

Reality in this Room – a talk

by Peter Gibson Aug 2017

In this talk I want to illustrate the philosophical approach to life by asking a simple question, and then pursuing it with a little more thoroughness than you might normally expect. In a nutshell that is what I think philosophy is – it is just nagging away at puzzling questions about our lives, long after most other people have registered the question, but swiftly moved on to more promising topics. Just as science raised the bar higher when asking how the physical world works, I take philosophy to show more determination than usual in trying to sort out the difficulty puzzles that face us in ordinary living.

The question I want to raise is ‘what exactly do we mean by ‘reality’?’, and I intend to raise it by asking the question ‘**what is the nature of reality in this room?**’. I consider this by far the best place to start. You could start with grand theories out of books, but my approach to philosophy is to start from things you feel pretty sure about, and work your way slowly and carefully towards the things that aren’t so obvious. If you’ve done a little bit of philosophy, you will know that philosophers are quite keen on raising doubts about the reality of what is smack in front of you, by suggesting that you might be dreaming it, or some evil scientist might be tinkering with your brain. I can’t deny those faint glimmers of doubt, because you can’t prove them wrong, but personally I never take them seriously. Everything I write or say about philosophy has a footnote which says ‘...but of course you never know, everything might be very weird’. I then ignore my footnote, because I can’t think of the slightest reason for seriously thinking that this room is anything other than pretty much what it appears to be.

Before plunging into the serious business of trying to figure out what reality in this room really amounts to, I would briefly like to address two of my favourite questions about philosophy, which are ‘who cares?’ and ‘so what?’. Expressing those queries with more dignity, my two preliminary questions are ‘why should we be interested in the reality of this room?’, and ‘what might be the implications of the sort of answers we come up with?’ If you have never tackled the problem, then quite reasonable initial answers might be that it doesn’t look very interesting (since the reality of rooms is well known to all of us), and only a very surprising answer would have any implications for our real lives (such as that the room is part of an experiment on the human race being run by clever white mice). Having spent a bit of time grappling with the question, I will give you my more positive answers. I would say that this enquiry into local reality can have a similar interest to foreign travel, because it constantly throws up the unexpected, and you find yourself looking at things a bit differently when you get home. The implications of such an enquiry cannot be prejudged, but I can certainly vouch for the fact that if you study this sort of philosophy for many years, you find your attitude to almost every aspect of life is subtly but significantly shifted. Not only does every room you enter begin to seem rather different, but you may also begin to think rather differently about the contents of your own head. However, at this stage you will have to take my word for that, so let me begin the enquiry.

I look around the room, and (in the normal way) I see a large number of physical ‘objects’ (some of them being people). I’m immediately going to pause and have a quick think about that one. I could have said that I start not with objects, but with lines, shapes and patches of colour (as when things are blurred if you regain consciousness). I could then take the next step, and say that these basic experiences add up to objects. Philosophers argue over this problem of the starting point, and often play safe by just talking about colours and lines. Normal people with busy lives just see the objects, and go from there. If we are being fussy, though, the idea of an ‘object’ is not as simple as it looks. **How many objects are there in this room?** I don’t want to get bogged down in that problem, but you quickly see that while a table may be a single object, if I dismantle it, the four legs and the top become five objects. If you include the screws and other bits, a table might consist of twenty objects. The chemists and physicists among you should by now be worrying about the atoms and molecules that make up the table, which surely count as objects? If you get as far as electrons, it is not even clear that there really are any objects down at that level, and the interior of the sun is too hot to permit normal objects to exist. Enough of that, but you see the problem. If I refer to all the inert objects in this room as ‘furniture’, with a view to selling it, or having it removed elsewhere, I could come to think of all of this furniture as one object, just as you can think of your house, or even Beaconsfield, as one object. In other words what is meant by ‘object’ rather depends on context. If a ‘pair’ of tables can be thought of as one object, this means all the obvious objects in the room can form innumerable combinations of further objects, and there are thus millions of large objects in this room. For example, if I hold up what looks like three fingers, their possible combinations make up seven objects (a trio, three pairs, and three single fingers). For ten fingers the combinations become vast, and for all the objects in room the combinations become unimaginable. You might say these are not real objects, but we all assume we are buying one thing when we purchase a pair of shoes, so making objects by combination is quite normal.

Thus if we treat the parts of objects as objects in their own right, that generates a huge number of extra objects, and if we can make new objects by combining the current ones, the number of objects become unimaginably large. I will, though, continue to talk about ‘objects’, but without entirely knowing what I mean by it. Let me now delve a bit further into the physical contents of the room. We are all happy that there are people and bits of furniture here, but what else is there? I used to find it entertaining that when I explained to younger pupils the difference between ‘abstract’ and ‘concrete’, they would then insist that the air in the room is abstract, and only accept that it is concrete when they waved their hands around, and heard and felt the air. So there is physical air in the room, with all of its ingredients, and all the dust and tiny bugs that float around in it.

The air is a familiar but neglected part of reality. It is when we learn a bit of physics that we realise how much else we are overlooking, much of it completely unknown to earlier generations. Let me first pause and say a word about **science**. Some people see a conflict between science and philosophy, and scientists get understandably cross if

philosophers make dodgy claims about nature which contradict what the careful scientists have actually proved by investigation. I agree with the scientists about that, but my view is that sensible scientists and philosophers are a team, with philosophers focusing on the broad general truths, and scientists closer to the detailed facts. Scientists only need to know about philosophy if they want to get a really wide overview of their studies (if, for example, they panic over whether an electron, which is a very weird thing, can be counted as an 'object'). Philosophers who want to think about nature must learn some science. I then see no reason why the accounts given by scientists and by philosophers should not nicely dovetail together.

That said, what else is in this room, apart from obvious physical objects, and transparent ones like the air? My favourite discovery here is **neutrinos**. These tiny particles are exceptionally light, and have no electric charge. Consequently they hardly interact with other matter, and can pass like ghosts through normal physical objects. Hence they are not of much interest to us in this room, until you learn how many of them are passing through here as we speak. A quick Google search says that there are passing through your body every second roughly one hundred trillion neutrinos. I don't know about you, but I found my first discovery of this fact to be both mind-boggling and eye-opening. Just occasionally neutrinos interact with something, and they can be detected in huge tanks of heavy water installed in coal mines, so about once a week one of your personal neutrinos may bump into something on its way through you.

Maybe we shouldn't get too excited about your hundred trillion per second supply of personal neutrinos, because the room is also full of light, which travels as weightless particles called 'photons'. I don't know how many photons bounce off you every second, but that number is also likely to be in the trillions. It is the fact that the neutrinos pass straight through us that is a bit disconcerting. The fact that the room is full of light is also usually ignored, but it should be no more surprising, once it is pointed out, than the presence of air. However, learning a little science shows that the light in the room is only the tip of the iceberg. Light is both particles (the photons) and waves (with a wavelength), and we now realise that the waves are electro-magnetic in character. Light is our favourite bit of the electro-magnetic spectrum, because we have eyes to detect it, but there is a huge spread of wavelengths in electro-magnetism, and if we attend to these other wavelengths we see that the room is choc-a-bloc with all sorts of other similar radiation. Down at the long wave end is long wave radio, and other radio signals are close by, so we suddenly realise that this room is crammed full of radio signals. Humans don't pick up radio signals, but we've made gadgets that do, so if I put a tuneable radio in front of you and twiddle the tuning knob, a good one will reveal that hundreds of radio broadcasts are passing through our room. That means they are also passing through you. We then realise that television signals travel by the same medium, so all those useless TV channels you see on powerful tuners are also competing to pass through us, and our room. If you are following closely, you will already have jumped ahead and thought 'mobile phones!'. Older mobiles can pick up a signal when someone calls you, but I think I am right in saying that modern phones also emit a signal, because your location can be detected from it, so every local phone that is turned on is emitting an electro-magnetic signal, and most of them are reaching us here (given that they can all reach the nearest telephone relay mast), so that's another mass of stuff that is racing through us and our room, much of it at close to the speed of light.

Radio, TV and phone signals are part of the electro-magnetic question, of which the most obvious part is the visible colours. Some people see colours as merely aspects of physical objects, and so their reality is the same as that of the objects, but a problem is suggested by the phenomenon of colour-blindness. If someone cannot distinguish a red ball in green grass, they must be seeing virtually a single colour, where most of us see two distinct colours. Hence they presumably see both green and red differently. So what colour is grass. We may say it is the colour 'normal' people see it, but why should the majority prevail. If there were more 'colour-blind' than 'normal' people, the 'normal' people would become abnormal. There doesn't seem to be a 'right' colour for grass, so maybe it isn't an objective fact in the room. Furthermore, experiments show that insects can see the ultra-violet part of the spectrum (which is *not* violet, and is invisible to most of us). So what colour is ultra-violet (to insects)? There may be a colour in the room which none of us have ever seen.

Talk of radios, TV and phones triggers another rather different question. ***How much information is in this room?*** This is a bit puzzling, because it is not obvious whether information can qualify as an ingredient of reality. If one radio wave contains a radio programme and another doesn't, we don't think the first one is heavier than the second one. Information doesn't weigh anything, any more than ten bricks arranged in a square weigh more than ten bricks arranged in a circle. And yet information is vital to our lives, and they even suggest that DNA should be mainly understood as information, and that information could even be the most fundamental idea in all of physics. You can't leave information out of our account of reality, but that extends our idea of reality a little beyond the mere physical stuff in the room.

Another aspect of the physical stuff in the room (and especially the objects) which can't be neglected is their relationships. If you tried to specify what is in the room (to make a duplicate, perhaps) it is not enough to list the objects in the room. We must also say how they are arranged. But if you have one object to the left of another, and then swap them over, you don't add anything physical to the room. It still has the same mass and energy, and yet it is different. So relationships are real features of the physical world, and yet (like information) though don't seem to be physical (even if they are located in space and time). This puzzle only seems to bother philosophers, but it a very odd aspect of reality that needs explaining.

For now we will stick with the physical stuff. So far we have obvious stuff such as typical objects, unnoticed stuff like air and light, more elusive stuff that is detected by radios and telephones, and barely detectable stuff like neutrinos,

which we only accept because we trust the experts. Physics tells us that down at the most fine-grained level the reality of all of this stuff conforms to what they call the Standard Model. Since the discovery of the Higgs boson, this model has been assumed to be pretty much correct – as far as it goes. If we want to know about the reality in this room, this looks very promising. The theory says that basically there are three families of particles, making seventeen basic particles in all, and that the nature of the physical stuff in this room can be almost entirely explained by the theory. Thus it is clear, mathematically precise, and fully endorsed by our best experts. Although the Model relies on particles, the underlying idea is of a 'field', and particles are seen as lumps in a field, rather as sea waves are lumps in the water. So the most basic idea is that our reality consists of fields. To this we might add 'energy', since events are seen as transformations of energy. So the good news is that our reality is fields and energy, but the bad news is that no one (as far as I can tell, and I've asked around) really knows what fields and energy are. They are numbers fed into equations, and the equations make good predications – and that's it. Theorists speculate about underlying entities such as 'strings', but no one knows how to test the theories.

Thus we don't know the ultimate explanation of how the physical world works, and it is arguable that we couldn't possibly ever know the answer to that, because no theory handed to us by the experts can ever stop us from continuing to ask 'why? why? why?'. Still, the Standard Model is pretty impressive, and if you add the theories of relativity to it (even though the two are not quite compatible), you get a pretty comprehensive picture of reality. It is tempting at this point to embrace the philosophical doctrine known as Physicalism, and call a halt to our enquiry. This doctrine says that once you have explained the physical stuff the job is done. Everything is physical, and you just need to explain how the physical stuff explains the more complicated things. The slogan for Physicalism is 'nothing exists except the postulates of physics'. That is, if you really really want to know what exists, you must ask an expert physicist (and don't waste your time with philosophers, artists or priests).

To say that only physical stuff exists is obviously controversial, but even if you like the sound of it, it has problems. We have already seen that information seems to be an incredibly important feature of reality, and yet doesn't seem to exist with mass, size and energy, the way physical stuff does. Three other aspects of nature also seem to create trouble for anyone who says that only physical stuff exists. The first is that the stuff we know seems to obey detailed laws of nature, concerning gravity, motion, interactions and so on. If you think these laws must exist, given that they seem to be universal, you are committed to the existence of something which doesn't appear to be physical. So **are the laws of nature in this room**, and if they are, what are they made of? The other two misfits are space and time. Like the air and light in our room, space and time are so obviously here that we look straight past them. Relativity is a theory of physics, and it relies on a unified concept of space-time, but you really have to stretch the word 'physical' if space and time are going to be included. Philosophers find time particularly problematic, and are hard put to specify what exactly the word 'time' means. For example, if you think of the present moment as just the place where the past meets the future, then the present moment seems to have no more distinct existence than the place where two pieces of paper overlap. Hence the present moment doesn't exist, and yet we think everything happens in the present moment! I can offer no solution for that very ancient problem. Physicists seem to have no interest at all in the present moment, so they tell us nothing about the puzzling nature of time in this room. Thus the impressive state of modern physics doesn't seem to give us the whole story about the reality we are encountering right now.

Let us now be a little more adventurous in our enquiry. Modern science leapt into action with Galileo and co. in the seventeenth century, by means of two key advances. They invented the controlled conditions experiment, which could always be repeated if you didn't believe it, and they found you could be much more precise if you measured things, and applied mathematics to them. Hence most of modern physics and chemistry is expressed mathematically, and the laws of nature are mostly understood as sets of equations. (Note, however, that biology is far less mathematical). So my next question, a bit quirkier than the previous questions, is '**does mathematics exist in this room?**'. If mathematics is the language of nature (which it may or may not be), then nature exists in this room, so the language of nature must be here too. Pythagoras's Theorem, for example, would certainly be applicable if we arranged to furniture into right-angled triangles, so it is some sort of fact about existence in this room (and every other room). This becomes very puzzling, because theorems of geometry, and all the other truths of mathematics, are an aspect how things are in this room, even though their so-called 'reality' seems rather shadowy, in comparison with the furniture.

At this point I will introduce for your consideration an idea that has crept into modern philosophy. The thought is that if you say 'Peter is standing up', then that sentence is made true by that fact that I am standing. If, while you are contemplating this sentence, I sit down, the sentence switches from true to false, because I have made it false (by ceasing to stand). So the idea is that my bodily position is the 'truthmaker' for your true sentence 'I am standing'. That all seems obvious and common sense, but the controversial idea is that *every* true sentence has a truthmaker. This proposal works fine for true remarks about simple physical facts, but it also has to work for truths about history, about sub-atomic physics, about the future, about economics, and so on. Needless to say, even as we speak fat books are being written about the claim that every truth has a truthmaker. It is controversial because there are obvious problem cases. For example, what is the truthmaker for 'squares have four corners', or 'there are no alligators in Beaconsfield'?

Personally I find the truthmaker idea appealing, because it discourages people from claiming big truths on insufficient grounds, so that leads me to wonder what the truthmaker is for Pythagoras's Theorem. That is, we all agree it is true, but what actually *makes* it true? I'm not claiming to know the answer to that, but the Theorem could hardly be true if the world were not a certain way. For example, the Theorem is said to have first become obvious to the Egyptians,

who urgently needed to survey plots of land after the Nile flooded each year. On that basis I can at least suggest that the truths of geometry are part of what is true (and hence, in some sense, 'real') in this room.

Now, however, I have opened a real can of worms, because if you like the truthmaker idea, then you have to say that anything which seems to be true in this room must also have something about this room which makes it true. Our minds are then flooded with all the truths that humanity has ever thought of, and we have to say that if they are true at all, then they are true in this room. Thus no one doubts (I trust) the truth 'Paris is the capital of France'. Is it true 'in this room'? If it isn't true in this room, then it isn't true in any other room (even a room in Paris), which means it isn't true anywhere, which is crazy, so it must be true in this room. We can say something like 'reality in this room is such that Paris is the capital of France', but that doesn't say much, and beyond that it is not quite clear what else to say.

At this point you probably have an inner voice screaming 'stop! I surrender! Are you really going to cram the whole universe into this small room?'. If you are screaming that, you have a good point. But it is hard to get away from the fact that the truths of mathematics and of logic are not only true in this room, but they also *apply* to anything that that happens in this room (in a way that truths about Paris do not particularly apply). We have examined the physical reality of the room, and we now seem to have added the **abstract reality** that applies to the room.

Let me return to the physical facts of the room, and consider another question, which we may or may not approach scientifically. **What are the possibilities in this room?** When I was talking about the physics of this room, I presented the stuff in the room as being rather inert, contemplating something like a frozen snapshot of the situation, but the reality of the room is, of course, highly active. Everything is moving and fluctuating, especially down at the quantum level, and you can't be satisfied with an explanation of the reality of the room if you don't take such activity into account. I think this more dynamic aspect of reality is best approached by asking about what is possible (and what is impossible). I can currently (given the state of my right knee) jump about three inches of the ground, but I used to play basketball, and could do rather better in my youth. But even then there was no chance of my doing a slam dunk. Our lives are defined by what is possible. Similarly, I would say, every object in this room is defined not only by what it is, but also by its powers and possibilities. A decent table should support the weight of an average man, but might collapse under a huge man. In an emergency you can break a window with a table, but not with a rolled up ball of paper. Some people in this room are capable of learning Mandarin from scratch, but most of us are probably not.

A different approach to the dynamic aspect of the room is to ask **what processes are going on in the room?** A few philosophers even say that we should drop talk of objects, and just think in terms of processes (so that an apple, for example, is part of the life processes of apple trees). There are plenty of bodily processes in the room, and quantum processes in molecules, as well as man-made processes in various gadgets.

Whether we think of possibilities or of processes, it seems to me undeniable that we must include the potential of this room among the real facts of this room. The room is good for a social meeting, but not for a big rock concert, or for a first date. Not all philosophers or scientists agree with me on this one, but I see the potential in a situation as being of more importance and interest than the static 'snapshot' facts, and I think this is where my view of philosophy meets common sense. When you encounter for the first time a coyote, or new model of phone, or a stranger on the tube, by far the most interesting aspect of their reality is their potentiality rather than their actuality. Even a static boulder on the hillside impresses us with its potential power if it starts to roll down the hill. So my view of the room is dominated far more by what might happen than by what is happening or has happened, let alone the static picture of how it is at an instant. This doesn't, of course, mean that the possibilities in the room are an extra component, which is added to the mass of the room, but it might need a different attitude to the physical matter in the room. The world is a very dynamic place.

Finally, let me turn to a rather important ingredient in the room which I have been neglecting – the people. Our presence as physical creatures is not, at first glance, any different for the reality of the room than the furniture – we are just an extra bunch of physical objects. But I think we bring some extra baggage with us which is worth considering. Consider the question **'does the English language exist in this room?'** It is tempting to say that there is nothing more to the English language than the words currently being spoken by people, or existing somewhere in writing, but that can't be right. There are also rules for English, and a huge vocabulary of words. We all know the rules and vocabulary of English, even when we are asleep. In some way, the whole of the English language exists in each of our heads, but it is also one and the same language. Hence in some way the English language is here in the room. A possibility in this room is to speak English and be understood.

If you accept what I just claimed (rather cautiously) about English, then you are accepting that a huge shared understanding between all of us is a feature of what is in the room. But you will then, of course, have to accept any other shared and unspoken understanding that exists among us. Without going into detail, we can think of this as our 'common culture', which is something like the typical culture of the English home counties. The most interesting part of that might be our shared values and moral principles, because those are often claimed to have a universal quality. We might say that a knowledge of local geography happens to be shared between us, but if all human beings (apart from a few psychopaths) have a shared core of **moral values** (about the care of children, for example), then those values have to be in the room, because they will be in almost any room. There is a high possibility in the room that there will be a loud outcry if someone in the room gratuitously mistreats a child.

There are other obvious questions about the human aspects of local reality. Only a few people might think there could be ghosts in this room, but a lot of people think of the mind as being distinct from the body, and hence they think that

the inventory for the room would include separate entries for the minds and the bodies of the people present. There might also be claims for the personal identity of each one of us (or the soul), particularly if a belief in immortality is involved, since some thing must be there to survive physical death.

Enough! I'm hoping that you agree with a large proportion of what I have claimed to be in the room, and that you agree that some of my less obvious claims are at least worth considering. I daresay a few of my suggestions have been met with a raised eyebrow and a pitying look. What I am really hoping, though, is that many of you will think that the questions I have asked are intriguing, and worth asking. If you agree, than I may just have planted a seed of philosophy, and my efforts have been worthwhile.