Journal and Proceedings of The Royal Society of New South Wales

Volume 118 Parts 3 and 4 [Issued March, 1986]

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Science and Truth

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[Faculty of Science Centenary Lecture, The University of Sydney, 22nd April, 1985]

Abraham Lincoln was once standing before a donkey conversing with a colleague. The dialogue went like this, Lincoln speaking first:

"Sir, how many legs does this donkey have?"

"Four, Mr. Lincoln."

"And how many tails does it have?"

"Why, one, Mr. Lincoln."

"Now, sir what if we were to call the tail a leg; how many legs would the donkey then have?"

"Five, Mr. Lincoln."

"No sir, for you cannot make a tail into a leg by calling one."

In some years of using this dialogue in pedagogical situations, I have found it inevitably generates disagreement among students. Occasionally I have taken straw votes. I wish I had been doing this for many more years and keeping records. It might be a barometer of the spread of the dark clouds of relativism. Nowadays the vote produces more support for Lincoln's interlocutor than for Lincoln, with a number of abstentions.

I suppose the most obvious feature of truth and objectivity to be that, whatever the subject matter, saying or thinking something to be so does not make it so. Something independent of thought or assertion determines whether what I think or say is so. There is a significant class of exceptions to this, however; and examples are worth giving if only to set them aside. Standing before the altar or the town clerk and saying 'I do' is not to describe my marriage; it is, rather, to perpetrate it. Similarly, it is, often, saying the words 'I promise' that makes it true that I have promised; or it is the umpire saying "you're out' that makes it true that you are out. In these and similar cases, which are called performative utterances, saying does make what is said so. Such cases aside, I can proceed.

Truth and objectivity, considered with this feature in mind, are bound up with what philosophers call the problem of the 'reality of the external world.' But it is worth mentioning, just to set something else aside, that mathematics is pretty clearly an inquiry in which saying does not make things so, while it is also an inquiry about which it is extremely problematic to speak of the things studied being part of external reality. The metaphysics of mathematics is difficult and controversial. But at the very least, it is bizarre to think of numbers as having natural histories as

species of animals or mountain ranges do. I shall have no more to say about mathematics however. I used the well-known phrase 'reality of the external world.' Now I do not like that phrase. It invokes a picture of our minds or our consciousness as inside and the rest outside. This is a distortion of the nature of the relations between ourselves and the rest of reality; and it is eventually also a distortion of the nature of what is our inner life. It is a picture the Oxford philosopher, Gilbert Ryle, denigrated as of the ghost in the machine. It stems from Descartes. The Cartesian picture has been superseded recently by an image that is modern and up-to-date. It is the picture of each of us possibly a brain in a vat, being manipulated by a marvellous computer program into having the experiences and acquiring the beliefs that we do have and acquire; we are completely and systematically deluded in our attitude that we are human bodies, including other people. But dispute with proponents of the neo-Cartesian vision – a vision that calls itself modern materialism, identifying our minds with our brains – is not my concern here, though some of what I say toward the very end will bear on it. Proponents of that view and I are in agreement about the commonsensical points that, e.g., the solar system and the galaxy were here before us or before any sentient life was here; and we are in agreement that much plant life and geological activity occurred on the earth before there was any sentience or consciousness there; and we are in agreement that, unless the nuclear disaster we dread goes even further than we anticipate, much plant life and geological activity, among other things, will continue on its way long after we are extinct.

My interest here is to acquaint you with a dimension of the current phase in the struggle to cling to the idea of things being as they are whether we know it or not, whether we like it or not; and even whether we have developed, in our thought and language, conceptions of it or not. The anecdote about Abraham Lincoln is to the point. You cannot make a tail into a leg by calling it one. The implication of that is that the differences we have conceptualized through our words 'tail' and 'leg' have, in their way, carved reality at the joints, to use a fine metaphor of Plato's.

Now this does not obstruct the possible development of a scientific theory which trivializes the significance of the differences between tails and legs. After all, we already use the word 'limb' to cover both arms and legs. What I've said in no way rules out the possible usefulness of assimilating arms, legs and tails in virtue of all of them being appendages to torsos. Philosophy has little to do with that.

Earlier, I spoke of the dark clouds of relativism. Here is another philosopher speaking in 1940 of the threat of those clouds:

"If the people who share a civilization are no longer on the whole convinced that the form of life which it tries to realize is worth realizing, nothing can save it. If European civilization based on the belief that truth is the most precious thing in the world and that pursuing it is the whole duty of man, an irrationalist epidemic, if it ran through Europe unchecked, would in a relatively short time destroy everything that goes by the name of European civilization." (R.C. Collingwood, An Essay on Metaphysics (1940))

I have reservations about the phrases 'the most precious thing' and 'the whole duty'. Surely bad enough if truth and its pursuit are among the very most important things in our civilization and they are threatened.

Others, far less attractive to me than Collingwood, can be heard speaking of the faith of our civilization, our Christian civilization, in God; and of how the loss of that faith will throw us into barbarism and chaos. Perhaps their concern and Collingwood's are connected. I think there is a

connexion; for I think that philosophy has a current task of providing a conception of reality as independently determining whether our thoughts and assertions are true or false, a conception which does not, covertly or explicitly, invoke the notion of a God's eye view. How does that work? It seems to me it is a matter of feeling that truth involves a point of view outside all our local points of view. By local, here I mean something we should understand both in terms of history and the contemporary surface of the earth; and indeed in relation to possible thinking beings elsewhere in the universe. There is a temptation, in trying to formulate a conception of reality that meets the requirements of objectivity, to sneak in the idea of an ideal observer, a knowing being who stands outside all our points of view. And that is what a God's eye view comes to. What I want to do here is speak about some key conditions for achieving an absolute conception which spares itself the burden of God. But I must come to that gradually, beginning with comment on relativism about truth.

I have coined the word 'truforism' for this relativism, a 'truforist' for a supporter of it. I would be astonished if you did not see the aptness of this label. It is not hard to find in much conversation the phrases 'true for me' or 'true for them', or 'true for the Eskimos' or 'true for New Guinea Highlanders' or 'true for Buddhists'. And naturally we hear 'true for us' (whoever we are; I suppose members of western European civilization are intended; but it is a feature of relativism itself that there is no obvious way to make things stop there; why not true for New Yorkers or true for residents of Bondi?). It is quite easy to find anthropologists these days who will speak of other peoples who 'live in different worlds'. If we take this literally, we must be dumbfounded at how it is that we can kill those people so easily. Now an initial response to truforism is that of my colleague David Stove. If 'true for them' means anything more than 'they believe it' what exactly is the more that it means? This is a good response. For there is an obvious difficulty about making sense out of 'It is true for them; but it is not true'; while there is no difficulty at all about understanding 'They believe it; but it is not so'. It is common as rain to say truly 'It's raining; but he doesn't believe it' or 'It's not raining; but he believes it is.'

But I think we must go further than David Stove goes to stop the virus from spreading. I have no great confidence that my suggestions will succeed. Truforism is not new. It started in at least ancient Greece, and Plato tackled it vigorously. In its current outbreak and form, I believe it to be largely a product of the spread of European civilization across the earth, with its attendant uprooting of civilizations more ancient than itself and of primitive cultures. We are paying a heavy price for this uprooting and there is little telling where it is all going to end up. Sympathy for the peoples involved and concern about our crimes against them and their ways of life is widespread among members of our own civilization and is especially strong in the sensitive and intelligent young, our students. I don't, indeed cannot, despise this sympathy and concern. Further it goes with the commonly found idea that the very ways of life we have uprooted may be sources of enlightenment for us, either because we gain appreciation of ourselves through comparisons or, more dubiously, through attempts to adopt as our attitudes, attitudes they have, especially toward nature. I said this was more dubious than learning through comparison. This is because such adoptions on our part just aren't live options. And that they are not live options must diminish our ability even to imagine our way into those attitudes. We can no more do that than try to make ourselves into Samurai warriors. I do not mean there is no point in the imaginative effort. But putative adoptions of such attitudes are deep distortions. The effort deserves comparison with those who avow that they practice Christianity because some religion is needed to keep the community together. This is the doctrine of religion as social cement. What is important about such an adoption is that it will precisely not be a religious attitude. Indeed, so far as I understand Christianity, it may be some sort of heresy. Even so, I recognize that going to Church regularly, participating in the mass and other rituals, could lead to authentic faith, a sort of self-induced brainwashing. But that word may be unfair. We do not think of ourselves as

brainwashed because we first pay attention to, say, Mozart, in order to impress a lover and eventually find ourselves truly admiring and delighting in his music. So perhaps I must hope that not very many are imitating Samurai warriors.

I said I cannot despise the sympathy and concern that the uprooting effect or European civilization has caused in the young and in others. How to accommodate the concern without condescension and without lapsing into truforism?

A start is to develop David Stove's point further in a way I hope he would agree with. Instead of just asking for the difference in meaning between 'P is true for them' and 'They believe P', let us go further and notice these things: First, it is possible rationally to believe what is false. Second, it is possible irrationally to believe what is true. We can say, in many cases, "They believe P; it is not at all surprising that they do given their life and environment and history; it is even justifiable on their part to believe as they do. Nevertheless, not P". Some examples ought to make this obvious. As we know, it is not true that everybody believed the earth was flat until quite recently. But just about everybody who thought about it in Europe believed Ptolemaic astronomy, which placed the earth so that the heavens revolved around it. Even so, Aristarchus long preceded Copernicus in theorizing, with very good evidence, that the earth was spinning on its axis and revolving around the sun. Aristotle, quite reasonably, said this could not be, else we should be thrown off the surface due to the ferocious winds that would be generated. Then the Romans took over and darkness descended for a long time. But even when Galileo did much to establish the heliocentric view, it was not irrational to reject it. For there was the problem of the stellar parallax. The fixed stars do not change their appearance to the naked eye; nor did they do so with the best telescopes of the day. This fact made it seem ludicrous to believe that the earth had the large orbit Kepler attributed to it. This could only be so if the distance of the fixed stars was so great as to be merely mathematically conceivable. The distance involved staggers the imagination. The enormously large and the incredibly small still boggle the mind. it could easily have been unjustifiable to accept Aristarchus or Copernicus without some decent explanation of the apparent evidence against their views. So these are case of rationally believing what is false and irrationally believing what is true. It is enough to justify saying, as I want to say, that it was not unreasonable to deny what were in fact truths and that it was reasonable to insist on what were in fact falsehoods. We can explain the errors.

Now it would be quite impossible illuminatingly to write the history of science without recognizing these points. Even the new discipline called the 'sociology of knowledge' wants to ask not only why false beliefs were so long sustainable and give answers in terms of non-scientific interests that influenced people; that inquiry also seeks answers to questions as to why truths were discovered when they were, and not sooner or later.

For instance, I have been told that in Germany after the First World War, the indeterminacy involved in quantum mechanics appealed to many scientists because of the question 'How did Germany lose the war?' I guess what was involved was a certain solace in the idea that some things happen just at random. We can see that, even if there is no rigorous way to connect the micro-phenomena of physics with the macrophenomena of tanks crossing the borders, bullets penetrating skulls, and diplomats engaging in their machinations, this fact about Germany at that time may be significant in relation to the question why a theory was attractive to many people.

Even so, it is worth distinguishing between the sorts of interests and cares which diminish our surprise at people believing certain things because the interest induced the beliefs, and things that relate to whether the propositions involved are justifiable. I doubt if those German scientists would ever have argued that Germany's loss of the war was a confirming datum for quantum

mechanics. But in the case of stellar parallax, the unchanging appearance of the stars throughout the year was relevant to whether or not Copernicus was right. To take another case, we are unsurprised that the Pope believes that God exists. But even he, especially since the current holder of that office was trained in philosophy, would hardly argue: "I am the Pope, therefore God exists". We expect the Pope to believe in God, but not to believe that his being Pope is a reason to believe what he believes. It is no reason for our believing that what he believes is true; I expect he knows that.

So far, then, we have examples from our own history and civilization of reasonably believing what is false and unreasonably believing what is true. Throughout this, I am using the word 'true' in its everyday way. That way can be called absolute, not relative; it repudiates truforism. The word 'absolute' causes problems here and something is worth saying about it. I could put my point by saying that truth is just truth, and enough said. There is nothing to be gained by adding 'absolute'; indeed it concedes to the opposition that there may be something in the words 'relative truth;. And I have to admit that there is something. So let me say what that is. And this too is part of a more conciliatory way with truforists. I know that Spinoza, and I think that Hegel, gave a sort of sense to the notion of absolute truth. Spinoza, along with many thinkers in the 17th and 18th Century, made a distinction between obscure and clear ideas of the very same thing. For example, a bird flying by me fast when I haven't got my glasses on will just be a blur. That blur is a very obscure idea of that bird. Someone with better eyes would have a clearer idea and a good ornithologist an even clearer one. These will all be ideas of just the same bit of reality. This is an intriguing way to think. Spinoza is an ancestor of writers on religion and theology who interpret the ideas of traditional religion as seeing through a glass darkly what the more enlightened can see clearly.

It is quite explicit in Spinoza that he thought this way about popular religion. As for Hegel, about whom I am far more ignorant, he thought that religion and art could produce conceptions about life and reality that would fall short of the conceptions that philosophy – his philosophy anyway - could produce. But the religious and artistic productions would be ideas or conceptions of just the same basic truths. He called the ideas, as philosophy would produce them, the absolute truth. It strikes me that rather than 'relative', the word needed here to contrast with 'absolute' would be 'partial'. It is also seems to me that 'absolute', as it is used here, might be well replaced by 'ultimate'. Given that, I cannot forebear to quote something Arthur Koestler once said: "The ultimate truth is the penultimate lie". Still, along these lines, we seem to be able to make some sort of sense out of the notion of absolute truth. But this is no help for truforist relativism. This, as I admit, intriguing way of thinking of intellectual, even spiritual if you like, development, does not threaten plain truth. For basically, little more is involved than is involved in the fact that 'very large city on the East Coast of Australia, may register someone having spotted that city which is, more accurately, registered by 'the largest city in Australia' or 'capital city of N.S.W.'. We may identify and describe the very same thing from the point of view of different interests. Still, I don't know what the ultimate or absolute description of Sydney would be. That is irrelevant to a horde of descriptions just being plain true of Sydney. Accommodating the Spinoza/ Hegel insight, assuming it really is one, is no threat to truth and objectivity. Indeed, in its suggestion that there is a truth to be captured in different ways, some superior to others, it may be seen as positively supporting the realistic attitude I am defending.

The rationalist way of thinking I have sketched here leads to many controversial claims, such as that religion is the opium of the people and the heart of a heartless world; or that belief in God is fear of the power of the father; or that belief in God is recognition of our dependency on community or society. These views seek to explain why religious belief is so tenacious. They do not seek to support the proposition that God exists. They claim, in effect, that to say 'I believe

that God exists' is to say 'I recognize my deep dependency on things I cannot control' or something like that. Well, all you can do is see if believers will make that substitution when they are enlightened. That is not my problem. I suspect it is less likely than proponents of these explanations of religious belief may have thought. My point has only been that this notion of absolute in contrast to partial truth is no threat to truth. It is no help for truforism. My hope is that budding truforists will see that, with it, and with what I have said about reasonable and unreasonable belief, one has enough intellectual apparatus to accommodate the sympathy and concern one has for uprooted ways of life without being driven into relativism.

Recall that I am trying to salvage an absolute conception of independent reality without indulging in the God's eye view. One might even say I am trying to express clearly what the idea of a God's eye view expresses obscurely. For the most part, I have offered materials for a theory of error. But the examples have been from our own culture.

In order to address mayself to the question of other contemporary cultures, especially those which are unscientific, I am going to borrow heavily from the Cambridge anthropologist, Robin Horton. Horton belongs to the intellectualist camp in theoretical anthropology. That is, he rejects the idea that the fundamental thinking processes of African tribes he is familiar with are different from ours. They are significantly different and I will say how he thinks they are. But the difference is not a matter of basic rationality. I will not, for lack of time, say anything about the opposing camps in anthropology on this matter. Suffice to say that the issue there is one of how we are to make sense of the wildly false propositions primitive people assert quite readily and often. They say a lot of bewildering things. These cultures have cosmologies, large-scale views of how the world works and the place of human beings in it. Horton believes they arrive at theories in the same fundamental way that western scientists arrive at them. That is they use the hypothetico-deductive approach. Unobservable things are postulated to explain observable phenomena. Such hypotheses get more or less confirmation from observations that are made as a result of expectations about how things will work, expectations derived from the hypotheses. What is different is the content, not the form, of this approach. First of all, Horton, with many philosophers of science, holds that models of the unobservable are developed by analogy with processes that are observables. Think here of those elegant lectures on physics given by people like Feynman. We are given ping-pong balls bouncing off each other in a birdcage. We are then invited to develop our understanding of what water getting hot is like through this analogy. There are many such pedagogical devices. Analogies and models have played a vital role in the development of our scientific theories. Of course, mathematical equations take over eventually; the models may only be stages on the way. Note the parallel with the rationalist idea of obscure ideas being replaced by clearer ones.

Now, given this, Horton suggests that we develop our theory of error in connection with his Africans in this way: All human beings believe what Bertrand Russell called 'stone-age metaphysics'. That is, in the domain of everyday life, control and understanding of the environment has two dimensions. First, everybody knows that if its sharper it will cut easier; if its heavier, you have to work harder to move it; if it has a hole in it, it won't float; if its coming at you, get our of the way; if you step on it hard, you will often crush it; if you stab him, he will bleed, etc. But in our stone-age metaphysics we also hold that people make things happen by giving orders and that they themselves act; individual human beings are more or less initiators of changes, even if these be only changes in the positions of their limbs in walking or moving food from plate to mouth. They bend things and break them. They also are the givers and receivers of orders and commands, the producers of anger and resentment, of distress through irresponsibility or of pleasure through generosity. To sum this up, stone-age metaphysics includes mechanical goings on and also the goings on of agents, of persons with intentions and

desires, and of persons with authority or power. Now all this, Horton notes, goes on more or less within a range of things not much more than 1000 times smaller or larger than ourselves. But then we come to the problems of the very large and the very small, the macrocosm and the microcosm. What if we want to pursue either understanding or some forms of control into those regions of reality?

We must, says Horton, do this by analogy with something from our stone-age metaphysics. This must be done to get the enterprise off the ground. Horton's idea is that we, especially since the 17th century but also in ancient Greece had the good fortune to develop our analogies with the mechanical dimension of goings on in the everday world. The Africans, on the other hand, developed their analogies from the other dimension, from the area we may call the area of agency or the powers of persons. And this was also a feature of much European thought in the medieval period. Horton thinks that we got it right and he thinks that it is undeniable that we did. Our greater success at control is inexplicable without that being so. About the natural order, as distinct from the social or the cultural order, western science has hit on the right path. Horton makes the intriguing suggestion, though, that in the understanding of social relations and in the area of psychosomatic illness, the Africans may have the edge on us. That is, their social psychology may actually be, in significant ways, much subtler than ours due to profound reflection on the nature of interpersonal relations. I do not know his work well enough to assess this striking suggestion; and it is not necessary to this discussion.

So here again we have an explanation of why people have the beliefs they have which way make it rational on their part to have such beliefs. And we do not diminish our sympathy and concern for them by going on to say they are just mistaken in many of their beliefs.

We may wonder, in relation to the natural order, what is so powerful about our approach. I think it is that all human beings are bound to acknowledge that something has been got right when a form of description of some occurrence or class of occurrences in nature enables or facilitates the reproduction of that occurrence from growing things to splitting atoms. Concomitantly, there is prevention in some cases. This is not to say that science is only interested in controlling things. That would be an insult to the contemplative, wondering moment that so deeply informed the lives of thinkers such as Newton, Faraday and Einstein, just to mention a few. I have spoken of understanding as well as of control. Scientific inquiry, like philosophy, begins, as Aristotle said, in wonder.

The wonder need not cease when power enters on the scene. What I have called the contemplative moment makes no sense at all if a scientific theory is just a recipe for manipulation; nor does it make sense if a theory is just a way for a professional scientist to gain prestige and authority in the community of scientists or the wider community. Ideas, in any domain, are not just so much steam puffing out of the engines of power and prestige. Or, if they are, what engine is puffing out the steam of that idea? This is in no way to deny that many scientists may be corrupt in the ways indicated. They can even be corrupt and produce good science.

Let us return to the problem of the God's eye view. We want plain truth and independent reality without God. We want to reach a conception of *how things would be anyway*, as it seems useful to put it. Such a notion is inextricably bound up in our concept of knowledge, in the very meaning of the words 'to know'. As in the move from stone-age metaphysics, we must proceed by analogy. The model it would help to be able to apply is a simple one. If people are all at varying distances and directions from, say, a cube, and asked to provide a representation of what they see, you can get different results. I say 'can' for, after all, they may know, on independent

grounds that it is a cube and just say they are seeing a cube and there is an end to it. So we have to think of the task as being to say how it looks from a variety of viewpoints, especially if we think of the thing as suspended in mid-air, some people above and others below it and people at many different angles of sight from it. Initially, many of the claims will appear inconsistent with each other. It may look diamond shaped from here or like a pyramid from there, etc. It cannot be all these. But we can systematically relate the diversity of representations to each other and, taking into account that the thing is a cube, everything can be made coherent and consistent.

Let us elaborate the model a bit. So far, all the viewers, as far as I told you, have ordinary eyesight. But we can also suppose some of them to have bad eyesight, cataracts on their eyes; we may suppose some of them to belong to cults which find the cube repellent, but the pyramid a gift from God; or there may be clouds of smoke between the cube and some of them, giving them only brief glimpses. This will produce a much more complex diversity among the set of representations we come up with. Now the task of reconciling the representations will have something more like the difficulty the thing it is a model for has. And we shall have to exclude some of the representations as just not worth taking seriously, even if we can explain how they came about.

Now what we achieve here is the relating of a series of representations to each other in a way that renders their diversity intelligible. We have not only the cube itself, but all those representations of it. We do not want to say that the representations are somehow outside the world, hanging about in some other substance, mind-substance or the like. The representations – we might say the representatives themselves facts in the reality we are concerned with. We want a conception of reality only what is being represented but the very representations of it. That means that we are moving up to the level of representations of representations. At that level our thinking has to include a theory of error. For the first-level representations will almost certainly be inconsistent with each other. We want to be able to explain the irregularities in this representational situation. After all, even if some of the representations are false, they are themselves occurrences or circumstances within the world. Moreover, since it isn't just us western sophisticates who may notice this second level problem, that of representation of representation, we are stuck with a potential infinite regress. But this is a harmless regress. Consider a similar regress that may actually be realized, but not to infinity. Anthropologists get a grant to study a tribe. Some sociologists get a grant to study the practices anthropologists engage in when studying tribes. Some philosophers of science get a grant to study the methods of sociologists when they study anthropologists studying tribes. And then, some other sociologists get a grant to study the approaches of the philosophers of science, etc. It will get very difficult, perhaps impossible, to devise interesting questions if this continues. There is no logical difficulty in the general idea, only a financial difficulty or, as J.L. Austin once said in a different connexion, we reach the point of diminishing fleas.

With such a model in mind, just substitute for my word 'representations', the word 'beliefs'. The totality of our beliefs – though I don't mean to suggest that we have the remotest idea how to count them – is our representation of the world. The needed absolute conception is not that of a position outside all this. That would be the God's eye view creeping in again. It just is the idea of the possibility of systematically relating all the representations. This is, of course, an incredible project and the division of labour involved is intense. We need, among other things, theories about how the original cube affects its perceivers via their bodies and especially – as our best current theories have it – their brains and nervous systems. But it is still an open question how to apply our ordinary notion of causality – which is that of something that makes something else happen – to this issue. Can we here, in a theory about perception and belief, proceed as we have in those inquiries where we get laws of nature, invariable or statistically stable universal variations

between types of events and properties? It is still an open question whether the role we assign to our concepts of belief and representation will be that of being the effects of the causal properties of the cube on the observers. The representing itself may be, to such a large extent, a social and linguistic activity, the human activity of conceptualization and communication, that the project of reconciling the diversity of representations won't just be a matter of a theory of how various human bodies are stimulated by interrelations to other bodies. That theory, of representation and belief, may have to be more like a social theory than like a psychological or physiological theory. But the fundamental idea remains. Not a God's eye view from somewhere else, eternity or outside the world; rather the idea of the myriad of complex interrelations of all the points of view within the world. And this is what deserves, I believe, to be called the absolute conception. It involves not just the idea that continued and varied observation of the cube will result in convergence of representations of it; it also involves the idea of convergence in our theory of error and diversity of representation. There is plenty left to do. But it cannot all belong to natural science. For natural science demands that our representational practices be seen as just vocable blasts with possibly interesting auditory properties and relations. I believe that the representational activities – which are not of course our only social practices – are overt, public and observable. They are not behind the verbal scene, not the fire of thought behind the smoke of language. They are rather shown forth to our direct observation in the speech and actions of one another. And you cannot fruitfully study them with an eye to the task of reconciling the representations by taking them as sound emitted from complex mechanisms. Thus theorizing and thinking about understanding itself, not as a physical process, but as a human, social process, is indispensable. This investigation requires us not just to try to get at the truth; but to think about truth itself. And truth is not a physical property. I hope this means that my profession may continue its long run performance on the stage of enquiry, even though it gave the lead in the play to natural science a long time ago.

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