CHAPTER 5

Anti-Realism and the Deconstruction of Science

1. Introduction

In the last chapter we considered Davidson's attack on the scheme/content distinction, and argued that Davidson himself nevertheless seemed to continue assuming this distinction when, for example, he claims that "we must, in the plainest and methodologically most basic cases, take the objects of a belief to be the causes of that belief". Against Davidson we reasoned that if the relationship between our beliefs and those things which make our beliefs true is a causal one, then it follows from the contingent nature of causal connections that our beliefs could have been different, even radically so.

Earlier in the same chapter we drew attention to what looks like an essentially similar anomaly in Putnam's (1981) exposition of his own internal realist position; that is, while claiming, as an internal realist, that he rejects the idea of a reality existing externally to all thought and language, Putnam nevertheless asserts that "our conceptions of coherence and [rational] acceptability ... depend upon our biology and our culture". In view of this definition of truth as idealized rational acceptability it would seem that Putnam is required to admit that the judgement of a belief's truth or falsity is going to be (at least to some extent) determined by biological and cultural causes. In thus admitting that our beliefs are
in part causally determined, Putnam, like Davidson, seems to assume the existence of a reality which bears only a contingent relationship to them – a reality, that is, external to, and independent of, our beliefs.

In Chapter 2 a theory was developed in terms of which we indicated how it might appear that scientific change could be viewed as a process continuous with the processes of biological evolution. It was pointed out how on the assumption of this theory it would seem, that scientific change can be viewed as a naturalistic process. We went on to suggest that the assumption of such a view would mean that in the same way as the processes of biological evolution are amenable to causal analysis and explanation so also is the process of scientific change itself. In short, the suggestion that scientific change is continuous with biological evolution, seems to entail the view that whether we accept or reject a particular belief is a matter subject to causal determination. Accordingly, it would appear that the above mentioned criticisms levelled at Davidson and Putnam must apply with equal force when directed against the view that the processes of scientific change can be viewed as being continuous with those of biological evolution.

In this chapter we will argue that these criticisms rely for their force on a realist theory of causation and that once this is rejected in favour of an anti-realist one the idea that beliefs have causes is
no longer problematic. We reach this conclusion by arguing that the Cartesian distinction between reasons and causes rests for its validity on realism. In doing this we shall demonstrate how the anti-realism espoused in this thesis allows for a defusing of the debate between modern humanists and naturalists over the true origin of human actions.

With this conclusion as our aim this chapter proceeds as follows: In Section 2 we present a number of ideas and distinctions central to the philosophy of Descartes. We do this because this thesis is committed to the view that the Cartesian bifurcation of nature not only established the dualisms which give rise to the humanist-naturalist debate, but also that it transformed distinctions in the theory of knowledge in such a way as to make this debate now seem an intractable one.

In Section 3 we explain how, when combined with an empiricist theory of knowledge, Cartesian metaphysics made possible the transformation of natural philosophy into an 'autonomous' discipline - what came to be called the "New Science". It is further explained how, on the assumption of Cartesian ideas, Darwin's theory of evolution can be seen as conferring on science supreme authority concerning matters of knowledge and thus, as robbing philosophy of any autonomy. In Section 4 we explain how, after Darwin, psychology as Cartesian philosophy of mind was transformed so that, with the emergence of behaviourism, psychology became a Cartesian science of behaviour. We point out how behaviouristic
psychology's rejection of mind and reason can be viewed as resulting from the conjunction of the Cartesian view of nature and Darwin's assimilation of man to nature. We suggest that in view of the authority of science, philosophers found themselves powerless to challenge the 'scientific' claim that human behaviour can be explained as the effect of efficient and, therefore, ultimately, external causes. In Section 5 we look at how major developments internal to physics have resulted in science itself coming to question its realist and empiricist assumptions.

Against this backdrop, recent anti-realist and anti-empiricist ideas in philosophy are thrown into relief. We have already argued in Chapter 3 that the source of the distinction at the centre of the anti-realist realist debate can be traced back to the same origin as the debate between empiricists and rationalists—viz, the Cartesian bifurcation of nature. In Section 3 of the present chapter we argue that Cartesianism also gives rise to the split between science and philosophy, and go on to suggest that by eliminating the Cartesian split between thought and reality we also undermine the separation between science and philosophy. To justify this conclusion we show how the elimination of Cartesianism undermines certain crucial distinctions which are thought to warrant the separation of science and philosophy—the logically necessary/logically contingent, and the a priori/a posteriori distinctions.
In Section 6 we show how our rejection of the Cartesian thought/reality distinction undermines the Cartesian distinction between reasons and causes. In the context of a discussion ranging over a number of what we see to be some important philosophical implications flowing from rejection of the distinction between reasons and causes, we argue that without this distinction the problem at the centre of humanist/naturalist debate no longer arises. In Section 7, we summarize and conclude the chapter.

2. Classical Cartesianism

The Cartesian bifurcation of nature not only involved a separation of mind and body, but also required a separation of final and efficient causes. Accordingly, Descartes maintained that events occurring in the physical world can be explained as the results of efficient causes, whereas mental events cannot be accounted for in this way. This is because, he argued, mind, being essentially rational, acts in a way that is ends-directed, and its actions must therefore be understood teleologically, i.e., in terms of final causes. The reasoning which led Descartes to this conclusion, viz, that there is a discontinuity between the natures of human and natural behaviour, can be seen in the way he justifies his distinction between human and animal behaviour.
According to Descartes, because animals have no minds, they can, in principle, be viewed as nothing more than complex machines. This means that if it were possible to construct machines resembling some kind of animal:

we would have no means of recognizing that they were not of exactly the same nature as these animals.

Descartes, 1968, p.73

However in the case of humans things are significantly different:

if there were machines which had a likeness to our bodies and imitated our actions, in as much as this were morally possible, we would still have two very certain means of recognizing that they were not, for all that, real men. Of these the first is, that they could never use words or other signs, composing them as we do to declare our thoughts to others. For one can well conceive that a machine may be so made as to emit words, and even that it may emit some in relation to bodily actions which cause a change in its organs, as, for example, if one were to touch it in a particular place, it may ask what one wishes to say to it; if it is touched in another place, it may cry out that it is being hurt, and so on; but not that it may arrange words in various ways to reply to the sense of everything that is said in its presence, in the way that the most unintelligent of men can do. And the second is that, although they might do many things as well as, or perhaps better than, any of us, they would fail, without doubt, in others, whereby one would discover that they did not act through knowledge, but simply through the disposition of their organs: for, whereas reason is a universal instrument which can serve on any kind of occasion, these organs need a particular disposition for each particular action; whence it is morally impossible to have enough different organs in a machine to make it act in all the occurrences of life in the same way as our reason makes us act.

Descartes, 1968, pp. 73-74
In this passage Descartes draws attention to two observable properties displayed in the normal use of human language which he considers distinguishes it from the behaviour of animals and machines. First, in so far as humans "arrange words in various ways to reply to the sense of everything that is said in [their] presence" their use of language reveals it as something that possesses a kind of coherence and appropriateness to the situation which is totally lacking in the non-linguistic behaviours of animals and machines. Second, since "reason is a universal instrument which can serve on any kind of occasion" and it is language that allows us to "use words or other signs, composing them as we do to declare our thoughts to others", normal language use reveals it to be something free from stimulus control.

There is also a third property which, according to Descartes, distinguishes language from non-human behaviours - normal use of language reveals a creativity not to be found in the behaviour of animals:

It is particularly noteworthy that there are no men so dull-witted and stupid, not even imbeciles, who are incapable of arranging together different words, and of composing discourse by which to make their thoughts understood; and that, on the contrary, there is no other animal, however perfect and whatever excellent dispositions it has at birth, which can do the same. Nor does this arise from lack of organs, for one sees that magpies and parrots can utter words as we do, and yet cannot speak as we do, that is to say, by showing what they are saying is the expression of thought; whereas men, born deaf and dumb, deprived as much as, or more than, the animals of the organs which in others serve for speech, habitually invent
for themselves certain signs, by means of which they make themselves understood by those who, being fairly continuously in their company, have the time to learn their language. And this shows not only that animals have less reason than men, but that they have none at all.

Descartes, 1968, pp. 74-75

Thus, whereas animal behaviour can be explained in purely mechanistic terms, and, therefore, as resulting from efficient causes, the above observable features of language demonstrate that this is not true of human action. Because humans act in a fashion which cannot "in any way be derived from the power of matter" (ibid, p.76) it becomes necessary to assume the existence of a human soul, that is of a nature different to that of animals; of a nature, Descartes thought, which made it entirely independent of the body. But once we grant that normal human language use reveals language to function in a creative and reasonable way which is free from stimulus control, it immediately follows from the Cartesian view of language as the vehicle of thought and the activity of the soul, that the soul itself is creative, reasonable and free from stimulus control; hence, in contrast to animals and other natural beings, humans can, in any given situation, deliberate upon and freely choose the ends for which they might act. Given the fact that humans are thus capable of deliberation and reasoned activity, it follows that their actions must be viewed as having their origin in mental reasons rather than physical causes. If this was not the case, if, in other words, it was possible to explain human actions by tracing
them back to physical causes, then we would have no reason for supposing humans to be different from machines; that is, we would have no reason for supposing that humans were any more rational, or more moral, than a machine.

The Cartesian view that human beings have minds whereas non-humans do not was of further importance in that it suggested that each is best studied using quite different methods.

In considering the mind's knowledge of itself as compared to its knowledge of some physical object, Descartes writes:

What shall I say of myself, I ask, I who seem to conceive so clearly and distinctly this piece of wax? Do I not know myself, not only with much more truth and certainty, but also more distinctly and clearly? ... if my notion and knowledge of the wax seems to be more precise and distinct after it has become known to me not only by sight or touch, but also in many other ways, with how much greater distinctness, clarity and precision must I know myself, since all the means which help me to perceive the nature of wax, or of any other body, prove much more easily and evidently the nature of my mind? And so many other things besides are to be found in the mind itself, which can contribute to the clarification of its nature, that those which depend on the body ... scarcely deserve to be taken into account.

Descartes, 1968, pp. 111-112

It is Descartes' view that the contents of the mind are immediately accessible to itself; in contrast, objects belonging to the physical world are accessible only in a mediated fashion.
we perceive bodies only by the understanding which is in us, and not by the imagination, or the senses ... we do not perceive them through seeing them or touching them, but only because we conceive them in thought ...

Descartes, 1968, p.112

Yet it is not simply because physical objects are not immediately accessible to thought that knowledge of them is more problematic than the mind's own self-knowledge. In outlining his own approach to developing his knowledge of physical nature, Descartes asserts

to begin with, it is better to use only what presents itself spontaneously to our senses and of which we cannot remain ignorant provided we give it even a moment's reflection, than to seek out more rare and more obstruse phenomena; the reason for this is that these rarer ones are often misleading when one does not yet know the causes of the commoner ones, and that the circumstances on which they depend are almost always so special and so minute that they are difficult to detect. But the order I have adhered to in this has been as follows: firstly, I have tried to find in general the principles or first causes of everything which is, or which may be in the world, without considering to this end anything but God alone, who has created it, or taking them from any other source than from certain seeds of truth which are naturally in our minds. After that, I examined what were the first and most ordinary effects that could be deduced from these causes, and it seems to me that in this way I have found heavens, stars, an earth, and even on the earth water, air, fire, minerals and other similar things, which are the most common and simplest of all, and consequently the easiest to know. But, when I wanted to come down to those which were more particular, so many different ones presented themselves to me, that I did not believe it possible for the human mind to distinguish the forms or species of bodies which are on the earth, from an infinity of others which might have been there, if it had been the will of God to put them there, or, consequently to apply
them to our use, unless we reach for causes through effects and make use of many particular experiments. Following which, turning over in my mind all the objects which had ever been presented to my senses, I dare to state that I observed nothing that I could not easily enough explain by means of the principles I had found.

Descartes, 1968, pp.79-80

So while Descartes supposed that knowledge of nature can, at least in principle, be deduced from "seeds of truth which are naturally in our minds", he nevertheless viewed experiments as helpful devices when it comes to discovering causes "so special and so minute that they are very difficult to detect".

There is, Descartes believed, an additional reason for considering experiments as helpful in our attempts to increase our knowledge of nature:

I must ... admit that the power of nature is so ample and so vast ... that I observe almost no individual effect without immediately knowing that it can be deduced in many different ways, and that my greatest difficulty is ordinarily to find in which of these ways the effect depends upon them; for to this end I know no other expedient but then to seek certain experiments which are such that their result will not be the same if it is in one of these ways that the explanation lies as if it lies in another.

Descartes, 1968, pp.80-81

While experiments thus possess considerable heuristic value in the study of physical nature, they are, according
to Descartes, inappropriate when it comes to the study of the mind and its activities. This is not simply because these are unobservable to others, nor is it just because they are unmeasurable and, therefore, unquantifiable. More importantly, what makes the experimental method an inappropriate one for the study of mental activity is the fact that this activity is rational activity; the fact that mental activity is end-directed means that it cannot be investigated by manipulating external variables which can act as efficient causes only. Human behaviour resulting from mental activity of one sort or another is behaviour which cannot be explained in terms of such efficient causes; rather it is behaviour which results from the individual having thought some one thing or another and is, therefore, behaviour that originates in reasons rather than in experimentally manipulated external situations.

Thus we can only make sense of an individuals conduct once we know his reasons for his actions. How can we best do this? Given Descartes' view that knowledge of our mental life is the most direct kind of knowledge available, the answer is simple: we ask the agent why he performed the act we are interested in. Once the agent looks inwards into his mind, once he introspects, he automatically places himself in the best possible position to inform us of his reason(s) for acting as he did. Thus, rather than experimentation, it is introspection which is the most appropriate method for acquiring information with which to further our understanding of the mind and its activities.
In concluding this section it is worth stressing that Descartes' commitment to this duality of method was inextricably linked to his commitment to a duality of being.

3. From philosophy to science

From the time of its inception Descartes' dualism of mind and body was fraught with very real problems. Certainly not the least of these was that of how to account for the interaction of mind (which, for Descartes, has no spatial extension) and body (which, he says, acts purely mechanistically and, therefore, only in reaction to forces located outside itself).

There were various responses from those philosophers who concerned themselves with these problems. Some for example, extended Descartes' view, that God had implanted ideas in the mind which accurately mirrored external reality, to conclude that God had created physical reality so that it would proceed in a way which paralleled the development of ideas. These philosophers, e.g., Malebranche, came to be known as 'psychophysical parallelists'. In contrast to the parallelists who retained Descartes' dualism and attempted to find answers to the problems it created, other philosophers sought to escape from these problems by trying to get rid of the dualism they saw as their source. In seeking this escape these philosophers chose one of three avenues. First, there were those who tried to eliminate the dualism of the mental and the physical by
reducing the physical to the mental. Viewing ideas as the fundamental stuff of nature these philosophers became known as 'idealists', the most famous of whom was Berkeley. Second, there were those who sought an escape from dualism by reducing the mental to the physical. Viewing physical things as the fundamental building-blocks of nature, these philosophers became known as 'materialists'; included amongst their number were Hobbes and La Mettrie. Whereas both the idealists and the materialists equate reality with one or the other of Descartes' two worlds of \textit{res cogitans} and \textit{res extensa}, there is a third avenue open to those who wish to escape this dualism. This involves rejecting the idea that the distinction between the mental and the physical makes any sense when it is viewed as a metaphysical distinction. If this idea is rejected it follows that reality can not only no longer be meaningfully conceived as a dualistic combination of mental and physical phenomena, it also can no longer meaningfully be conceived as either one of these. Spinoza, Kant, and later the German Idealists, all chose this option.

While the relative merits of these 'metaphysical' views regarding the relationship between the mental and the physical were being debated by 'speculative' philosophers, something else was happening which would eventually come to greatly influence both the direction and the outcome of these debates. This was the rise of Cartesian natural philosophy and its eventual birth as the 'New Science'.

Although having its origins in the Greek philosophers' quest for material and efficient causes, the story of natural philosophy prior to Descartes had been a rather up-and-down affair. As against the pre-Socratics, Plato downgraded the status of natural philosophy. This state of affairs was soon to be reversed by Aristotle. However Aristotle's own subsumption of material, efficient, and formal causes to final ones, and his belief that theology had, therefore, to be considered the queen of the sciences meant that when early Christian thinkers (e.g. Augustine) integrated Christian theology with Aristotle's metaphysics, natural philosophy was again relegated to a lowly position, and was made subservient to Church teaching. Things were not to change again until the thirteenth century when Aquinas formally separated the realm of 'nature' from the realm of 'grace'. With this separation Aquinas paved the way for the emergence of the Cartesian conception of nature which was eventually to make possible the transformation of natural philosophy into a supremely influential discipline which came to see itself possessing total autonomy.

Needless to say, the Cartesian bifurcation of nature was not in itself sufficient to bring about this change in the status of natural philosophy. While Cartesianism gave to natural philosophy both a clearly defined subject matter (the whole of physical nature) and its own distinctive method with which to study this subject matter (the experiment) it did not, however, give natural philosophy any reason to justify
it's conception of itself as an autonomous source of knowledge. For, irrespective of what conclusion is deduced from the experimental study of physical nature, the final validity of experimentally deduced conclusions can only be decided by examining whether they are consistent with truths implanted in the mind by God. It must be remembered that for Descartes experiments served as heuristic devices for testing out the truth of beliefs which originated in an imperfect mind; they are not to be viewed as a source of truths in themselves, and in no way as justifying the claim of natural philosophy to be an autonomous source of knowledge.

However, it was not long before such a justification was forthcoming. All that was required was a transformation in the way experiments were viewed, and this was introduced by the empiricist theory of knowledge of Locke and his followers. Where Descartes had insisted that knowledge originated in truths implanted in the mind by God, Locke argued that the origins of knowledge were to be found in experience. From such a theory of knowledge it follows that experiments constitute more than simply a test of truth; they constitute a source of truth.

This new view concerning the role of experiments in the study of nature is to be found clearly expressed in the writings of one of the earliest, and perhaps greatest, exponents of the new natural philosophy - Sir Isaac Newton.
In the last of the "Queries", one which did not appear until the post-humous 4th edition of his Optics, and after it had been "corrected by the author's own hand, and left before his death with his bookseller" Newton outlines the method of analysis he considers fundamental to natural philosophy:

This analysis consists in making Experiments and Observations, and in drawing general Conclusions from them by Induction, and admitting of no Objections against the Conclusions, but such as are taken from Experiments, or other certain Truths. For Hypotheses are not to be regarded in experimental Philosophy. And although the arguing from Experiments and Observations by Induction be no Demonstration of general Conclusions; yet it is the best way of arguing which the Nature of Things admits of, and may be looked upon as so much the stronger, by how much the Induction is more general. And if no Exception occur from Phenomena, the Conclusion may be pronounced generally. But if at any time afterwards any Exception shall occur from Experiments, it may then be pronounced with such Exceptions as occur. By this way of Analysis we may proceed from Compounds to Ingredients, and from Motions to the Forces producing them; and in General, from Effects to their Causes, and from particular Causes to more general ones, till the Argument end in the most general.

Newton, 1952, p.404

So rapid was the rise in influence of this natural philosophy - this 'New Science' - that, almost immediately, it came to be seen as possessing a status eclipsing that of traditional 'speculative' philosophy (i.e. metaphysics). Indeed, in reflecting on the status of his own position as a philosopher relative to that of the heroes of the New Science Locke commented as early as 1690:
The commonwealth of learning is not at this time without master-builders, whose mighty designs, in advancing the sciences, will leave lasting monuments to the admiration of posterity; but everyone must not hope to be a Boyle or a Sydenham; and in an age that produces such masters as the great Huygenius and the incomparable Mr Newton, with some others of that strain, it is ambition enough to be employed as an under-labourer in clearing ground a little, and removing some of the rubbish that lies in the way of knowledge...

Locke, 1961, p.xxxv

And, just sixty years later, Hume, in one of his more famous passages, writes:

When we run over libraries ... what havoc must we make? If we take in hand any volume; of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion.

Hume, 1951, p.165

Kant, awoken from his "dogmatic slumbers" by Hume, set out to limit the pretensions of his new science in his Critique of Pure Reason. Yet because Kant maintained that all (non-conceptual) knowledge was tied to experience (whether to its contents or conditions), and because he agreed with Hume that the speculations of metaphysicians result in little more than fantasy, his views served in the end to reinforce rather than diminish science's self confidence.
Even so, it was only Darwin's assimilation of man to nature which made it possible for science to triumph over philosophy. Because thinkers before Darwin generally viewed human rationality and morality as requiring some sort of dualistic conception of man (either of a Cartesian or Kantian nature) it was still thought by many philosophers that their discipline had some standpoint outside the scope of, and therefore beyond the reach of, natural science. For Cartesians this starting point was located in the domain of the mental, while for Kantians, philosophy was a special form of critique - critique based not on empirical considerations, but on considerations which are transcendentally deduced.

If we use as one premise the Darwinian view that humans are natural beings and as the second premise the conditional that if humans are natural beings, then their behaviour is the behaviour of natural beings, we can conclude that human behaviour is natural behaviour. But given that human behaviour is natural behaviour it follows that it is as valid to study human behaviour using Newton's method of analysis as it was for Newton to use this method when studying the behaviour of simple physical bodies. This is because human behaviour as natural behaviour is behaviour that can be explained as the effect of efficient causes. From this it follows that it is no more necessary to appeal to a mind or anything else mental (e.g. reasons, intentions) when explaining human behaviour than it is necessary to appeal to mental facts when explaining
the behaviour of other natural objects (e.g. atoms, gasses, electric charges).

In the absence of any necessity to invoke mind in the explanation of behaviour the Cartesian world of the mental evaporates, leaving only Descartes' physical world - a world determined by efficient causes. Similarly, in the absence of any necessity to invoke reason in the explanation of behaviour, Kant's noumenal world disappears to leave only a world of phenomena consisting of physical objects which behave in accordance with laws of efficient causality. In short, with Darwin the domain of science can now be considered to extend over the whole of nature, and it is no longer possible for philosophy to find a starting point outside it. Philosophy now has to accept the fact that its own existence is a dependent one and that it is unable in itself to serve as a source of knowledge about the world. Thus it is that in the two hundred years between Descartes' bifurcation of nature and Darwin's assimilation of man to nature, philosophy emasculates itself.

In concluding this section let us briefly recapitulate: although tracing the history of this self-emasculcation of philosophy back to the Cartesian bifurcation of nature, we stressed that, for Descartes, science, as natural philosophy, could never have proclaimed itself to be autonomous; its 'findings' could always be challenged in light of truths implanted by God in the mind. It was only with empiricism's reconceptualization of the function of experiments as a source of truth rather
than simply a test of truth, that science, i.e., experimental philosophy, acquired autonomy. Finally, when Darwin indicated how it was possible to conceive the whole of nature as consisting of physical things which behaved in response to efficient causes, the rule of science became supreme; with this last development Compte's age of 'positive philosophy' had, it seemed, become a real possibility.

4. **Psychology: From science of mind to science of behaviour**

In spite of the observations made above, however, it should be noted that the rise of Darwinism did not herald an immediate decline of mentalism, since the logical consequences of the view were not apparent straight away. Darwin himself continued to maintain mentalist beliefs. On the assumption that the mind had evolved as a biological organ possessing obvious survival value, he thought that animals other than man would also be capable of mental activity.

Of course Darwin was not alone in reasoning this way; the idea that the mind could be viewed as a biological organ which evolved as a result of the survival value it conferred on the species, became the basis for a whole new school of psychology - American Functionalism. In viewing their discipline as a sub-branch of biology, functionalists saw themselves as natural scientists and, as such, they proceeded to study
mental processes 'scientifically' by doing experiments on the animal behaviours they saw as evidencing some kind of mental activity.

More or less at the same time as the American functionalists were doing their experiments on animal behaviour, the 'structuralist' school of psychologists in Germany was establishing psychology as an experimental science of the human mind. Working with human subjects structuralists had no compunction about combining the experimental method with a use of introspective reports. By using the introspective method the structuralists saw themselves as gaining direct access to the phenomena with which they were primarily concerned - the contents of consciousness.

Whereas the functionalism of William James, John Dewey and the Chicago school derived its impetus from Darwinism, the structuralism of Wilhelm Wundt and his Leipzig school derived much of its thrust from British empiricism.

In assuming something like the 'mental chemistry' of John Stuart Mill, structuralism viewed conscious experience as consisting of a number of fundamental mental elements. The goals of structuralist psychology as identified by Wundt were (1) to discover the elements out of which conscious experience was composed, (2) to determine the manner in which these elements were connected, and (3) to determine the laws
regulating these connections. A basic assumption of structuralism was that, when used in conjunction with the method of introspection, the analytical methods of experimental science would make the attainment of these goals possible.

As schools of experimental psychology neither functionalism nor structuralism were to last for much more than a decade into this century. Without doubt their early demise can be attributed largely to the problems they encountered in attempting to reconcile their Cartesian assumptions with their commitment to the experimental method.

In the case of structuralism these problems came to manifest themselves almost immediately. Thus as early as 1874, Brentano, in his *Psychologie vom empirischen Staufpunkt*, is to be found criticizing the experimental approach to psychology advocated by Wundt in the first volume of the latter's *Physiologische Psychologie* published only the previous year. While sharing with Wundt the desire to see psychology established as a 'science' Brentano nevertheless rejected the belief that psychology can be experimental. Thus against the experimentation of Wundt's Leipzig School Brentano argued that because psychical phenomena are intentional, it is, in principal, impossible to break them down into more basic elements, amenable to experimental analysis. In opposition to Wundtian structuralism Brentano argued that psychology must be developed as an 'empirical' science of mental acts rather than as an 'experimental' science of mental contents.
Brentano's reasoning at this point reveals fundamental similarities between his own views and those of Descartes. Like Descartes, Brentano believed that mental phenomena are of a radically different nature to physical phenomena. Again in agreement with Descartes, Brentano thought that this meant that different methods of inquiry were appropriate in the study of each of these.

There were, nonetheless, differences between them. For example, where Descartes characterized the mental as being essentially 'rational', Brentano characterized it in terms of its 'intentionality'. Another difference between them, one which was to turn out to be one of major importance for the fate of Brentano's psychology, was that whereas Descartes had a theory of knowledge which made it possible for him to claim an objective knowledge of his own and other people's minds, there was no such way that it was possible for Brentano to defend his own mentalistic views in the context of the then prevailing positivist epistemology. In this regard, given the overriding concern of psychologists to establish their discipline as a true science, structuralism's adherence to an 'experimental' approach was to prove decisive in ensuring its triumph over Brentano's 'empirical' act psychology.

Needless to say there seemed to be something of a dilemma here; on the one hand, if psychology was to constitute a genuine science of the mind then it had to adhere to the analytical method of the natural sciences; only in this way could it
then become an experimental science. On the other, psychology, as the study of the mind, could ill afford to overlook what is essential to mental phenomena, viz, their intentional nature. Thus, for the reasons given by both Descartes and Brentano, psychology, could not, it seemed, both acknowledge the intentionality of the mental and at the same time try and analyse mental phenomena into constituent elements which stand in purely accidental relationships to each other.

A possible way out of this dilemma was suggested by Wilhelm Dilthey, who drew a distinction between two different types of psychology. He characterized one of these as 'analytic', or 'explanatory', psychology; this makes use of the analytic methods of the natural, or experimental, sciences and in doing so, examines the relationship between particular events in an attempt to discover the causal laws which regulate the interactions between these events. The second type of psychology Dilthey characterized as 'descriptive', or 'understanding', psychology; this assumes the individual to be a psycho-physical unity and concerns itself with discovering the meaning, or significance, for the individual of particular episodes within his life-experience.

What is interesting about Dilthey's approach is the way in which he takes Descartes' metaphysical distinction between the mental and the physical, and transforms it into an epistemological-cum-methodological one. Thus although Dilthey rejects
the existence of any Cartesian mind, he does, nevertheless, agree with Descartes that the thoughts, beliefs, and experiences of an individual cannot be explained as the effect of efficient causes, and that they can only be understood. In this way Dilthey was able to accommodate both the descriptive psychology of Brentano, for example, and, at the same time, the analytical psychology of, for example, Wundt's structuralist school.

There are clear similarities between Dilthey's position and Davidson's 'anomalous monism'; these render Dilthey's views vulnerable to the same objection we raised against Davidson (see Chapter 3) namely, that if an individual's behaviour can be explained simply in terms of efficient causes, then what reason is there for supposing it necessary to make any reference to mental activities at all? In other words, if it is possible to dispense with any reference to the mind and still provide adequate explanations of behaviour why not just dispense altogether with any talk about the mind?

This was in fact one of the lines of reasoning the behaviourists used against the functionalists. Arguing against the functionalists' programme of doing experiments on animal behaviour as a way of trying to learn about mental processes, John B. Watson, himself having trained as a functionalist, argued that if experimental psychology consists largely in the experimental analysis of behaviour then why not see it as such and, dispensing with all talk about unobservable mental activities, let psychology become the 'science of behaviour'.
In illustrating how such a transformation of psychology could be achieved Watson made a great deal of the concept of conditioning. It was his belief that this concept, which arose out of the experimental work of nineteenth century Russian physiology, could be used to account for all those behaviours that had traditionally been explained as resulting from the mental process of learning. Watson argued that whereas the concept of conditioning could be defined in terms of concepts which are objective, observable, and readily measurable, the concept of learning referred to a process which is subjective, unobservable, and difficult to measure. In generalizing from this example, he argued that if psychology concerned itself with the experimental analysis of behaviour and eschewed all reference to unobservable mental activities, it would eventually acquire a system of concepts and principles which would make it possible for psychologists to predict and control human behaviour with the same degree of accuracy and success that natural scientists are capable of. In this way behaviourism indicated how it was possible to realize fully the promise heralded by Darwinism — that is, the complete assimilation of man to nature.

Before proceeding, let us briefly recapitulate the history of this development: For Descartes, it was noted, animal behaviour is mechanistic behaviour; it is behaviour which can be studied experimentally. In the Cartesian view, the study of animal behaviour — as a branch of physiology — is a branch of natural philosophy. With Locke and the empiricists'
transformation of the role played by experiment, natural philosophy came to see itself as autonomous in relation to the rulings of speculative philosophers. Revelling in this newly acquired sense of independence, this highly successful natural philosophy came to view itself as the New Science. The emergence of Darwin's theory of evolution in the nineteenth century resulted in the important consequence that man himself was assimilated into nature. One result of this was that man himself came to be seen as a legitimate object of scientific study. Human behaviour, as a species of animal behaviour, came to be viewed mechanistically, and as the effect of efficient causes. In short, as a result of Darwin's assimilation of man to nature, the study of human behaviour could be considered as a branch of science and, therefore, as a legitimate area of experimental inquiry. The emergence of behaviourism involved the concrete realization of this logical consequence of Darwinism.

There was, we noted, a second important consequence which resulted from Darwinism, a consequence that is closely related to the first. Because Darwin extended the legitimate domain of scientific enquiry to include the whole of nature, he effectively robbed philosophy of any independent basis upon which it could stand should it choose to dispute the claims of science. In short, philosophy, after Darwin, no longer has any autonomy; it is to science, and to science alone, that we must turn if we seek knowledge of reality.
The significance of this becomes apparent if we examine the arguments of those modern philosophers who oppose the idea that psychology can be an experimental science. Peter Winch is, as we have seen (Chapter 3, Section 3) committed to this view. He opposes the idea of a human science for the same reason as Descartes - because the meaningful nature of human action precludes its experimental analysis. In assuming this view Winch, like Davidson, argues that, because of the holistic nature of meaning, the analytical nature of the experimental method renders it an inappropriate tool for the study of human action.

At the same time, however, Winch, siding with Locke against Descartes, views experimental science as autonomous in relation to the claims of philosophy. In Winch's view it is a "serious ... mistake ... to think that philosophy, with its a priori methods of reasoning could possibly compete with experimental science on its own ground" (Winch, 1958, p.9). Yet, in thus agreeing with Locke, Winch finds himself in a compromising position; while he wants to concede autonomy to experimental science he also wants to "wage war" on what he claims is a "prevalent contemporary idea about the nature of philosophy" (Ibid, p.3). Having as "one of its presiding geniuses, John Locke", this idea is that of the 'underlabourer conception' of philosophy. In characterizing this popular conception of philosophy Winch writes:
according to it philosophy cannot contribute any positive understanding of the world on its own account: it has the purely negative role of removing impediments to the advance of our understanding. The motive force for that advance must be sought in methods quite different from anything to be found in philosophy; it must be found, that is, in science. On this view philosophy is parasitic on other disciplines; it has no problems of its own but is a technique for solving problems thrown up in the course of non-philosophical investigations.

The modern conception of what constitutes the 'rubbish that lies in the way of knowledge' is very similar to Locke's own: philosophy is concerned with eliminating linguistic confusions. So the picture we are presented with is something like this. Genuine new knowledge is acquired by scientists by experimental and observational methods. Language is a tool which is indispensable to this process; like any other tool language can develop defects, and those which are peculiar to it are logical contradictions, often conceived on the analogy of mechanical faults in material tools. Just as other sorts of tool need a specialist mechanic to maintain them in good order, so with language. Whereas a garage mechanic is concerned with removing such things as blockages in carburettors, a philosopher removes contradictions from realms of discourse.

Winch, 1958, pp.4-5

In his attack on the under-labourer conception of philosophy Winch begins by making a distinction between the aims of the philosopher and those of the scientist:

The difference between the respective aims of the scientist and the philosopher might be expressed as follows. Whereas the scientist investigates the nature, causes and effects, of particular real things and processes, the philosopher is concerned with the nature of reality as such and in general.

Winch, 1958, p.8

For the sake of argument, let us accept Winch's
proposed distinction. Does it place the philosopher in any position to refute the claims of those who would have us believe that psychology can be considered a natural science? In answering this question let us turn our attention to Winch's criticism of John Stuart Mill whom, he says, "states naively a position which underlies the pronouncements of a large proportion of contemporary social scientists" (Ibid, p.66).

Mill regards all explanations as fundamentally of the same logical structure; and this view is the foundation of his belief that there can be no fundamental logical difference between the principles according to which we explain natural changes and those according to which we explain social changes. It is a necessary consequence of this that the methodological issues concerning the moral sciences should be seen as empirical: an attitude involving a wait-and-see attitude to the question of what can be achieved by the social sciences and, incidentally, ruling the philosopher out of the picture.

But the issue is not an empirical one at all: it is conceptual. It is not a question of what empirical research may show to be the case, but of what philosophical analysis reveals about what it makes sense to say. I want to show that the notion of a human society involves a scheme of concepts which is logically incompatible with the kinds of explanation offered in the natural sciences.

Winch, 1958, pp.71-72

In criticizing Mill it is clear that Winch assumes the Cartesian view that there is a fundamental discontinuity between natural and social processes. Winch does not, however, explain how this discontinuity can be reconciled with the Darwinian view that humans themselves are natural beings, and the consequence which follows from this—viz, that human behaviour,
being the behaviour of a natural being, is itself natural
behaviour. Moreover, given Winch's distinction between
the concerns of the philosopher and those of the scientist,
it is difficult to see how the philosopher can question the
validity of applying scientific methods to the study of social
psychological processes. For after all, if it is accepted that
the aim of the scientist is to "investigate the nature, causes
and effects of particular real things" it is difficult to see
why human beings - themselves instances of particular real
things - cannot be legitimate objects for scientific study.
And similarly since human responses constitute particular
real things (events) Winch can't, without contradicting himself,
deny that it is reasonable that science should investigate
them experimentally. On the assumption of his own view that
it is a "serious mistake ... to think that philosophy ... [can]
possibly compete with experimental science on its own ground"
Winch can hardly concede the philosopher (whose concern is
with reality as such and in general) any jurisdiction to criticize
the scientists' efforts to discover the "nature, causes and
effects" either of particular social processes or of particular
human social actions.

With behaviouristic psychology's elimination of the mental,
Darwin's assimilation of humans to nature is completed. On
the assumption of the Darwinian view of man and his place
in nature, science is able to confidently assert that since
there is no longer any occurrence which cannot be explained
as the effect of efficient causes, there is no longer any need to talk of final causes. (See e.g., B.F. Skinner, 1953, 1972; J. Monod, 1971; E.O. Wilson, 1978.)

Needless to say, the elimination of final causes is at the same time the elimination of reason. In conformity with its empiricist foundations science thus no longer appeals to 'reason' to support its knowledge claims but instead appeals to 'evidence'. Science's blindness to reason thus comes to serve as a form of self-immunization (Habermas) against philosophical criticism by, in effect, "ruling the philosopher out of the picture" (Winch).

5. The breakdown of Cartesian science

It has been stressed in this chapter that since the time of Descartes natural science has generally assumed a conception of the physical world which is, in its fundamental details, much the same as Descartes' conception of physical nature; the physical world is conceived as consisting of objects that (1) exist externally to our conceptions of them, and (2) behave in a way that can be explained as the effect of efficient causes.

The epistemological problems created by the Cartesian separation of the mental and the physical have been covered above and will not be discussed any further. Suffice to say
at this point that when these problems are addressed to the scientist his response is typically to characterize them as 'philosophical' problems and thus as of no real concern to him as a 'scientist'; what matters to him is 'evidence' and as long as he has that, that is all that matters.

While science was thus able to remain relatively untroubled by the criticisms that philosophers raised over the epistemological problems generated by its Cartesian assumptions, it proved to be a very different story when these same assumptions created problems within science itself. Where until the beginning of this century science had been able to work successfully on the Cartesian assumption that the objects of its investigation could be considered as existing externally to the thoughts and observations of the scientist himself, a radical departure from this assumption seemed to become necessary because of developments initiated by Plank's discovery of the quantum. Explaining the need for this departure Niels Bohr, himself one of the pioneers of the new revolution in physics, writes:

New fundamental aspects of the observational problem ... were to be uncovered by the development initiated by Plank's discovery of the universal quantum of action in the first year of this century. In fact, this discovery proved that the wide applicability of so-called classical physics rests entirely on the circumstance that the action involved in any phenomena on the ordinary scale is so large that the quantum can be completely neglected ...

In this new field of experience ... we had met with many great surprises and even been faced with the problem of what kind of answers we can receive by putting questions to nature in the form
of experiments. Indeed, in the account of ordinary experience it is taken for granted that the objects under investigation are not interfered with by observation ... If, however, we have to do with atomic systems, whose constitution and reactions to external influence are fundamentally determined by the quantum of action, we are in a quite different position.

Faced with the question of how under such circumstances we can achieve an objective description, it is decisive to realize that however far the phenomena transcend the range of ordinary experience, the description of the experimental arrangement and the recording of observations must be based on common language. In actual experimentation this demand is amply satisfied with the specification of the experimental conditions through the use of heavy bodies such as diaphragms and photographic plates, the manipulation of which is accounted for in terms of classical physics. Just this circumstance, however, excludes any separate account of the interaction between the measuring instruments and the atomic objects under investigation.

Bohr, 1960, pp.10-11

Here Bohr argues that when it comes to the experimental investigation of sub-atomic phenomena, the quantum of action introduces into the processes of observation and measurement effects which preclude the making of any distinction between the measuring instrument and the phenomena under investigation. Bohr draws the conclusion that there is no way we can sensibly talk of sub-atomic phenomena as 'physical objects' in anything like the traditional sense.

It is this last consequence which was seen to call into question the Cartesian view of physical nature assumed by post-Cartesian science. The radical nature of this challenge is emphasized by Heisenberg in his Physics and Philosophy.
In drawing attention to the importance of the Cartesian bifurcation of nature for the history of science, Heisenberg writes:

in natural science the partition was for several centuries extremely successful. The mechanics of Newton and all the other parts of classical physics constructed after its model started from the assumption that one can describe the world without speaking about God or ourselves. This possibility soon seemed almost a necessary condition for natural science in general.

Heisenberg, 1958, pp.74-75

But, Heisenberg adds, "the situation changed to some extent through quantum theory". He continues:

in the Copenhagen interpretation of quantum theory we can indeed proceed without mentioning ourselves as individuals, but we cannot disregard the fact that natural science is formed by men. Natural science does not simply describe and explain nature; it is a part of the interplay between nature and ourselves; it describes nature as exposed to our method of questioning. This was a possibility of which Descartes could not have thought, but it makes the sharp separation between the world and the I impossible.

If one follows the great difficulty which even eminent scientists like Einstein had in understanding and accepting the Copenhagen interpretation of quantum theory, one can trace the roots of the difficulty to the Cartesian partition. This partition has penetrated deeply into the human mind during the three centuries following Descartes and it will take a long time for it to be replaced by a really different attitude toward the problem of reality.

Heisenberg, 1958, p.75

Largely inspired by the Uncertainty Principle first enunciated by Heisenberg in 1926, the celebrated 'Copenhagen
interpretation' of quantum theory was "thrashed out in the autumn of 1927 at two physics conferences: the General Physics Congress in Como ... and the Solvay Congress in Brussels" (Heisenberg, 1971, p.79). While it has been subjected to considerable criticism by Einstein, Schrodinger, and de Broglie to begin with and, more recently, by Bohm, Bub, and Vigier, it has, nonetheless, become an orthodoxy in modern physics.

The difficulty that many encounter in either understanding or accepting the Copenhagen interpretation of quantum theory can, we believe, be put down largely to the fact that it radically conflicts with the Cartesian view that has in Heisenberg's words, "penetrated deeply into the human mind". This is clearly evident in the reaction of someone like Popper who argues that by bringing anti-realism into physics, the Copenhagen interpretation at the same time introduces subjectivism into the field. Thus, Popper maintains, if physics is to retain objectivity, it is necessary to find a realist interpretation of the quantum mechanical formalism with which to replace the anti-realist Copenhagen one.

However, against Popper, and in agreement with Kant, we have argued that realism, insofar as it rests on a Cartesian separation between thought and reality, precludes any possibility of knowledge. Furthermore we have argued in agreement with Davidson that the Cartesian idea of a reality existing externally to thought is incoherent. We therefore dispute Popper's claim
that the anti-realism of the Copenhagen interpretation in itself constitutes a weakness for it (which is not to say that it does not suffer from other weaknesses).

By introducing anti-realism into physics, the Copenhagen interpretation for the first time removed physics from the Cartesian base upon which it had rested for the previous three centuries. This not only undermined the materialist metaphysics which had become, especially since Darwin, an assumption fundamental to much Western intellectual thinking, but it also entailed a rejection of Descartes' metaphysical separation of final and efficient causes.

This last point is of fundamental importance. As we have seen, assuming the Cartesian view that natural events can be explained as the effect of efficient causes, the Darwinian idea that humans themselves belong to nature entails the conclusion that human behaviour can be explained in terms of efficient causes alone. If this is the case, it would follow that on the Cartesian view we would have as little need to appeal to anything mental in explaining human behaviour as we have in the case of animal behaviour (or, for that matter, rock behaviour). This amounts to saying that mental phenomena themselves have no explanatory function — in Skinner's words, they are 'explanatory fictions'.

Of course it is totally unacceptable to suppose that people do not have 'reasons' for what they say and do, and,
to suppose that what people say and do does not 'mean' anything. By adopting an anti-realist position it is suggested that we can accept Darwin's idea that humans are part of nature and at the same time retain the idea that human action can be described as rational and purposeful in the traditional sense of these words. Before we go on to demonstrate how this is possible we first return to look again at the views of our paradigm of a contemporary Cartesian thinker - Peter Winch.

Basic to Winch's attack on "the idea of a social science" is his assumption that whereas the relationship between related natural events is one that is purely 'extrinsic' or 'external' to their nature, the relationship between ideas, beliefs, actions, etc., is 'intrinsic' or 'internal' to their nature: this means that if we are to understand the essential role played by particular ideas, beliefs, and actions in human life it is necessary to view these within a wider context of related ideas, beliefs, and actions. (See Winch's example cited earlier in Chapter 3 Section 3 of an act of obedience and the character of its relationship to an earlier act of command.) Assuming this distinction Winch argues that, since "social relations between men exist only in and through their ideas" (Winch, 1958, p.123), any investigation of social relations necessitates conceptual analysis. This means, according to Winch, that the study of human action must be considered to belong to the domain of philosophy rather than that of natural science.
But is Winch correct in claiming that the relations existing between ideas are fundamentally different to those which exist between natural events? His Cartesian view that they are hinges on the assumption that there is an essential difference between 'internal' and 'external' relations. What is this distinction, and is it a tenable one?

In maintaining that the way "men can be related to each other through their actions" can be considered to be "the same kind of way ... propositions can be related to each other" (Winch, 1958, p.125) it is clear that for Winch, as for the British Idealists, internal relations are quasi-logical in character. We have already noted (Chapter 3, Section 3) that this results in a convergence between his views and those of Davidson (Davidson, 1970, 1974a); in basic agreement with Winch, Davidson too argues that it is the essentially logical, or rational, nature of the relationships which exist between human beliefs, intentions, actions, and so on which gives the mental its holistic character. Since Davidson also assumes the Cartesian view of physical nature as a world of physical objects which relate to each other in an essentially non-logical way he is forced to the conclusion that the mental is irreducible to the physical. This leads to a further convergence between Davidson's views and those of Winch — viz, their Cartesian attitude that the rational nature of the mental precludes it from being amenable to experimental study. On the basis of this view both of them argue that psychology, as the study of the mental, must be considered to belong
to the domain of philosophy rather than that of science.

The conclusions reached by Davidson and Winch rest on the assumption that the 'internal' relations which exist between propositions, beliefs, intentions, actions, etc, are fundamentally different to those between natural, or physical events, whereas logical relationships are governed by a fundamentally different kind of law to those governing the relationships between natural events.

In section six of the preceding chapter, however, we argued that there is no essential difference between logical laws and natural laws, thus subverting Winch's and Davidson's stark separation of the domains of the mental and the physical.

Needless to say some would see the fact that the laws of logic (such as they happen to be) are discoverable a priori and, therefore, must be seen as akin to philosophy rather than science, as a serious objection to our rejection of the distinction between logical and natural laws.

We would argue against this objection by pointing out that it assumes another of the distinctions we have, following Davidson, found to be incoherent - viz, the distinction between theory and experience. In rejecting the possibility of any such fundamental distinction we would argue that the idea of an experience lying 'beyond' or 'outside' concepts, ideas, beliefs, theories, etc, is an unintelligible one. In view of
this we reject as unintelligible the (empiricist) idea that it is possible to discover truths by going 'outside' theory to an external experience. At the same time, of course, the claim that it does not make sense to talk of discovering truth 'outside' concepts, theories, etc, also entails rejecting as unintelligible the (rationalist) idea that truths can be discovered independently of experience by looking 'inside' concepts, theories, and so on. This leads us to the conclusion that in view of the unintelligibility of the epistemological distinction between a priori and a posteriori truths, that distinction no longer provides a basis upon which to separate logical from natural laws.

What is more, while reaffirming our view that there is no fundamental difference between the laws of logic and the laws of nature, we wish to say that Winch's and Davidson's Cartesian claim that there is an essential difference between the mental and the physical has no basis. In this conclusion we also claim that their concurrence on the (Cartesian) view that psychology, as the study of the mental, must align itself with philosophy rather than science, is equally without basis. Our reason for concluding this is not that we see psychology as belonging to philosophy rather than to science; it is rather that given our rejection of the distinction between a priori and empirical truths we no longer see any basis upon which to make a distinction between science and philosophy.
Accordingly, in concluding this section, we wish to claim that the rejection of a Cartesian separation between thought and reality, entails both the rejection of those ideas which led to the splitting of science from philosophy, and, therefore, the new sense these ideas gave to traditional distinctions which seemed to justify this separation.

6. Reasons and Causes

In the preceding section we argued that the rejection of the thought/reality distinction also requires a rejection of the idea that there is a fundamental distinction between 'logical' and 'natural' laws. We further argued that in so far as anti-realism undermines the distinction between logical and natural laws, it also undermines the idea that propositions relate to each other differently to the way in which natural events relate to each other. In view of these consequences we now argue that anti-realism undermines the traditional idea that 'reasons' explanations are fundamentally different in kind to 'causal' explanations. In examining how this comes about, let us begin with the following analysis of such explanations from Davidson:

Consider our common-sense scheme for describing and explaining actions. The part of this scheme that I have in mind depends on the fact that we can explain why someone acted as he did by mentioning a desire, value, purpose, goal or aim the person had, and a belief connecting the desire with the action to be explained. So, for example, we may explain why Achilles returned to the battle
by saying he wished to avenge the death of Patroclus. (Given this much, we do not need to mention that he believed by returning to the battle he could avenge the death of Patroclus.) This style of explanation has many variants. We may adumbrate explanation simply by expanding the description of the action: 'He is returning to battle with the intention of avenging the death of Patroclus.' Or we may more simply redescribe: 'Why is he putting on his armour?' 'He is getting ready to avenge Patroclus' death.' Even the answer 'He just wanted to' falls into the pattern. If given in explanation of why Sam played the piano at midnight, it implies that he wanted to make true a certain proposition, that Sam plays the piano at midnight, and he believed that by acting as he did, he would make it true.

Davidson, 1974a, p.44

In view of this kind of analysis Davidson goes on to argue that:

Two ideas are built into the concept of acting on a reason (and hence, the concept of behaviour generally): the idea of cause and the idea of rationality. A reason is a rational cause. One way rationality is built in is transparent: the cause must be a belief and a desire in the light of which the action is reasonable.

Davidson, 1974a, p.46

Given that Davidson's analysis is one which many would regard as accurately representing our modern commonsense notion of behaving for a reason, let us turn to the following passage from Aristotle's Physics:

Intelligent action is for the sake of an end; therefore the nature of things also is so. Thus if a house, e.g., had been a thing made by nature it would have been made in the same way as it is now by art; and if things made by nature were made also
by art, they would come to be in the same way as by nature. Each step then in the series is for the sake of the next; and generally art partly completes what nature cannot bring to a finish, and partly imitates her. If, therefore, artificial products are for the sake of an end, so clearly also are natural products. The relation of the later to the earlier terms of the series is the same in both.

Aristotle, 1941, p.250

For Aristotle, it is clear, nature is itself ends-directed: this means, of course, that generally things do not happen without reason. It is this inbuilt reason which constitutes the 'purposive' character of natural phenomena.

Needless to say, Aristotle did not view the fact that natural phenomena are purposive as entailing the consequence that they possess the capacity of rational thought. Thus, in addressing himself to those who were of a mind to criticise his view that teleological actions can only arise from activities of thinking and deliberation, he writes:

It is absurd to suppose that purpose is not present because we do not observe the agent deliberating. Art does not deliberate. If the ship-building art were in the wood, it would produce the same results by nature. If, therefore, purpose is present in art, it is present also in nature. The best illustration is a doctor doctoring himself; nature is like that.

It is plain then that nature is a cause, a cause that operates for a purpose.

Aristotle, 1941, p.251
As we have explained, the Cartesian bifurcation of nature undermined this Aristotelian view and transformed 'reason' from being something 'natural' into something 'mental'. However to understand how it happened that the Cartesian bifurcation of nature resulted in the transformation of teleological explanations into explanations in terms of beliefs, and so on, it is necessary that we make brief reference to another factor - the development of logic; why this is so becomes clear when we trace logic back to its beginnings.

In his *Introduction to Metaphysics* Heidegger asks:

> Since when ... has there been this logic which still dominates our thinking and our discourse and which from an early day has contributed in large part to determining the grammatical view of language and the basic Western attitude toward language in general. When did the development of logic begin?

Heidegger, 1959, pp.120-121

To which he answers:

> It began when *eon*, the being of the essent, was represented as *idea* and as such became the "object" or *episteme*. Logic arose in the curriculum of the Platonic - Aristotelian schools ... Logic was able to arise as an exposition of the formal structure and rules of thought only after the division between being and thinking had been effected ...  

Heidegger, 1959, p.121

In short, it was only when Greek philosophy, after Parmenides, initiated a distinction between thought and being,
that a separate science of thought became possible. The beginning of this science is, according to Heidegger, the beginning of logic.

While the Greeks viewed logic as the science of thinking this did not mean that they also saw it as a science of reason. Reason, for the Greeks, is something which exists both outside as well as inside the mind, and is, therefore, not something that can be equated with thinking. Such an equation only became possible when Descartes, in separating res cognitans and res extensa, defined reason as 'the essence of the mental'.

With Descartes' assimilation of reason to the mental it was now possible to view the science of thinking as tantamount to a science of reason, wherein the laws of logic came to legislate the bounds of reasonable thinking. This was basically the view of Kant, according to whom all reasoning must remain within certain categories. Kant identified these categories as the forms of possible thought; he believed that if reason attempted to transcend these categories it could only result in 'irrational' thoughts and beliefs.

Kant's conflation of reason with thinking completes the Cartesian assimilation of reason to the mental: Reason as it was conceived by the Greeks disappears completely and we are left with only 'reasons' – i.e., those individual beliefs, judgements, etc, which enter into our thought. The fact that the laws of logic allow us to 'explain' why we think, say,
or do, some particular thing by making reference to these various mental items is what enables them to serve as 'reasons'. In other words, given that the laws of logic justify making certain inferences, they allow us to explain our present action as something which is a consequence of what we believe. It is in this way that the laws of logic constitute our beliefs, assertions, and so on, as 'reasons'. It follows from this that without logic there would be no 'reasons' and, in consequence nothing that we thought, said, or did could be held to be reasonable, or rational.

It is the assumption of this Kantian view by modern philosophy which underlies its concern to preserve the special status of the laws of logic. We are in agreement with those philosophers who, like Popper, claim that any attempt to give a 'naturalistic' account of logic must, in so far as it involves attempting to reduce 'reasons' to efficient causes, result in irrationalism.

In arguing for an anti-realism we have rejected the Cartesian idea that reality exists externally to thought and, with it, the Cartesian idea that it is possible to draw a fundamental distinction between final and efficient causes. We have argued, in other words, that there is no fundamental difference between reasons and causes. Given this conclusion it might well be asked what we are to make of the everyday observation that while people are often said to act for 'reasons' it is never said of rocks, for example, that they act for 'reasons';
in other words, what is to be made of the fact that whereas
commonsense permits such locutions as "John's behaviour is
irrational" and "Mary's reasons for acting as she did are
intelligent ones", it does not permit either "that rock's behaviour
is irrational" or "this rock's reasons for acting as it did
are intelligent ones"?

We argue that it is possible to preserve all the meaningful
and useful distinctions which common sense associates with
the distinction between 'reasons' and 'causes' quite simply
by choosing, as Davidson does, to equate 'reasons' (but not
reason) with rational causes, or, in other words, 'mental'
causes - causes consisting of thoughts, beliefs, desires,
intentions, and so on. From this it follows that it becomes
meaningless to talk of acting for 'reasons' in those instances
where (in the case of rocks, for example) we choose to withhold
the attribution of thoughts, beliefs, intentions, desires, and
so on.

When, in that case, do we withhold such attributions?
According to anti-realism, the question whether certain kinds
of entities do or do not exist, or whether certain kinds of
processes do or do not occur, is not one that can be answered
by examining the contents of a reality which is external to
our beliefs and theories. There is no such reality.

Consider, in view of this doctrine, the controversial
question of whether animals have thoughts, feelings, desires,
and so on (the debate between functionalists and behaviours in the early years of this century centre on this question). For the anti-realist it is a mistake to suppose that this question can be answered by putting aside the various ideas which different people have on this matter, and looking at a reality which has been stripped bare of them. In recognizing that the answers people give to the above sort of questions depend very much upon their point of view, he feels constrained to examine and assess what he sees to be the advantages and disadvantages of the various points of view. Given his own concerns and interests he may find himself inclined to decide "Yes, there are advantages in attributing thoughts to animals", or he may conclude that "there are no advantages in attributing thoughts to animals". In this way the anti-realist approaches the question of whether or not something exists, by dealing with it on the basis of essentially pragmatic concerns. Thus, in the case of rocks for example, given that he cannot see any advantages in attributing to them thoughts, beliefs, desires, etc, he will conclude that he cannot meaningfully speak of them as acting for 'reasons'.

Another important distinguishing feature of the way in which the concept of a 'reason' is commonly understood lies in the fact that it is a normative concept; people can be described as believing, saying, or doing something for 'good' reasons, for 'bad' reasons and, even, for no reason at all. In other words, people's thoughts, assertions, and actions, can be characterized as being 'reasonable' or 'unreasonable',
as being either 'rational' or 'irrational'. If, for example, a person's 'reasons' for thinking, saying, or doing, the things that he does can be seen typically to embody obviously 'false' beliefs (e.g. that he is a poached egg), or originating in totally 'unrealistic' desires (e.g. he wants to be a poached egg), or embodying totally 'illogical' inferences (e.g. it follows from the fact that somebody called me a poached egg that I must be one) then such a person can justifiably be described as 'irrational'.

We would argue that when it comes to deciding the 'rationality' or otherwise of a belief, an assertion, or action, or, even, a person, the norms which are referred to when making this decision can be viewed as the product of social interactions of the kind discussed in chapter two of this thesis. In other words, we would argue that the norms defining what is 'rational', and what is 'irrational' can be viewed as social norms which have their origins in the kinds of social situations and social interactions investigated by Sherif. We contend that this is true even of the laws of logic. This last conclusion follows from the bringing together of the view we developed in chapter two, that scientific theories, laws, etc can be equated with socially constructed norms, with the conclusion we reached in arguing that there is no fundamental difference between logical and natural laws.

At this point we should consider one remaining objection to our suggested elimination of the distinction between logical
and natural laws and, with it, the distinction between reasons and causes: this objection stems from the widely held belief that whereas logical laws are prescriptive and legislate how people 'should' think, natural laws are descriptive and state how natural phenomena 'do' behave. Thus it might be argued that since the ascription of rationality presupposes that humans are autonomous in this respect at least, acting for 'reasons' is fundamentally different to acting in response to some cause. At this point we run into the traditional free-will/determinism problem.

We would argue that for the anti-realist this problem simply disappears. Once the distinction between external and internal relations is rejected the idea that there can be 'causes' which exist 'externally' to and independently of what exists 'internally' to the thinking, beliefs, intentions, desires of the individual no longer makes sense. What this means is that the idea advocated by metaphysical determinists - viz, that human action originates in 'external' causes - is nonsensical. Of course it follows at the same time that the advocacy by free-will philosophers of the idea that the causes of human action are located 'internally' to the individual and that, as such, they are themselves entirely independent of, and unaffected by, external causes, is equally unintelligible.

Needless to say, it does not follow from this that the anti-realist must dispense with the concept of freedom. What it does say is that if anti-realists choose to retain the notion
of freedom as an intelligible one, they must define it in a non-metaphysical way. For example, while rejecting both Hobbes' realist and deterministic metaphysics, the anti-realist might concur with him that

LIBERTY, or FREEDOME, signifieth (properly) the absence of Opposition; ...

And according to the proper, and generally received meaning of the word, A FREE-MAN, is he, that in those things, which by his strength and wit he is able to do, is not hindered to doe what he has a will to.

Hobbes, 1914, p.110

In understanding the notion of freedom to mean that an individual is free if, and only if, he is not hindered from doing what he has a will to do, we argue that it is intimately bound up with other such notions as belief, desire, intention, and so on. In view of this it is possible to argue that even while rejecting the idea that there is any fundamental difference between human action and the behaviour of natural objects such as rocks, it is appropriate to restrict the ascription of 'freedom' and 'responsibility' to only those beings we are willing to consider act with 'reasons'. Thus it is that there is one-one correspondence holding between those instances where we are inclined to judge an individual either rational or irrational and those instances where we are inclined to hold an individual as responsible for his actions. The only difference, of course, is that whereas we refer to norms pertaining to matters of truth and logic when determining what is 'rational',
we refer to 'moral' norms when considering the social acceptability of an individual's conduct.

We conclude this section by making the following points: First, a rejection of the Cartesian reasons/causes distinction does not entail a rejection of the notion of cause as such. What it does entail is a rejection of the Cartesian view that causes and causal connections can exist externally to thought. Second, our rejection of the Cartesian reasons/causes distinction indicates how we may view reasons as themselves constituting causes. Thus, where we cite 'reasons' for our believing, saying, or doing some particular thing, we may quite legitimately view these 'reasons' as causes which determine consequent beliefs, assertions, actions, and so forth. In this regard we follow Davidson (1963). In rejecting the distinction between 'internal' and 'external' relations, however, we reject Davidson's view that mental phenomena differ from physical phenomena in having a holistic nature while the latter do not. While we agree with Davidson that mental phenomena can only be precisely identified when located within a context of other beliefs, we argue that a rejection of the internal/external relations distinction means that physical phenomena too acquire their identity via their relations to their surrounding context. In this way we follow Bohm (1980) in arguing that much modern physics suggests that the holistic character which Davidson attributes to the mental can equally validly be attributed to the physical. Third, since the rejection of the Cartesian reasons/causes distinction entails the view that what we call
'causes' do not exist externally to belief, we argue that this makes it possible to offer causal theories of belief and knowledge which do not run foul of Hume's problem.

Thus we argue that when causality is understood in this post-Cartesian, non-naturalistic way: First, Davidson can, without running into Hume's problem, make assertions like "we must, in the plainest and methodologically most basic cases, take the objects of a belief to be the causes of that belief." Second, Putnam, without encountering the same problem, can even make assertions like "Our conceptions of coherence and acceptability ... depend upon our biology and culture." Such an assertion will now no longer imply that there are other equally good conceptions of the way things are, suggesting either relativism or (for the metaphysical realist) scepticism. Within the context of anti-realism, Putnam's assertion makes sense as an assertion internal to a certain causal theory in which we make sense, always in our terms of the differential and perhaps distorting effects of some important biological and cultural differences. But anti-realism doesn't accept the move from the legitimacy of this kind of reflection to the legitimacy of the question "but how do we know the other person's (animals', etc) standards aren't right? How can we be sure that our best beliefs and theories (using our standards of goodness) don't do their own distorting?" Third, a rejection of the Cartesian causes/reasons distinction undermines the idea that there is a fundamental difference between 'explaining' an individual's behaviour and 'understanding' that behaviour; such a rejection thus undermines Dilthey's
idea that there is a fundamental difference between what he calls 'analytic' or 'explanatory' psychology and what he refers to as 'descriptive' or 'understanding' psychology. In view of this, we side with Rorty (1980,1981) against Dreyfus (1980) and Taylor (1980) in maintaining that there is no fundamental distinction to be drawn between the 'explanations' yielded by the Naturwissenschaften (natural sciences) and the 'understandings' yielded by the Geisteswissenschaften (human sciences): like Rorty, we see the distinction tied to the question of whose concepts and language are chosen as a vehicle with which to make sense of that action; if we choose the agent's own concepts and language then we 'understand' his action, and if we choose our own then we 'explain' his action. We go along with Rorty in seeing it just as a matter of our not choosing to attribute concepts, beliefs and language to natural objects which prevents us from being able to make sense of the idea that this behaviour may be 'understood'. Thus, in refusing to accept that there is any sense in which we might meaningfully talk about 'understanding' rock behaviour we are not thereby committing ourselves to the idea that human behaviour is somehow fundamentally different in kind to rock behaviour. In short, we argue that from the fact that human thought, language and action can be 'understood' it does not in the least follow that human thought, language, and action cannot be causally 'explained', nor does it follow from the common sense view that only uniquely human behaviours (i.e., human thinking, talking, acting) can be 'understood'
that there is a fundamental discontinuity between human behaviours and the behaviours of other natural objects.

At this point we bring to a close our argument that by undermining the reasons/causes distinction the rejection of the Cartesian thought/reality distinction makes possible a synthesis of beliefs in human freedom and rationality with the Darwinian view that there is no fundamental discontinuity between humans and nature.

7. Summary and Conclusions

In this chapter we have been concerned to explain how anti-realism undercuts the humanist-naturalist debate, arguing that it does this by undermining the Cartesian reasons/causes distinction. In developing this argument we began by presenting an outline of some ideas and distinctions central to Descartes' dualism of mental and physical realities. We pointed out that in separating the 'mental' from the 'physical' Descartes at the same time advocated a separation between 'final' and 'efficient' causes. Having done this we proceeded to explain how Cartesian metaphysics, when it was combined with empiricist theory of knowledge, made it possible for 'natural philosophy' to free itself from its traditional ties to speculative philosophy and develop as a new and autonomous science.
With Darwin's assimilation of man to nature it became possible for this new science to deduce from the Cartesian assumption that 'natural' events can be explained as the effect of efficient causes, the consequence that 'human' behaviour too can be explained in this way. While agreeing with those who argue that viewing human behaviour as the effect of efficient causes precludes viewing such behaviour as embodying any 'reason' or 'purpose' we draw attention to the way in which much criticism levelled at the 'scientific' or 'naturalistic' view by those who try to preserve the traditional view of humans as rational and moral beings, assumes the same Cartesian distinctions which give rise to this problem. (Thus we argued that while the debate between the humanists and the naturalists originates in the Cartesian bifurcation of nature and more specifically in the Cartesian separation of final and efficient causes, those who argue against a naturalistic conception of humans assume the validity of the Cartesian reasons/causes distinction.)

We also explained how these distinctions (between thought and reality, reasons and causes) underlie such central philosophical distinctions as the distinction between logical and non-logical truths, between _a priori_ and _a posteriori_ truths, and indeed, between science and philosophy, and argued that the central role these latter distinctions play in the humanist/naturalist debate is further evidence for the intimate connection between Cartesian assumptions and the strategies adopted in this debate.
We next explained how our earlier rejection of the Cartesian thought/reality distinction requires a parallel rejection of the idea that there is any fundamental difference between reasons and causes. After a critical examination of the origins of the Cartesian reasons/causes distinction, we went on to point out how it is possible to reject this while at the same time preserving the traditional distinctions between 'rational', 'non-rational', and 'irrational' behaviour. After further indicating how a rejection of the reasons/causes distinction allows for a dissolution of the free-will/determinism problem we brought to a close our argument that a rejection of the Cartesian thought/reality distinction undercuts the current humanist/naturalist debate.
Summary and Conclusions

In the introduction to this thesis we noted that there is currently a wide-ranging debate among both philosophers and social scientists, between those who claim that because humans are rational and moral creatures it follows logically that they must be viewed and studied in a different way to (other) natural phenomena, and those who claim that because humans are natural beings, they can be viewed and studied in the same way as other natural objects. We have applied Fay and Moon's (1977) description 'humanist - naturalist' to this debate and our aim in this thesis has been to develop arguments in an attempt to undercut it.

We have wanted to agree with both the humanist view that people should be seen as rational and moral creatures and with the naturalist view that because humans are natural beings it follows that they can be studied using the same methods used in the study of other natural beings, and to this end we argued that these two positions can only be rendered consistent by rejecting the commonly assumed Cartesian view of nature. We did this by taking a Kantian approach in arguing that the Cartesian view of nature with its presupposition of a thought/reality distinction leads to absurd consequences.

The modern humanist view that human action originates in reasons can, we argued (Introduction, Chapter 3), be seen
as a continuation of the classical rationalist view that knowledge originates in a \textit{a priori} given ideas; similarly, we argued (Introduction, Chapter 3) that the modern naturalist view that human action originates in natural causes can be seen as continuous with the classical empiricist view that knowledge has its origins in sensory experience. In view of this we suggested (Chapter 5) that just as Kant was able to defuse the classical rationalist/empiricist debate by rejecting the Cartesian thought/reality distinction so, in a similar way, we, too, could defuse the modern humanist/naturalist debate by rejecting this same distinction.

Kant's own concern was with the theory of knowledge. According to Kant it is the assumption of the thought/reality distinction by both the classical rationalist and the classical empiricist theories of knowledge which prevents them from succeeding, and he argues against both (see Chapters 3 and 4) that the assumption of a Cartesian concept/object separation prevents the re-establishment of a link (or correspondence) between concepts and objects.

Where Kant was concerned with the theory of knowledge we have been concerned with the theory of action. We have argued that the assumption of the Cartesian thought/reality distinction by both modern humanists and modern naturalists prevents them from being able to explain human action. We argued (Chapter 5) that this is because their common assumption of the Cartesian reasons/causes distinction prevents them from
establishing any link between reasons and causes. We concluded that by rejecting the Cartesian reasons/causes distinction it is possible to agree both with the modern humanist view that humans are rational and moral creatures, and with the modern naturalist view that because humans are natural beings it follows that they can be viewed and studied in the same ways as other natural beings.

We will now conclude this thesis by drawing together some of the issues already discussed and attempting to deal with some of the tensions and problems that might still not appear to be fully resolved in its central argument. First, we look at how our attack on the Cartesian thought/reality distinction makes possible the integration of Popper's evolutionary theory of knowledge and the evolutionary theory of scientific change we presented in Chapter 2. Second, we make the relation between, on the one hand, the views of Kuhn and Feyerabend and on the other, the views defended in this thesis more explicit. In particular, we shall compare our own anti-Popper strategies with those of Kuhn and Feyerabend. Third, we look at how our 'idealized' notion of truth can be used to defend an anti-realist account of knowledge against the attacks of sceptics, and illustrate this by discussing the 'brains in a vat' problem (a modern variant of the Cartesian demon problem).

(1) The claim that modern humanistic thinking is essentially a continuation of classical rationalist thinking is basic to
our thesis, and we have tried to indicate how the modern humanist view that human action must be explained by viewing it as originating in 'reasons' is closely linked to the classical rationalist view that knowledge has to be explained as originating in a priori given ideas. In this context we have considered Popper's 'critical rationalism' as an example of a 'modern humanistic' theory of knowledge and, viewing it as such, have contrasted it with the 'modern naturalistic' theory presented in Chapter 2.

We have already argued that a rejection of the Cartesian thought/reality distinction effectively undermines the modern humanist-naturalist debate and we can now see how it also undermines the idea that Popper's 'humanistic' theory of scientific change must be viewed in a way that makes it fundamentally discontinuous with the 'naturalistic' theory we developed in Chapter 2. In view of this it is interesting to consider the way in which Popper himself compares and contrasts scientific change with the evolution of organic structures.

Popper often characterizes his own theory of objective knowledge as one which is based on an 'evolutionary approach' (see, e.g., Popper, 1972) and frequently cites the parallels he sees existing between the way in which knowledge grows out of conjectures and refutations and the way in which organic structures grow out of the trial-and-error processes of mutations and natural selection. On this basis Popper argues that
both scientific change and biological evolution conform to his basic schema:

\[ P_1 \rightarrow TT \rightarrow EE \rightarrow P_2 \]

Nevertheless Popper steadfastly refuses to accept the idea that there is a basic continuity between scientific change and biological evolution. Given his 'humanistic' viewpoint he argues that where logical relationships exist between scientific theories and problems and errors, no such relationships exist between the 'theories' and 'problems' and 'errors' embodied in organic structures (Popper himself uses these terms in this way - see, e.g., Popper, 1972, p.145), and that in view of this it follows that there is a fundamental discontinuity between scientific change and biological evolution.

On the basis of our argument that there is no fundamental difference between 'logical' and 'natural' laws we rejected the idea that there is any fundamental difference in kind between the relations which hold between assertions, theories, and other Popperian third world objects, and the relations which hold between 'natural' objects. We therefore want to say that it follows from a rejection of the Cartesian thought/reality distinction that Popper has no basis upon which to distinguish between his three worlds and, therefore, no basis on which to draw a fundamental distinction between scientific
change and biological evolution. In the light of this we suggest that the evolutionary theory of scientific change advocated in Chapter 2 can be interpreted in such a way as to allow the assimilation of Popper's own 'evolutionary theory' of scientific change into a more general evolutionary theory of biological and social change.

In thus adopting the view that scientific change can be regarded as continuous with biological and social evolution we reject Popper's contention that the logic of scientific discovery is autonomous with respect to the natural order of things. Against Popper we side with Kuhn and Feyerabend in viewing scientific change as consisting of processes amenable to social psychological analysis and explanation.

(2) We wish it to be clear, however, that our disagreement with Popper is not wholly reducible to the same line of attack mounted against him by these two critics. In particular we find Kuhn and Feyerabends' talk of 'incommensurability' problematic in that it presupposes the same Cartesian thought/reality distinction which generates the problems they expose in Popper's thinking. (In this regard see also our discussion of Davidson's arguments against the scheme/content distinction in Chapter 4.)

Our own attack on Popper focussed upon an ambiguity in his understanding of the notion of objectivity and we argued
that in view of the way that he is required to equivocate on this, his theory of knowledge clearly fails; indeed, we concurred with Lakatos' view that Popper's theory of knowledge is not, strictly speaking, a theory of knowledge at all.

Kuhn and Feyerabend follow Popper both in making the Cartesian thought/reality distinction and in assuming that reality can only be perceived and known through theories. Unlike Popper, however, they came to recognize that they face the problem Kant had identified as facing all rationalist theories of knowledge - viz, how can we ever get 'outside' our ideas, theories, etc., in such a way as to be able to examine whether or not these correspond to reality as it is 'in itself'. In view of this problem these authors agree that if we are given two competing theories which provide us with quite different views of reality, then because we have no external and independent measure of truth it follows that we have no way of telling which of these two theories gives us the more accurate (truthful) account of reality: They are, in a word, incommensurate.

Against Kuhn and Feyerabend, however, we have argued that in so far as the notion of incommensurability rests on the assumption of the Cartesian thought/reality distinction it is unintelligible. From this it follows that the idea that theories can be commensurate (having identical ontologies, for example) is equally unintelligible. This means that Popper's
idea that it is possible to compare the truth-content of two competing theories (that is, their respective degrees of verisimilitude) is also absurd.

(3) It was shown in Chapter 4 that this conclusion follows from a rejection of the Cartesian thought/reality distinction; there we argued that because there can be no one true theory it follows that truth must be regarded as indeterminate and, therefore, as not the kind of thing which can be approached more or less closely. We argued that because anti-realism's rejection of the Cartesian thought/reality distinction entailed the abandonment of the traditional correspondence theory of truth, it followed that the anti-realist ran into the problem of how to formulate a meaningful distinction between 'true' and 'believed true'. After arguing that Rorty's 'revisionary pragmatist' theory of truth failed to provide such a distinction, and having identified apparent difficulties with the views of Putnam and Davidson, we opted for Kant's view that truth "must be ascertained from its special determinations, and through its congruence with the criteria of all real experience".

After having noted that Kant had formulated his 'idealized' notion of truth so that he, as an anti-realist, could cope with such problematic cases as dreams and delusions we went on to argue that a radical rejection of the Cartesian thought/reality distinction undercuts the criticism Rorty makes of Putnam's 'Platonic' notion of truth as 'idealized rationally acceptable
belief'. Needless to say it may well be that doubts are still entertained as to the force of this criticism of Putnam. For example it may well be thought that just as we often wake up to find that episodes we had believed to be real were in fact only dreams so we might 'wake up' some time in the future to find that our existence has been that of a brain in a vat kept alive and electrically stimulated in ways which resulted in our having the various beliefs and experiences which we at present consider veridical. Does the fact that we can conceive of this brain in a vat possibility indicate the validity of Rorty's criticism of Putnam? And, if so, does it seriously challenge our own 'idealized' notion of truth?

The epistemological problems generated by the 'brains in a vat' hypothesis are frequently discussed in the current literature. (See, e.g., Putnam, 1981; Nozick, 1981). As an anti-realist Putnam attacks this problem using arguments based upon the theory of reference (see Putnam, 1981). thus, he argues that if we are really brains in a vat then our words 'brain', 'vat', etc., can only refer to brain-images and vat-images. Without real brains and real vats, he claims, there cannot exist the kind of causal connections between our words and reality to make our words refer to brains and vats, and make our query 'are we brains in a vat?' be a query about our really being brains in a vat. The assertion 'we are brains in a vat' is, in other words, a self-defeating one for Putnam.
We doubt that such an argument can allay all sceptical worries of this kind, however, even on an internal realist account of matters, and even forgetting any doubts we might have about the causal theory of reference. After all, we can surely make sense of being told that the things we called brains, vats, etc., were really only images, but that there really are things which look the same way and which play identical roles (call these 'Brains' and 'Vats'), with our earlier experiences being the results of electrical (Electrical?) stimulation of Brains in a Vat. Such a story might become very persuasive after a while: perhaps there was a very curious break in our old experiences, culminating in our re-emerging with changed robot-like bodies in an orderly world whose happenings, we all agree, strongly confirm the story of our having been Brains in a Vat.

So some sceptical worries do survive Putnam's own arguments. Note, however, that our reconstructed Brain in a Vat hypothesis is an empirical hypothesis for which ordinary empirical evidence can exist (our later post-Brain-in-a-Vat experience). The hypothesis does not involve Deceiving Demons or Evil Scientists who exist in a metaphysically recondite world and whose true doings will for ever remain inaccessible to us. It is not in this sense a metaphysical hypothesis which relies on a version of metaphysical realism.
Given our arguments against metaphysical realism we argue that should the brains in a vat hypothesis be interpreted metaphysically it is an hypothesis that is unintelligible and, therefore, not one that can give us any reason to doubt our everyday beliefs. On the assumption that it is interpreted in such a way that it becomes an 'empirical' hypothesis we can see two possible lines of reply to it. Firstly, from its being an empirical hypothesis, it follows that at some stage we might find ourselves presented with some 'reason' or some 'evidence' which leads us to conclude that we have been brains in a vat. In that case, however, we could adopt a Davidsonian line of reasoning and argue that we could only make sense of this discovered 'evidence' or 'reason' if in fact most of our beliefs are true. But then the discovery that we are brains in a vat could never result in our having to conclude from this discovery that most of our previously existing beliefs are false; Thus even if we entertain the hypothesis that we are brains in a vat this does not give us any reason for supposing that most of our beliefs might be false. In short, using this line of argument we can conclude that the brains in a vat hypothesis does not give us any reason to entertain global scepticism (whether or not such a line of argument allows us to conclude in addition that we are not brains in a vat).

A second line of reply we might follow is to argue that when construed as an empirical hypothesis the possibility that we are brains in a vat is on a par with hypotheses
like 'The sun goes round the earth'. We have good reason/evidence for supposing that the earth goes round the sun and no good reason/evidence for supposing the converse, and so it becomes 'unreasonable' to doubt the earth goes round the sun. In a similar way we might argue that it is also unreasonable to doubt those things we consider ourselves to have good reason/evidence for believing solely on the grounds of an hypothesis (viz, that we are brains in a vat) which is (so far) supported neither by reasons nor evidence.

We have maintained that the metaphysical realist has no line of reply to the sceptic who challenges him by presenting him with the brain in the vat problem (where this problem is construed in metaphysical realist terms). We have also tried to show that the anti-realist has a reply (along either of the two lines outlined above) to the brains in a vat problem when that problem is interpreted in the only way in which he can make sense of it. We therefore conclude by observing that (metaphysical) realism can have no answer to its own Cartesian version of the problem, while the anti-realism advocated in this thesis does yield the makings of an effective response to the non-metaphysical version of the problem.
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