

So, the attack on the resemblance thesis naturally leads us to an attack based on our lack of understanding of the qualities concerned. So, here you can see empiricism playing a big role. Remember, Locke is very notable for his empiricism, for insisting that all our ideas must derive from experience. All our ideas are copied, as it were, from experience. Berkeley and Hume both follow him in this.

But if our ideas are copied from experience, then it seems that our ideas of primary qualities must be infused with the experiential qualities through which we experience them. When I see a circular shape, I see it as colored. It's only because it's colored that I can see it at all. Well, if that's so, what doesn't it follow that my idea of a shape must intrinsically be colored? And if secondary qualities like color cannot exist except in a mind, then the same is going to go for the primary qualities, isn't it? Well, maybe not. Why can't I see a yellow circle, a blue circle, a red circle, and so forth, and then form the abstract idea of a circle, just a circle, not with any particular color? Why can't I do that? In which case, that idea of circularity is not going to be, as it were, contaminated with subjective secondary qualities. Maybe I can form the idea of something which is circular but not colored.

Well, Berkeley and Hume both attack Locke, saying that we cannot do this. And they attack Locke on the doctrine of abstraction. Now, you may remember Locke's doctrine of abstraction is that we form general ideas by leaving out detail. So, for example, a child, the first man that child gets to know is probably his father. So, the child forms the idea of his father. Then, he begins to meet other men and notices their similarity and notices their difference, no doubt, from the women that he meets. And then he forms the abstract idea of a man by leaving out details. So, some men are tall, some are short, some are fat, some are thin, some have a beard, some don't. The child forms the abstract idea of a man by leaving out all the distinctive features and just retaining the general features of manliness. That's Locke's doctrine of abstraction.

Berkeley very strongly attacks it. He says you can't do that. There's no way you can form the idea of a man who is neither tall nor short, nor fat nor thin, nor with a beard nor without one. That's inconsistent. You cannot imagine such a thing because such a thing cannot exist in reality any more than you can form the idea of a triangle which is neither equilateral nor isosceles nor scalene. It's impossible to do these things. And when you read Berkeley, you might wonder why. Why is he making such a big thing about abstraction? Why is it so important to him? Well, the reason that it's important to him comes back to this business of primary and secondary qualities. Berkeley wants to say that I cannot form the idea of a circle which has no color. And if I can't form the idea of a primary quality circle without the secondary quality color, and if all my ideas of secondary qualities are intrinsically mental, they cannot exist outside a mind, then it follows that I cannot even conceive of a primary quality which can exist independently of a mind. I cannot form that conception. And that's why he put such a lot of emphasis on it. If you read Berkeley's Principles, most of the introduction is devoted to an attack on abstraction. That's why.

So, Berkeley concludes from this argument that bodies independent of mind are literally inconceivable. You cannot even conceive of an object existing outside of the mind. Now, if that's right, then it follows that the world has to consist ultimately of mental entities, spirits, and ideas. So, you get to Berkeley's famous idealism. Now, most of us probably are not going to be very attracted by idealism. It seems the kind of extravagant metaphysical nonsense that philosophers love spouting. But no commonsensical person could possibly believe. Samuel Johnson is

famously said to have discussed Berkeley in these terms, kicking a stone. He said, "I refute him thus," and the idea was that the solidity of the stone clearly shows that real physical objects exist outside minds.

Well, suppose we want to have a rather more considered reaction to Berkeley. The right thing to do seems to be just to concede that our notion of body is not likely to be ultimately composed of elements that we can fully understand in those kinds of terms that Locke thought we could. If we try to form an idea of body as consisting entirely of properties that resemble our ideas, then we have this problem of understanding what it is that fills the space. And maybe we just have to concede that in the case of a property like solidity, we just can't do that. We have to attribute body as having something, I know not what, that fills the space. Is that a problem? Well, Berkeley and co wanted to say that was a problem, that a theory that attributes "a something I know not what" is no theory at all. But actually, we can see with the progress of modern science that this has become a much more familiar idea.

Okay, at the time, the best physical theory, the corpuscularian theory, had this interesting coincidence that the properties attributed to matter were, at the same time, properties that seemed intrinsically intelligible. That made sense. Again, Locke wanted to say that in praising the corpuscularian hypothesis, he praises the fact that it is so intelligible. Shape, size, motion, these are things that we can understand readily enough, and it seems to make sense when one thing bashes into another and makes it move. It's got that kind of intrinsic intelligibility. So, we naturally get the idea that the fundamental properties of matter, the properties in terms of which we're explaining everything, including matter's appearance, those properties are ones which are intelligible to us.

Then we look critically at solidity, and we find actually maybe it's not so simple. Maybe, in order to draw a distinction between matter and empty space, we have to attribute this crucial property, solidity or something like that. Which is a property that we can only understand indirectly, in dispositional terms, in terms of what it does. We have to say, there's this something, we know not what, that keeps other something, we know not what, out. And that looks at first to be undesirable. But then you look at modern theories and you see things like mass, charge, spin, strangeness, all these funny properties that we start attributing to fundamental particles. We come up with things like quantum mechanics, where we more or less have to give up any attempt to understand the fundamental properties of things in terms that we find naturally intelligible. And we have to face up to the fact that as evolved creatures, our senses are naturally fitted to understand the world at one level. But that doesn't mean by any means that our intuitive understanding is going to work all the way down. So maybe we just have to accept that our best theories are quite likely to attribute fundamental properties to objects which are radically different from anything that we are intuitively aware of.

So, we do have to say, well, is this something I know not what, which has these properties? I call it charge. It can be either positive or negative. It has the property that a positive attracts a negative and a positive repels a positive, and so forth. All I can do is give you equations at best which describe how these things behave. But if you say, what is it? All I can say is, well, it's a something I know not what that has these properties. So, at the time, that looked unacceptable. I think the reason it looked unacceptable was because the scientists of the time had this illusion, a very attractive illusion, that the world was going to be comprehensible. And the illusion was fostered by having a physical theory which seemed to be so intuitively neat and nice. The crack

there comes with solidity. If you really push at that, you come to a quite different conclusion about the way in which an ideal science can be. It cannot attribute ultimate properties that we will necessarily find intelligible.