# THE MIND-BRAIN PROBLEM TODAY —A VIEWPOINT FROM THE NEUROSCIENCES—

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The nature of the mind and its relation to the brain is perhaps the oldest, most intractable and certainly the most interesting and important of all the problems that man has put to himself concerning his own nature. It was first posed in its modern form in classical Greece and the two millennia that have passed since the time of Plato and Aristotle have witnessed most extraordinary labors of philosophers, psychologists and neurologists. Yet the dispute still rages. Now one party, now another holds the field, but each "solution" to the problem that is enthusiastically accepted develops before long such serious strains and faults as to render it vulnerable to the next "solution," which usually turns out to be a rehashed version of an earlier one and so the debate continues.

Now in all the disputes that have arisen over this problem, two main polarities may be observed. Most philosophers and most theories belong recognizably to a monist or to a dualist persuasion. Some people have said that a human being is just a human physical body whose more complex and goal-directed behavior, dispensations and propensities constitute his mind. Other people have said that a human being has a human physical body to which is attached or related in some way in *addition* a human mind. In the traditional arguments about the mind-brain relationship a number of separate arguments have tended to become confused and a philosopher may be a monist in one respect and a dualist in another. Yet in some form this remains the central question for thought. Another way of drawing the distinction between the two schools is to say that the monist holds that all human behavior and experience can theoretically receive a complete scientific explanation in terms of current physical concepts only. The human being is held to be a complex physical machine in whose function and behavior no principles or entities or laws other than those fully described using the *current* concepts of physics, or laws derivable from physics, play any part whatsoever. In other words all psychology

can eventually be reduced to neurology, to neurochemistry and finally to biophysics. This school is temporarily dominant in the neurobiological sciences. The dualists on the other hand state that although a tremendous amount of human behavior and experience can be reduced to such explanations in the positivistic hierarchy, yet this is not the whole story and there remains an irreducible core of mental events ontologically distant from physical events and thus outside any possible explanations given in current physicalistic terms.

This controversy may best be understood when viewed against its historical background. "Primitive" man everywhere today, and so presumably our own "primitive" ancestors, belong wholeheartedly to the dualist party. Concepts of the separable soul or double, and of other worlds with their hierarchies of spirits, gods, demons and all the paraphernalia of the supernatural are to be found in practically every primitive culture. In the historical development of Western civilization the Babylonians, Egyptians and others were obsessed with the "other world" and with the human relationship to it. The Greeks, Romans, Celts, Gauls and others all had complicated accounts of the human soul and other worlds, various divine or semi-divine environments located in blessed islands, high mountains, under the earth or interpenetrating our world in subtler fashion. These concepts were highly developed in the many mystery religions that flourished at that time and received their supreme philosophical expression at the hand of Plato. The origin of these ancient beliefs may be traced in part to dream and hallucinatory experiences, which were taken at their "face value" so to speak. It must have seemed only natural to suppose that some part of the human being must be able to leave the body in sleep or trance to visit the strange places of dreamland. The occurrence of hallucinations and eidetic imagery must have been further powerful factors in the origin of the belief that there were lands to be glimpsed momentarily and strange god-like people who could walk the land and were yet not human. The Christian psycho-theology established the concept of the separable and distinct soul set in the flesh as a fundamental dogma to be accepted almost without question by all reasonable men. This powerful, culturally determined belief, absorbed by the great philosophers of the renaissance of philosophy in the sixteenth and seventeenth centuries from their earliest years as an inalienable foundation of reasonable opinion, may be considered to be the baseline from which all subsequent theories stemmed.

Philosophers, not content with dogma, sought to express the age-old doctrine in modern philosophical form to complete, with the new physics, the main structure of human knowledge. For Descartes the

mind was a spiritual substance, whose existence formed the most certain object of our knowledge, for he found himself able to doubt the existence of all sensations and objects but in so doing he could not doubt that he himself was doubting; and doubt being a species of thought he was able to utter his famous dictum "Cogito ergo sum." In the meantime physicists had been finding out about the physical causes of our perceptions. It became clear that our perception of the external world is mediated by complex causal chains of physical events—the passage of light rays, their effects on the retina and the subsequent events in the nervous system. However, it was asked, could this complicated physical machine be related to the unextended, spiritual substance of the mind "that which in us perceives and thinks"? Descartes made the unfortunate choice of the pineal gland for the site of interaction but as so little was known at the time about the brain, his physiological speculations were safe for the moment from informed criticism.

The activity of philosophers for the next three hundred years were directed into attempts to repair this gulf left by Descartes. Let us review the nature of this gulf. On the one hand there was the material world whose cardinal attribute was extension. It was Galileo's great mathematical machine of atoms moving according to natural laws, with human bodies as integral parts of the mechanism. Associated with each living human body there was a mind, an unextended, thinking substance. Now the mind was held to contain not only the ego, that which perceives and thinks, but also the secondary qualities of objects as well. For the *res extensa* consisted of only those qualities of objects, such as extension and size, amenable to mathematical treatment. All the non-geometrical properties, such as color, sound and smell, were located in the mind. This conglomeration was held to exercise its complex functions on the physical organism via the tiny and insignificant pineal gland. But this "solution" served only to multiply problems. If the two substances are quite independent, how do they interact? How can the unextended mind know anything about the physical world? And with the mind lodged uneasily in a small portion of the brain, and with these difficulties unsolved, the question rested. Under the powerful influence of Hobbes and his followers today, the scientific materialists, many people came simply to regard the whole story as confused nonsense generated by a reprehensible survival of animism in science. Hobbes taught that the mind is simply a name for the thinking activities of the body that are nothing but the movement of atoms in the physical organism.

The centuries following Descartes and Hobbes saw the rise of biol-

ogy and of the study of the nervous system. The anatomy of the nervous system and the function of much of it can be expressed in simple anatomical and physiological terms, such as neurone, fiber, impulse, and synapse, all recognizably belonging to *res extensa.* It was only when it became necessary to deal with the question of the higher functions of the brain that the old metaphysical puzzles arose. Is the brain only a physical machine that produces appropriate learned motor responses in the organism to a variety of sensory inputs? Or is the brain unique amongst physical machines, in having, in addition to the functions of automatic servo-control of the organism, a function of liaison with the mind? Are thinking, imagining, perceiving and emotions only the movement of nervous impulses in certain parts of the brain or are these brain events merely a substratum for some other and correlated mental events that *are* the thoughts, images, percepts and emotions? A great number of arguments were formulated on both sides. Let us review some of them briefly. In favor of the monist school it has been said:

1. That no one has ever been able to give an objective demonstration of mind. If you open someone's skull you will find only a mass of grey jelly inside; no mind, no poor ghost somehow eternally invisible pulling invisible wires from the scenes;

2. That damage to the brain can interfere with and even completely abolish all mental functions without exception to produce blindness, idiocy, agnosia, changes in personality and a host of neuropsychiatric calamities;

3. That no instances of "mind" have even been found other than the complex behavior of organisms, and linguistic philosophers have tried to show that "mind" *means* only a class name for certain activities of the organism as well as propensities and dispensations to react in certain ways.

To this the dualist can reply:

1. That the evidence for mind is that which each man can give for the existence and nature of his own mind. "Surely," it may be asked, "you cannot say that you yourself do not think, or doubt, or love, or hate, or have imagery, or pains. These activities and these thoughts, pains, images and emotions themselves are mental events—the collection of them make up your conscious mind. Surely it is obvious that a pain or a thought is not remotely like a part of the brain, nor is having a pain or thinking like a parcel of impulses traveling about on neuronal pathways in your brain." Furthermore it may be claimed that mental events cannot logically be identical with any cerebral events, because (a) the ego and thoughts are not spatial entities and cannot

thus be identical with any part or condition of a spatial entity such as the brain, and because (b) images *are* spatial entities but they are geometrically incongruous with any possible patterns of neuronal impulses in the brain and cannot thus be identical with them.

2. That the medical evidence from brain injuries and disease need show only that cerebral events bear *causal* relations to mental events such that all, or at any rate most, mental events are determined during life by cerebral events. The medical evidence certainly does not show that mental events are *identical* with cerebral events. A set of events *a* may be determined by a set of events *b either* because they are causally linked *or* because $a = b$.

3. That the fact that we never encounter minds without bodies shows only that minds without bodies may be beyond the reach of our feeble powers of exploration. We can now give a plausible account of just why disembodied minds may be beyond our reach. To the linguistic philosophers the dualist can say that in the first place linguistic analysis can show at best only how our ancestors, who formed our language, regarded nature and their place in it, and, secondly, as Whorf has shown, ancestors who regard nature in different ways create radically different languages (compare English with Hopi), the "linguistic analysis" of which would lead to radically different metaphysical theories about nature and the place of mind in nature. Furthermore, for all the examples that we could dredge from ordinary conversation tending to support one metaphysical theory, one would be sure to find others supporting rival metaphysical systems. The technique of but a few contemporary philosophers (e.g., Gilbert Ryle) is to select just these statements about the mind from common usage that support their own particular anti-dualist position and to ignore or suppress those that do not. For instance, "a thought came into my mind," "my mind was far away at the time," "his mind was full of gloomy forebodings," are all culled from common usage and all have a logic quite different to usages like "he has a brilliant mind" which do submit to a structure in function or class-member:class analysis. These statements emphasize the mind as an entity and a spatial entity at that.

The dualist can also point to the findings of parapsychology which have now shown beyond all reasonable doubt that the human organism can obtain information from both present and *past and future* events without the use of any of the recognized channels of sense. Thus it is simply not true to say that all mental activities are physical activities (as physics is currently understood) of the organism, for precognition would certainly, and telepathy and clairvoyance would probably, defy any currently available physical explanation. The dualist can also

mention the Bergsonian hypothesis that the causal relations between brain and mind on the afferent side are not wholly excitatory but the brain may be held actively to inhibit certain autonomous activities of the mind. This inhibition may in turn be inhibited by various means, such as a reduced sensory environment or the action of mescaline, so as to release the autonomous activity of the mind in the form of the hypnagogic and mescaline phenomena, incomparably the most magnificent and beautiful events within the range of human experience.

The monist may then reply to the dualist that our knowledge of our own minds must always be subjective and thus cannot be used in a scientific world scheme that demands only and always objective public phenomena. A more extreme position would be to deny all experience and all mental events in favor of a radical behaviorist theory in which all alleged sensations, images, and the like are subsumed under the verbal reports of the subject. That is to say events in the sensory parts of the brain are held to affect events in the motor areas (including the motor speech areas) by means of the computing and communicating machinery joining the two, so that appropriate actions towards the environment are produced and certain words are spoken. So there are no images but only statements "I see, or have, an image." Subliminal excitations of the motor centers may be said to be "thoughts"—i.e., such subliminal excitations could lead to later statements such as "I thought. . . ." There are likewise no sensations but only actions, or statements "I see a . . ." for example. No sensations or images occur on any inner stage. There are no occult inner television screens on which reality casts its shadow play in our consciousness.

To these arguments the dualist can reply that the first stage in any science is natural history. That is, we must look around to find out what things there are in the world before we can even start the rest of the scientific business—experiments, the formulation of hypotheses, and so on. And if it is a fact that there are private sensations and images, as a great number of acute people have said there are, then it is the business of science to catalogue these events and not to assume that it will be safe to ignore them or to deny their existence on a priori grounds. Naturally in our investigation of the public physical world only publicly observable events can be admitted into the account. A planet seen only by Mr. Jones cannot be astronomical. But this does not in any way show that there cannot be private mental worlds that each observer can observe, and that each observer cannot compare the entities to be found in his private world and their properties by means of symbolic communication with other observers. My knowledge that my images occur and are spatial entities is at least as certain as my

knowledge that there are physical objects, and this knowledge is stronger than my belief that any philosophical theory is true. And when Professor Price reports that his own images are spatially extended, I can examine my own images and I can observe that my own images are also spatially extended. And when Professor Broad says certain things about his own sense-data I can observe that my own sense-data are the same as what Professor Broad says his sense-data are like. In such a way, generally agreed upon and thus objective knowledge can be established about a class of events, particular instances of which can be observed by only one observer but different members of the class can be observed by many observers. So we can say that any theory that denies the existence of what we may all plainly find in our own minds is a very queer metaphysical theory indeed to be held in the greatest suspicion.

In the legacy left by Descartes we can distinguish between a pseudo-problem and a number of real problems. The pseudo-problem, which has been widely mistaken for a real problem and even for the crucial stumbling block of the whole theory, is the question of how can an unextended substance interact with or bear causal relations to an extended brain, and vice versa. However Ducasse has shown that there is no a priori reason why causal relations should not link extended and unextended entities. The real problem was first noted by Berkeley who pointed out that, if secondary qualities were to be in the mind, then primary qualities must also be in the mind, for all the arguments that were brought forward to show that secondary qualities must be in the mind applied as well to primary qualities. In any case, he added that to speak of an unextended color was nonsensical. But the proper inferences from these observations had only very recently been drawn. Now that we can successfully defend the occurrence of mental (experiencing) events, can we give any clearer account today of the nature of mental events and their relation to brain events? I think that we can and that Descartes's fundamental error has been discovered.

It will be remembered that Descartes differentiated between the mental and the physical on the grounds of spatial extension—the physical events were spatial events and the mental events were not. Now this seems to work all right for the ego but what about images? And what about hallucinatory and other sense-data? Surely an image is spatially extended and are not images in the mind? How then can a non-spatial mind contain spatial images? Parts of an image certainly bear spatial relations to other parts of the image, and the image as a whole bears spatial relations to other images. An after-image of a circular light is itself a *circle*. So we come to the new theory of mind that

has been put forward most clearly by Professor Price, that the mind is itself *spatial,* its space being a different space from physical space. A mind may now be given a precise definition: it is a collection of images (and possibly a pure ego and possibly sense-data as well but images are enough for our present purpose) that are extended for one human individual, in a space all of their own. Thus the cosmological universe consists not of one physical world but of one physical world (space-time) and many image (private, mental, sensible, perceptual) worlds (space-time) as well. Images may bear only causal relations but no spatial relations to physical events, i.e., certain cerebral events. In this case we are dealing with a multiple space-time universe. On the other hand the images may bear both causal and higher-dimensional spatial relations to physical objects. In which case we live in an *n*-dimensional universe, as Professor Broad has suggested.

The advantages of this new theory over the traditional Cartesian theory are as follows:

1. It maintains the unity of the human organism so important to the neurobiological sciences. The mind is merely an extra spatial part of the organism.

2. The relationship between a mind and a brain is the relationship between two extended entities, and so it offers the possibility of using mathematical methods to tackle the problem. The particular suggested development is to develop an *n*-dimensional physics out of the present *n*-dimensional geometry. The theory may then be subjected to experimental test.

3. The theory tells us exactly *where* a mind is and why we cannot observe other people's minds directly as we can observe our own and as we can observe physical objects. It also explains how our observations of our own mental states, including our own sense-data, is related to our observations of physical objects, and thus it clears up one of the most difficult problems of contemporary philosophers—the sense-datum controversy. Descartes, we may say, erred by confusing the pure ego with the whole mind and by mistaking a heuristically useful division of the properties of objects with an ontological distinction between objects and minds.

The new theory also clears up one of the outstanding paradoxes of philosophy: the famous time gap in perception. Most scientists unconsciously accept in their everyday lives the philosophical theory of perception known as naive realism. This states that visual sense-data, in the Broad-Price sense, that is the collection of colored surfaces that present themselves to immediate experience, are literally the physical objects themselves. Likewise somatic sense-data are held literally to

make up a direct experience of the physical body. This theory conflicts with the neurological evidence that our experiences depend essentially on brain states and there is abundant neurological evidence to show that our sense-data, including somatic sense-data, cannot be identical with external objects but only with particular brain states. If we removed the brain of a child and connected it up to a super-computer that fed appropriate stimuli into the sensory nerves, the person concerned would live a perfectly average kind of life—in fact any kind of life we cared to program. The sensory fields in consciousness are constructions of the nervous system and not a direct apprehension of external physical objects. In other words the physiological mechanisms of perception work like television and not a telescope. The second difficulty with the naive realist theory is the time gap in perception due to the finite velocity of light. If I look up at the night sky I see a little twinkling spot—the star as common sense has it. This event is certainly correctly described as "I see a star." But it is equally certain that the little twinkling spot is a function of the star millions of years ago, depending on how far away it is. The actual physical star "now" will be seen on earth only by my descendants in millions of years' time. If, however, we abandon naive realism and come to realize the little twinkly spot is constructed by my nervous system, we do not get into this bind.

Thus in conclusion we can suggest that modern physics and cosmology are based on an enormous and probably mistaken assumption for which there is not one particle of evidence. This is that the space of consciousness and the space of the physical world are the same. In other words that $3 + 3 = 3$. Whereas they may well be different space, in which case the correct sum is $3 + 3 => 3$. If we wish to consider space- time rather than space, the digit changes to 4.

## DISCUSSION

POYNTON: I wish to endorse Dr. Smythies's plea very strongly that we should think more in terms of information than in terms of physical/non-physical. I think we ought to be more concerned with this idea of informational action rather than physical action. We are, perhaps, in danger of getting carried away in physical-metaphysical arguments and fights about what you mean by physical and non-physical. What we are really concerned about is, I think, the question of information. And if we are thinking in terms of information, we can deal in a reasonable way with causal interaction, whereas if we deal with the lesser intent of physical/non-physical interaction, then we

have all the problems of causality and what is a-causal. We get into fantastic complications. So I certainly do endorse very strongly his plea that we think in terms of informational action and informational ideas, rather than physical action.

SMYTHIES: It seems quite clear that you could design experiments to test information capacity, using ESP or SP. Has anybody done this?

BEAL: Yes, they have an information-theory test, using computers, on the possibility of telepathy existing. In both Russia and the United States, studies have been performed using information-theory message inversion, high noise to signal ratio and extracting information. The problem was it took such a long time, cost so much money, took so much patience. You had 97% confirmation, supposedly, that there was such a thing as telepathy. It was dropped because it was so difficult.

ORME: I can understand Dr. Smythies's great difficulties about adopting a monist position where mind is simply an extension, as it were, of the brain. The thing that I find rather difficult, though, is when he suggests something multi-dimensional. This, in a sense, puts forward a hypothesis and yet the problem is: Where is it? If it is multi-dimensional space, I am aware of the space around me. Now, if there is another dimensional space, this does not mean very much. The only other dimension, or whatever you want the thing called, is a temporal one and of course this, in the Relativity Theory, is somewhat equivalent to spatial dimensions. But, I do feel resistant to postulating dimensions that I have no experience of.

SMYTHIES: You understand what space is because there is space around you. I am saying you are making an assumption here, which you may not realize you are making but which is maybe illegitimate. The space around you in this sense is the space of consciousness. You assume this space around you is the same as the space of the physical world—as do most people and all physicists. But I am just saying that philosophers like Price and Broad have questioned whether this is the case. You see, this is a question of arithmetic. Nobody doubts that there are three spatial dimensions in the physical world. Nobody doubts that space-consciousness has three dimensions. Your visual percepts are arranged in a three-dimensional system. What has always been assumed is that three plus three equal three. Price says this may be wrong. Three plus three may equal six or something different. So I think your question disguises the real point at issue.

MEERLOO: I want to come back to your question of the mind-brain today. I do not think there is a good leading neuroscientist who sticks to the old monistic or dualistic theory. There is a continual interaction. This continued interaction presumes communication between an

entity and the outside. The milieu plays a role, communication with internal organs plays a role. This implies system. On different level systems, the qualities of this communication change and that is all we can say. Descartes struggled with this same difficulty and Spinoza too. They knew that those two dimensions were there but they came, intuitively, to other kinds of explanations. And of course we are only working on a part. The brain is not important for that, it is a tool. We know now that many parts of the brain can be lost and still the function can be restored, in a few cases. We talk about localization tentatively, but we are continually making mistakes about this question of localization. When I talk about this continued interaction, it is not only about one human being, it is completely throughout evolution. So this interaction theory is at this moment accepted by the leading people in neuroscience.

SMYTHIES: Neuroscientists do not accept it, otherwise Eccles would not have been attacked as viciously as he was.

MEERLOO: The question is not put in a neuroscientific sense. The problem is an etymological one. So you have to ask people who are looking over the shoulders of the neuroscientists. If you are only working with brains, you see nothing but that. When you work only with a red box, you only see reds and boxes. That old monism and dualism notion has disappeared.

FLEW: It seems to me that if you are going to make three plus three yield six and get six spatial dimensions, the crux is going to be that there must be a spatial relation between the dream appearances and public objects. Now, it seems to me that all that is being shown is that there are spatial relations within each person's mental imagery, but I cannot see that it even makes sense to ask where, in relation to this, my visionary experience is. It makes sense to ask where is Flew having a vision, and the answer is wherever Flew is, his visions are. But it surely does not make sense to ask: Where is part of Flew's visionary experience relative, not to other parts of his visionary experience, but to the public world? I think if you are going to get six out of these sums, you have got to have an answer about the spatial relations of things within the vision to things within the world.

SMYTHIES: I do not know if you have read Broad's account of this. He is one of the very few philosophers who took Dunne's theory of time seriously. He wrote a long account of Dunne's theory of time, in the nineteen-thirties. You have one public world of objects in which the entities have spatial relationship to each other. You have another world of images in which the entities have spatial relationship to each other. But as to the communication between these two—there is no

spatial relationship between this space and that space, there are only causal ones. They are just different spaces. But Broad says that the three-dimensional space of physics or the common physical world and the three-dimensional space which you operate in dreams and in imagery and unconsciousness are artificial subsections.

FLEW: I did study this one and I thought he just had not provided an answer to this crucial question. Because he had not provided an answer to this, he was in fact trying to sum two sorts of things that were not sound. It is like trying to sum an appearance into reality and see how many realities you get.

SMYTHIES: It depends on whether the basic statement is true. An after-image has geometrical properties of its own and not something that is attributed by your process of observing it. When you look at an after-image and you see this object changing red and blue, is this an entity? Is this an object which has properties of its own? If it had geometrical qualities, if it is an entity, it has geometrical qualities. Then you can relate its properties to those of physical objects, geometrically. But you could say this image does not really have properties. A very complicated brain process goes on.

FLEW: It cannot be an entity if it is a necessary condition of being an entity that it is, in the old sense, a substance, that it could be said significantly to exist by itself. My dream could not even significantly be said to exist without me to have it. It is like my pain and unlike my razor.

SMYTHIES: In your present field of experience, all these things go together. They are always part of your consciousness. This is not an argument against the proposition that these things can be said to have relationships with other entities. That is the crucial point.

MEERLOO: You talk of antithecal systems, they are interactions. So when I have a dream, it is a different system than when I see a glass and throw it on the floor. They meet each other sometimes and have interaction.

SMYTHIES: The point is this: Descartes said that mental events do not have any extension, they are not spatial. His image of a mental event was a thought. But Price has said this is wrong, visual images are just as mental, just a part of consciousness as any thought.

MEERLOO: It is a different space image.

SMYTHIES: Then, how do you relate the space in which images are extended to the space of the common physical world which is based in your brain?

MEERLOO: You do not have to relate.

SMYTHIES: You do not have to, but you may be able to. No one has

to do anything. You only do what your hypotheses direct you to do. It seems to me what Price and Broad are suggesting here is a new way of looking at dualism, different to Cartesian dualism, but nevertheless possibly valid, possible relationships in the world which may be true.

BRIER: I was worried when, towards the end of his talk, Dr. Smythies suddenly declared that he did not care whether or not parapsychological phenomena do or do not contradict the laws of physics. It worried me because it has always been my bedrock of definition that a phenomenon is not paranormal if it does not, ostensibly, contradict the laws of physics. This is your point of departure. Simply to waive the laws of physics in favor of something like information theory, which is after all only a kind of formalism describing certain facts of communications and which therefore has no laws which would, as such, preclude certain possibilities and contingencies—this seems to me a very questionable step and I would like to know how Dr. Smythies would defend it.

SMYTHIES: It does not bother me. The laws of physics had been got at by examining a great number of molecules and their interaction. If Eccles is right, let us say at the moment "if," then the present laws of physics, glorious as they are, are incomplete. They do not take into account this kind of infraction. When I seem not to care about this, I mean that I am not prepared to bow down before the law. Whether these mind influences exist and what are their properties, the present laws of physics are not relevant, because they are not designed to account for these phenomena.

BRIER: I do not understand this talk about different spaces. I can understand there being an n-dimensional space. But when you talk about different spaces, it seems like a sort of a category mistake. Let me give you an example. I do not know if you know of the work on spatial perception done by Patrick Sheelan. He recently published a paper in which he tries to see how people perceive light points in a darkened room. They have no perspective cues, it is purely dark and it is a very big room. He will say: "Illuminate three points within the room and ask the people to describe the spatial relations between the three points." This is a case where you cannot use any cues. When people describe these things, they are describing things on the surface of a sphere. There might be an equilateral triangle, but people will say the lower two sides are down and one is up. Now, in this case, we can understand that they describe things in a different geometry from the way we describe things when we have other visual cues. But this is not to say they have different spaces. But when you talk about different spaces, it seems that it is like the same thing. Do you not really

mean different geometries could be used to describe the experience? Would you agree with that?

SMYTHIES: What I am saying is that it is assumed, at the moment, that the space of the public physical world, when one speaks intuitively, is the same as the space of your consciousness. The issue is that people do not understand what "space of consciousness" means. What I am saying is that it is a space in which your dream images and your visual sensual state exist and it is assumed that these two spaces are the same. They are geometrically different.

BRIER: They are geometrically different! That is different from saying that they are two different spaces. Put it this way: There is only one space, the space of the world.

SMYTHIES: Why do you say that? How do you know that?

BRIER: Put it this way: If you can say that the geometries are different . . .

SMYTHIES: I would say that the totality is an end image from manifold of which one cross-section is a four-dimensional one and another cross-section is also four-dimensional, but they are different. They are geometrically different.