke retains the belief that God has established substances and species, but unlike his predecessors, he maintains that such things are unknowable (Buchdahl 186-87).

Endnotes

1. This is especially true when we consider, as mentioned previously, that in Locke's day there was no generally accepted atomic theory which today makes it easy for us to accept unquestioningly such a supposition as natural.
2. One might think that such an argument is no longer open to serious consideration since modern science has discovered not only that water has a real essence, but even exactly what that essence is. But we will remember that in Chapters 3 and 6 we pointed out that even being able to peer into the microscopic world, it would still have to be the mind which would construct essence from among what was observed at that level, and from what we determine to be essential within that microscopic world.
3. Remember again that Locke's supposition that water had a real essence separate and apart from its nominal essence within its internal structure, was more speculative in that the corpuscular hypothesis which supported his supposition was not nearly as widely held and substantiated as today's atomic theory.
4. Also see (III. vi. 37).
5. These sorts are what would today be called natural kinds.

Chapter 8  
The Essences of Mixed Modes  
and Relations

Thus far our treatment of Locke's notion of essence has almost exclusively centered on the essence of material substances, but Locke is hardly silent concerning the essences of things other than substances. What he has to say about the real and nominal essences of things other than substances raises some unique problems and should give us a deeper insight concerning his notion of essence.

To begin with in the case of things other than material substances like mixed modes and relations, the real essence is not the internal corpuscular structure (1), but rather "the very being of any thing, whereby it is what it is" (III. iii. 15). Since this real essence is not unknown like the internal structures of the corpuscular philosophy, it can serve as that to which we attach the name. Take for example a triangle which doesn't have a real essence in the sense of a corpuscular structure made up of insensible particles, but instead its real essence, and that "...whereby it is what it is" (III. iii. 15), namely a figure composed of three intersecting straight lines, is the very thing to which we attach the name. Thus in the case of things like modes, the real and nominal essences are the same.

Now we should not take this to mean that modes don't

have real essences, or that the real essence of such things is no more than whatever composite of characteristics to which we choose to attach the name. True, modes don't have internal corpuscular structures the way material substances do, but they do have real essences or that

...Essentia or Being of the thing itself; that Foundation from which all the Properties flow, and to which they are all inseparately annexed. (III. iii. 18)

So just as a substance like gold has a real essence which makes it have the qualities it does, so too a mode like a triangle also has a real essence, and just as the real essence of gold produces its color, malleability, and metallic nature, so too the real essence of a triangle, or what it really is, namely a space between three intersecting straight lines, would produce its qualities or properties, like its angles equalling 180 degrees (Woolhouse 419). In the case of modes, however, Locke claims that we know the real essence and there is no corpuscular structure or nature which is hidden from us. With modes we know all there is to know, and therefore we attach the name to that real essence or what the thing really is. Hence, with modes the nominal and real essence are identical.

Now this raises an interesting question concerning our being able to be wrong about substances. If we can be mistaken about material substance because, as Locke says,

with substances (unlike simples) the mind needs to join qualities together, and we have no way of knowing if we are joining them together properly or not, then we need to first suppose the existence of substances. We need to suppose that substances exist beyond man's awareness of them within something like nature or the mind of God. If Locke supposes that we can be wrong about what substances really are, he must equally suppose there is something which establishes the reality of substances. In other words, the qualities which are joined together in order to form substances must be united by something beyond human minds, and such "real" substances are the things to which the substances we form with our minds must strive to conform if possible. Indeed, as we discussed in the last chapter, this is one of the aspects of scholasticism that Locke retained, and from which he was unable or unwilling to free himself (Gibson 190).

Certainly, if he did free himself from the Scholastic notion that there existed God-established substances, then we would be the only source of the idea of substance, and whatever we said was the real essence would in fact be the real essence. Any reasonable theory upon which we agree would do. But can Locke take such a position? It doesn't appear so because by accepting the notion of God-established substances, while at the same time denying any knowledge of the connections that unite and separate qualities into substances, Locke must suppose that we can

be wrong about the real essence of a substance (2). If this is true, however, and we can be wrong about the real essences of substances, then why can't we be wrong about the real essences of modes as well? If God created substances, didn't He create modes as well? And couldn't we be wrong about the modes that God created, just as we could be wrong about substances and species?

In order to understand Locke's position on modes, we need to recall the distinction we had made between modes and simples. We will remember that although Locke says that with modes the nominal and real essences are the same, in the case of modes he doesn't simply mean that we can't be mistaken about what they really are, but, more precisely, he means they are truly identical. With mixed modes the real and nominal essences are truly identical in the sense that whatever we attach the name to is the real essence, and there is no more reality to a mode than that.

...Mixed Modes and Relations, having no other reality, but what they have in the Minds of Men, there is nothing more required of those kinds of Ideas, to make them real, but that they be so framed.... (II. xxx. 4) (3)

But is that true? Are the nominal and real essences of mixed modes one? We need to consider the several distinctions that Locke makes between the essences and species of mixed modes and substances. He says, "...that the species of mixed modes are made by the understanding"

(III. v. 9), and are thus not by nature, but are artifices of the understanding. This may be true, but we need keep in mind that this is what Locke says about the species of substances as well.

Wherein then, would I gladly know, consists the precise and unmovable Boundaries of that Species? Tis plain, if we examine, their is no such thing made by Nature, and established by Her amongst Men. The real Essence of that, or any other sort of Substance, tis evident we know not; and therefore are so undetermined in our nominal Essences, which we make our selves... (III. vi. 27)

Locke goes on, however, to make the further distinction that, unlike substances whose real essences are unknown, the real essences of mixed modes are known. For example, unlike gold whose real essence is unknown, the real essence of a mixed mode like suicide is known. Since there is nothing about suicide that goes beyond our notion of it (i.e. nothing hidden about a mode like suicide the way there is in a substance which has an insensible corpuscular structure), we know all that it really is. Therefore we attach the name to the real essence. Thus, in the case of suicide, the nominal and real essence are identical.

But there is a question here concerning whether or not we really do in fact know the real essence of a mixed mode like suicide. Today when social scientists study something

like suicide they often discover new and previously unknown factors concerning the nature of the phenomenon, just as modern chemists discovered new factors concerning the internal structure of substances (Mackie, Problems 91). So it would seem, especially in the light of many of the suprising discoveries of contemporary social science, that the real essences of many mixed modes are not so obvious, and perhaps nearly as difficult to get at as the real essences of substances.

Another distinction Locke tries to make concerns the claim that the qualities which make up mixed modes are put together by imagination, while the qualities which make up substances are given by nature.

...in forming those Ideas of mixed Modes....he puts Ideas together, only by his own Imagination, not taken from the Existence of any thing....But in the forming his Idea of this new Substance he takes the quite contrary Course; here he has a Standard made by Nature.... (III. vi. 46)

This is certainly true, and something is given by nature. That given, however, amounts to little more than the simple ideas which make up the idea of a material substance. The idea of the substance itself is an idea which certainly isn't given and its reality is less than assured. Indeed, Locke has at length argued that with substances we don't observe the necessary connections that join the qualities or simples; and thus the simples are

joined into the idea of a substance by mind and not by nature. True, the joining of those simples is not completely random and we do observe certain qualities found constantly together within nature. So nature at least gives us hints as to what qualities should and should not be joined. In other words, although not revealing to us necessary connections, nature does show us connections to the extent that certain qualities are found constantly together within nature. Unfortunately, however, many things are constantly found together within nature, and such unions are more than can be used. The roots of trees are always found together with soil (as in our example of "blankwicks"), and the stars are found constantly together with the night sky, yet we refrain from joining such things. Clearly, we are in a position of choosing what things, which are constantly found together, should we join and what things should we refrain from joining.

Of course the same thing could be said of mixed modes. Take the example of jealousy which Locke imagines that Adam invented upon seeing the way that Lamech was behaving (III. vi. 44-5). With Adam's invention of the mixed mode of jealousy, isn't he doing just what we do when the mind joins the ideas of qualities together into substances? Consider leaves which are not always attached to branches, and branches not always attached to tree trunks, but when they are found together we have the idea of a tree. Equally, if Lamech were merely acting melancholy, and had

no attachment to a woman, Adam would not consider him jealous, for Adam attaches the word jealousy to a mixed mode which encompasses both those ideas, which indeed are often found together, but often found apart as well. So as branches and limbs are often, but not always found together, so too melancholy and attachment to a female are often, but not always found together. When they are found together, we say that they form trees or jealousy; when they are not found together, we say that such substances and mixed modes don't exist. So aren't the qualities that make up mixed modes as much given in experience, or found together, as the qualities that make up substances? True, there are archetypes concerning substances, but equally there are archetypes with mixed modes, for as the qualities that make up substances are often found to go together and thus form an archetype, so too are the characteristics that make up our ideas of mixed modes often found to go together and thus form an archetype as in the case of Lamech.

Locke admits that mixed modes are not formed totally randomly, and without any reason (III. v. 7), but he argues that they are not based on an archetype in the way that substances are. He argues that this is evidenced by the fact that in different languages and cultures the words that stand for different mixed modes have different meanings as well. For example, we may translate a certain foreign term into the English word "incest," but what we consider incest is not exactly what is meant by the foreign

term. Indeed, the foreign notion might forbid marriage to a second cousin, while our notion of incest doesn't forbid such a union, but does prohibit marriage to an aunt, which the foreign notion doesn't. This of course is true, but no more so than is the situation with substances. For example, our notion of a horse does not include the instance of a zebra, while another culture's language might attach the name for horse to a zebra as well, but would not attach that name to a Shetland pony, while we would. So wherein lies the difference between substances and mixed modes?

As another distinction, Locke says that with mixed modes the mind can create them before such things actually exist. That is, one could imagine adultery before the first case of it ever existed, or to use Locke's example, men had the idea of a resurrection long before it actually took place (III. v. 5). But can't the same be said of substances? Can't they be constructed out of imagination prior to the existence of such things? Couldn't we imagine a substance only later to discover that such a substance actually exists? There certainly doesn't seem to be anything that would prevent us from doing so, and it is hard to see here the distinction that Locke obviously does between substances and modes.

Locke also argues that with mixed modes the mind

...arbitrarily unites into complex Ideas, such as it finds convenient; whilst others that have

altogether as much union in Nature, are left loose, and never combined into one Idea... (III. v. 6)

But again that seems to be what we do with substances as well? We choose to join branches and trunks together into tree, but not roots and soil together into blankwicks, so wherein lies the difference?

Besides all this, however, there is another critical factor concerning this issue of the distinction between substance and modes which involves Locke's theology, and the question of whether God establishes the reality of mixed modes as well as substances. Granted a material thing like a substance exists even if we have no idea of it, while a mixed mode like adultery has no such independent existence, and exists only as an idea. Thus its existence is totally dependent upon our idea of it.

...the Names of mixed Modes always signifie (when they have any determined Signification) the real Essence of their Species. For these abstract Ideas, being the Workmanship of the Mind, and not referred to the real Existence of Things, there is no supposition of any thing more signified by that Name, but barely the complex Idea, the Mind it self has formed, which is all it would have express'd by it; and is that, on which all the properties of the Species depend, and from which alone they flow: and so in these the real and

nominal Essence is the same... (III. v. 14)

But even if this is the case, doesn't God have an idea of such mixed modes, and wouldn't God's idea of something like adultery give it a reality even if man never came to compose that idea himself? It would seem that Locke doesn't think so given his statement above, but when we consider his previously discussed scholastic position that God establishes the ultimate reality of what constitutes a substance, it certainly is strange that God would have dominion over substances but not modes. Are modes then artificial things and totally the product of man? In Locke's day things like jealousy and adultery were thought to be more than mere constructs of imagination in the sense that they were defined and their specific boundaries established by God rather than man? Take for example the mixed mode of incest. Although it may be true that we create the complex idea of incest, isn't there a standard or archetype for incest in the fact that God also has an idea of incest, and the idea that God has of that mixed mode is what establishes its ultimate reality whether we are aware of that archetype or not. Indeed, we are not aware of the actual boundaries that make up substances and their species, but Locke supposes that God or nature has established such boundaries, so why wouldn't God be the one who establishes the boundaries of mixed modes as well?

Furthermore, given Locke's theology and especially his professed belief in the revealed truth of Scripture (Locke,

"Letter" 387) wouldn't he be forced to concede that God establishes the ultimate standard or boundary for what was or was not incest or adultery. There is certainly a discrepancy here between what Locke says about modes and their creation out of human imagination, and Locke's position concerning God's sovereignty and the authority of Scripture. Indeed, the two positions do seem incompatible.

One way to resolve this apparent contradiction is to brand Locke's theological position as less than sincere, and see him as a budding deist because he grants God existence, but denies, or at least limits, God's reign over the world. That, however, wouldn't be an accurate assessment of Locke's position. Rather it is simply that Locke doesn't at all consider the consequences of his epistemology upon ontological or theological matters, but instead, as was mentioned in the last chapter, is merely focusing on human understanding.

Locke was concerned to limit the discussion of substance to the idea of substance which men can be said to have....he ostensibly proclaimed himself uninterested in the problem of the ontological nature of substance... (Yolton, Way of Ideas 127)

In light of this, however, we can see why Locke is often accused of having inspiring the deists. Although it may not have been his intention, his nearly exclusive focus on human understanding, and his lack of interest in

justifying his new epistemology with the traditional metaphysics and theology, which he seems to have sincerely embraced, raised a host of questions. Indeed, though he may have ignored the effects that his epistemological positions had upon metaphysical and theological issues, such positions certainly did have their effect, and there was certainly created a rift between his new epistemology and traditional metaphysics and theology.

This tension between Locke's epistemology and traditional metaphysics can also be seen in the case of relations which Locke says, like modes, have nominal essences which are their real essences as well. As with modes, relations have no real essence in the sense of a hidden internal structure as there is with material substances. Thus there is nothing which goes beyond the nominal essence; whatever reality a relation possesses is contained within its nominal essence. Furthermore, with relations there is, in a way, even less contact with the reality of substances than with mixed modes, for unlike the modifications of substances, relations are completely independent of substances.

The nature therefore of Relations, consists in the referring, or comparing two things, one to another; from which comparison, one or both comes to be denominated. And if either of those things be removed, or cease to be, the Relation ceases, and the Denomination consequent to it, though the

other receive in it self no alteration at all.  
v.g. Cajus, whom I consider to day as a Father,  
ceases to be so to morrow, only by the death of  
his Son, without any alteration made in himself.  
(II. xxv. 5)

In this example of fatherhood the death of the father's  
only child causes his fatherhood to cease, although there  
has been no change or modification to the father himself.  
Locke takes this to mean that fatherhood isn't a  
modification of a substance, but is independent of any  
substance and is produced merely by our minds comparing one  
thing with another.

This might at first appear to be very close to the  
Thomist position of the scholastics (Gibson 194-95), which  
held that although relations are based upon the reality of  
substances, they are, unlike modes, disconnected from those  
substances which constituted reality. With the Thomist  
position, however, there was a reality of a sort to the  
notion of relations, for relations represented the order  
that existed among substances and modes. While substances  
represented the things of reality, relations represented  
the order of that reality. For the scholastics (at least  
those who followed the Thomist tradition) such an order was  
real and God-established, and man needed to discover those  
God-established relations or order.

Relationships of fatherhood and sonship really  
exist in God. It is peculiar to relatedness that

thought can ascribe it without falsehood to things in which it does not really exist; other categories of attribute like quantities and qualities are defined as modifications of their subjects, but relatedness is defined only as a reference to something else. Sometimes this reference arises from a connection things themselves have by nature, but sometimes only from a link made in our minds. Since the coming forth of word and spirit in God are within God's substance, the relationships that arise must really exist in his nature. (Thomas Aquinas 66-7)

Since God establishes relations or the order that exists among the substances or mixed modes of this world, we, in our attempt to understand that order, could certainly be wrong, and what we suppose about such relations may not in fact be the reality of the order God had established. But Locke distances himself here from the scholastics on this point, for he says that with relations the real and nominal essence are identical, and thus they have no reality beyond the nominal essence or what we determine them to be.

Locke does of course speak of "natural relations" such as father and son, brother, country-men, etc., but such relations are not natural in the sense of being created by nature. Indeed, he says they are

...suited only to the convenience of

communication, are proportioned to the Notions Men have, and the commerce of Thoughts familiar amongst them; and not to the reality or extent of things... (II. xxviii. 2)

This raises again the theological question of God's sovereignty, this time over relations rather than mixed modes. Here, however, with relations this question of God's sovereignty is even more critical than it was with mixed modes because for Locke morality rests in such relations.

Locke defines morality as the relation between human action and law.

And tis by their Conformity to one of these Laws, that they take their measures, when they would judge of their Moral Rectitude, and denominate their Actions good or bad. (II. xxviii. 13)

So even in the case of God's divine law, it is not that law which constitutes morality, but rather the relation between that law and human action, which, because it is a relation, is determined by man, and has no other existence besides man's idea of it, as was the case with mixed modes. So God may establish divine law, but if morality is the relation between that law and man's actions, man must determine that relation. Thus we are left with the strange consequence that man rather than God is the determiner of the relation we know of as morality (4).

Again, however, we should remember that although these

positions that Locke puts forth in the Essay do have implications in the areas of metaphysics, and theology, Locke's intention is primarily to explore the scope and limits of human understanding, and not to consider the implications that his epistemology has on more theoretical ontology concerns. As we will see in the next chapter which deals with Locke's notion of science and the scope of human understanding in general, Locke follows the model set forth by Bacon at least in so far as he, like Bacon, divorces himself from metaphysical concerns, and centers strictly on epistemological issues. Indeed, Locke's idea of a new science of probability (5), as we will see, is not a science which tries to capture the ultimate reality of things, but rather a conventionalist science limited by the scope of human understanding. So at least part of the solution to the anomalies that appear when we take what Locke says and view it from theological or metaphysical perspective, lies in the fact that Locke is ignoring considerations which were of great theoretical importance to the scholastics, but are of little practical concern to himself.

Locke of course is not denying the value of considering metaphysical and theological questions. He is simply intent upon something else. He would agree that God establishes the essences or species of things like mixed modes or relations as well as substances, but unlike the scholastics who also believed that God provided man with an

ability to perceive and know such things, Locke was unable to detect such abilities at work. Because Locke was unable to observe the connections which unite simple ideas, he claimed that sensations enter the mind unmixed and separated one from another. Consequently, we are forever in the position of having to assemble them into our ideas of substances, modes and relations, and are never able to know if we are assembling them in the way that they are assembled beyond our understanding within nature or the mind of God. So the mixed modes and relations that we have ideas of are not necessarily the ones that God has established, but rather ones of our own creation. It is these essences and species (i.e. the ones of human understanding) that Locke is exploring and not the God-made ones, which Locke believes exist, but because they are not the species of human understanding they are of no interest to him here.

End Notes

1. Simples are the exception here in that they are not material substances, but their real essence is their corpuscular structure.
2. By real essence here we don't necessarily mean the corpuscular structure, but rather what the thing really is.
3. Also see (II. xxii. 5) and (II xxii. 8).
4. This certainly looks like more fuel for the deist fire, for it grants that God is the creator of divine law, but it is man who determines morality, because morality is the relationship between divine law and human action, and, as a relationship, is determined by man and not God.
5. Locke shows that the traditional notion of a deductive science of necessary truths was impossible in regard to the physical world given our limited capacities of understanding.

Chapter 9  
Essence and Locke's Notion  
of Science

In the formulation of Locke's notion of science we can certainly see the influence of other thinkers who, like Locke, were breaking from medieval notions of learning, and were moving in the direction of the new science. Indeed, the England into which Locke was born was one in which the idea of a new science had already been kindled by Frances Bacon.

A generation before Locke, Bacon was already in rebellion against the same institutionalized philosophies and thinking that Locke would find so difficult to bear from his first encounters with them during his university days at Oxford (Hargreaves-Mawdsley 98-9).

Again, in the customs and institutions of the schools, academies, colleges, and similar bodies destined for the abode of learned men and the cultivation of learning, everything is found adverse to the progress of science. For the lectures and exercises there are so ordered that to think or speculate on anything out of the common way can hardly occur to any man. (Bacon 89)

Additionally, Bacon's criticism that the method of scientific demonstration which was taught by the scholastics was nearly exclusively that of the syllogism,

and induction was hardly mentioned (Bacon xxiv-xxv), must have certainly been attractive to the young Locke who had come to a very similar opinion about the logic and method of the scholastics (Hargreaves-Mawdsley 98-9).

The logic now in use serves rather to fix and give stability to the errors which have their foundation in commonly received notions than to help the search after truth. So it does more harm than good. (Bacon 41)

Indeed, in logic and scientific method, Bacon's influence upon the development of Locke's belief in an empirical and inductive method must have been considerable. Even Locke's attack on the Aristotelian forms was preceded by a similar attack by Bacon (Bacon xxiii). Perhaps, however, the most important Baconian influence upon Locke's notion of science, and philosophy in general, at least concerning our particular study, was Bacon's notion of species and the natures or forms (1) upon which they rested. Indeed, even on this subject, Locke takes a position very close to that of Bacon's.

Among Prerogative Instances I will put in the fifth place Constitutive Instances, which....are those which constitute a single species of the proposed nature, a sort of Lesser Form. For since the genuine forms (which are always convertible with the proposed natures) lie deep and are hard to find, it is required by the circumstances of

the case and the infirmity of the human understanding that particular forms, which collect together certain groups of instances (though not all) into some common notion, be not neglected, but rather be diligently observed. For whatever unites nature, though imperfectly, paves the way to the discovery of forms. (Bacon 170)

It would appear from this statement that Bacon is making a distinction very close to the one that Locke makes between real and nominal essence. The big difference between the two philosophers on this matter, however, is that for Bacon, although there is a deeper nature or form, that deeper nature or form can be known simply by careful observation, while for Locke the deeper nature of material things is specified by the corpuscular philosophy whose insensible particles are beyond our powers of observation to know. Consequently, for Bacon it is a real rather than nominal essence which serves as the basis of species, because such real essences or natures were knowable in Bacon's estimation. So unlike Locke whose nominal essences are the basis of species and are created by mind and not nature, Bacon believes the basis of species to be natural. Furthermore, Locke's central claim that we don't observe the connections that unite qualities together into substances, is simply absent in Bacon who supposes that such unions are knowable. It would thus appear that Bacon didn't take his empiricism to the radical extent Locke did

in questioning our ability to perceive the unions of simple ideas which make up particular substances. By contrast to Locke, Bacon simply took for granted that the unions and divisions we make between simples in order to make up substances were the same ones that exist within nature. Locke, by contrast, thought that we simply have no means of knowing if our divisions are the true ones that exist within nature or not. Therefore the divisions we make and the essences we establish will be nominal ones. Bacon apparently didn't see any insurmountable difficulty in determining exactly where nature establishes the divisions between substances and species.

Very great, in short, is the prerogative of constitutive instances; for they are of much use in the forming of definitions (especially particular definitions) and in the division and partition of natures; with regard to which it was not ill said by Plato, "That he is to be held as a god who knows well how to define and to divide."

(Bacon 172-73)

So although Bacon admits that such divisions are difficult, it is possible for us to know the actual specific divisions that exist within nature, and thus he agrees with Aristotle that the species which serve as the objects of scientific inquiry are, in contrast to Locke, based upon real and not merely nominal essences (Osler 4-5).

For Locke on the other hand the matter was not that simple. As we had seen earlier, by claiming that sensations come to us separately as simples, Locke is forced to account for how sensations come together to create the complex ideas we have of substances. His explanation is that such simples must be joined by mind. But then we have no guarantee that the simples we unite into the complex ideas we have of substances are the same unions of qualities that exist within nature. Locke is forced to concede that we can't be certain that our ideas of substances are identical to the actual substances which exist within nature. Thus, for Locke, we have no true knowledge of such things in the strict sense. We don't have a knowledge of individual substances because we don't know the necessary connections between the sense qualities. So such substances, and consequently the essences we abstract from them and to which we attach the species name, are the products of mind and not given by nature. Thus our understanding of the material world, at least in regard to our understanding of the actual material substances or bodies that Locke believes make up our world, can never reach the level of true knowledge. In Book Four where Locke considers the extent of human knowledge he says, it is

...yet very narrow, and scarce any at all. The reason whereof is, that the simple Ideas whereof our complex Ideas of Substances are made up, are,

for the most part such, as carry with them, in their own Nature, no visable necessary connexion, or inconsistency with any other simple Ideas, whose co-existence with them we would inform our selves about.

11. The Ideas, that our complex ones of Substances are made up of, and about which our Knowledge, concerning Substances, is most employ'd, are those of their secondary qualities; which depending all (as has been shewn) upon the primary Qualities of their minute and insensible parts; or if not upon them, upon something yet more remote from our Comprehension, tis impossible we should know, which have a necessary union or inconsistency one with another. (IV. iii. 10-11)

Or as he says elsewhere concerning our knowledge of the species of substances, which of course begin with the complex idea of a particular substance from which our general notion of species are then abstracted.

Now because we cannot be certain of the Truth of any general Proposition, unless we know the precise bounds and extent of the Species its Terms stand for, it is necessary we should know the Essence of each Species, which is that which constitutes and bounds it. This, in all simple Ideas and Modes, is not hard to do. For in these, the real and nominal Essence being the same; or

which is all one, the abstract Idea, which the general Term stands for, being the sole Essence and Boundary, that is or can be supposed, of the Species, there can be no doubt, how far the Species extends, or what Things are comprehended under each Term: which, 'tis evident, are all, that have an exact conformity with the Idea it stands for, and no other. But in Substances, wherein a real Essence, distinct from the nominal, is supposed to constitute, determine, and bound the Species, the extent of the general Word is very uncertain: because not knowing this real Essence, we cannot know what is, or is not of that Species; and consequently what may, or may not with certainty be affirmed of it. (IV. vi. 4)

Thus inquiries concerning such substances are certainly going to produce something less than science, which, we will remember for Locke, was an understanding that was certain and absolute such as we have in mathematics. But as we mentioned earlier, although such true knowledge is beyond our grasp, Locke insists that we need to pursue an understanding (limited as it might be) of material bodies or substances. Locke says that even in view of this scepticism concerning a true knowledge of material bodies, we need to inquire and explore, for

...a Man accustomed to rational and regular Experiments shall be able to see farther into the

Nature of Bodies, and guess righter at their yet unknown Properties, than one, that is a stranger to them: (IV. xii. 10)

But again these experiments and studies of material bodies, as beneficial and productive as they are, do nevertheless produce something less than knowledge.

But yet, as I have said, this is but Judgment and Opinion, not Knowledge and Certainty. This way of getting, and improving our Knowledge in Substances only by Experience and History, which is all that the weakness of our Faculties in this State of Mediocrity, which we are in in this World, can attain to, makes me suspect, that natural Philosophy is not capable of being made a science. (IV. xii. 10)

Thus because of the poverty of our faculties of understanding, we cannot achieve a science concerning material substances, but only what Locke calls opinion. Locke says that God has given us very little true and certain knowledge; in fact, just enough to give us a taste of what knowledge really is in order that we might see how far short we actually fall in most matters from truly knowing something with certainty. Thus in most matters God has

...afforded us only the twilight, as I may so say, of Probability, suitable, I presume, to that State of Mediocrity and Probationership, he has been

pleased to place us in here; wherein to check our over-confidence and presumption, we might by every day's Experience be made sensible of our short-sightedness and liableness to Error; the Sense whereof might be a constant Admonition to us, to spend the days of this our Pilgrimage with Industry and Care, in search, and following of that way, which might lead us to a State of greater Perfection. (IV. xiv. 2)

Locke explains that man should accept the limitations that God has placed upon his understanding, and that he should be "satisfied with what God hath thought fit for them" (I. i. 5). Furthermore, we should not be discouraged because we are unable to come to true knowledge in most areas of inquiry, but we need to press on after an understanding even where true knowledge is impossible.

It will be no Excuse to an idle and untoward Servant, who would not attend his Business by Candle-light, to plead that he had not broad Sun-shine. The Candle, that is set up in us, shines bright enough for all of our Purposes. (I. i. 5)

Although God has kept from us true knowledge in any large measure, there is still an understanding to be had and God has provided us with the ability to pursue a probable understanding in most matters (II. xxiii. 12).

Now this probable understanding, although being

uncertain and therefore not knowledge in Locke's thinking, is not completely without support. In fact, the judgments that lead to probable truths are supported by evidence, but unlike the immutable and constant demonstration which provides the evidence which supports knowledge, the evidence upon which we base our probable understanding is not constant and immutable.

As Demonstration is the shewing the Agreement, or Disagreement of two Ideas, by the intervention of one or more Proofs, which have a constant, immutable, and visable connexion one with another: so Probability is nothing but the appearance of such an Agreement, or Disagreement, by the intervention of Proofs, whose connexion is not constant and immutable.... (IV. xv. 1)

So even though uncertain, this probability does rest upon evidence or proofs and is clearly valuable, and, in the absence of certain knowledge, it is even necessary to pursue such a probable understanding if our actions are to be guided by reason at all.

But if we concede that in many areas including the study of material substances we will never achieve knowledge and our understanding will at best be probable, what does that mean? What is a probable understanding or a probable science? We will recall that the idea that our understanding concerning natural philosophy can only be probable stems from the fact that our understanding of

substances and species is less than certain and merely probable. So we first need to understand how our judgments concerning substances and species are probable, and this requires that we begin by considering Locke's thoughts concerning probability in general.

To begin with, Locke says that probability (2) is "the Agreement, or Disagreement of two Ideas, by the intervention of one or more Proofs" (IV. xv. 1), which, unlike the proofs which support knowledge, are not constant and immutable. Furthermore, Locke says there are two grounds by which we can establish such probability. The first is our own experience and observation, and the second is the testimony of others based upon their experience and observation (IV. xv. 4). But clearly, something like our complex ideas of substances or species are not based in our own observations or experience, as Locke has argued. Only the simple ideas are given in experience, and the complex ideas of the substances and species have to be created by operations of the mind (i.e. judgment and abstraction). Nor is it based in the testimony of others whose experience and observations are obviously like our own and lack any idea of substances or species.

True, it certainly was, for the most part, the testimony of others that first gave us our ideas of substances and species. In our early childhood it was others who instructed us in the putting together of simples into substances, and it was others who gave us guidance in

the denomination of particulars into species. We were told by others that the stuff we walk on is a substance called dirt, and then when we picked up a piece of that dirt, we were corrected by others and told that that particular piece of dirt was actually another substance altogether called a rock. Or having been told that our family pet was a cat, and the Saint Bernard next door was a dog, we were corrected by others when we identified the Yorkshire Terrier that we encountered as a cat. So it certainly is the testimony of others that serves as the basis for the understanding we have concerning such things. But of course when we examine that testimony, we find that in regard to things like substances and species such testimony is not based in any observation or experience. Locke allows for the testimony of others, but only if that testimony vouches for their own experience (IV. xv. 4). So with our understanding of substance and species being based in something less than observation (either our own or others), how could Locke claim that we have a probable knowledge of such things?

Locke does go on to modify this stand concerning experiential evidence and allows for probability in regard to things of which we don't have, and can't have, sensory experience. Such would be the case with immaterial beings like angels or spirits, as well as microscopic beings which we equally can't perceive with our senses, or beings who because of their remoteness from us (e.g., beings

existing in other places throughout the vast universe) are unable to be perceived (IV. xvi. 12). Probability in such areas, says Locke, is by analogy.

We see Animals are generated, nourished, and move; the Load-stone draws Iron; and the parts of a Candle successively melting, turn into flame, and give us both light and heat. These and the like Effects we see and know: but the causes that operate, and the manner they are produced in, we can only guess, and probably conjecture. For these and the like coming not within the scrutiny of humane Senses, cannot be examined by them, or be attested by any body, and therefore can appear more or less probable, only as they more or less agree to Truths that are established in our Minds, and as they hold proportion to other parts of our Knowledge and Observation. Analogy in these matters is the only help we have, and 'tis from that alone we draw all our grounds of Probability. (IV. xvi. 12)

So Locke says that in the case of things which aren't open to observation, or the scrutiny of our senses, the only way such things can be posited as probable is as they more or less agree with truths we have already established. Thus we can establish something as probable by drawing an analogy between that opinion or judgment and an established truth. For example, Locke says that we can

have a probable understanding concerning the existence of angels and spirits because since there are an enormous number of beings ranked from the level of man downward to the simplest of beings, and because it is obvious that God has ordered nature in gradual grades, we can accept it as probable that there are equally a great variety of beings ranked above man between ourselves and God (IV. xvi. 12).

Or consider Locke's own words as he explains in his other example how we can have a probable understanding of the ultimate cause behind heat and fire.

Thus observing that the bare rubbing of two Bodies violently upon one another, produces heat, and very often fire itself, we have reason to think, that what we call Heat and Fire, consists in a violent agitation of the imperceptible minute parts of the burning matter: (IV. xvi. 12)

Locke's point seems to be that if heat and even fire are produced on one level (the level of everyday experience) by the rubbing of two bodies against one another, then heat or fire should be produced on the microscopic level by a similar agitation of bodies. Since Locke thinks that what occurs on the microscopic level is the cause of the phenomena we observe on the level of everyday experience, he supposes that the agitation on the microscopic level is the ultimate cause of heat and fire. These two cases that Locke offers may not be the best of all possible examples of analogy, but they are sufficient

to give us an idea of what he has in mind. Indeed, they are at least adequate to give us an example of how Locke thinks probability can be established absent of observation.

Furthermore, we should note that Locke's idea of analogy is very close to what he says about inference.

To infer is nothing but by virtue of one Proposition laid down as true, to draw in another as true, i.e. to see or suppose such a connexion of the two ideas, of the inferr'd Proposition.  
(IV. xvii. 4)

Of course this idea of inference is different in that what is inferred is not analogical or similar to the established truth but rather follows from it. From one proposition laid down as true others can be established as probable, not because they are like it, but because they follow from it or are logical consequences of it. This idea of inference, like the idea of analogy, is not something new with Locke, but rather is merely an explanation of the way people do in fact argue and attempt to establish reasonable opinions in the absence of observable facts. Indeed, when both direct observation and indirect observation (i.e. the testimony of others) are not possible, we attempt to establish an opinion as probable by either showing that the proposition in question is either like another or follows from another that has already been established. Locke is certainly correct in assuming that

this is, and should be, the way in which we reason in order to achieve probable truths, but the big question for us is whether such a means to probability can be used to establish our opinions concerning substances and species. Can we use analogy and make inferences concerning particular substances and species? In the case of our opinions concerning what simples make up particular substances and what essential characteristics set the boundaries for species, since observation is clearly impossible, are we able to found those opinions on analogy or inference?

Locke does mention that our joining of sense qualities into substances is not random and there is evidence for such unions because the qualities are found together within nature.

...the Mind of Man, in making its complex ideas of Substances, never puts any together that do not really, or are not supposed to coexist; and so it truly borrows that Union from Nature. (III. vi. 29)

But as we had seen earlier, in the case of the qualities or simples that make up substances, although such qualities are found together within nature, there are a great variety of qualities found together from which we must choose some and reject others in the formation of our idea of substance (3). In other words, we must draw the lines and boundaries from among the qualities which are

given by nature. So our question must be, why would we choose certain qualities which are found together within nature to be more probable than another set of qualities which are equally found together? Are there analogies or inferences upon which to base our opinions concerning what particular simples make up our ideas of substances and what simples constitute the nominal essences which provide the basis for our idea of species?

This matter of choosing between a variety of given alternatives becomes especially problematic with the idea of species. With the idea of species, more than with notions of particular substances, we are even more hard pressed to explain why we choose certain ideas from among what is given, to be abstracted and thus make up the nominal essence, rather than others. Are there analogies or inferences by which we can determine certain abstract ideas or nominal essences more probable than others?

Endnote

1. For Bacon the term form does not signify Aristotelian forms, but the nature or inner causes of a thing.
2. It should be noted that Locke's use of the word probability does not mean what it does today in the contemporary mathematical sense. As we will see, such an idea of probability is not at all what Locke has in mind, for none of his examples are able to be verified or falsified (which would be necessary in order to establish a degree of mathematical probability). Rather that Locke is using the term probable in the much broader sense of something being presumed not on the basis of immutable proof, but nevertheless being supported by some type of evidence.
3. Recall our previous example of the roots and soil not being joined into the idea of a "blankwick," but branches and trunks are joined into the idea of a tree.

Chapter 10The New Probable Science and Locke's Idea of Species.

In order to pursue this question concerning the possible basis for probability in regard to substances and species, we should begin by recalling that for Locke these two problems are really two different aspects of the same problem of determining species. Indeed, the problem of species is really two fold.

The first part of the problem is establishing the idea of a substance from which the general idea of an essence or species can be abstracted. Since we don't observe the connections that unite sense qualities into substances, or more properly we observe too many, we are forced to base our opinions of such unions on inference or analogy rather than observation. Of course our question will be what possible analogies or inferences could be used to establish probable opinions concerning substances. We will deal with this matter of attempting to base such opinions in analogy and inference in a moment.

The second part to the problem of establishing probable species is that even if we could establish substances with probability, we still need to abstract a general idea from that idea of the particular substance. To do so we need to know what qualities or simples should be left out of our abstract idea, and what qualities or simples should be retained. If we merely retain all of the simples that are

contained in our idea of a particular substance, and carried them over into the abstract idea which would serve as the basis for our idea of a species, there would be no individuation within species. If all species were so determined, there would be a species for every individual substance, and the idea of species would be eliminated entirely. So obviously we need to select certain qualities to retain in the abstract idea and others which we need to omit. Thus we need to ask what might be the criterion by which such a selection is made? Can we find an analogy or inference to support one set of qualities as probable rather than another?

In considering the first part of this problem of species which involves the determining of particular substances, we have already considered many of the problems involved in putting together one set of simple ideas rather than another. Obviously if we are wrong about the simples we put together to form substances, our ideas of species, which are abstracted from those ideas of substances, will be wrong as well. Of course in some instances this matter of needing to know the correct unions of qualities that make up the true substances of nature it is not at all problematic, and inferences or analogies can be made in order to support our opinions concerning particular sets of qualities or simples. Indeed, in many cases one set of qualities or simples does seem to be more probable than any other. Take for example an individual substance like a

rabbit whose sense qualities, or the simple ideas we have of those sense qualities, are conjoined simply because all those qualities or simples move together, and are thus supposed to be a unit. Since its brownness, shape, furriness, etc. all move as one, we suppose, even without observing the necessary connections between such qualities, that we have evidence for believing that those sense qualities are somehow united into a thing or substance. Thus analogy certainly is effective in this case. Indeed, because we accept the fact that qualities which move constantly together form a union or thing, in the case of an animal we can infer that the particular sense qualities are united because they move constantly together. With other living things like plants, this argument is less effective because they are in general considerably less mobile (1), and certainly when we consider inanimate substances this analogy is of no use whatsoever. In fact with many inanimate things it is very hard to say what could serve as evidence and how we could base our idea of such a substance in anything like analogy or inference. Take for example a mountain, its qualities aren't separated from the qualities that surround it by the fact that its qualities all move together as a unit. Indeed, since it is stationary, what separates and draws the boundaries between its qualities and the qualities of the things that surround it is hard to say. Here there isn't any criterion given by nature. A substance like a mountain doesn't seem to be

supported by analogy or inference, and is thus without the evidence that substantiates other substances like animals. Since our idea of a substance like a mountain lacks such evidence, how can our opinion concerning such a thing be considered probable, and subsequently, how can our opinions concerning the species derived (by abstraction) from such substances be considered probable and worthy of study by natural philosophy?

Of course even in the cases where we have evidence and seem to be correct in our ideas concerning natural substances (as in the case of animals), there is still the second part of this problem of establishing species. Even if we get the idea of a particular substance right, there is the problem of knowing what simple ideas need to be abstracted from the idea of the substance in order to create the nominal essence and thus species, and what simple ideas do we need to refrain from abstracting. If we choose for instance to include in our abstract idea of a substance like a horse the simple idea of its color, the species "horse" will be completely different than if we omitted that simple idea of its color from our abstract idea. On the other hand, if we didn't include the idea of color (e.g., black and white strips) from other similar substances, we would not get the idea of a zebra as a separate species. So what simples we choose to abstract and refrain from abstracting will enormously effect our idea of species.

Furthermore, with this second part of the problem, unlike the first part of forming our ideas of substances where we asked only if given qualities should or should not be united, we must now also ask the more difficult question of how much variation is to be tolerated within an abstracted quality before that variation represents a specific change? What analogy or inference could we use to support our opinions concerning what degree of variation among the essential characteristics constitutes a specific changes? Here with the second part of the problem of establishing species, there seems to be even less in the way of analogy or inference upon which to establish our opinions as probable.

It should be noted that Locke does indeed tell us what in fact are the characteristic bases upon which we determine species. He says that

...in Vegetables and Animals 'tis the Shape, so in most other Bodies, not propagated by seed, 'tis the Color we most fix on, and are most led by.

(Ill. vi. 29)

But Locke is not making an argument here for the claim that we should use shape or color to distinguish species, but rather he is merely stating that this is in fact what men do use in determining species. In fact, Locke's statement indicates just how arbitrary the species of our understanding are, and how wanting they are for a real basis in nature or even reason. But in looking for such a

natural or even reasonable basis we are hard pressed to find one. Surely there are shared qualities within many particular things, but is there any good reason why we pick out certain shared qualities over others (thus creating one species rather than another). Certainly there are many more shared qualities than we could ever use to distinguish species, and there is no reason why certain common characteristics should be specified as more probable than others. For this reason we don't recognize certain kinds of things or species that people of other cultures recognize simply because (for whatever reason) we choose not to distinguish certain characteristics as essential or species determining. So because nature has given us more characteristics than we could ever use in order to establish the species of our understanding, we have a great liberty concerning what species to distinguish and what species to refrain from distinguishing.

True, in the case of animals and things propagated by seed there is something given by nature. With animals their ability to mate and produce fertile offspring (although certainly not flawless) is surely a species determining characteristic which is given by nature. Equally, in the case of plants propagation is a natural determinator of species. But what of the rest of the world where species can't be determined in such a way?

Nor let any one say, that the power of propagation in animals by the mixture of Male and Female, and

in Plants by Seeds, keeps the supposed real Species distinct and entire. For granting this to be true, it would help us in the distinction of Species of things no further than the Tribes of Animals and Vegetables. (III. vi. 23)

Of course there are characteristics or factors other than propagation which could be used to make up species, but, as we have said, there are many more of them than we could ever use. Thus we must choose from among a host of equally viable characteristics which could potentially be used to determine a species. But here, in the obvious absence of observation, analogy and inference seems absent as well. In this case how do we use analogy or inference in order to establish one particular notions of a species as probable rather than another? Indeed, in this matter of species, inference and analogy are unable to support any selection of qualities. Or perhaps we should more properly say that inference and analogy could equally be used to support all viable competing notions of species and therefore would be of little use. For example, if a group of people decided to distinguish a species "softmetal" by picking out the essential characteristics of metallic and malleable, such a species would include both gold and silver, but the people who distinguished such a species certainly could find sound inferences upon which to base that particular species. On the other hand, if another people distinguished gold from silver by using different

essential characteristics they too could find good reason, just as could a people who choose to distinguish enough essences to make twenty different species of gold.

So in regard to our knowledge of species, not only do we lack true knowledge, but it would appear that our notions of species are for the most part without the support of the analogies or inferences that would make them probable. But what then is the basis or criterion for establishing species? Certainly, it is necessary to establish some basis for species, but without being able to resort to inference or analogy what could be used to found our opinions of species?

In pursuing this question there is one very important factor which should be kept in mind. Remember that the situation is considerably different with the abstract ideas of species than it was with the idea of substance. Locke, being a nominalist claims that universals such as our ideas of species exist only as words or ideas. Now this is not to say that Locke didn't believe that God or nature hadn't grouped things together into species. Quite the contrary, but in regard to our understanding, since we cannot know these species, and in most cases we even lack evidence for a probable understanding of them, the species we do know are of our own creation and only exist therefore as words or ideas. In other words, even though there are natural kinds or species which have an existence apart from our words or ideas within something like the mind of God, we

can't know them, and thus, from the perspective of our understanding, there are only the species of our ideas and language. So Locke's nominalism, at least in part, comes out of our inability to know the reality of species or kinds as they exist within nature or the mind of God, and thus we must settle for the conventional species that exist within language and human thought.

Thus since species are, for the most part, of our design and have no reality beyond words or ideas, we don't need to get them right or somehow match them with reality. Species are nominal and therefore we don't need observation or analogy to establish them because species, being things of language and ideas, are confined to the understanding and need not be measured against any reality outside of our understanding (other than of course the fact that we can't put anything we wish together. There has to be the reality of some shared qualities or characteristics).

...tis plain, that our distinct Species, are  
nothing but distinct complex Ideas, with distinct  
Names annexed to them. (III. vi. 13)

That doesn't mean, however, that since our ideas of species are purely a matter of ideas and language, there is no criterion by which to substantiate them. Indeed, even though they cannot be established on a basis of inference or analogy, they are hardly created at random. We certainly have a criterion by which to group particulars into species, but that criterion in many instances amounts

to little more than considerations concerning the convenience and efficiency that those species provide our understanding and communication.

As we mentioned earlier, however, the species and genera of language are equally the very objects which we study in science or natural philosophy, and our inquiries into the nature of things are directed and molded by those linguistic species. Thus if species are not founded in reality, but merely ideas and language, the understanding we gain by studying such species is not an understanding of a natural order. The order and arrangement of things is the order and arrangement of our own language and ideas. Consequently, many of the theories and principles upon which we base our science or natural philosophy don't reflect a natural order but an order of our own making, and an order established for the sake and convenience of our understanding.

This certainly is the tacit consequence which logically follows from Locke's position on essence, and the true extent of the scepticism produced by his inquiry concerning the scope and bounds of human understanding. But if this is true, what do we make of Locke's realism? Why does Locke in so many places insist that our study of nature be rooted in experience and that our ideas must conform to nature? Why does he say that our understanding has to be about matters

...as do really exist in Things themselves, as

well as for the complex Idea in other Men's Minds, which in their ordinary acceptation they stand for: therefore to define their Names right, natural History is to be enquired into; and their Properties are, with care and examination, to be found out. (III. xi. 24)

True, nature must be consulted and our science is not exclusively a thing of our understanding. But the establishment of species certainly is for the most part a matter of the understanding, and, as we have seen, there is little basis within nature for them. Now certainly once those species are established, we then must empirically examine particulars to see if such things should be included within a given species, but although nature is consulted to see if particulars in fact belong to a certain species, nature in most instances cannot be the actual determinator concerning the formation of the species themselves (III. xi. 7). True, nature supplies the fact that certain qualities or characteristics are shared among particulars, but the number of such shared characteristics is so large that we must choose which ones to use in order to establish our ideas of species.

Of course in places Locke does mention the reality of nature in regard to species.

I do not deny, but Nature, in the constant production of particular Beings, makes them not always new and various, but very much alike and of

kin one to another: But I think it is nevertheless true, that the boundaries of the Species, whereby Men sort them, are made by men... (III. vi. 37)

So Locke concedes that there well may be real species which exist within the mind of God or nature, but we have no way of knowing them. Thus in terms of our understanding only nominal essences and species are available to us. Therefore the understanding which results from the study of such species is going to be something less than a true understanding of nature. Indeed, as a consequence of Locke's work we see that, at least in the area of natural philosophy, we study nominal rather than real essences and species (2).

As we had said earlier, however, Locke's intention was not to produce scepticism and squelch our hope of understanding the world, but rather to put our understanding of the world into a proper perspective. Locke's purpose was to show that the scope of true and certain knowledge is very narrow and the error of past thinkers was supposing that our knowledge extended further than it in truth did. Man has always, thought Locke, had an understanding which was of his own making and something certainly short of a replication of nature, but out of man's vanity he convinced himself that what he conceived to be true about the world was in fact true. As Locke says, ...True knowledge grew first in the world by experience and rational observations; but proud

man, not content with the knowledge he was capable of, and which was useful to him, would needs penetrate into the hidden causes of things, lay down principles, and establish maxims to himself about the operations of nature, and then vainly expect that nature, or in truth God, should proceed according to those laws which his maxims had prescribed to him; whereas his narrow and weak faculties could reach no further than the observation and memory of some few facts produced by visible external causes, but in a way utterly beyond the reach of his apprehension;-it being perhaps no absurdity to think that this great and curious fabric of the world, the workmanship of the Almighty, cannot be perfectly comprehended by any understanding but His that made it. Man, still affecting something of the Deity, laboured by his imagination to supply what his observation and experience failed him in; and when he could not discover (by experience) the principles, causes and methods of nature's workmanship, he would needs fashion all these out of his own thought, and make a world to himself, framed and governed by his own intelligence. This vanity spread itself into many useful parts of natural philosophy; and by how much the more it seemed subtle, sublime, and learned, by so much the more

it proved pernicious and hurtful, by hindering the growth of practical knowledge.... (3)

Locke's intent is to point out this folly of previous thinkers, but in so doing he also wishes to set the stage for the future advancement of human understanding. His intention is clearly to establish the perimeters and context for the development of our understanding, and that understanding should be seen not as knowledge, which Locke had come to see as impossible in regard to a science of material bodies; but as being nevertheless of utility and value, even if it represented something other than a knowledge of the reality of nature.

So by Locke establishing the boundaries of true knowledge, we are forced to face the fact that mere man can never achieve a real knowledge of God's creation. Indeed, we are only able to have knowledge of a small part of that reality, and we need to rely for the rest of our understanding upon something far less than true knowledge. Indeed, our understanding is, for the most part, a mere conceptualization of the world, which doesn't necessarily reflect reality as it is (4). But to reiterate, this should not cause us to lose sight of the fact that even in the absence of true knowledge we need to press on into those areas where some understanding is necessary, and of great utility even if neither certain nor even probable. This is certainly true in the case of species which can neither be grounded in observation nor inference, but are

nevertheless of great utility to human understanding.

Endnotes

1. Recall the previous example of a "blankwick."
2. Recall our argument in Chapter 6 where we claimed that because of Locke's position that simples are given in perception singly and unmixed, we can never know any real essences even if future technology would make the particles of the corpuscular philosophy observable.
3. This statement is from Locke's fragment, De Arte Medica, 1668. It is quoted in Mandelbaum 47-8.
4. We say that it doesn't necessarily reflect reality as it is. It is possible in instances that it does, but the point is that we will never know when it does and when it doesn't.

Chapter 11Conclusion

In conclusion, the significance of this study, and its importance concerning a philosophical understanding of Locke, and his idea of essence, lies in the claim that a knowledge of real essences was not merely beyond the technological reach of Locke's day, but of necessity is permanently beyond the reach of human understanding. Indeed, if Locke is correct in claiming that the connections that join sense qualities are not observed, or more precisely, many more are observed than we need or desire or can make sense of, then we are forced to make choices from among what is given. This holds both in regard to mixed modes as well as material substances, and, in particular, to the microstructures of material substances. Indeed, no matter how deep we peered into the microscopic world, choices would still have to be made on every level just as they are on the level of everyday experience. Just as we must choose, from among what is given, which qualities or simples to join together into substances and which to refrain from joining, likewise we would have to make a similar choice on the microscopic level where there are also more connections given than are needed. So even if we could explore the deepest level, the essences we would find there would still be created by human judgment and thereby would be less than real or

natural. Thus even with microscopes, or other devices, that could take us to the most elementary level of phenomena, we would still be faced with the obstacle of being confronted with many more connections than we need. At whatever level of experience we consider, we will always be unable to determine any absolute and intrinsic boundaries that separate and unite sense qualities into natural entities or substances. So the objects of our study will always be, on whatever level, of human construction.

A similar situation exists in regard to the question of species. Many more possibilities exist than we need or could possibly use and therefore choices must be made. According to Locke such choices are not strictly based on what is given, as the medievals had believed, but rather upon conjecture and opinion. Hence the species which we study as the objects of scientific inquiry are products of human conventions, and the selection of essential and accidental characteristics which define such species is based not upon any reality, but instead upon a basis of convenience and utility for man. So in spite of Locke's belief in the reality of substance, and the fact that nature (or God) had grouped those substances together into kinds or species, we have no way of knowing upon what basis that actual grouping rests.

Consequently, since human understanding strives to go beyond an understanding of individual substances and seeks

to understand what is true of species rather than individuals, the understanding derived from such a study of physical bodies will itself be largely a matter of human convention and conjecture and not something which necessarily reflects reality. Locke's exploration concerning human knowledge thus ultimately revealed our inability to create a science of nature that would do anything more than reveal what is true of man-made rather than natural species.

Such a conventionalist position meant that it was no longer possible to understand the world as it truly was, which had been the ambition of the ancients and medievals as well as many of his contemporaries, but now the world would be as man constructed it. Since Locke rejected the view that man was able to know nature as it objectively was, or as God or nature had created it, he sought to establish instead a new perspective from the standpoint of human understanding.

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