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The purpose of this paper is to determine in what sense Locke may posit a 'real essence' of things distinct from 'nominal essence' or substance. The approach taken is to first present a formal model of a typical perceptual situation, where there are things with properties, and ideas thereof formable therefrom. The word 'property' is used loosely throughout this essay, purposefully, to avoid the problem of Locke's position on the existence of an external world, by maintaining an ambiguity of 'quality' (which inheres in the object) and 'simple idea' (which inheres in the mind) under this single term. 'Property,' of course, includes both primary and secondary qualities. Secondly, I investigate Locke's idea of 'Nominal Essence' according to the micro-world model. Thirdly, I consider Locke's position of 'real essence.' Then, as with 'nominal essence,' I attempt to determine the 'real essence' of one of the things in the micro-world. Upon attempting this, a feature of the micro-world is discovered which accounts for the inability to discover the 'real essence' of any of the things in the world. ('Things' is used interchangeably with 'bodies.')

This feature, however, leads the idea of 'real essence' into an impasse. Either 'real essence' is a mere type of 'nominal essence,' or it is 'substance.'

Suppose a micro-world, in which there are four objects, four properties, and each object has exactly three properties. Suppose further that all possible combinations of the three properties are represented once. Now suppose that each object has  $n$  replicas, so that there are  $4n$  objects but still 4 types of objects in this micro-world.

According to Locke's theory of nominal essence, a subject in this micro-world (which we will henceforth designate micro-world  $\xi$ ) could form exactly 15 abstract ideas, or 'nominal essences' given a name annexed to each. Since abstraction is merely the retention in one idea of just those qualities which are common to the bodies compared, given micro-world  $\xi$ , comparing all four bodies, we could abstract the idea 'abcd,' given  $n$  presentations of each type, we could abstract ('abc,' 'abd,' 'acd,' 'bcd'), and comparing each body-type with every other body-type, we could form the abstract ideas: 'ab, ac, ad, bc, bd, cd, a, b, c, and d.' Obviously in such a micro-world, there would be, already, determinate relations between our abstract ideas. 'Abc' implies 'ab,' so anything of the type 'abc' would necessarily be of the type 'ab.' To illustrate this, suppose property 'a' is 'yellowness,' property 'b' is 'a certain bumpy texture,' property 'c' is 'having hardness p,' and property 'd' is 'being round.' Clearly, a 'yellow bumpy thing with hardness p,' is necessarily 'a yellow bumpy thing.' Under this theory, if we merely annex a name to 'abc,' which we'll symbolize 'N<sub>abc</sub>', and likewise for 'ab,' then the question 'what is the (nominal) essence of a thing 'A<sub>abc</sub>,' is provided by the response, "the essence of the thing 'A<sub>abc</sub>' named by 'N<sub>abc</sub>' is the abstract idea 'abc.' Here I assume the thing 'A<sub>abc</sub>' has some qualities which are peculiar to it and have been ignored by abstraction to 'abc.'

Immediately there are problems with such a simplistic account of 'essence.' By what has just been shown about the necessary relation between abstract ideas in micro-world  $\xi$ , 'A' necessarily implies more than one essence, namely, 'abc, ab, ac, bc, a, b, and c.' But this is contrary to something contained in the concept of 'essence,' as normally conceived, that it should be unique, and should be able to pick out (Kripke - rigidly designate) a ~~single sort of~~ thing. Only  $X_A$  rigidly designates A;  $X_E$ , for example, picks out both 'A' and 'B.'

Given this new condition, that essence, as we normally understand it, must be able to pick out a thing, the question as to what exactly it designates arises. Does essence designate a particular thing or a plurality of things, or a sort of things? Here 'sort' merely means a number of particular things with some attribute in common, considered as a single thing with respect to just that attribute. By 'plurality' is meant n things with identical properties considered as a unit. Essence cannot designate a plurality unless there are at least two things in the world which are identical. But, it is not clear that there are two identical things in the world. Things may appear identical but not be so, simply due to our inability to observe their differences. It is also not clear what is required for identity. Often identical things have different origins. Moreover, if spatio-temporal identity is required, it is clear that no two things in the world can be identical by the definition of a thing as, minimally, that which is spatio-temporally distinct from any other thing. Essence cannot designate a particular thing, for in such a world, there would be as many essences as particular things, and the answer to the question, "what is the essence of this thing," would be "itself," which is, at best, uninformative. Therefore, essence designates a sort of things.

The problem of nominal essence remains. 'A' designates ~~many sorts~~

both 'ab' and 'c'; yet, 'ab' is a different sort than 'c.' For if we merely knew there were two sorts of things 'ab' and 'c' in a micro-world, we could not know, just on that information, whether the two sorts were mutually exclusive or whether there was some thing 'A', in such a world, that was classifiable under either sort. But, we want to give a single answer to the question, "what is the essence of 'A'?"

Clearly, we must look beyond mere observation of things and classification of such things according to similar properties. On the other hand, in what sense may we 'look beyond' observation? To sense things beyond our senses seems <sup>practically</sup> impossible, especially if we extend the notion of sensation to include cases of natural sensation extended through instrumentation. Nonetheless, two forms of observation need be distinguished, the second of which is not as yet provided for in micro-world  $\xi$ : passive and active observation. The latter adds to the former manipulation of things prior to sensing their properties. From such manipulation, we form (according to Locke) our idea of 'power' that is, by inducing collision of one solid body on another, which is, ultimately, all 'manipulation' can amount to, we gain our idea of the power of the first by those changes, induced appearances or disappearances which the first incurs on the second. How is the artificial or natural collision of bodies and the record of their regular property changes supposed to indicate the 'unique essence' of a sort of bodies?

The answer is supposed to lie in the notion of 'dependence.'

The fact that nominal essences are seldom unique to sorts of bodies, and the common understanding that essence need be something which is unique to a sort of body, leads Locke to posit 'real essence.' A type of essence that is unique to a sort of body must also be an essence which causes and in which subsist all the properties of a sort, "some real constitution on which any collection of simple ideas co-existing must depend." (III, III, 16)

What exactly does Locke mean by 'dependence?' It seems, from his general theory that 'y depends on x' means roughly 'x causes y' and 'y subsists in x.' But how do we discover what properties subsist in and are caused by what other properties? Locke gives us his answer in his idea of 'cause and effect.'

Thus finding that in that substance which we call wax fluidity, which is a simple idea that was not in it before, is constantly produced by the application of a certain degree of heat, in relation to fluidity in wax, the cause of it, and fluidity the effect.

Locke sketches this general method of discovering what properties depend on what properties: test 'x' applied to 'body 'S' is the cause of any properties in 'S' that appear after the test. Clearly, 'test x' itself is nothing but induced impulse of one body upon another, for even if 'x' is induced energy, as heat, such energy is only produced by inducing impulse of one body upon another, as striking phosphorous on stone or a stick on a stick. Locke's method can then be modified, (ultimately) applying body 'R' to 'S', we say 'R' causes any properties in 'S' which were not observed prior to the application. But how do we recognize a body except through its properties? So, the test may be re-modified into 'applying the complex of co-existing simple ideas 'R' to the complex of co-existing simple ideas 'S', we say 'R' causes any simple idea, which was not observed prior to the application of 'R.'

Of course the test extends to the disappearance of properties. If 'R', a hammer, is applied to 'S', a glass ball, we say that 'R' causes 'S' to lose its round shape. The test also extends to the application of a number of bodies, and the appearance and disappearance of many properties.

If we are correct that Locke means by 'dependence,' 'subsists in and is caused by,' and if the test just mentioned shows both what properties cause what properties (what simple ideas cause what simple ideas) and, although this is not clear from the test, what properties subsist in what properties, then such a test demonstrates (in the non-Lockean sense) what properties depend on what properties. Supposedly, according to Locke's definition of 'real essence,' if we found a property or a complex thereof, 'R,' that, upon application, made appear all of the properties of a complex 'S,' then we could say that we had found the 'real essence of S,' which is 'R'

How exactly is this test to work? Properties in 'S' that remain in 'S' after applying 'R' are not 'caused by' 'R.' What such properties depend on depends finding some 'test(s) X' such that all properties in 'S' other than those 'caused by' 'R' are produced by some 'test(s) X.' Clear finding the 'real essence' by this method presupposes both observing all of the properties in 'S,' and finding all the tests, or applied co-existing property complexes 'R' and 'X' that, discretely, produce all the properties in 'S.' By this method, it is clear that there may be some property in 'S' that is unobserved until we apply the proper test, in which case real essence seems unknowable, since we have no way of exhausting all the possible tests on 'S.' Even if we inadvertently find some 'R' such that 'R' causes all the properties in 'S,' it is still possible that some unobserved property in 'S' is not caused by applying 'R,' and therefore 'R' is not the 'real essence.' Suppose that, inadvertently, we

we discover some property in 'S' that was never observed prior to applying 'X'. Further suppose that this property, we'll call 'q', is not affected (caused to appear or disappear) by applying 'R'. Then, if it is also the case that 'X' does not produce all the properties of 'S' including 'q', neither 'R' nor 'X' is the real essence of 'S'. This is obviously so, as all the properties in 'S', including 'q', are uniquely caused by neither 'R' nor 'X'.

In microworld  $\mathcal{E}$ , there must be real essences for sorts of bodies. First, however, it is not clear which sorts of things have real essences. Do things 'A' through 'D' have 'real essences,' or do things 'X<sub>E</sub>' through 'X<sub>N</sub>' have 'real essences?' All that is clear is that those things all, of whose properties appear and disappear with the inducement of some body or bodies, have 'real essences.' In micro-world  $\mathcal{E}$ , all we can do is observe the collision of all the non-redundant combinations of the four bodies that are given in experience, 'A' through 'D', record which properties change in which bodies in which collisions, and reason that given any collision, the properties of bodies that change are dependent on the properties of bodies that don't.

As an example consider colliding body 'A' with body 'D'. Suppose that each time we perform this collision, or observe it in nature, property 'b' of 'D' disappears, but no properties in 'A' change. Are we then justified in reasoning that 'A' causes property 'b' of 'D' to disappear? If so, can we reason, by modus tollens, that property 'b' of 'D' does not disappear 'because' 'A' is not present? But what would this tell us about the occurrence of 'b' in 'D' other than that it is present when 'A' is not colliding with 'D'? Yet, the lack of 'A' colliding with 'D' is itself not a property. Yet, to give a real essence for 'D', we must, along with the other properties, state what thing (maybe a body) causes



causes 'b' to occur in 'D.'

It seems there is a fundamental problem with micro-world  $\xi$ . We assumed a world in which no two bodies were completely different. But if 'real essence' can only be determined when all of the properties of one body change when collided with another, where none of the properties change in that other, then it is necessary in such a world to have two bodies with completely different properties. A thing with properties 'abc,' must change into a thing with properties 'efg' when some body 'X<sub>1</sub>' collides with 'A (abc).' So suppose that we extend micro-world  $\xi$  to include properties 'e,f,g.' What is 'X<sub>1</sub>'? 'X<sub>1</sub>' must be some thing in the micro-world; it must be some thing which can collide with 'A,' and it must be able to transform 'abc' into 'efg.' 'X<sub>1</sub>' cannot be an abstract idea (X<sub>A</sub>...X<sub>N</sub>), since ideas have no extension or solidity which is required of a thing to collide with another. Further, 'abc' and 'efg' must have some property or properties in common for one to change into the other; otherwise there could be no physical point of connection at which the <sup>collision, thus property</sup> change could take place. Supposedly, those properties would be properties which are necessary for collisions of bodies; figure, extension, solidity (primary qualities). But, if this is the case, then 'abc' and 'efg' really have some property in common, represented 'abc(y)' and '(y)efg.' But if this is true, then 'X<sub>1</sub>' cannot be the 'real essence' of 'efg,' since not all the properties in 'E' can be caused by (in the Lockean sense) 'X<sub>1</sub>'.

Now, the idea of 'that which could cause and subserve all the properties of a body' is not distinguishable from Locke's idea of 'substance.' In a letter to the Bishop of Worcester he writes, "substance is something which supports accidents or other simple ideas or modes and is not supported itself." A thing which could support '(y)efg,' the primary and secondary qualities of a thing cannot be the 'real essence, since this is composed of

essence' since this is composed of primary qualities which must themselves be caused by and subsist in something else. But, substance is unknowable since we can form no idea of it, since ideas are ultimately nothing but the combination of simple ideas, and simple ideas are supposedly caused by ~~primary~~ qualities of bodies, which are therefore the source of all of our ideas, but which themselves depend on something else, which preceeds in the sense of causing and subserving but not being caused or subsisting in the source of our ideas.

However, the idea of an essence on which all secondary qualities depend, but upon which some and perhaps all primary qualities do not depend seems reasonable. Since not all of the qualities of the body would be caused by and subsist in such an essence, such an essence would not be a substance and therefore unknowable. On the other hand, no secondary quality would not be caused by and subsist in such an essence, and therefore, the criterion of 'real essence' having to cause and subserve all of the observable properties of the body would seem to be satisfied.

But, is there no observable property of a body which is not a secondary quality? It seems that I can observe the solidity, extension and figure of a body as well as its coldness and yellowness. Locke concedes that one may have a simple idea of a primary quality virtually as easily ~~yet~~ imprecisely as a simple idea of a secondary quality, the former merely being a simple idea of more than one sense.

But, then, if this is the case, a most serious objection is raised to Lock's position of 'real essence.' For, if every observable property depends on the 'real essence,' and if all primary qualities are observable properties, as we have just shown, then the 'real essence' is something in which all properties (primary and secondary qualities) subsist and by which all properties are caused, and is thus 'substance.' But, if, on the other hand, not all observable properties depend on the 'real essence,' then there are some observable properties (probably primary qualities) which do not depend on the 'real essence.' If this is so, then the 'real essence' does not uniquely support and cause the total co-existence of all the observable properties of thing and is therefore not 'real essence.' The only possibility is that there is some unobservable property on which all the properties of the thing depend. But, an unobservable property, as distinguished from an unobservable<sup>ed</sup> observable property, is impossible to know, if by 'observation' is meant 'sensation,' where in Locke's theory, sensation, which ultimately (reflection merely operating on the materials given by sensation) provides all the simple ideas out of which all of our other ideas are formed, which are the materials of any knowledge we may have. A mere 'unobserved observable property' which supports all of the qualities of the thing and is considered 'real essence,' is, in principle knowable, but no different than unobserved nominal essence, as in the case where two people have different abstract ideas, and therefore different judgements as to the nominal essence of a thing, simply because one has been more observant than another. 'Real essence' merely adds to nominal essence classification, what properties depend on what properties. If, as above, 'real essence,' is some unknowable 'something,' then it is clearly 'substance.' Therefore, 'real essence' is mere 'nominal essence' with the astute ob-

servation of the dependence of properties, or 'real essence' is 'substance.' There is, then, no good reason to posit 'real essence,' if what is meant by 'real essence' is an essence distinct from 'nominal essence,' for 'real essence' is a mere 'type of nominal essence.'