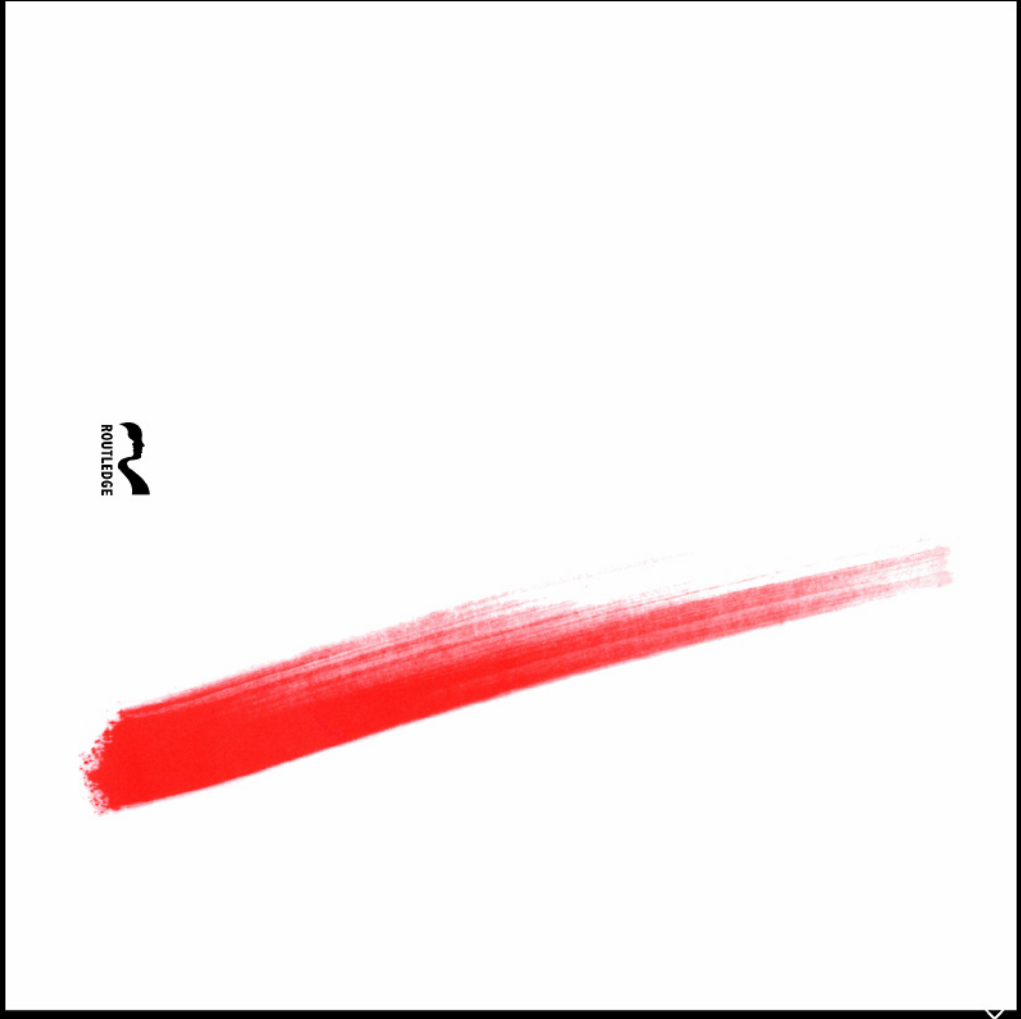

Verificationism

Its History and Prospects

C J Misak

VERIFICATIONISM

Not a chronological account of verificationist philosophies, Misak's book nevertheless draws on a wide range of historical and contemporary sources to advance an argument for a position difficult to label in a non-misleading way. She calls her position 'moderate verificationism' but also presents it as a development of Peircean pragmatism. Crucial to this view is a broader concept of experience and a broader account of what it is to understand a sentence than are found in earlier forms of verificationism. I would urge those discouraged by the current state of Anglo-American philosophy to give Misak a hearing. In her hands philosophy is flourishing.

Peter H.Hare
State University of New York at Buffalo

Verificationism is a survey of the precursors, the main proponents and the rehabilitators of one of the most influential concepts in philosophy and scientific methodology between the 1930s and the 1960s. In line with the resurgence of interest in logical positivism amongst philosophers of science, *Verificationism* assesses the more flexible ideas of verification which are now being put forward.

As the most comprehensive survey of verificationism, this book will be important for researchers and lecturers in the fields of philosophy of science and empiricism. It will also be of interest to those working in general epistemology and in moral philosophy.

C.J.Misak is Associate Professor of Philosophy at the University of Toronto; she is the author of *Truth and the End of Inquiry.*

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Its History and Prospects

C.J.Misak

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For David

CONTENTS

INTRODUCTION

One idea promoted by logical positivism has shown itself to be remarkably resilient. This is the thought which is at the heart of the verifiability principle: a belief with no connection to experience is spurious. A belief which aspires to knowledge cannot reach above or behind experience; if it pretends to do so, it is in some way illegitimate. The logical positivists took the required connection with experience to be empirical verifiability. And they took the nature of the illegitimacy to be meaninglessness. In order to be meaningful, a hypothesis must be such that there is in principle an experiment or observation which would verify it or show it to be true or false.

But the idea that a belief with no connection to experience is spurious has many other guises. Its roots go as deep as Berkeley and Hume and they are as widespread as Kant, Leibniz, Comte, Mach, Duhem, Wittgenstein, Einstein and Peirce. It is presently being rehabilitated, after the bruising it took in the logical positivists' hands, in the work of Bas van Fraassen, Michael Dummett, Crispin Wright, Christopher Peacocke, David Wiggins, Richard Rorty and others. Indeed, the thought that philosophical notions must be connected to experience and practice is at the heart of much contemporary feminist philosophy.

So the verificationist idea underlies all sorts of positions which are self-consciously anti-positivist. As A.J.Ayer, one of the most influential of the logical positivists, said, many years after his theory ceased to be a popular view,

> The verification principle is seldom mentioned and when it is mentioned it is usually scorned; it continues, however, to be put to work. The attitude of many philosophers towards it reminds me of the relation between Pip and Magwitch in Dickens's *Great Expectations.* They have lived on the money, but are ashamed to acknowledge its source.
>
> (Ayer 1977:156)

My project is to examine the history of and the arguments for a verificationist criterion of legitimacy, meaningfulness or whatever. This is easier said than done, for arguments here tend to be surprisingly thin on the ground. But once I have identified the considerations which sustain the idea, we shall have a better grasp of just what, if anything, is right about it. And once the defects in some of the proposed criteria are made apparent, we shall be in a better position to see just what sort of criterion, if any, ought to be adopted.

Verificationists have tended to be vague about what their criterion is a criterion *of*. And many who reject the label, but nonetheless make use of the verificationist idea that our theories must be connected to experience and practice, often say nothing at all about what that might mean.

Verificationism is usually thought of as a semantic doctrine: a view about the meaning or content of expressions. But we shall see that it can spring from a variety of other (related) sources—from a view about the origins of our thoughts, from a view about what makes for successful science, from an account of what an inquiry aimed at truth requires, etc. But whatever the source of a particular verificationism, when it comes to specifying what it is that the proposed criterion is a criterion of, its advocates more often than not turn to 'meaningfulness'. Sometimes this seems to be simply in want of a better term, sometimes it seems to be a cloak for uncertainty about what the criterion demarcates, and sometimes the term is used self-consciously and carefully. The logical positivists were at first clear on this matter—they were indeed demarcating meaningful statements from meaningless gibberish—but we shall see that when that criterion proved elusive they too became cagy about what it was that was being marked off.

In the chapters that follow, I shall look at the varieties, semantic or not, of verificationism—of the thought that our assertions must be connected to experience. So Popper, van Fraassen, and Rorty, for instance, appear as verificationists in the pages to follow, even though they do not put forward verificationist semantics. Where it is unclear what the criterion in question is a criterion of (meaning- fulness, usefulness in inquiry, what we can frame an idea of, or whatever) or where I want to be careful not to beg any questions, I shall use terms such as 'legitimacy' and 'spuriousness'. The verificationist takes a legitimate or non-spurious hypothesis to be one which is appropriately connected to experience.

A number of epistemological themes will emerge from the story that is told, for we shall see that the nature of truth and knowledge is very much at stake in debates about verificationism. Empiricism, or the view that experience is our only source of knowledge, is perhaps the

most well-travelled route to verificationism. And empiricism, after all, incorporates a view about how our beliefs can be justified—we break into the regress of offering reasons for beliefs by appealing, ultimately, to experience. But even those verificationists who are not easily located in the empiricist tradition find themselves straight away answering questions about the nature of truth, knowledge and reality.

Perhaps the most important of the epistemological themes I shall uncover is that those who put forward a verificationist criterion end up, whether they intended to or not, with an epistemology heavy with anti-realist strains.

The issue of realism is of course a thorny one, tangled with numerous definitions of 'objectivism', 'subjectivism', 'relativism', 'idealism', 'realism' and 'anti-realism'. I shall not go immediately into the details of these debates, but rather let the relevant issues unfold as we go along. What will emerge is that I take a kind of transcendentalism to be the essential characteristic of realism. By this, I do not mean a position which employs transcendental arguments to explore the preconditions of experience, but rather, a position which holds that truth transcends or goes beyond human inquiry.

Already we see the germ of a connection between verificationism, which holds that a legitimate belief cannot transcend experience, and non-realism, which holds that a true belief does not transcend inquiry. Experience, of course, does not obviously exhaust inquiry, and so the connection requires elucidation. We shall have to examine particular positions to see how it is actually made.

So an underlying argument of this book is that it is impossible, or at least extremely difficult, to maintain both realism and verificationism. But I also want to suggest that the verificationist idea and a particular sophisticated non-realist epistemology that can accompany it are sensible. In *Truth and the End of Inquiry* (Misak 1991) I argued that a certain kind of pragmatic epistemology undercuts debates about realism and idealism and ought to be accepted. Here, when I talk of the non-realist epistemology which would best accompany verificationism, it is that pragmatism I shall present, primarily in chapters 3 and 4. Of course, not all verificationists adopt that particular epistemology and so when I talk of the general kind of epistemology verificationists must adopt, I shall use the term 'non-realism' or 'anti-realism', to signal its opposition to realism. Pragmatism is a species of that non-realist epistemology which takes truth to be somehow the product of human inquiry.

In chapter 1, I shall trace the history of the verificationist idea from Berkeley to the later Wittgenstein. Some views which could have been

discussed have been relegated to occasional end-note status for the sake of both economy and a more streamlined story. And each of the views I do discuss, in this and in subsequent chapters, deserves a book in its own right, written by someone who has dedicated herself to the study of that view. My hope is that the boiled-down accounts presented here capture the overall story of the verificationist thought and capture what is important about that thought in each particular view.

Chapter 2 will be an exploration of verificationism as it appears in its most notorious form—logical positivism. The difficulties in setting out this view go beyond the usual. For the positivists' views evolved, sometimes dramatically, and, although common strands run through all of the positions, the diversity of opinion on various issues is striking. There is no monolith to rail against here.

Despite this fact, the logical positivists and their debates have been badly caricatured and it is usually thought that there is a well-defined extreme position to attack. The caricature must, however, be drawn here along with the more accurate picture if we are to understand contemporary versions of verificationism in the context in which their adherents find themselves. For philosophers who are attracted to the verificationist idea tend to want to distance themselves as far as possible from what they see as the tainted position of their predecessors.

One way in which I have tried to deal with this difficulty is by presenting the caricature as representing the initial view of the logical positivists and then showing, without getting lost in the details of the evolution of the positions of various members, how that view was made more sophisticated. This, of course, is a fairly standard way of setting out logical positivism. The advantage of it is that it gets both the received view and the more friendly view of logical positivism on the page. The disadvantage of it is that it does not discuss head on those new interpretations of logical positivism which have certain positivists putting forward from the beginning subtle non-foundationalist positions.

I cope with the disadvantage first by myself tracing the swing away from foundationalism. I shall argue that those in what is sometimes called the 'left wing' of logical positivism were attracted almost from the beginning to non-realist positions, while those in the 'right wing' were eventually forced towards those non-realist positions. Second, the disadvantage, I suggest, is not so telling in the context of the verificationist criterion. In the writings of the logical positivists, one will often find a blunt and severe statement of the verifiability principle alongside subtle epistemological thoughts. That is, the

honing of the verifiability principle often did not keep pace with the sophistication of other doctrines held by the positivists.

In chapter 3, I shall tell the story of an alternative path to verificationism, taken by the founder of pragmatism, C.S.Peirce. We shall see that, despite certain difficulties, the prospects are better for this broader verificationism, which, in the end, ceases to see itself primarily as a criterion of meaningfulness. It is a mark of some other property, something like appropriateness for inquiry. The question of meaningfulness here does not altogether drop away, but it takes a backseat role. We shall feel the pull toward a more generous notion of experience and, once we set out in that direction, we shall see the beginnings of an adequate verificationist criterion.

Chapter 4 will deal with a contemporary version of verificationism: that put forward by Michael Dummett. Dummett has managed to get verificationism back on the agenda by having it arise from general arguments about the nature of language and understanding. We shall see, however, that rather than taking a step forward, the Dummettian position seems to have some of the unfortunate consequences of the least attractive version of logical positivism.

The occasion will arise here (and become pressing) to answer W.V.O.Quine's objections to the very thought that a judgement has any content to call its own; to the very idea that we can determine whether a certain sentence is such that its content satisfies a verificationist test. I shall try to answer these objections and to show that, although Quine aims to explode verificationism, he offers his own brand of the idea that a statement must be connected to experience. The upshot here will be that verificationism need not rest on an atomistic conception of meaning, but can incorporate a moderate holism.

In chapter 5 we will look at some other contemporary philosophers who are attracted to verificationism. The best points found here will provide us with further suggestions as to how a verificationist criterion might be improved. Again, the pull will be in the direction of a broader notion of experience and the challenge will be to provide that notion with sufficient substance.

What we will have, in the end, is not a precise and easily applicable verificationist principle, for one of the arguments of the book is that such precision and application ought not to be sought. What we shall find ourselves in possession of is nothing more than a very rough guide for answering the question, for any given belief, 'is this belief connected in the appropriate way to experience?'

This is not to say that I will ignore the details as to how various proposed criteria might function. I shall explore the treatment which certain statements in science, mathematics, metaphysics and morals

have received from various verificationists and the treatment they would receive from our moderate, holist, verificationist. What should become clear is that the ways in which some have wanted to connect the empirical to the theoretical, mathematical, moral and metaphysical are too strong. Verificationism cannot be a weapon for bludgeoning kinds of sentences which one wants to denigrate.

The path of naturalism, to use an overused term, shall also be traced throughout the book. We shall see that Hume's naturalism—his goal of making philosophy more like the sciences—reappears again and again. The verificationist must take a stand on just what the relationship is between philosophy and the sciences. Extreme naturalists argue that philosophy must wither away and be replaced by the natural sciences. But perhaps there is room for a moderate view which would require a connection between philosophy and experience without reducing all inquiry to science. Such a view will surface in chapter 3, where Peircean pragmatism is considered, and will be a theme of the chapters that follow.

Naturalism is linked to the notion of the unity of inquiry—the thought that all inquiries must abide by the same principles and form a seamless whole. Naturalists, of course, identify those principles as the principles of science, much to the frustration and disgust of many of those in the humanities, arts and social sciences. But I shall argue that inquiry might be unified by a verificationist principle which is properly sensitive to the characteristics of these inquiries.

And so, it seems, it should be. For the general project of those who populate these pages is to connect meaningfulness, truth, objectivity, or whatever, to human experience. But if experience is restricted to what the senses deliver, then much of what is important, perhaps most important, in human existence must be discounted—our moral, political, and aesthetic experience.

I shall not present in this book a developed verificationist account of objectivity or truth in these matters. Rather, I shall concern myself mostly with other kinds of statements which seem to be discounted by a view which restricts experience to the senses—mathematical and logical statements, statements about the past, etc. The verificationism I offer will make room for these statements and for morals as well, but a proper treatment of the latter will have to be conducted under a separate cover.

As should by now be clear, I use the term 'verificationism' very broadly. That is, I use it to refer to a wider doctrine than that held by the logical positivists. It refers to any attempt at connecting the non-spurious or the legitimate with experience. For the logical positivists' specific proposal in this regard, I use Verifiability principle'.

I do realize that using Verificationism' in this way has its dangers. These days a view tends to be dismissed straight away simply for being verificationist. I thus run the risk of having readers think that I am beating a dead horse or, worse, that I am putting all sorts of reputable views in a suspicious light by labelling them verificationist.

But one thing I want to do here is to point to the underlying similarity between self-consciously anti-positivist views and the verificationism of logical positivism. I want to suggest that those who would like to make use of the idea that our views ought to be connected to experience must engage in the same kind of project as the logical positivists. They must engage in unpacking that idea.

So we shall see that verificationism comes in many flavours, not all of them as strong as the caricature of logical positivism would have us believe. Today students are often taught to think of logical positivism as being an unfortunate and crude interlude in an otherwise glorious philosophical tradition. It will become clear, however, that logical positivism was not a break with tradition, but was, and still is, very much a part of the Anglo-American (for want of a better term) attempt at understanding human inquiry in a world not altogether of our making.

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1
FOUNDERS

GEORGE BERKELEY (1685–1753)

Verificationism is usually thought to be a cornerstone of empiricism, the view that experience is our only source of knowledge about the world. We shall see that many of the problems and issues which concerned two early British empiricists, Berkeley and Hume,[1] continue to be at the heart of more recent debates.

Here is how Berkeley's empiricism manifests itself:

> It is evident to anyone who takes a survey of the *objects of human knowledge,* that they are either *ideas* actually imprinted on the senses; or else such as are perceived by attending to the passions and operations of the mind; or lastly *ideas* formed by help of memory and imagination—either compounding, dividing, or barely representing those originally perceived in the aforesaid ways.
>
> ([1710] (1901):257)

What we can know is what we can sense or what we can construct from what we have sensed—by remembering, imagining, or by a kind of cut and paste method on those sensory materials.[2]

This is a view about the origins of our thoughts, a view which holds that all of the materials for thought come from the senses. Once we have this view in hand, we can then ask what we can have a thought of, what we can frame an idea of, or what can be a content in our minds. Certain things, it seems, fail to meet the standards set by Berkeley's thesis about the origins of thought.

One thing it seems that we cannot have a thought of is a mind-independent entity. For if our source of knowledge is our own experience, then how can we construct a concept of a world independent of our experience? This is a point which Berkeley presses and it is a point which we shall have to return to again and

again in this book. Berkeley thought it led to immaterialism or idealism, the view that there are only two kinds of things in the world —minds and their ideas.[3]

It would seem that a denial of the existence of the material world would be thought contrary to commonsense. But Berkeley thinks himself to be of 'a vulgar cast, simple enough to believe my senses, and leave things as I find them'. ([1713] (1901):445) His project is to set straight the sciences and the 'scientific' philosophy undertaken by Locke and Newton by returning to the 'high-road of plain common sense'. ([1710] (1901):237) His most systematic work, published in 1710, is titled *A Treatise Concerning the Principles of Human Knowledge: Wherein the Chief Causes of Error and Difficulty in the Sciences, with the Grounds of Scepticism, Atheism, and Irreligion, are Inquired Into.* In it, he says:

> I am inclined to think that the far greater part, if not all, of those difficulties which have hitherto amused philosophers, and blocked up the way to knowledge, are entirely owing to ourselves. We have first raised a dust, and then complain we cannot see.
>
> ([1710] (1901):238)

In order to see when we have raised a dust, Berkeley thinks that we must apply the principle at the heart of his doctrine of the origins of ideas—only that which is conceivable, or that which one can frame an idea of, makes sense. If a philosophical difficulty turns on something which we cannot properly frame an idea of, the difficulty is a spurious one.

We must remember here that conceivability, for Berkeley, does not extend to the wildest stretch of our imaginations. What is conceivable is that which we can experience: 'my conceiving or imagining power does not extend beyond the possibility of real existence or perception'. ([1710] 1901:260) What we can conceive of is what we can 'copy' from ideas which arise from sense experience; it is what we can encounter in sensory experience.[4]

Berkeley's view about the origins of ideas or the contents of our thoughts becomes a semantic thesis in the following way. With Locke and Hume, he thought that words get their meanings by standing for ideas.[5] Thus, if you cannot get an idea of *x* then you do not have a meaning for the term you use to name *x.* If we are to 'annex a meaning to our words', we must 'speak only of what we can conceive'. ([1710] (1901):245) So until the person who claims to believe in the existence of *x* can tell me what it means—can say what sensory-produced idea it stands for—I cannot believe in it. For I will not have

a grasp of 'it'; I will not know the meaning of *'x'* Berkeley puts the point nicely by stating that 'you will not so much as let me know *what it is* you would have me believe'. ([1713] (1901): 432)

There are three advantages, Berkeley thinks, to adopting the principle that every idea must arise from sensory materials:

> *First,* I shall be sure to get clear of all controversies purely verbal…*Secondly,* this seems to be a sure way to extricate myself out of the fine and subtle net of abstract ideas which has so miserably perplexed and entangled the minds of men …*Thirdly,* so long as I confine my thoughts to my own ideas …I do not see how I can easily be mistaken.
>
> ([1710] (1901):253–54)

We shall see that all of these are important to subsequent verificationists. The verificationist aims to identify spurious debates, one of which is said to be the debate over abstract ideas, which shall be considered below. And the verificationist often claims that one's own sensory perceptions are infallible or cannot be mistaken.

By way of explanation of this third advantage, Berkeley says that '[t]he objects I consider, I clearly and adequately know. I cannot be deceived in thinking I have an idea which I have not'. ([1710] (1901): 254) I can know that I am not mistaken about the contents of my sensory perceptions as I have them. Thus, Berkeley thinks that he is 'the farthest from Scepticism of any man'. For he knows 'the existence of other things as well as my own Soul'. ([1705] (1901):26) And if one sticks to this immediate knowledge, the damage of misleading language will be minimized.

When put to use, Berkeley's principle of conceivability operates in two ways, really opposite sides of the same coin. First, the principle imposes constraints on a concept—a concept must be connected to sensory experiences. Some purported concepts fall afoul of these constraints and are thus senseless. And second, the principle imposes conditions on the kind of concepts we can have; it imposes constraints such that our concepts of, say, matter and existence, must be of a certain sort.

Berkeley sets his principle to work against the view of abstract ideas held by the scholastics and by Locke.[6] On this view, we can employ a method of abstraction to separate or distinguish different elements of a concept so that, although there cannot be a situation in which one element is actually isolated, we can tell that the elements are distinct. We can, for instance, suppose extension without colour, even though we cannot ever have colourless space. And we can take the idea that we have singled out and think of it as a universal

abstract idea. That is, we can have the idea of extension or of colour 'in abstract', as opposed to the extension or the colour of some particular thing. (See [1710] (1901):240.)

Berkeley rails against this view. He finds that he cannot make these abstractions; he cannot, for instance, conceive colour without extension, nor extension without colour. The idea of extension is not independent of the idea of colour, for 'in a strict sense, I see nothing but light and colours'. ([1709] (1901):192) And we cannot suppose colour without extension; what we perceive are coloured extensions. Similarly, there is no abstract triangle, which is 'neither oblique nor rectangle, equilateral, equicrural nor scalenon, but all and none of these at once'. ([1710] (1901):246) Look into your own thoughts, Berkeley advises, and you will find that you cannot imagine such a creature.

Thus, abstract ideas fall afoul of Berkeley's principle. They do not arise from perceptions and so we cannot frame an idea of them. Berkeley thinks that 'trifling with words' ([1710] (1901):302) in this way—using words which have no correlate in experience—has resulted in 'a great number of dark and ambiguous terms' being introduced into science, philosophy and morality. ([1710] (1901): 338–39)

We can also see an instance of the other verificationist strategy in Berkeley's argument against abstract ideas. Our concept of general terms must be of a certain sort if it is to abide by the principle of conceivability. He argues that general words do not refer to abstract ideas; rather, an idea becomes general when it is made 'to represent or stand for all other particular ideas of the same sort'. ([1710] (1901): 245) Thus a general term is connected or related to its particular concrete instances; it is not something abstract.

So here Berkeley's principle acts both to challenge a view of a concept (abstract ideas as the referent of general terms) and to aid us in coming to the right view of a concept (general terms are terms which stand for particulars of which we have experience).

Berkeley also argued against the view that primary qualitites such as solidity, extension and motion inhere in matter, where matter is supposed to be 'an unthinking substance'. ([1710] (1901: 262) The idea of substance, again found in Locke,[7] is that, after we peel off the attributes from a thing, we are left with 'something I know not what'. A thing or object, such as a table or a cherry, is composed of a substance in which a number of attributes inhere. The substance is the bearer or supporter of the attributes and is distinct from the sum total of those attributes. Our experience of an object, however, is limited to its attributes—we do not have any experience of the substance itself. Berkeley says, in contrast to this view:

> I see this cherry, I feel it, I taste it: and I am sure *nothing* cannot be seen, or felt, or tasted; it is therefore *real.* Take away the sensations of softness, moisture, redness, tartness, and you take away the cherry… A cherry, I say, is nothing but a congeries of sensible impressions, or ideas perceived by the senses.
>
> ([1713] (1901):469)

Berkeley's thought is that if we took away all of the sensations associated with an object—all of the attributes of a thing—we would not be left with a mysterious substance of which we could say nothing. We would be left with nothing at all. This is his conceivability principle applied to matter. We cannot conceive of existence abstracted from perception. And we cannot conceive of matter abstracted from extension:

> It is said extension is a *mode* or *accident* of Matter, and that Matter is the *substratum* that supports it. Now I desire that you would explain to me what is meant by Matter's *supporting* extension. Say you, I have no idea of Matter; and therefore cannot explain it. I answer, though you have no positive, yet, if you have any meaning at all, you must at least have a relative idea of Matter; though you know not what it is, yet you must be supposed to know what relation it bears to accidents, and what is meant by its supporting them. It is evident *support* cannot here be taken in its usual or literal sense, as when we say that pillars support a building. In what sense therefore must it be taken?
>
> ([1710] (1901):266)

Things, Berkeley argues, do not exist independently of our perceptions of them:

> It is indeed an opinion strangely prevailing amongst men, that houses, mountains, rivers, and in a word all sensible objects, have an existence, natural or real, distinct from their being perceived by the understanding…yet whoever shall find in his heart to call it in question may, if I mistake not, perceive it to involve a manifest contradiction. For, what are the forementioned objects but the things we perceive by sense? and what do we perceive besides our own ideas or sensations? and is it not plainly repugnant that any of these…should exist unperceived?
>
> ([1710] (1901):259)

Berkeley's view that objects are congeries of sensory perceptions is clearly a corollary of his view that the only things which exist are minds and their ideas. His argument for idealism also turns on his conceivability principle. Our conception of the world must arise from that which we can conceive. Since we can only conceive of ideas, we must take the world to consist of ideas. Here we have Berkeley's immaterialism, his view that matter, as philosophers attempt to think of it, does not exist.

For Berkeley, an idea itself is a mental entity which exists only when perceived. And since 'an idea can be like nothing but an idea',[8] there is no independently existing reality for ideas to correspond to. A physical body is 'that which is immediately seen and felt, which is only a combination of sensible qualities or ideas'. ([1710] (1901):310) Sensory ideas (shapes, colours, etc.) are 'observed to accompany each other' and 'collections' of them 'come to be marked by one name, and so to be reputed one *thing*'. ([1710] (1901):258) When we talk of a physical object we really talk of a collection of sensory perceptions that we actually have or that we could have. We shall see that this view of material things is a mainstay of empiricism.[9]

We have seen that Berkeley did not think that his idealism entailed scepticism, the view that we cannot know anything. Indeed, the view Berkeley saw himself waging war against was the scepticism (and the implicit atheism) lurking in the picture of the mind and the world painted by Newton and Locke, the picture of the physical world as a machine working according to its own deterministic laws. On this view, the only role for God to play is to start the machine in motion. Berkeley thinks it is a virtue of idealism that God is not relegated to a bit part.

On Berkeley's view, there is a distinction between real things and ideas of them, a distinction which has God playing the starring role:

> The ideas imprinted on the Senses by the Author of nature are called *real things:* and those excited in the imagination, being less regular, vivid, and constant, are more properly termed *ideas,* or *images* of things, which they copy and represent.
>
> ([1710](1901):274–75)

Berkeley, who in 1734 was made Bishop of Cloyne, Ireland, offers us an argument for the existence of God. Every idea must be caused by something. And ideas, Berkeley argues, are passive; there is 'nothing of power or agency included in them'. ([1710](1901): 270–71) Thus they cannot act as the cause of anything. Our minds can be the cause of ideas, such as the ones we create by imagination. But some ideas are not caused by us, such as the ideas that arise from the senses.

Those ideas have a remarkable consistency, suggesting that one powerful mind—the mind of God—causes them.[10] God 'contains and supports' the sensible world. ([1713] (1901):424)

It is this thesis about God which enables Berkeley to combine his idealism—the thought that only minds and their ideas exist—with a kind of realism. Realism, as I shall use the term, is the view that truth, objectivity or reality transcends our knowledge or inquiry. Berkeley argues that things exist independently of any finite mind, i.e. independently of our minds, but not independently of the mind of God.

But what about the idea of God? That does not seem to arise from the senses and thus it would seem to be meaningless on Berkeley's view. Berkeley thinks he has a way round this difficulty. He takes an idea to be a sensory image or a picture and a 'notion' to be a concept, not arising from the senses, of the self, spirit, God, etc.[11] We can have a notion of our own existence by 'inward feeling or reflection' and of 'spirits' by 'reason'.[12]

What are we to make of this glaring exception Berkeley makes to his conceivability principle? Let us notice first that there is a difference between the sorts of things Berkeley thinks we can have notions of. Recall that the method of 'inward feeling or reflection' is from the beginning a part of Berkeley's account of how we get our ideas from experience. We can perceive 'by attending to the passions and operations of the mind'. ([1710] (1901):257) But using 'reason' to arrive at a notion of spirit is more suspicious—why not use reason to arrive at a notion of an abstract idea or of substance? It seems that Berkeley's desire to maintain a central position for God gets in the way of his consistent application of the criterion of conceivability.

If we set aside Berkeley's thoughts about God, we can think of his criterion in the following manner, a criterion which we shall see survives into the present century. The principle of conceivability arises from the thought that language can be misleading; that language is a source of error.[13] In the case of abstract ideas, for instance, we are led astray by the thought that every name must stand for an idea and by the fact that we encounter names such as 'triangle', 'extension' and the like. We conclude that these terms name abstract ideas rather than particular triangles or particular extended objects.

Berkeley thinks that we need to formulate a principle which will help us avoid such errors. If we are to combat the misleading nature of language, we must give our words a precise meaning—one which 'never goes beyond our ideas'. ([1705](1901):28–30) We should try to pay as little attention as possible to what language suggests and rather, whatever ideas we consider, 'endeavour to take them bare and

naked'.[14] We should endeavour to not stray beyond what we can perceive though our senses.

DAVID HUME (1711–1776)

Whereas the subtitle of Berkeley's *Treatise* indicated that the author intended to show where the sciences went wrong, the subtitle of Hume's *A Treatise of Human Nature* is more positive about the sciences: Hume's book is *An Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects.* Hume's project is to put philosophy on a scientific footing—to apply the methods of science to philosophy.[15] Human beings, including their thinking and acting aspects, must be studied as part of nature. We shall see that this naturalist sentiment characterizes that strand of the verificationist tradition which culminates in logical positivism.

There is a famous passage in Hume's *An Enquiry Concerning Human Understanding* which has associated him with logical positivism:[16]

> When we run over libraries, persuaded of these principles, what havoc must we make? If we take in our 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.
>
> ([1777](1975):165)

The principles which lead to this dramatic result are those principles about the contents of the mind which are at the heart of traditional empiricism. Like Berkeley, Hume thinks that all knowledge of the world comes from experience. He goes on to formulate the following criterion of sophistry and illusion: ideas must either be formal (i.e. not about the world) or they must correspond to 'impressions', which are something like sensory experiences. We seem to possess an 'unbounded liberty' to think of what we like, but 'upon a nearer examination' we find that we are 'really confined within very narrow limits', for all our non-formal thoughts must be copies of impressions. ([1777] (1975):19)

Hume calls the formal group of legitimate ideas 'relations of ideas' or 'demonstrative truths'; they are such that the opposite is inconceivable. ([1777] (1975):25) Here we are to find the hypotheses of geometry, algebra and arithmetic. The second group encompasses matters of fact or probabilistic truths. Every non-demonstrative idea,

hypothesis, judgement, or content statement[17] is a candidate for membership in this group. Like Berkeley, Hume thinks that it must pass the following test:

> When we entertain…any suspicion that a philosophical term is employed without any meaning or idea (as is but too frequent), we need but enquire, *from what impression is that supposed idea derived?* And if it be impossible to assign any, this will serve to confirm our suspicion.
>
> ([1777] (1975):22)

Those hypotheses which fail to fall into either group (demonstrative or probabilistic) are examples of sophistry and illusion. They have found their way into our discourse in the following manner:

> it being usual, after the frequent use of terms, which are really significant and intelligible, to omit the idea, which we wou'd express by them, and to preserve only the custom, by which we recall the idea at pleasure; so it naturally happens, that after the frequent use of terms, which are wholly insignificant and unintelligble, we fancy them to be on the same footing with the precedent, and to have a secret meaning, which we might discover by reflection.
>
> ([1740] (1978):224)

Hume puts out a number of arguments for his view about the contents of our minds and for the criterion that follows upon its heels. One takes the form of a challenge. Upon scrutiny, he finds that all of his thoughts, 'however compounded or sublime', 'resolve themselves into such simple ideas as were copied from a precedent feeling or sentiment'. ([1777] (1975):19) He challenges anyone to come up with an idea that cannot be so resolved. If we are unable to present a *prima facie* legitimate idea that fails to correspond to an impression, this will give some weight to the thesis that all intelligible ideas correspond to impressions.

But Hume himself offers and summarily dismisses a counterexample to his thesis. We can imagine someone who is well acquainted with colours, with the exception of a certain shade of blue. Different shades of blue, with a gap in the place of the one he has never encountered, are placed before him in descending order from deepest to lightest. Hume thinks that he will be able 'from his own imagination, to supply this deficiency, and raise up to himself the idea of that particular shade, tho' it had never been conveyed to him by his senses'. ([1740] (1978):6)

This seems to be a genuine counterexample to the claim that every idea must arise from an impression. Hume, however, offers the following reason for ignoring it:

> this may serve as a proof, that the simple ideas are not always derived from the correspondent impressions; tho' the instance is so particular and singular, that 'tis scarce worth our observing, and does not merit that for it alone we should alter our general maxim.
>
> ([1740] (1978):6)

But of course, one would think that the whole point of a counter-example is that it is a particular and singular refutation of a general maxim.

It might be argued that such counterexamples can be contained because they will always be of the nature of a continuous spectrum of cases, where we are asked to fill in one bit of the spectrum. But it is not clear what would exempt points on such continuous spectra from being genuine counterexamples. The fact that all counterexamples to the thesis that all ideas correspond to impressions might be of one sort does nothing to mitigate the damage they do.

Hume's second argument for the thesis about the contents of our mind relies on claims such as: 'A blind man can form no notion of colours; a deaf man of sounds.' ([1777](1975):20) If these claims are right, then it seems that an idea can arise only where there has been an impression. But the claims are not obviously true. Perhaps a blind person might form some kind of idea about various colours by studying the laws of optics. Or he may have an idea that red is a warm colour and blue cold. Again, we are not presented with a convincing argument in favour of the empiricist criterion.

Hume's best argument is one which we shall encounter again. He argues that *if we want to understand an idea,* if an idea is unclear, we ought to reduce it to its simple constituent ideas and produce the impressions from which they are derived. ([1740] (1978):648)

He says:

> when we have pushed up definitions to the most simple ideas, and find still some ambiguity and obscurity; what resource are we then possessed of?…Produce the impressions or original sentiments, from which the ideas are copied. These impressions are all strong and sensible. They admit not of ambiguity …And by this means, we may, perhaps, attain a new microscope or species of optics, by which…the most minute, and most simple

> ideas may be so enlarged as to fall readily under our apprehension.
>
> ([1777](1975):62)

If the method for achieving clarity breaks down because there is no impression corresponding to a simple idea, that is because the idea has no clear meaning—it is obscure or spurious.

Hume, like Berkeley, finds that some of our most important ideas are not derived from impressions. For instance, the thought that our senses inform us of a world of independent enduring physical objects is an illusion. ([1740] (1978):187ff) I think that I see the very same object (this table, that book) today as I did yesterday. That is, I think that objects endure, that they continue to exist even when unperceived. But my belief in a world of enduring physical objects cannot be derived from impressions. For I cannot have an impression of objects when I am not perceiving them.

Hume also argues that we have no impression of a necessary connection between a cause and its effect. He asks where we get the idea of a cause from. There is no common character to all causes, so our idea must be derived from our experience of the relation between things. The inference that we draw from cause to effect rests on the fact that we frequently experience the constant conjunction of two things or events. 'Without any farther ceremony we call the one *cause* and the other *effect,* and infer the existence of the one from that of the other.' ([1740] (1978):87)

That is, all that is experienced is a regularity or a constant conjunction of events. There is no impression or experience of a necessary connection. And without a necessary connection, we do not have our usual concept of causation. Two events can be regularly conjoined without there being a causal connection between them. If we must be sceptics about any idea which does not correspond to an impression, then we are not entitled to believe that there are necessary connections or causal relations.

Inductive inference must also fall by the wayside. For the principle of induction—that events in the future will be like events in the past—depends on the notion of causation. Hume says:

> These two propositions are far from being the same, *I have found that such an object has always been attended with such an effect,* and *I forsee, that other objects, which are, in appearance, similar, will be attended with similar affects.*
>
> ([1777] (1975):34)

An inductive inference is of the form: As have always been accompanied by *Bs* in the past, therefore As will be accompanied by *Bs* in the future. Hume's point is that we can know the first proposition, the claim about constant conjunction in the past, through experience, but nothing in experience enables us to know the second proposition, the claim about what we can expect in the future. The second proposition is not a demonstrative truth and if we suggest that we know it as a matter of fact, we must claim to know it because, in the past, we have found that we can expect the future to be like the past. And this is clearly a circular argument.

Hume points out that all non-formal ideas—all matters of fact—seem to be based on causation and on inference from experience. ([1777] (1975):26) Thus it seems that his criterion undermines all but direct sensory experience and formal knowledge: 'the understanding, when it acts alone, and according to its most general principles, entirely subverts itself, and leaves not the lowest degree of evidence in any proposition, either in philosophy or common life'. ([1740] (1978): 267–68)

This is a devastating conclusion, one that leaves the philosopher 'inviron'd with the deepest darkness, and utterly depriv'd of the use of every member and faculty'. ([1740] (1978):269) It is a conclusion which Hume avoids embracing. He argues, in effect, that the epistemology which leads to such scepticism ought to be abandoned in favour of an epistemology which acknowledges that there can be no secure foundation for our most important beliefs. The correct epistemology is one which gives up on the attempt at grounding our beliefs in experience and holds that objectivity does not require such grounding.

Hume is 'absolutely and necessarily determin'd to live, and talk, and act like other people in the common affairs of life'. ([1740] (1978):269) The sceptic 'cannot expect, that his philosophy will have any constant influence on the mind: or if it had, that its influence would be beneficial to society'. ([1777] (1975): 160) He finds that 'nature' cures him of his 'philosophical melancholy' ([1740] (1978):269); '[n]ature is always too strong for principle'. ([1777] (1975):160) We must admit that the sceptical conclusions which follow from our empiricist premises

> are mere amusement, and can have no other tendency than to show the whimsical condition of mankind, who must act and reason and believe; though they are not able, by their most diligent enquiry, to satisfy themselves concerning the foundation of these operations, or to remove the objections, which may be raised against them.
>
> ([1777] (1975):160)

Thus Hume takes the bite from his stringent criterion. He seems to set it up only to knock it down. We should, except when engaging in philosophical speculation in our study, ignore the empiricist thesis about the contents of the mind and the accompanying criterion. We should, indeed, we must, depend on supposedly spurious ideas in everyday life. We are merely barred from including them in a certain type of philosophy. This bodes ill, it seems, for that kind of philosophy —the philosophy which demands that Reason or, as in one of the passages above, 'understanding', is the arbiter of what is acceptable. For Reason does not take us far enough to make acceptable that which we must accept- the notions of causation, inductive inference, etc.

Hume advises that we acknowledge the whimsical condition we find ourselves in; the condition of having to act and believe by relying on concepts that do not pass the stringent test that at first looked so right. And that test, it now seems, cannot be a test of meaninglessness, for the recommendation that we believe and act on meaningless thoughts would be bizarre. Rather, the empiricist test, one would think, must be something like a test for contents which we can have confidence or certainty in—we can be sure of those contents which are either demonstrative truths or derived from experience.

Once we see that that aim is too high, we see that we are creatures of habit and custom and it is those things which fill the breach left by Reason. Reason, says Hume, 'is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them'. ([1740] (1978):415) What we are fit for is practical action in the world. We are not fit for finding the secret causes of things, if they exist. Reason is not our greatest glory, for it is inadequate for the job of getting about in the world. Experience, custom and habit are steadier, more reliable guides to life.

Hume's empiricist successors have found this appeal to nature and custom highly unsatisfactory. For the most part, they endorse the project Hume set out with and found he could not maintain—the project of showing how legitimate ideas are securely grounded in experience. Hume's success was to show that certain ideas are not grounded in experience and his failure was to suggest that they were nonetheless legitimized by an altogether human practice.[18] To abandon the project of showing how legitimacy is tied to experience is to abandon the realist and naturalist project of showing how those statements in which we can have confidence are statements which are tied to the world.

Thus, Hans Reichenbach, one of the logical positivists, thought that Hume was 'not ready to realize the tragic consequences of his criticism' (1938:345); and Karl Popper was so persuaded by Hume's sceptical arguments that he rejected the use of inductive inference in science.

Mach too argued that science can dispense with hypotheses which do not meet the empiricist test.[19] We need not appeal to custom or habit to rehabilitate ideas which do not correspond to impressions, for we can do without them.

So Hume's criterion has survived and is usually taken to be the predecessor of the logical positivists' verifiability principle, despite Hume's own arguments for abandoning it.

There is, however, an alternative empiricist criterion that Hume *was* willing to embrace.[20] We can follow his thoughts about custom and habit to the conclusion that our inquiries ought to be limited to 'such subjects as are best adapted to the narrow capacity of human understanding'. ([1777] (1975):162) Our inquiries ought to be contained within the practical or common life. For it is only there that we can say how causation works—by habit. Those 'who have a propensity to philosophy' can continue with their researches if they see that 'philosophical decisions are nothing but the reflections of common life, methodized and corrected'. ([1777](1975):162) But a philosophy which goes beyond this naturalism is a foolish pursuit. Such a philosophy gives up on the method of experience and habit and adopts the method of reason. Common life is abandoned in favour of a more exalted abstract domain. And Hume thinks that he has shown this kind of inquiry to be fruitless. Once we are 'sufficiently apprized of the weakness of human reason, and the narrow limits to which it is confined', we should see that 'it leads to conclusions so extraordinary, and so remote from common life and experience' that this kind of reasoning has 'no authority'. ([1777] (1975):72)

It is this criterion which is at work in Hume's discussion of the idea of substance. He says:

> I wou'd fain ask those philosophers, who found so much of their reasonings on the distinction of substance and accident, and imagine we have clear ideas of each, whether the idea of *substance* be deriv'd from the impressions of sensation or reflexion?
>
> ([1740] (1978):15–16)

The answer is clearly that the idea of substance is not derived from impressions. All that one has an impression of are the properties of an object, not the thing in which the perceived properties inhere. Hume concludes that this kind of metaphysics is spurious, like the metaphysics which searches for necessary connections and essences. Inquiry into an idea which does not correspond to an impression is fruitless, despite the fact that some of those impressionless ideas will play an important role in our lives and belief systems.

Before we turn to those successors of Hume who adopt his initial and abandoned criterion—the thought that a legitimate idea is one which corresponds to an impression—it is important to see two difficulties which Hume encountered. For they will stick tenaciously to any attempt at arriving at a verificationist criterion.

First, Hume wavered on the issue of whether impressions are restricted to the sensory. When his sceptical arguments get going, he does indeed focus on the sensory. But when he first characterizes the notion of an impression, he holds that those contents of the mind 'which enter with most force and violence, we may name *impressions;* and under this name I comprehend all our sensations, passions and emotions, as they make their first appearance in the soul'. ([1740] (1978):1) We have an impression 'when we hear, or see, or feel, or love, or hate, or desire, or will'. ([1777] (1975):18) He says that 'all our ideas are nothing but copies of our impressions, or, in other words…it is impossible for us to *think* of any thing, which we have not antecedently *felt,* either by our external or internal senses'. ([1777] (1975):62)

We shall see that some of Hume's successors want to restrict experience to external sensory experience; they would reject Hume's suggestion that passions and emotions can count as experience. But others want to retain some of Hume's breadth here.

The second, related, difficulty is the problem of characterizing experience, of saying just what experience *is.* Hume's suggestion is that ideas are distinguished from impressions by being fainter. The difference between an idea and an impression is roughly that between thinking and feeling.

He anticipates the objection that sometimes ideas seem to be as forceful as impressions. Experiences we have in dreams and hallucinations, for instance, may seem as 'lively' as experiences we have when awake and thinking straight. We want to say that the latter are veridical and the former are not or, in Hume's terms, the latter are impressions whereas the former are ideas.[21]

Hume thinks that he says enough by way of blocking this objection by the following:

> But notwithstanding this near resemblance in a few instances, they are in general so very different, that no-one can make a scruple to rank them under distinct heads, and assign to each a peculiar name to mark the difference.
>
> ([1740] (1978):2)

Again, Hume's response to what appears to be a genuine counterexample is to ignore it. The problem remains for his successors to say something more adequate about what experience amounts to.

AUGUSTE COMTE (1798–1857)

Like Hume and many of the other empiricists we shall examine, Comte believed in the progress of science and held that if we extend its methods to other domains of inquiry, advance is possible there as well. Indeed, he argued that if we do not extend science, modern society will disintegrate. It is in the position of needing to find for itself some principles upon which to act. The evils which plague society, Comte suggested, arose because of a kind of anarchy in beliefs; the rejection of the religious doctrine that was so widely accepted in the middle ages left humanity directionless.[22] The human mind craves a philosophy and Comte's project is to set out the universal principles or the secular faith which all people can adopt. These turn out to be the principles of science.

In undertaking this project, Comte becomes the first empiricist to look seriously at the various domains of inquiry with an eye to determining whether they measure up to the standards of science. Along the way, he founds the discipline of sociology.

Comte is also the first to use the term 'positivism'—the view that the function of inquiry is to 'discover the laws of phenomena'. (1875a: 4) Phenomena are what strike the senses or what appear to us. The aim of inquiry, Comte argues, is to predict and control phenomena and we do not require knowledge of anything deeper than appearances for that. Specifically, we do not require knowledge of essences or causes. Like Hume, Comte argues that we predict experiences by means of other experiences which experience has led us to believe are signs or antecedents of it.

Also with Hume, Comte adopts what we would today call a kind of non-realism. He argues that we must realize that we cannot hope to gain an 'objective synthesis' or absolute knowledge. Rather, we must content ourselves with a 'subjective synthesis' or knowledge that merely enables us to use nature so that we can make society better. There is no objectivity beyond human objectivity:

> The only really universal point of view is the human… This is the only one which recurs and is perpetually renewed, in every department of thought; in regard to the external world as well as to Man.
>
> (1875b:418)

If we restrict our inquiries to the realm of appearances, we cannot pretend that we are theorizing about the world as it is independently of us. We are theorizing about the world as it appears to us.

Comte,' unlike Berkeley and Hume, does not begin with an empiricist account of the contents of the mind. And he does not think that a semantic principle is at the bottom of positivism.[23] Rather, he relies on a detailed history of the evolution of human development.[24] He argues that there are three methods the human mind adopts, in succession, to explain phenomena. And each branch of knowledge passes successively through each of the three different methods. Comte's aim is to provide a justification of one of the central tenets of positivism: the belief in the validity of the physical sciences. His argument is that, if you look at the history of human development, you will see that it is the story of the realization of the scientific spirit. That story is as follows.

All areas of inquiry start off in the theological, fictitious, or mythological stage, in which the human mind tries to explain nature as being ruled by gods. Phenomena are explained by invoking the arbitrary will of these supernatural beings. This explanation is rejected as people realize that nature is governed by laws.

The acknowledgement that laws govern nature results in the next—the metaphysical—stage, in which the gods are depersonalized and become abstract metaphysical entities. Rather than invoke the will of God to explain phenomena, powers or essences behind the phenomena are taken as explanations. John Stuart Mill, in his book on Comte, explains the point nicely:

> Instead of Dryads presiding over trees, producing and regulating their phaenomena, every plant or animal has now [Aristotle's] Vegetative Soul… At a later period the Vegetative Soul has become a Plastic Force, and still later, a Vital Principle. Objects now do all that they do because it is their Essence to do so, or by reason of an inherent Virtue.
>
> ([1865](1961):11)

But metaphysics, at bottom, offers the same kind of explanation as theology, merely substituting mysterious entities for mysterious gods. It is a primitive precursor of science and will be superseded by the final positive or scientific stage. This stage comes when it is realized that supernatural beings and metaphysical abstractions are not real. The only realities are the phenomena:

> In the final, the positive state, the mind has given over the vain search after Absolute notions, the origin and destination of the

> universe, and the causes of phenomena, and applies itself to the study of their laws,—that is, their invariable relations of succession and resemblance. Reasoning and observation, duly combined, are the means of this knowledge.
>
> (1875a:2)

Comte's criterion eschews theology and metaphysics in favour of sciences which restrict themselves to appearances. Science must search for invariable laws, or in Hume's terms, constant conjunctions, and give up the search for what are called causes. Like Hume, he thought that they are 'beyond our reach'; an 'unattainable mystery'. ([1848] (1957):51) The search for them is vain and we ought to set 'aside all inaccessible researches on the ground of their utter inutility'. ([1848] (1957):50)

Comte thought that what would today be called 'instrumentalism' is a cheat. Instrumentalism is the position which holds that hypotheses about theoretical or unobservable entities do not get at an 'intrinsic reality', but are 'merely indispensable means'. A scientist believes that unobservable entities exist or believes hypotheses about them because they are good instruments for predicting what will happen on the phenomenological level. Comte thinks that one who takes this position 'feels the inanity of such [hypotheses], and yet dares not surrender them'. (1875a: 188) Science must be purified of such 'mischief. (1875a: 237–38)

Thus, he was unwavering on the point that, if you want an inquiry to be characteristic of the final stage of inquiry, you must make sure that you are dealing only with the accessible. The way to ensure this is to see that hypotheses are open to positive verification. They cannot purport to be about something which cannot be observed, for they must relate only to phenomena.

The various sciences have different records with respect to Comte's criterion: they go through the stages of development at different rates. Comte thought that in his day, one could identify sciences in each of the stages. Astronomy, he argued, had reached the final stage: 'since the establishment of the law of gravitation, geometers and astronomers have put away all their fancies of chimerical fluids causing planetary motions'. (1875a:187)

Physics, however, still had traces of the metaphysical spirit in it.[25] It speculated, in a phrase reminiscent of Hume, 'beyond the limit of our faculties':

> What scientific use can there be in fantastic notions about fluids and imaginary ethers, which are to account for phenomena of heat, light, electricity and magnetism?… These fluids are

> supposed to be invisible, intangible, even imponderable, and to be inseparable from the substances which they actuate; Their very definition shows them to have no place in real science, for the question of their existence is not a subject for judgment: it can no more be denied than affirmed: our reason has no grasp of them at all. Those who, in our day, believe in caloric, in a luminous ether, or electric fluids, have no right to…refuse to admit angels and genii.
>
> (1875a: 187)

So Comte thinks that hypotheses which claim to refer to something which cannot be sensed (incapable of being, for instance, seen or touched) are spurious. And entities (supposed causes) which are indistinguishable from the things they are supposed to excite to action (their effects) are not real. Not only do they require us to distinguish two indistinguishable things, but they fail to explain the phenomenon:

> For instance, the expansion of bodies by heat is not *explained,*—that is, cleared up,—by the notion of an imaginary fluid interposed between the molecules, which tends constantly to enlarge their intervals; for we still have to learn how this supposed fluid came by its spontaneous elasticity, which is, if anything, more unintelligible than the primitive fact… These hypotheses clear away no difficulties, but only make new ones, while they divert our attention from the true object of our inquiries.
>
> (1875a: 188)

It is, Comte points out, no explanation of the observable phenomenon to say that something which is itself unexplained and unsupported causes the phenomenon. Surely he is right that something like his verificationist criterion gets at what is wrong with the likes of the ether hypothesis.

He also suggests that such hypotheses and entities are spurious because they go beyond our reason—we can have no grounds to assert or deny them. Like Hume, Comte thinks that we must restrict ourselves to things our faculties—sensory and cognitive—can grasp. This point can be put so that it is almost a tautology: we must inquire into matters into which we *can* inquire; we cannot inquire into matters into which we cannot inquire. But there is a substantive point here, for both Comte and Hume think that the history of inquiry is marked by repeated efforts to inquire into that which goes beyond us.

It is important to see that, although Comte declares as spurious statements about the Absolute or about ultimate solutions to

questions, he does not want to deny these hypotheses or assert them to be false. He just thinks that it is impossible to apply the positive method to such issues and, thus, we cannot inquire about them. He thinks that when we state why we reject metaphysical positions, we must avoid denying them. Metaphysical questions must die from neglect, not by refutation.

We shall see this kind of thought echoed by the logical positivists, who made the point that the negation of a meaningless statement is just as meaningless as its assertion. In Comte's hands, this warning has more to do with inquiry than with logic. If a statement goes beyond our experience and reason, then we cannot inquire into it, full stop. So we cannot inquire into it to find that it is false. We had better just leave it alone, to wither away as a matter that no one is interested in.

It is not only physics which Comte accuses of remaining stuck in the primitive stages of inquiry. Chemistry is in an even worse state, as is inquiry into social phenomena. Comte sees the evolution of human development as a story of faith being absorbed by reason, to the good of society. And reason has yet to triumph fully in these domains.

Comte, however, does not want to denigrate art, religion, morals and other inquiries into social phenomena. He thinks that positivism is 'even more favourable to art than to Science'. ([1848] (1957): 375) Since, traditionally construed, these areas of inquiry do not seem to be open to verification or sensory observation, Comte proposes a new social science, 'social physics', or 'sociology'. This science is rooted in biology (1875a:397), for the social and the political must, says the positivist, be connected with 'the scientific point of view'. (1875b:35) We must search for the natural laws that govern social phenomena.

By this, Comte seems to mean that social matters are not arbitrary, nor are they merely matters of individual influence. Nor should the fact that they are regular make us think that they are governed by a deity or by metaphysical essences. Rather than search for the essence of elements such as art, philosophy, morals, and political organization, the positivist will show how they evolved or developed historically. For that is how to spot the laws that govern social phenomena: '[a]nd now that man's history has been for the first time systematically considered as a whole, and has been found to be, like all other phenomena, subject to invariable laws, the preparatory labours of modern Science are ended'. ([1848] (1957): 35)

Social and moral scientists must undertake empirical studies into the history of various aspects of human development and try to identify laws. Oddly, the chief law which Comte identifies on the basis of his own extensive history is the very three-stage evolution described above—the evolution from theological explanation to positive

explanation. The oddity is a kind of circularity—the evolutionary story is supposed to be both the motivation for and the result of the application of the positive method.

In addition to the methodological prescription for the human sciences (study history and identify laws), Comte wants to straightforwardly apply his verificationist criterion to them. Since, for instance, we cannot compare the happiness of different animals or of the different sexes, questions of which is happier are 'impracticable and unintelligible'. (1875b:73) The only questions we can answer, and thus the only legitimate questions, are those regarding, for instance, whether improvement must accompany development. We must look to see whether history shows any invariable laws regarding the relationship between these two phenomena.

Moral philosophy, or inquiry into what is good and bad, can also abide by the positivist spirit. The basis of morality is not theological nor is it metaphysical; both of which, Comte holds, base morality on self-interest. To inquire into what is right and wrong, we must direct our attention to human faculties and human habits: '[h]uman faculties, affective as well as intellectual, can be developed only by habitual exercise; and positive morality…teaches the habitual practice of goodness without any other certain recompense than internal satisfation'. (1875b:395) The laws of conduct for humanity must not be derived from fictions, but 'from a wise estimate of [humanity's] own nature and condition'. (1875b:395) We must start with how human beings actually are and get morality going from that.

In philosophy in general, the positivist spirit requires the abandonment of the method of introspection, the method of observing one's own internal states. Metaphysics tends to conceive of the 'study of Man, and especially intellectual and moral Man, as entirely independent of that of the external world'. (1875b:385) The metaphysician, in an inadequate attempt to imitate the sciences, proposes to adopt the method of introspection:

> This procedure, very marked from the time of Locke onward, has now issued in dogmatically sanctioning…the isolation and priority of moral speculation, by representing this supposed philosophy to be, like science itself, founded on a collection of observed facts. This has been done by proposing, as analogous to genuine observation, which must always be external to the observer, that celebrated *interior observation* which can only be a parody on the other.
>
> (1875b:385)

We have seen that Comte thinks that the social world is unified with the physical world in that both are law-governed. These laws are identified, however, on the basis of ordinary sensory observation. The unification is not to be achieved by certain branches of inquiry claiming a special kind of observation for themselves. Unlike Hume, Comte is clear about what he thinks counts as observation— sensory perceptions count, but not feelings and sentiments.[26] We shall see that the denial of introspection is a plank in many subsequent empiricist positions. The study of human nature is a science which must start from and restrict itself to the senses.

Philosophy, along with every other branch of inquiry, must also abandon the *a priori* method—the method of reaching conclusions by thought alone. To ensure that one's conceptions are positive rather than theological or metaphysical, one must adhere strictly to the method of observation. Comte argues that there are only three legitimate means of investigation—observation (direct, unaided observation), experiment (where we subject the phenomenon to artificial circumstances and then observe it), and observation by comparison. (1875a:116) *A priori* reasoning is always to be avoided. Our conclusions must not be based on what seems to us to be rational or desirable:

> some modern philosophers, possessed with the notion of the simplicity and economy of nature, have concluded *a priori* that most substances must be the various compounds of a much smaller number of others. But, while endeavouring to conceive of nature under the simplest aspect possible, we must do so under the teaching of her own phenomena, not substituting for that instruction any thoughtless desires of our own. We have no right to presume beforehand that the number of simple substances must be either very small or very large. Chemical research alone should settle this; and all that we are entitled to say is that our minds are disposed to prefer the smaller number.
>
> (1875a:255–56)

This thought will strike most as right and so will Comte's avoidance of the danger which accompanies it. That is, it would be easy to go from here to an extreme empiricism, with experience pushing out reason altogether, but Comte, with a keenness for balances, does not make this move. The path to positive knowledge is 'reasoning and observation, duly combined'. The positive spirit must keep itself away from two dangers.[27] The first is mysticism and the way to guard against that is to sanction the verificationist maxim that 'observed facts are the only basis of sound speculation'. (1875b: 424) But the second is 'absolute

empiricism' or the refusal to go beyond the simple ascertainment of a fact. He says, sounding very much like certain twentieth century philosophers of science:

> If it is true that every theory must be based upon observed facts, it is equally true that facts cannot be observed without the guidance of some theory. Without such guidance, our facts would be desultory and fruitless; we could not retain them: for the most part we could not even perceive them. (1875a: 3)

Comte's point here is that science cannot be a straightforward matter of making observations. For theory is necessary in order to observe. But nonetheless, once a theoretical statement is in hand, you must be able to trace it back to observations. It is just that you cannot get the theoretical statement in hand merely by observation.

But, despite his strictures against the *a priori,* it seems that Comte follows Hume in retaining a special place for a certain kind of *a priori* reasoning. Abstract mathematics, for instance, is not founded on observation, yet it is 'at the head of positive philosophy'. (1875a: 27) That is, a 'purely logical science', which Comte takes to be perfectly legitimate, is 'independent of observation'. (1875a:72) The 'experimental' is to be distinguished from the 'logical', and both have a place in science. Comte does not, it seems, insist that all domains of inquiry abide by the verificationist maxim. He adopts something like Hume's distinction between matters of fact and relations of ideas and, again like Hume, requires his criterion only to be applicable to matters of fact. We shall see that most empiricists who accept a verificationist criterion, despite their commitment to the unity of inquiry—to the thought that all inquiry must abide by the same principles—bifurcate inquiry in this way. I shall suggest in chapter 3 that this bifurcation is unfortunate and unnecessary.

JOHN STUART MILL (1806–1873)

John Stuart Mill is also a pillar of the empiricist community. Like Hume, he is a naturalist, holding that human beings are a part of the natural order and must be studied as such. There is, he argues, 'nothing in causation but invariable antecedence' ([1872] (1979): 299) and 'every attribute is *grounded on* some fact or phenomenon, either of outward sense or of inward consciousness'. ([1872] (1973): 98) And in good empiricist form, Mill takes matter to be analysable in terms of sensation:[28]

> I believe that Calcutta exists, though I do not perceive it, and that it would still exist if every percipient inhabitant were suddenly to leave the place, or be struck dead. But when I analyse the belief, all I find in it is, that were these events to take place, the Permanent Possibility of Sensation which I call Calcutta would still remain; that if I were suddenly transported to the banks of the Hoogly, I should still have the sensations which, if now present, would lead me to affirm that Calcutta exists here and now. We may infer, therefore, that both philosophers and the world at large, when they think of matter, conceive it really as a Permanent Possibility of Sensation.
>
> ([1872](1979):184)

A physical thing is a thing such that, if certain conditions were to obtain, certain kinds of sensations would occur. The truth of this conditional is not altered by the conditions failing to obtain.

Mill also agrees with Berkeley and Hume about substances: 'no assertion can be made, at least with a meaning, concerning these unknown and unknowable entities, except in virtue of the Phenomena by which alone they manifest themselves to our faculties'. ([1872] (1973):100) 'Matters of fact' are the only things which can be believed or tendered for belief. ([1872] (1973):104)

But Mill does not merely repeat the claims of his predecessors. What is most important for us about Mill's contribution to the debate about verificationism is his refusal to bifurcate inquiry; his refusal to sharply distinguish kinds of inquiry that are empirical from kinds that are not. He insists that all legitimate domains of inquiry are empirical. He is most famous in this regard for his thoughts about mathematics and logic.

The empiricist holds that all knowledge arises from the senses. A problem immediately presents itself about mathematical and logical knowledge, which do not seem to arise from the senses. We have seen that the way in which Hume and Comte handle this difficulty is to distinguish between two sorts of knowledge, roughly, the formal and the non-formal, and to require empiricist principles to apply only to the non-formal. Mathematical and logical propositions are verbal propositions, true by definition.

Mill disagrees. He acknowledges a distinction between 'verbal' and 'real' propositions ([1872] (1973):115–16) and between 'apparent' and 'real' inference ([1872] (1973):158–60) and, like his predecessors, thinks that verbal propositions and apparent inferences do not deliver knowledge about the world. But he breaks with empiricist tradition and argues that the truths of mathematics, logic, and geometry are not in this category.[29] They have empirical content.

Mill sees that if mathematical statements are not merely formal, he must say how they are justified. He must show how they pass the test that any empiricist will require of non-formal statements. His suggestion is that the statements of mathematics and logic are inductive generalizations or generalizations from experience.[30] It is because these generalizations are based on such a large number of instances that we tend to think they must be necessary truths. But they are in fact fallible.

So Mill disputes Hume's claim that the necessity involved in mathematical truths is that their negations are inconceivable. Rather, arithmetical statements, for instance, are inductive generalizations 'known to us by early and constant experience'. ([1872](1973):256)

Mill also takes numbers to be empirical—they are collections or aggregates:[31] '[e]ach of the numbers two, three, four, etc., denotes physical phenomena, and connotes a physical property of those phenomena. Two, for instance, denotes all pairs of things, and twelve all dozens of things'. ([1872] (1973):610) Mathematical statements assert, for instance, 'that collections of objects exist, which while they impress the senses thus, 000, may be separated into two parts, thus, *oo o*'. ([1872] (1973):257) So the statement *'2+1 =3'* is to be thought of as an empirical truth about collections—the collections *o* and *oo* can be rearranged as the collection *ooo*. Different facts, however, are represented in these arrangements. For '[t]hree pebbles in two separate parcels, and three pebbles in one parcel, do not make the same impression on our senses'. ([1872] (1973):256)

A corollary of the thought that mathematical and logical statements are inductive generalizations is that they are in principle subject to falsification by a counterexample. So one would think that *'2+2=4'* would be falsified were one to see a collection *oooo* which can be perceived not as *oo oo*, but as, say, *ooo oo*.

This conception of mathematics has come in for much derision. To the thought that arithmetical statements depend on the observation of a matter of fact, Frege posed formidable objections. We can, for one thing, add two five figure numbers without observing that quantity of objects being thrown together. ([1884] (1950): 10e–11e) And he sarcastically says of Mill's argument about collections: 'What a mercy, then, that not everything in the world is nailed down; for if it were, we should not be able to bring off this separation, and *2+1* would not be *3*!' ([1884] (1950): 9e)

A.J.Ayer, stating the logical positivists' opposition to Mill on this issue, stressed that if I counted five pairs of objects and found that they amounted to nine, I would not conclude that *'2 x 5=10'* had been refuted. (Ayer 1952b:75) I would say that I had counted wrongly or had been mistaken to think that there were five pairs of objects to

begin with. We will always preserve the validity of a mathematical truth by adopting some other explanation of the 'falsifying' observation. Hempel ([1945] (1964):367–68) added that it is not possible to even state what kind of evidence would disconfirm a mathematical or logical hypothesis.

But despite the fact that Mill's particular way of unifying mathematical and scientific inquiry does not seem to work, it is important to recognize the possibility of such a unification for the empiricist. For in chapter 3 we shall see the idea arising again, in a more palatable form.

And we shall see another Millian unification resurface, one which is often entirely overlooked by empiricists. Mill did not only do what would now be called philosophy of science. He is perhaps best known for his moral and political philosophy and his empiricist principles rule in that domain as well. Morals and politics also answer to experience—experience is the testing ground for observations about what is right and wrong, just or unjust.

This view appears in Mill's *The Subjection of Women,* where he argues that patriarchy, or the dominance of men over women, would be justified only if it were thought to be best 'on the testimony of experience'. ([1869] (1984):263) By 'best' in these matters, Mill means 'most conducive to…happiness and well-being'—he is a utilitarian.

Mill sees that, if experience is to be the testing ground in ethics, complex issues immediately arise. For, even if one holds scientific observation to be laden with theory and background belief, it seems clear that observation of what is right or wrong, cruel or kind, etc. is much more so.[32] He argues, for instance, that before we can test the claim that men ought to have authority over women, both men and women must have experienced social life under conditions of perfect equality. Only then could it be held that a particular system, that of subordination of women to men, is conducive to the happiness and well-being of all. For '[e]xperience cannot possibly have decided between two courses, so long as there has only been experience of one'. ([1869] (1984):276)

Here we begin to discern a move in empiricism toward broadening the notion of experience so that it takes in much more than sensory perception. We shall see that the move is flatly rejected by that strand of empiricism which culminates in logical positivism. But I shall suggest that the empiricist ought rather to follow Mill and hold that non-sensory judgements, even moral ones, can and ought to pass a suitably formulated verificationist criterion.

ERNST MACH (1838–1916)

Comte might have introduced an empiricist criterion to physics, but it took a physicist, Ernst Mach, to cement the friendship. Mach grounded his verificationism not on a story of human development, but on a 'doctrine of elements' which has resonances in Hume:

> As to the sum of my physical findings, these I can analyse into what are at present unanalysable elements: colors, sounds, pressures, temperatures, smells, spaces, times and so on. These elements depend both on external and internal circumstances; when the latter are involved, and only then, we may call these elements sensations.
>
> (Mach [1926] (1976):6)

Sensation, Mach argued, is the starting point of science. 'Science has always required self-evident propositions as a safe foundation upon which to build' ([1906] (1959):56) and it has found such an indubitable or certain basis for itself. This foundation is what is immediately given by the senses.[33]

Sensation is also the finishing point for science because, as Hume and Comte stressed, '[f]or the investigator of nature there is nothing else to find out but the dependence of phenomena on one another'. (Mach [1872] (1911):63) The aim of science is to discover the relations between phenomena and eventually, Mach predicted, all scientific theories will be replaced by 'mathematical functions' which will relate sensations to each other.

Mach took these empiricist principles to entail that certain notions have no place in science. No mysterious causes, for instance, are allowed; causation is merely constant conjunction[34] and is to be reduced to functions or reciprocal dependencies among sensations.

Likewise, metaphysics is spurious. It is the study of what exists outside experience ([1906] (1959): xl) and a legitimate sentence or theory must contain only terms which can be 'constituted' out of experiences. There is, for instance, nothing like 'substance' or 'the weird and unknowable "thing-in-itself" underneath the properties or behind the appearances. ([1926] (1976):7) For 'the world consists of only our sensations' ([1906] (1959):12)—a 'thing' in the external world is really a construction from sensations. It is a 'relatively constant sum of touch and sight sensations associated with the same space and time sensations'. ([1933] (1960):611)

Mach took much of the physics of his time to be metaphysics. And he took Newton's accounts of absolute space, motion, and time to be prime examples of such spuriousness. Newton says:

> Absolute space, in its own nature, without relation to anything external, remains always similar and immovable. Relative space is some movable dimension or measure of the absolute spaces; which our senses determine by its position to bodies … Absolute and relative space are the same in figure and magnitude; but they do not remain always numerically the same.
>
> ([1686] (1934):6)

Absolute space does not require a relation between material bodies; there can be empty space. By its very nature, absolute space is unobservable, since we can only observe relations and positions of bodies. Newton thinks that those who 'confound real quantities with their relations and sensible measures…defile the purity of mathematical and philosophical truths'. ([1686] (1934):11)

Newton's sentiment is of course most contrary to the spirit of positivism, which reviles the purported purity of at least philosophical, if not mathematical, truths. Mach insisted that a notion such as that of absolute space cannot be pointed to in experience and thus it is 'devoid of content and cannot be used in science'. ([1933] (1960):293) And if two things (absolute and relative space) are always the same in figure and magnitude (if their measurements always coincide), then it is senseless to say that they differ in number (that there are two things rather than one).

Newton's account of absolute motion is that it is the 'translation of a body from one absolute place into another'. ([1686] (1934):7) Mach objects to this as well: '[a] motion may, with respect to another motion, be uniform. But the question whether a motion is *in itself* uniform, is senseless.' ([1933] (1960):273) And:

> No one is competent to predicate things about absolute space and absolute motion; they are pure things of. thought, pure mental constructs, that cannot be produced in experience. All our principles of mechanics are…experimental knowledge concerning the relative positions and motions of bodies.
>
> ([1933] (1960):280)

A change in the position or velocity of a body under the influence of another can only be determined relative to a physical reference system. It cannot be determined by reference to absolute motion or space.

Of absolute time, Newton says that it, 'from its own nature, flows equably without relation to anything external'. ([1686] (1934):6) And Mach says:

> With just as little justice, also, may we speak of an 'absolute time'—*of a time independent of change.* This absolute time can be measured by comparison with no motion, it has therefore neither a practical nor a scientific value; and no one is justified in saying that he knows aught about it. It is an idle metaphysical conception.
>
> ([1933] (1960):273)

The way to investigate the nature of time is not to look at how it is used in theoretical physics, but rather, to look at how it is measured. Once we adopt such a methodology, we should see that 'For the natural inquirer, determinations of time are merely abbreviated statements of the dependence of one event upon another, and nothing more.' ([1894] (1898):204)

So Mach holds that scientists ought not to extend the notions of space, time and motion 'beyond the boundaries of experience'. ([1933] (1960):280) Scientists ought to ignore questions about things which go beyond experience. For 'to refuse to attempt answers to questions that have been recognized as meaningless, is in no sense an act of resignation; in view of the mass of material that can really be investigated, it is the only reasonable course open to a man of science'. ([1906] (1959):366)

Perhaps Mach's objections here have been vindicated, for Newton's accounts of absolute space, motion, and time seem to have been left by the scientific wayside.[35] But Mach was not so fortunate in other endeavours. He also argued (against Boltzmann and Planck) that the atomic hypothesis fell to his criterion. Since atoms and molecules cannot be perceived, they are theoretical constructs which do not refer to reality. They are 'merely a product of thought' ([1872] (1911):51) or 'things which can never be seen or touched and only exist in our imagination and understanding'. ([1872] (1911):50) When debating the issue, Mach would often ask 'Haben Sie einen gesehen?' (Have you seen one?).[36] No one, of course, had. And as far as Mach was concerned, if atoms and molecules 'from their very nature *can never be made the objects of sensuous contemplation*', then they are 'mere things of thought'. (1906:138)

Mach did, however, allow for the kind of instrumentalism which we saw Comte reject. If it is really unavoidable, it is permissible for the physicist to treat mere things of thought as 'auxiliary concepts'. These make no claim to refer to actual or existing objects, but serve merely as bridges from sensation to sensation. The resulting theory would be an imaginative construction or a convenient instrument. It would allow the scientist to predict, but it would not describe reality. That is, concepts with no connection to experience can be used in science if

they make for a simpler explanation of the phenomena. Absolute space does not, but atoms might.[37]

Many scientists took Mach's side on the atomic issue and agreed with him that the success of modern science was due to the acceptance of a principle of verifiability.[38] Indeed, had Mach consistently taken the instrumentalist line and said that atomic theory was acceptable, but only as an instrument to enable scientists to predict the course of phenomena,[39] he would still have supporters of a sort, as we shall see when we look at the work of Bas van Fraassen. Electrons, quarks, and the like have replaced atoms as what empiricists take to threaten to make science full of 'childish and superfluous subsidiary conceptions' (Mach [1900] (1986):389) but the issue remains the same.

This raises serious questions about what is to count as observable. Is an entity which is unobservable to the naked eye mysterious, as Mach suggested? Or do we allow certain technologies to help us in our observations—what about magnifying glasses, telescopes, microscopes, etc.? We shall see that empiricists are divided on this matter.

Mach, like his predecessors, is a naturalist. He thought that the sciences must be unified and the path to this unification is to see knowledge as a biological phenomenon. There are no *a priori* truths; rather, all statements are subject to revision by experience.[40] All areas of inquiry should adopt the same empiricist standpoint. Science is the model for all inquiry.

Philosophy, if it is to be any good, must form a part of this unity. Non-metaphysical or legitimate philosophy is that which attempts a critical uniting of the results of the special sciences. Insofar as philosophy is identified with metaphysics, Mach insisted that he had no philosophy. All he had was a methodology—a scientific methodology.

This stance, however, is notoriously difficult to maintain. The empiricist seems to want to deny that there is a reality which is independent of our sensations. We saw that Berkeley bit the bullet here and took himself to be committed to idealism, the view that only our ideas exist. But Mach, along with most other empiricists, wants to reject that view.[41] For, first, idealism begs to be seen as metaphysical. And second, it seems that physical science needs an independent world to investigate.

Mach's way of denying that his position is a brand of idealism was, we shall see, resurrected by some of the logical positivists. Mach argued that the issues of realism and idealism and unfathomable things-in-themselves are 'sham problems'. There is no point in inquiring into them and '[b]y elimination of what it is senseless to explore, what the special sciences can really explore emerges all the

more clearly: the complex interdependence of the elements'. ([1926] (1976):8) The verificationist criterion rules out the investigation of metaphysical questions. It declares idealism to be a meaningless doctrine and so the verificationist, not being interested in it, is not landed with it.

Perhaps the best and most contemporary[42] way to see how Mach might manage to think that there is nothing but sensations and still reject idealism is to see that he wants to obliterate the distinction on which the idealism/realism issue turns. He wants to do away with the distinction between what is real and what is merely apparent. Sensations are all there is—they constitute both the physical and the psychological world. ([1926] (1976):7–8)

We can still have a notion of truth, Mach thinks. Truth is what we have when observation is accounted for:

> every practical and intellectual need is satisfied the moment our thoughts have acquired the power to represent the facts of the senses completely. Such representation, consequently, is the end and aim of physics; while atoms, forces, and laws are merely means facilitating the representation. Their value extends as far, and as far only, as the help they can afford.
>
> ([1906](1959):314–15)

There is an interesting tension in Mach's position which is reminiscent of Hume's difficulty in characterizing the notion of experience. Given the empiricist views set out above, Mach had a surprising side to him. He coined the term 'Gedankenexperimente' and argued that we have 'instinctive knowledge' which we can get at by these thought experiments. One would expect an empiricist of Mach's severity to balk at any attempt to appeal to anything beyond what our senses deliver.[43] But not only does Mach, unlike Comte, think that the method of introspection is valid,[44] he argues that thought experiments can transform our vague, semi-formed instinctive experience into clear, albeit fallible, theses. Inquirers can 'imagine conditions, and connect them with their expectations and surmise of certain consequences: they gain a thought experience'. ([1926] (1976):136) We can sometimes get a 'certain and unambiguous expectation of a result' in an imaginary experiment and when we do, that result is reliable.[45]

Examples of successful thought experiments include Galileo's famous conclusion that all bodies fall at the same speed, regardless of their weight, and Stevin's experiment about inclined planes.[46] And mathematics, Mach states, is full of thought experiments— every proof and deduction is the result of one. ([1926] (1976):144)

We must, however, use the method of thought experimentation only 'in provinces with which we are very familiar'. ([1933] (1960): 36) 'When experimenting in thought, it is permissible to modify *unimportant* circumstances in order to bring out new features in a given case; but it is not to be antecedently assumed that the universe is without influence on the phenomenon here in question.' ([1933] (1960):341) Experience in thought experimental contexts counts as experience only if the circumstances that are varied are familiar. We cannot allow our imagination to run too wild. Thought experiments have authority because they appeal to our instinct, but that instinct is trustworthy only in familiar situations. And Mach insists that thought experiments are mainly negative—they can tell us what cannot occur, not what can occur.

We shall see that Mach's idea that one can have experiences in thought experimental contexts is, at around the same time, made a platform in the empiricism of C.S.Peirce, the founder of pragmatism. And we shall see that the idea is an exciting one for the verificationist, opening doors which at first glance seem permanently closed.

But the side of Mach which emphasized external or sensory experience, as opposed to internal or thought experimental experience, is the Mach which has lived on. It provided immediate inspiration for the logical positivists. In 1895, Mach was the first to hold the chair of the History and Theory of the Inductive Sciences at the University of Vienna, which was later held by one of the most prominent of the logical positivists, Moritz Schlick. The members of the Vienna Circle formed the 'Verein Ernst Mach' (The Ernst Mach Society) in 1928, to 'further and disseminate the scientific world-conception'.[47] is this legacy to philosophy that Mach is best known for and it is this legacy which will be explored in the next chapter.

PIERRE DUHEM (1861–1916)

Pierre Duhem, in addition to many influential works on thermodynamics, energetics, and the history of science, was the author of *The Aim and Structure of Physical Theory,* which he claimed was a positivist treatise in its origins and in its conclusions. ([1914] (1954): 275–82) But, as we shall see, Duhem's positivism has a few significant twists.

Duhem, like Mach, took an instrumentalist line on scientific theories and theoretical entities. To explain, Duhem argues, is to 'strip reality of the appearances covering it like a veil, in order to see the bare reality itself. ([1914] (1954):7) Since 'the observation of physical phenomena does not put us into relation with the reality hidden under

the sensible appearances', science cannot explain. The laws of science deal only with appearances. They cannot get at the reality underneath.[48]

A physical theory is not an explanation. It is a system 'of mathematical propositions, deduced from a small number of principles, which aim to represent as simply, as completely, and as exactly as possible a set of experimental laws'. ([1914] (1954:19)

So, like Comte and Mach, Duhem thinks that a scientific theory is merely a classification of phenomena. It does not tell us what reality is really like, but rather, it shows us that there are appearances of order. A theory is 'an artificial construction manufactured with the aid of mathematical magnitudes'. ([1914] (1954):277) Propositions in a theory are 'neither true nor false. They are simply *convenient or inconvenient'.* ([1917] (1990):186)

An important motivation for Duhem's instrumentalism is the preservation of the autonomy of physics. He argues that *'if the aim of physical theories is to explain experimental laws, theoretical physics is not an autonomous science; it is subordinate to metaphysics'.* ([1914] (1954): 10) If the physicist tries to go beyond observation, he 'no longer has the right to shut his ears to what metaphysics wishes to tell him about the real nature of matter'. ([1917] (1990):184) Not only is there widespread disagreement amongst metaphysicans (a disagreement which is not reproduced amongst physicists), but physics cannot be derived from metaphysics. We would do better to describe the aim of physics in a way that made it autonomous and judgeable on its own terms.

That aim is not explanation, but classification of appearances: '*Agreement with experiment is the sole criterion of truth for a physical theory:* ([1914] (1954):21) The most a theory can provide by way of explanation is 'hints as to the real affinities of things'. ([1914] (1954):30) Theories are instruments for prediction or for anticipating experience. A scientific law is not true or false, but 'something more or less well selected to stand for the reality it represents'. ([1914] (1954): 168)

So Duhem does not begin with an empiricist story which goes from the importance of sensation to the thought that the unobservability of theoretical entities renders them spurious. Rather, he rests his case on the notion of explanation and on how theories cannot get at the real causes of things. And unlike Berkeley, Hume, Comte, and Mach, Duhem takes himself to be a straightforward realist—he thinks that there is something underneath the appearances. A theory which gets at this reality, or which explains it, is not scientific, but rather, is metaphysical.

Thus, one twist in Duhem's positivism is that he holds that science must restrict itself to the phenomena and that metaphysics is alone capable of expressing the truth of how things really are in the world. Metaphysics, including religion, is separate from, and higher than, science. One spinoff of this view is that metaphysics and religion are protected from the scientific onslaught. The principles of good science are not applicable to metaphysics, for metaphysics has a revealed basis.

This is not to say that metaphysics transcends experience altogether. A metaphysical belief, such as 'Man is free', 'The soul is immortal, or 'The Pope is infallible in matters of faith', can, Duhem says, clash with experience:

> If, for example, we noticed a case in which a Pope, placed in the conditions provided by the dogma of infallibility, issued an instruction contrary to the faith, we should have before us a fact which would contradict a religious dogma. If experience led to the formulation of the law, 'Human acts are always determined,' we should be dealing with an empirical law denying a proposition of metaphysics.
>
> ([1914] (1954):284)

But the principles of physics and metaphysics cannot clash, for they have a different status. The principles of physics do not have truth-values (they are instruments), whereas the principles of metaphysics do. And metaphysical propositions need not be traceable back to experience; they need not be, in Mach's terms, constituted by experience. Thus Duhem, unlike most positivists, does not take inquiry to be unified; he does not think that all inquiries have the same status and must abide by the same (verificationist) principles. Only when one is engaged in physical science must one be a verificationist.

Duhem's realism surfaces also in his argument that the physicist, despite the requirement to maintain the autonomy of his discipline, must assume a metaphysics. The physicist

> is forced to recognize that *it would be irrational to work towards the progress of physical theory if that theory were not the more and more clear, and more and more precise reflection of a metaphysics. The belief in an order transcending physics is the sole reason for the existence of physical theory.*[49]

The scientist must assume that 'physical theory is not merely an artificial system, suitable today and useless tomorrow, but…an increasingly more natural classification'. ([1914] (1954):270) The more

complete a theory is and the more it squares with our observations, 'the more we suspect that the relations it establishes among the data of observation correspond to real relations among things, and the more we feel that theory tends to be a natural classification'. ([1914] (1954):26–27) All we are justified in, however, are suspicions and feelings that this is the case. We cannot assert that we have in hand the theory which gets the reality right.

Duhem was a believing Catholic and this surely is one reason his view is so friendly to metaphysical doctrines and religious beliefs. But personal motivations aside, Duhem has shown us that positivism and instrumentalism can be put to service both by those who disdain metaphysics and by those who glorify it. Once the scientific is sharply separated from the metaphysical, one then has the option of deriding the non-scientific or of giving it an independent and perhaps higher status. Philosophers who insist that natural science is the only legitimate inquiry will of course choose the first option. But those who merely argue that natural science must steadfastly restrict itself to the phenomena may well choose the second. If the scope of science is restricted to the observable, then theology and metaphysics are saved from an attack by science.[50]

The second twist in Duhem's positivism lies in his argument that all observation is theory-laden and in the 'holism' which springs from that argument. Duhem argued that an experiment is not a simple observation of phenomena—it always is a 'theoretical interpretation' of phenomena. ([1914] (1954):144) It is not sufficient 'to have an alert attention and practiced eye; it is necessary to know the accepted theories and to know how to apply them'. ([1914] (1954):145) In order to make an observation in the context of an experiment, one must know a fair bit of theory. And thus 'it is impossible to leave outside the laboratory door the theory that we wish to test, for without theory it is impossible to regulate a single instrument or to interpret a single reading'. ([1914] (1954):182)

Because a whole theory is invoked every time an experiment is conducted, Duhem argues that an experiment can never refute an isolated hypothesis. The prediction of a particular phenomenon does not follow from a single hypothesis, but from an entire theory. So if the predicted phenomenon fails to come about, 'the whole theoretical scaffolding used by the physicist' is put into question. ([1914] (1954): 185) He says that '[t]he only thing the experiment teaches us is that among the propositions used to predict the phenomenon…there is at least one error; but where this error lies is just what it does not tell us'. ([1914] (1954):185)

The manner in which scientists decide which hypotheses to take as refuted depends upon the 'vague and uncertain' dictates of 'good sense'.

([1914] (1954):217) Criteria such as simplicity and precision must be relied upon in order to make a choice as to where the error lies. Eventually, Duhem thought, such criteria will come out clearly in favour of one rather than another hypothesis, but indecision may reign for a long time.

This kind of point is today called 'holism'—it is a whole theory, not a discrete and easily identifiable bit of it, which is at stake in an experiment, or which has empirical content. Philosophers today take this point to have a startling consequence for verificationism, which seems to be necessarily atomistic in that it asks whether individual statements are testable or have empirical content.[51] Duhem's argument is that no hypothesis is such that some set of observations are directly linked to it. No hypothesis has its own set of observational consequences which can be tested. Verificationism thus seems to be scuttled.

We have seen, however, that Duhem himself seems to embrace verificationism in that he thinks that science must restrict itself to the phenomena; that a scientist must not try to go beyond observation. And Duhem has a rather nice way of trying to make this claim compatible with his holism.

Despite the holistic claim that it is the whole theory which is put into suspicion when an experiment does not turn out the way the theory predicts, Duhem retains a distinction between a hypothesis with experimental meaning and a hypothesis without such mean ing. Either kind, surprisingly, can be legitimate. And either kind can be illegitimate.

The principle of inertia, for instance, states that a material point removed from the action of other bodies moves in a straight line with uniform motion. Since we can only observe relative motions, it might seem that we cannot test this hypothesis. Similarly, many laws in crystallography seem to be untestable: since the 'most perfect protractor determines the direction of a crystal's face only with a certain degree of approximation', relations between measurements are incommensurable. ([1914] (1954):215) Duhem says:

> The law of multiple proportions and the law of rational indices are mathematical statements deprived of all physical meaning. A mathematical statement has physical meaning only if it retains a meaning when we introduce the word 'nearly' or 'approximately'. This is not the case with the statements just alluded to. Their object really is to assert that certain relations are *commensurable* numbers. They would degenerate into mere truisms if they were made to declare that these relations are approximately commensurable, for any incommensurable

> relation whatever is always approximately commensurable; it is even as near as you please to being commensurable.
>
> ([1914] (1954):215)

But the fact that these hypotheses seem to have no empirical content does not entail that they are 'placed beyond the reach of direct experimental refutation [and] have nothing more to fear from experiment'. ([1914] (1954):215) It does not entail that they are metaphysical.[52] Such hypotheses can fall to experiment because they are a part of the theory that gets tested by experiment. That is, when faced with experimental results which contradict a theory, it could be decided either that the whole theory is erroneous or that the error lies in a particular hypothesis, even one which appears to have no empirical content. Hypotheses which 'by themselves have no physical meaning undergo experimental testing in exactly the same manner as other hypotheses'. ([1914] (1954):216)

So one might argue here that Duhem adopts the following kind of verificationism. A hypothesis in science must be part of a theory which is open to refutation by experience. Such a requirement is compatible with, even feeds off, Duhem's holism—his thesis that a hypothesis is never tested in isolation. We shall see similar ideas appear in the empiricism of W.V.O.Quine, but first, we shall turn to the more direct precursors of logical positivism, most of whom seem largely unaware of Duhem's arguments for holism.

ALBERT EINSTEIN (1879–1955)

Einstein said that the philosophical writings of Hume and Mach had a 'profound influence' on him.[53] The logical positivists were much impressed by the thought that the great physicist arrived at the Special Theory of Relativity through sticking carefully to a verificationist principle and took this as an argument for the principle.[54]

Bridgman, for example, cites the following passage to show that Einstein thought that the meaning of a term is the empirical operation which determines whether it applies:

> The concept does not exist for the physicist until he has the possibility of discovering whether or not it is fulfilled in an actual case. We thus require a definition of simultaneity such that this definition supplies us with the method by means of which, in the present case, he can decide by experiment whether both lightning strokes occurred simultaneously.
>
> (Einstein 1920:22)

And in Einstein's initial paper on relativity ([1905] (1952)), he insisted that the time and place of an event assume 'meaning only when it connects with our consciousness through sense-experience'—time, for instance, 'when it is subjected to measurement-in-principle by means of a clock present at the same place'.[55]

Indeed, Einstein makes the positivist-sounding remark that '[p]ure logical thinking cannot yield us any knowledge of the empirical world; all knowledge of reality starts from experience and ends in it. Propositions arrived at by purely logical means are completely empty as regards reality.' (1934:32) And: '[i]n order that thinking might not degenerate into "metaphysics", or into empty talk, it is only necessary that enough propositions of the conceptual system be firmly enough connected with sensory experiences'.[56]

But it is not clear that Einstein can be so neatly placed in the verificationist's camp. First, the articles in which some of the above passages appear do not present anything like a straightforward positivist picture. In one of the above papers, for instance, Einstein concludes that both 'pure reason' and 'experience' have their place in theoretical physics. (1934:33) In the other, he warns against the 'fateful "fear of metaphysics"…which has come to be a malady of contemporary empiricistic philosophizing'. (1944:289) The

> theoretical scientist is compelled in an increasing degree to be guided by purely mathematical, formal considerations in his search for a theory, because the physical experience of the experimenter cannot lead him up to the regions of highest abstraction. The predominantly inductive methods appropriate to the youth of science are giving place to tentative deduction.
>
> (1954:282)

In this sense, 'pure thought can grasp reality, as the ancients dreamed'. (1954:274)

So, although the positivist-sounding passages tended, for most of Einstein's readers, to dominate their view of his epistemology, one could focus on non-positivist-sounding passages and arrive at a very different perception, where deduction and intuition are at the heart of science. Einstein in the end explicitly rejected Mach's empiricism as being too strenuous. He argued that Mach's 'positivistic philosophical attitude' was a 'prejudice' which blinded him to the reality of atoms.[57] Mach, he said, 'more or less believed science to consist in a mere ordering of empirical material; that is to say, he did not recognize the freely constructive element in formation of concepts. In a way he thought that theories arise through *discoveries* and not through inventions.'[58] Mach failed to recognize that there was a significant

distance between observation and the formation of concepts and laws. Direct observation will not by itself, and not even with the help of a short chain of logical thoughts, get the scientist to anything interesting. Concepts cannot be derived from sense-experiences—they must arise from the imagination.[59]

Of course, it is difficult to set out just what theses one must accept in order to deserve the labels Verificationist' and 'positivist'. One thing we can say is that the positivist picture need not have it that science is restricted to making observations. We saw that Comte, for instance, was clear on this point, arguing that theory cannot arise by observation alone. It is only that once a theoretical statement is in hand, we must be able to trace it back to, or verify it by, observations. So Einstein's claim that experience alone will not give science the theories it needs does not automatically disqualify him from being a positivist.

But another thing we can say is that thinking that experience is crucial to physics does not make one a verificationist. One has to think also that a statement which does not have an empirical component is spurious or 'metaphysical'. It is clear that at times Einstein accepts this thought and just as clear that at other times he was extremely wary of it.

Also, the best case for Einstein's verificationism seems to be in his initial paper on relativity, where he characterizes events (their time and place) in terms of how we measure them. However, not only were there unverifiable postulates in that paper but, in response to a paper by Kaufmann in 1907 that certain experimental results spoke against the relativity theory, Einstein responded in a anti-verificationist, indeed an anti-empiricist, way. He asserted that having a theory which embraces a great complex of phenomena is more important than an apparent disagreement of that theory with the experimental facts.[60]

It is sometimes suggested that in Einstein's work one can see a 'pilgrimage from a philosophy of science in which sensationalism and empiricism were at the centre, to one in which the basis was a rational realism', a view that reason could get at the real world behind the phenomena. (Holton [1973] (1988):237) And it is sometimes suggested that Einstein's genius was to embrace polar opposites. He thought there was something important in positivism and in rationalism. He believed that theories must be empirically verified and that the scientist arrives at theories not by having them arise from the empirical data, but by free invention or pure thought.[61]

Einstein himself seems to support the latter interpretation when he says the following in response to the suggestion that he is a positivist. The physicist 'seeks to connect his concepts as directly and necessarily

as possible with the world of experience. In this case his attitude is empirical.' But because of considerations which convinced Duhem that it is only a theory as a whole which is tested by experience, the physicist

> then recognizes that there exists no logical path from the empirically given to that conceptual world. His attitude becomes then more nearly rationalistic, because he recognizes the logical independence of the system. The danger in this attitude lies in the fact that in the search for the system one can lose every contact with the world of experience.
>
> (1949b:679–80)

The physicist must keep this danger in mind, and then 'waver' between the 'extremes' of empiricism and rationalism.

A third view of Einstein's relationship to verificationism can be found in Brown's argument that Einstein thought that legitimate hypotheses must have consequences for experience and that such a consequence can be in a thought experiment.[62] Einstein distinguished between principle theories—which start with a principle and make everything fit with that principle—and constructive theories—which start with a conjecture to explain facts.[63] Brown suggests that Einstein's verificationism applied only to principle theories, not to explanatory, constructive theories and that, contrary to Holton's 'pilgrimage' view, Einstein maintained this throughout his career. His verificationism amounts to the thought that principle theories should not distinguish between states when there is no *intuitive* difference between them. An intuitive difference is one which can be seen either in an ordinary experiment or in a thought experiment. On this kind of verificationism, which we shall examine in greater detail in chapter 3, a legitimate difference is one which can be observed in an ordinary experiment or in a thought experiment and a spurious difference is one which cannot even be observed in a thought experiment.

We have seen that, oddly, such a view is especially natural for Mach. It is not so odd that Einstein may well have held it. But it is nonetheless a verificationism which we shall see would have been too weak for the logical positivists. On any reading of Einstein, it is hard to see how the positivists can appeal to the thought that Einstein's physics requires their sort of verificationism.

BERTRAND RUSSELL (1872–1970)

Bertrand Russell put forward an atomistic view of the relationship between language and the world which served as a kind of blueprint

for logical positivism. Indeed, his paper 'Logical Atomism' is included in collections of logical positivist writings, such as Ayer's 1959 volume. Russell, says Ayer, is 'a figure in the high tradition of British Empiricism'.[64] Keeping with empiricist tradition, Russell thinks that one of the main tasks for the philosopher is to show how our beliefs are justified. And he begins with those elements which he thinks are simple and which we cannot doubt—the data of experience. But Russell's views underwent frequent alteration and it is hard to set out exactly what kind of empiricist he is. Here I shall blur most of the subtleties of Russell scholarship and crudely set out the position which so influenced the logical positivists—the logical atomism of the first two decades of this century.

Russell's major contribution to empiricism lies in his use of mathematical logic, a domain of inquiry which made great strides from the 1870s to the 1930s. Russell was a pioneer here, with *Principia Mathematica* becoming a classic text.[65] He identified his project as 'an attempt to combine a general outlook akin to Hume's with the methods that have grown out of modern logic'. (1950:6) The formal language of logic, he argued, provides us with a perfect and clear language which can help us to understand the structure of the world. This attention to the relationship between language, logic, and the world is a central feature of the logical positivism which follows on Russell's heels.

The combination of Hume's outlook with mathematical logic resulted in Russell's method of logical analysis. It is supposed to be a method much used in science (1959:229–30) and it is supposed to be the only way to achieve progress. (1959:14–15) In a nutshell, it is as follows: 'The supreme maxim in scientific philosophising is this: Whenever possible, logical constructions are to be substituted for inferred entities.' (1917b:155)

And:

> I have maintained a principle, which still seems to me completely valid, to the effect that, if we can understand what a sentence means, it must be composed entirely of words denoting things with which we are acquainted or definable in terms of such words.
>
> (1959:169)

Russell thinks, with Berkeley and Hume, that there is a kind of epistemological security which accompanies simple experiences. Any inference or any inferred entity which goes beyond what is found in experience is suspicious. The method of analysis is supposed to provide us with a rigorous way of determining whether or not our

hypotheses are epistemologically secure. If object *a* is something with which we do not have direct acquaintance, but whose existence we merely infer, we should try to show how *a* is a logical construction out of, or is reducible to, or is deducible from, another set of objects, *b,* with which we do have direct acquaintance. If we can do this, then *a* and *b* have the same factual content and our knowledge of *a* is as secure as our knowledge of *b.* Our conception of the world ought to consist of such constructions. (1914: v–vi)

Similarly, if one finds that a belief is unclear or ambiguous, the method of analysis ought to be applied. ([1918] (1956):179–80) By showing how the complicated belief has the same factual content as a set of simple beliefs, the matter is cleared up. And the way to show this equivalence in content is through an artificial language— the language of logic, which consists in a set of symbols and explicit rules for the manipulation of those symbols.

Russell's doctrine of logical atomism is the explicit statement of what the method of analysis suggests about the relationship between language and the world. It is an explicit statement of how objects in the external world can be analysed or defined as combinations of what Russell called 'sense-data'—the data of experience.

Propositions, Russell argues, are either compound (molecular) or simple (atomic). Atomic propositions are those which do not contain propositions as components and molecular propositions are those which contain atomic propositions. Molecular propositions include conjunctions *(A & B),* disjunctions *(A v B),* implications *(A→B),* and negations *(–A).* The truth-values of such propositions depend entirely on the truth-values of their constituent propositions, an idea at the heart of the new logic. The truth-value of *(A & B),* for instance, is the value *true* exactly when the truth-values of both *A* and *B* are *true.* If the truth-value of *A* is *false* or if the truth-value of *B* is *false,* then the truth-value of *(A & B) is false.* This information can be summarized in a truth table:

A	*B*	*A* & *B*
T	T	T
T	F	F
F	T	F
F	F	F

Similarly for *(A v B):*

A	*B*	*A*	*v*	*B*
T	T	T	T	T
T	F	T	T	F
F	T	F	T	T
F	F	F	F	F

And so on.

The function of a proposition, Russell holds, is to report a fact. To see how it might do this, we must see that a proposition is expressed by a sentence made up of proper names and predicates. The elements of an atomic fact are either particulars (corresponding to the subject) or characters and relations (corresponding to the predicate). The language of logic maps on to this structure. Objects which we know by acquaintance are denoted by symbols (lower case letters *a, b,* etc.) for proper names. We can keep things straight by making sure that there is one symbol and no more for every simple object. Predicates, Russell argues, stand for universals—abstract entities with which we are also somehow acquainted. Such characters and relations are symbolized with upper case letters so that *Rab* is: *a* stands in relation *R* to *b.*

On Russell's view, the truth-conditions for atomic propositions can be given. For these propositions can be directly compared with reality: 'in every proposition that we can apprehend…all the constituents are really entities with which we have immediate acquaintance'. ([1905] (1956):56) Once we get down to atomic propositions, we are down to the relationship between language and the world. An atomic fact makes an atomic proposition either true or false. An atomic proposition latches on to an atomic fact— language latches on to reality.

Since all compound propositions can be broken down into atomic ones, all propositions are reducible to, or can be analysed into, propositions about objects with which we have a direct acquaintance. The notion of reducibility here is one of *logical deducibility,* of adherence to those rules by which to manipulate symbols, rules which turn on the truth table definitions of molecular propositions. Thus Russell can say that all meaningful propositions are either atomic propositions or are truth-functions of atomic propositions. Complex propositions must be logically reducible to simple ones. Statements which claim to be true but which are distant from experience can, in this way, be shown to be equivalent to component statements, whose truth or falsity is apparent. Since the complex statement will, by the grace of the logical nature of the reduction, have the same factual content as the simple ones, we can, in principle, determine whether it is true or false.

Thus, Russell adheres 'firmly' to the correspondence theory of truth, 'according to which the truth of basic propositions depends upon their relation to some occurrence, and the truth of other propositions depends upon their syntactical [i.e. logical] relations to basic propositions'. (1950:289)

This picture of language and reality, like most empiricist epistemologies, seems to leave little room for anything apart from natural science. Russell is a subjectivist in moral and political matters; disagreement over values 'is not a disagreement as to any kind of truth, but a difference of taste'. (1935:249) He holds that 'when we assert that this or that has "value", we are giving expression to our own emotions, not to a fact which would still be true if our personal feelings were different'.[66]

But Russell combined his empiricism with a passionate and lifelong commitment to radical politics and protest, something which, at first glance, seems in tension with the thought that ethics is a matter of taste. The tension disappears if we think about empiricism and ethics in the way Ryan advises we think of the sketchiness of Russell's moral philosophy:

> Once he had drawn the initial sharp line between genuinely philosophical inquiries and the realm of advocacy and persuasion, he was so unsure that there was anything worth saying about moral philosophy, and so passionate in innumerable good causes, that he turned away from philosophical ethics to a lifetime of advocacy and persuasion, though with some residual unease.
>
> (1988:49)

Non-scientific matters are of the utmost importance, but, given empiricist principles, nothing much can be said about them. We shall see that this attitude towards ethics is not uncommon amongst empiricists.[67] The ensuing silence about moral philosophy and the distinction between matters of fact and matters of taste can, however, give rise to the impression that these philosophers denigrate moral matters. We shall see that this impression is often mistaken, just as it is in Russell's case.

The real obstacle in the way of Russell's picture of language and reality is what he called the 'egocentric predicament', a predicament which seems to lead to solipsism of the present moment. The natural candidates for the epistemologically secure atomic statements are first person reports such as 'there is a patch of red before me'. The objects referred to in such reports are defined ostensively, by pointing. But if the contents of atomic propositions are *my* experiences, how can I get from them to knowledge of objects in the external world? How can

physical objects be constructed out of such experiences? There is a gap between a claim of what appears to be present to my senses and an object in the physical world; a gap which seems to require that I be a solipsist and hold that the only things I can know are the contents of my own mental states. I cannot know anything of physical objects or of the mental states of others. I cannot even know whether they exist.

If Russell's empiricism cannot go beyond present experience, if he must remain content with solipsism, he is landed with a position which goes against the grain of the spirit of his logical atomism. The latter is concerned with articulating the relationship between language and the *world.* Its spirit is a realist one: 'the world contains facts, which are what they are whatever we may choose to think about them'. ([1918] (1956):182) But if the only things Russell can know are the contents of his own mental states or what appears to be the case, that project cannot get off the ground.

Russell, throughout his life, expended a great deal of energy trying to answer the question 'what, exactly, is it that we are acquainted with?' in a way that would allow him to construct the external world. In 19l7b he argued that sense data are not mental. They can exist independently of being sensed by someone. He called such objects, which need not be data to any particular mind, 'sensibilia'. They are physical events in the nervous system of the observer. But the thought that the data of experience need not be the experience *of* anyone proved too much to bear. Russell abandoned the idea (see 1959:134–35) and ceased to use the term 'sense data' altogether.

His considered view seems to be that physical objects are inferred entities which are not logical constructions from the data of experience.[68] The problem here, of course, is that this admission is tantamount to giving up on the project of logical atomism, which was to show how all objects are analysable by or reducible to the data of experience. On Russell's considered view, we will never be justified in inferring physical objects in the strong sense of justification which he initially demanded. As Hume showed, we do indeed infer that *A* is an enduring physical object and we do indeed infer that all *Bs* are *Cs*, but we cannot find impeccable grounds for these inferences. It seems that Russell must cave in, as he sometimes does, and say: 'Belief in the existence of things outside my own biography…from the standpoint of theoretical logic, must be regarded as a prejudice, not as a well-grounded theory.' (1921:132–33)

In the end, Russell argued simply that solipsism is a doctrine that cannot be refuted and also a doctrine that cannot be sincerely held.[69] This was well after the logical positivists' attempt to carry out his program of analysis and we shall see that they came to a similar grief

for similar reasons. But we have one more precursor to look at before we examine the logical positivists themselves.

LUDWIG WITTGENSTEIN (1889–1951)

Wittgenstein's early work, as expressed in the *Tractatus Logico-Philosophicus* of 1918, is taken by many to be a version of logical atomism[70] and hence another immediate ancestor of logical positivism. Wittgenstein's ideas excited the logical positivists so much that they broke their habit of discussing a different topic at each of their meetings and spent all of 1926–27 on the *Tractatus.*[71] Moritz Schlick and Friedrich Waismann met frequently with Wittgenstein to discuss his views and they took them to be part and parcel of logical positivism. Wittgenstein himself vigorously denied that his position had any affinity to Russell's or to the logical positivists'.[72] But, as we shall see, there are verificationist tendencies in both his early and later work, if not the exact tendencies of others.[73]

In the *Tractatus,* Wittgenstein elaborated on the kind of correspondence theory of truth implicit in logical atomism.[74] His 'picture theory' of truth locates the sense of a proposition in the relation of language to the world: 'The sense of a proposition is its agreement and disagreement with the possibilities of the existence and non-existence of the atomic facts.' ([1918] (1955):4.2)[75] In the spirit of logical atomism, he holds that 'one name stands for one thing, and another for another thing, and they are connected together. And so the whole…presents the atomic fact' (4.0311) Reality or the world is a set of atomic facts or simple states of affairs[76] and '[t]he proposition is a picture of reality'. (4.021) The proposition *shows* how things stand, *if* it is true. And it *says,* that they do so stand.' (4.022) A proposition 'is like a scale applied to reality' (2.1512) where '[t]hese connections are, as it were, the feelers… with which the picture touches reality'. (2.1515)

One of Wittgenstein's most powerful ideas in the *Tractatus,* and one which was taken up by logical positivism, is that the truth of logical statements is based on their structure. We can recognize tautologies, such as Toronto is in Ontario or Toronto is not in Ontario', and contradictions, such as Toronto is in Ontario and Toronto is not in Ontario', as true or false entirely on the basis of their logical form. They are truth-functions; that is, they are examples of those complex statements where, if we know the truth-values of the simple statements they are composed of, we know the truth-value of the whole statement. But tautologies and contradictions are logical statements and are special in that they are true or false under *all* circumstances. Whatever the truth-values of the statements they are

composed of, the truth-value of a tautology is *true* and the truth-value of a contradiction is *false:*

P	*P v -P*
T	T T F
F	F T T

P	*P & -P*
T	T F F
F	F F T

These statements are thus independent of contingent facts about the world. They do not say anything about the world because they agree (or disagree) with every possible state of affairs.

Metaphysical statements do not have this feature, nor are they constructed from simple statements which touch reality (like the statements of science). Wittgenstein argues that this means that we cannot meaningfully speak of them. We can only meaningfully speak of propositions which are reducible to simple statements about reality or to propositions which are true or false whatever reality is like. Thus we seem to have here a kind of verificationism more explicit than anything which came out of Russell's logical atomism:

> The right method of philosophy would be this: To say nothing except what can be said, i.e. the propositions of natural science, i.e. something that has nothing to do with philosophy; and then always, when someone else wished to say something metaphysical, to demonstrate to him that he had given no meaning to certain signs in his propositions.
>
> (6.53, see also 6.54)

Most questions and answers put forward by philosophers are spurious —they arise from the fact that we fail to understand the logic of our language. Thus, the 'deepest problems are really *no* problems'. (4.003) The proper role of philosophy is not to set out philosophical theses which aspire to be true, but rather, to clarify propositions. 'Philosophy should make clear and delimit sharply the thoughts which otherwise are, as it were, opaque and blurred.' (4.112)

The focus on language as the means with which to get at reality leads Wittgenstein to that frequent companion of empiricism—the problem of solipsism. He seems happy to embrace it, as long as one does not start talking metaphysics. He says:

> what solipsism *means* is quite correct; only it cannot be *said,* but it shows itself. That the world is *my* world: this is manifest in the fact that the limits of *language* (the language which I understand) mean the limits of my world.
>
> (5.62)

This is a tricky thought. Whereas Russell could not see his way to avoiding solipsism, he was most averse to accepting it. Wittgenstein, on the other hand, seems to want to say that solipsism is correct and that one should accept it. What he is averse to is speaking about it. To see what is behind this thought, we must look again at Wittgenstein's apparent dismissal of metaphysics.

In anticipation of the objection that the propositions which constitute the *Tractatus* are themselves metaphysical, Wittgenstein says:

> My propositions are elucidatory in this way: he who understands me finally recognizes them as senseless, when he has climbed out through them, on them, over them. (He must so to speak throw away the ladder, after he has climbed up on it.)
>
> (6.54)

The response to this idea by Wittgenstein's contemporary, F.P. Ramsey, is often thought to hit the nail on the head: ' [If] the chief proposition of philosophy is that philosophy is nonsense…we must then take seriously that it is nonsense, and not pretend, as Wittgenstein does, that it is important nonsense!' (Ramsey 1931: 263)

That is, if Wittgenstein's thought is that statements which fail to touch reality are literally meaningless, then he cannot say that some of those meaningless statements are important. Meaningfulness seems to be a requirement for importance. No one thinks that the 'statement' 'Glamp snooks wallysuckle' is important—it cannot be, for it has no meaning.

We shall see that the question of the status of a philosophical test which flunks philosophical statements is one which continues to plague verificationists. But there is a significant difference between Wittgenstein's answer and the answer of most others. It is a difference which aligns Wittgenstein with Duhem. For Wittgenstein had a great respect for things metaphysical and mystical.[77]

Wittgenstein thought that the most important thing in the *Tractatus* was the notion of the inexpressible—the thought that metaphysics, ethics, religious belief, etc. go beyond what we can say. Like Duhem, he does not want to disparage what cannot be expressed by our language (Duhem would have said 'by science'). Such matters are more elevated and more deserving of our respect than those mundane states of affairs which do admit of expression. The pages of the *Tractatus* where Wittgenstein talks about the inexpressible must not be ignored, as they so often are.[78]

But Wittgenstein quickly went on to abandon the view of meaning set out in the *Tractatus.*[79] In the *Philosophical Investigations,* mostly

completed by 1945 and published in 1953, we find him no longer with the view of language as a picture which touches reality. Language, rather, is an instrument which has a certain purpose or use, namely, communication. The meaning of an expression is its use and knowing the meaning of an expression is knowing how to use it in some particular 'language game'.

Wittgenstein's verificationism, however, survives the loss of its initial rationale. In his later view of meaning, both Wittgenstein (at times) and many of his interpreters see a different argument for a verificationist criterion.[80] It is worth examining this position carefully, as sustained arguments for verificationism are rare.

The later Wittgenstein's emphasis is on what it is to understand a sentence. The view that he sees himself as opposing is the Augustinian view[81] that ostensive definition fixes the meaning of a term and is thus the foundation of language. Such definitions, Wittgenstein suggests, are not enough to provide knowledge of meaning. If I try to explain the meaning of the word 'tove' by pointing at a pencil and uttering the word, my definition is open to a number of interpretations, such as tove meaning 'pencil', 'round', 'wood', 'hard', etc. (1958:2) One requires some background information in order to decide what other things, besides the pencil, one should call tove. Similarly:

> When one shews someone the king in chess and says 'this is the king', this does not tell him the use of this piece—unless he already knows the rules of the game up to this last point: the shape of the king.
>
> ([1958] (1968) sec.31)[82]

Thus, an 'ostensive definition explains the use—the meaning—of the word [only] when the overall role of the word in language is clear'. (30) Ostensive definition can succeed only when combined with a background of practices. (6, 30)

In addition, Wittgenstein now wants to argue against the thought that simple statements express what is immediately given to us in experience and against the solipsism which seems to accompany this thought. We have seen that, since what is immediately given can only be understood by that to whom it is given, simple statements cannot be understood by anyone else. It is the possibility of such a private language that Wittgenstein argues against and it is here that verificationism crops up again. The argument turns on the thought that sense data do not meet the criteria of identity, which must be public or publicly verifiable. It is ironic that an argument against sense data results in a kind of verificationism, for we have seen and

shall see again that the argument that sentences must be reduced to sense data is often a source of verificationism.

Wittgenstein takes up the statement 'I am in pain.' If this statement is about a sense datum, then its content is 'subjective', private, or defined only for its possessor. Only someone who feels the sensation has access to the felt content of it and can fully understand the sentence. Others cannot fully understand talk of my sensations, for such talk is a fragment of a private language, a language whose words 'refer to what can only be known to the person speaking'.(243)

Against this picture, Wittgenstein asks us to imagine that he wants to keep a diary about the recurrence of such a sensation, which he will associate with the sign 'S'. He writes this sign down in his calendar every day on which he has the sensation. He writes the sign down when he thinks he is able to point to the sensation inwardly, and that inward pointing is supposedly a kind of ostensive definition of the sign. Wittgenstein says of the purported definition:

> But what is this ceremony for? for that is all it seems to be! A definition surely serves to establish the meaning of a sign.—Well, that is done precisely by the concentrating of my attention; for in this way I impress upon myself the connexion between the sign and the sensation.—But 'I impress it upon myself can only mean: this process brings it about that I remember the connection *right* in the future. But in the present case I have no criterion of correctness. One would like to say: whatever is going to seem right to me is right. And that only means that here we can't talk about 'right'.
>
> (258)

Wittgenstein's suggestion is that, because of the failure of the private naming ceremony to give a term meaning, the private linguist is in the position where whatever seems right to her is right. In that case, she loses her grip on the notions of correctness and incorrectness for the sentences in question. If, for instance, the private linguist claims to be using the term 'blue' consistently, her only criterion for knowing that she is using it consistently is that it seems to her that *that* thing in front of her is the same colour as other things which she has called blue. But she cannot, Wittgenstein suggests, make sense of the thought that she is using the term consistently. It may seem to her that she is following a pattern, but in fact, she might be using the term in an arbitrary fashion. In Wittgenstein's words: 'Always get rid of the idea of the private object in this way: assume that it constantly changes, but that you do not notice the change because your memory constantly deceives you.'[83]

The only kind of reason one can give, either to oneself or to somebody else, that one is following a pattern is a reason that could be accessible to others. It is a reason of the sort: 'You see, I am referring to *that* when I make the sign *R'*

Thus, Wittgenstein holds that the only way we can maintain the distinction between 'seems right to me' and 'is right' is by thinking about it as a matter of agreement within a speech community. Understanding or knowing the meaning of an expression is not a private internal matter. To say that *P* is a sentence in a private language is to say that there does not have to be any public consequences if *P* is true; *P* being true is something that is entirely a matter for the private linguist. But then '*P* seems right to me' will always be a sufficient condition for '*P* is right'. There is nothing that would count as evidence for or against the private linguist's claim that she is using a term in the same way or that she is picking out the same property by the term. Nothing would count as evidence to an observer and nothing would count as evidence to the speaker herself.

So, if I am to have a grip on the distinction between '*P* seems right to me' and '*P* is right', there must be some consequences of *P* being right that are in principle ascertainable by someone other than myself. For if we have a grip on a distinction, we must be sometimes able to distinguish on the basis of it. By hypothesis, this possibility is closed to the private linguist. The fact that the private linguist does not have any way of using the distinction entails that there is, for the private linguist, no difference in the content in the things to be distinguished. That is, the private linguist will not be able to use the phrases '*P* is right' and '*P* seems right to me' in any ways in which their content is contrasted.

Another way of putting the point is to say that if a person is not in a position to commit herself to anything about the way things would be different if a statement were true (or false) then it is quite obscure what reason either we have or she has for thinking that she understands it. For if a statement is about anything, one's understanding it cannot *merely* be a matter of *thinking* that she knows what it means or of having a certain sort of image in her mind. If someone knows the meaning of *P,* she must be able to manifest knowledge of those consequences. It is not enough if she says that she knows the meaning of *P* because she can envision it or formulate it to herself. Understanding is not a mysterious state like that. It must be in part manifested by expecting experience to take a certain course. For 'justification consists in appealing to something independent' (265, 378); it requires more than the feeling that one has correctly reidentified the property. Understanding involves practical abilities and they must be displayable in public.[84]

Notice that Wittgenstein's conclusion is not that the concept of pain is *reducible* to the conditions under which it is verified; that the very content or meaning of 'Paul is in pain' is a set of circumstances or behaviour which would verify the statement. Wittgenstein's position is not reductionist. (244, 304, 307) He argues merely that some such publicly accessible evidence must exist, not that, say, a psychological concept amounts to the evidence for it. It is just that we must count certain kinds of behaviour as fallible evidence for a certain concept or for a certain mental process.

Notice also that the argument against the private can be set against positions other than that which straightforwardly asserts the existence and importance of private sense data. For instance, another hypothesis for which there are no criteria for understanding is the Inverted Spectrum Hypothesis: that 'one section of mankind had one sensation of red and another section another'. (272) Could someone's experiences be systematically different from my own?

This issue only arises on a certain conception of the mental—the conception which has it that what goes on in someone's mind is something that is private to that thinker. On this conception of the mental, the problem of the inverted spectrum looks interesting, indeed, it is insoluble. But once we take that conception of the mental to be misguided, the problem of the inverted spectrum dissolves. If we begin with what is publicly shared, rather than with what is privately given, we will not find the possibility that one's colour spectrum might be inverted troubling. For we will not see it as a possibility.

In a way, verificationism falls directly out of Wittgenstein's wellknown claim that 'meaning is use'. If understanding a sentence or expression is a matter of knowing how it is properly used, then understanding must consist in practical capacities or abilities. Most important is the ability to recognize what evidence would count for and against sentences. If a speaker has this ability, she will, for the most part, be able to use the sentence when and only when it is appropriate.

This way of stating the position leads to a question which goes unanswered by Wittgenstein: how should we characterize the abilities required to ensure understanding? Is the required ability solely the ability to recognize what evidence would count for or against a sentence? Or do the abilities include knowing what inferences the sentence can play a role in, knowing how to use it in explanations, etc.? We shall see in chapter 4 that this question is the locus of a controversy amongst certain contemporary verificationists who are inspired by Wittgenstein.

Finally, notice that Wittgenstein's position entails a certain view of objectivity or, the realist will insist, lack of it. The meaning of a term

is given only by its use in the community and the only thing that 'grounds' a pattern of correct use is that it in fact gets carried on in a certain way by those who share what Wittgenstein calls a 'form of life'. On this view, there is no greater objectivity to be had than that which is provided by agreement within a community.

Of course, it does not follow that objectivity is an empty notion. Members of a community can get things right and can make mistakes and both of these situations can be identified. That is, on Wittgenstein's view, there is a right and a wrong usage of concepts, it is just that what determines whether a particular usage is right or wrong is a shared convention.

Again we see verificationism leading to non-realism. The realist will insist that meaning, rule following, and objectivity are grounded in something firmer than the way we happen to do things. Getting something right, on various realist views, might be a matter of corresponding to the way things are in the mind-independent world or conforming to some universally correct canon of rationality. Wittgenstein's argument against such views is, in effect, that the only way we can make sense of the notions of getting something right, or continuing to use a concept in the same way, or making a mistake, is by thinking of them as determined by the community of speakers. But he certainly does not want to do away with the idea of objectivity. As we have seen, his argument is that *if we are to preserve* this important idea, we must think of it in the way he suggests.

2
THE LOGICAL POSITIVISTS AND THE VERIFIABILITY PRINCIPLE

THE PROGRAM AND ITS MOTIVATIONS

We have seen that many empiricists have held that inquiry must be unified by the principle that only statements about sensory phenomena are legitimate. If inquiry is conducted in this spirit, which is supposed to be the spirit of science, then human progress is possible. The logical positivists (otherwise known as the logical empiricists or the Vienna Circle) continued in this optimistic tradition, arguing that progress is possible if and only if all branches of knowledge are conducted in the same clear, straightforward, observational and logical language. We must turn our backs on the thought that philosophy, for instance, is 'a system of knowledge' and turn toward the thought that only science provides us with knowledge.[1] Science has no limits: *'there is no question whose answer is in principle unattainable by science'.*[2]

Thus when we examine a branch of inquiry, such as philosophy, we must treat it as science:

> The traditional disputes of philosophers are, for the most part, as unwarranted as they are unfruitful. The surest way to end them is to establish beyond question what should be the purpose and method of a philosophical enquiry. And this is by no means so difficult a task as the history of philosophy would lead one to suppose.
>
> (Ayer 1936a:15)

The purpose and method of any inquiry are the purpose and method of science.

The logical positivists seemed well-equipped to speak of the various branches of inquiry, for amongst their number were philosophers, physicists, mathematicians, social scientists, logicians, and economists. The most important figures were Moritz Schlick, Rudolph Carnap, Otto Neurath, A.J.Ayer, Hans Reichenbach, and Carl

Hempel, with the participation of many others including Philipp Frank, Kurt Gödel, Alfred Tarski, Gustav Bergmann, Karl Menger, Hans Hahn, Friedrich Waismann, R.von Mises, and Herbert Feigl.

From 1924 to 1936, a group congregated around Schlick, who held Mach's chair in Vienna.[3] To facilitate the progress which would come of subsuming all domains of inquiry under natural science, Neurath launched in 1933 a series of monographs to be titled *Einheitswissenschaft,* which in 1938 began to be published under the title *International Encyclopedia of Unified Science.* In 1930 Reichenbach and Carnap transformed *Annalen der Philosophie* into a new journal, *Erkenntnis.* It eventually assumed the role of the *Encyclopedia* and became the forum for logical positivism.

In 1936 Schlick was fatally shot by a deranged student. The rise of National Socialism and the beginning of the war then dispersed the others[4] and shut down *Erkenntnis* in 1939.[5] Carnap, Frank, Godel, Tarski, Reichenbach, Hempel and von Mises made their way to universities in the United States. Neurath eventually joined Ayer in England. Logical positivism was thus very effectively introduced to the rest of the Western intellectual world and it quickly became one of the most influential views on the philosophical scene.

We shall see that despite significant differences in the views of the various logical positivists, and despite the eventual weakening of their positions, certain themes initially bind them together. They take Hume's starting point as their guiding thought: our beliefs, if they are justified, are justified by the data of experience.[6] This leads to the claim that science is the paradigm of rational knowledge and that metaphysics is the antithesis of it.[7] Like Russell and Wittgenstein, they felt they had an important resource which was unavailable to previous empiricists: the symbolic logic which was developed in the latter part of the nineteenth century. That logic was at the very centre of their program and, we shall see, at the very centre of many of the difficulties which that program encountered.

Domains of knowledge, it was argued, could achieve clarity by being symbolized in the language of logic. A scientific theory, on this view, is a deductive formal system—an axiomatic system which is given empirical meaning by definitions which hook up the primitive terms in the formal language with observables in the world. Theoretical terms are merely abbreviations of observational terms, the abbreviations being explicit definitions or logical equivalences. Like the early Wittgenstein, the logical positivists wanted to produce a 'logic of language' which would match the logical structure of the world.

Logic was to finally bestow upon philosophy the wherewithal to render its doctrines clear; insight into the nature of logic is 'the turning point in philosophy'.[8] Once we have put our philosophical views in the

language of logic and rendered them comprehensible, we can settle those age-old questions which have only resulted in 'fruitless conflict' in the past.[9] The new tool is a Russellian 'logical analysis' and, with it, clarity, precision, and rigour will reign.

The method of analysis, in the hands of the logical positivists, can be separated into two parts. The first is the study of how terms and sentences are related to each other. We can, for instance, clarify a term by showing it to be logically definable by or reducible to other terms, we can show that a sentence is a deductive consequence of other sentences, that a sentence is inconsistent with others, etc. By paying attention to this logic of language, we can see that sentences such as the following make no sense: 'My friend died the day after tomorrow'; 'The tower is both 100 and 150 feet high.' (Schlick [1936a] (1979b): 465) Our definitions of time, death, height, number, etc. are inconsistent with the above combinations of words.

The second part involves the study of the relationship between language and the world. It is here that the verifiability principle resides. It is here that we are supposed to clarify an issue by showing that certain sentences lack sense because they lack connection with the world. The primary argument for the principle is as follows.

A word, it seems, is defined by other words, whose meanings are already known. But unless we are to remain caught in a circle of definitions, words must be associated with something other than other words. Eventually, we must reach primitive or undefinable words, whose meaning can only be indicated by pointing at that which the term refers to. Terms and sentences must be about something— language must refer to what is given or to what can be pointed to in experience. If it is impossible to trace an expression to experience, then that is a way of showing that it has no meaning or content.

This argument is reminiscent of Hume's. In order to clarify an obtuse or complex sentence, we ought to simplify it or reduce it to something that is clear. The obvious candidate for such clarity seems to be that which is before our very eyes. Understanding a sentence requires more than definition of its terms, for if that was all there was to understanding, an infinite regress would result. The regress is to be stopped by an appeal to ostensive definition— definition must in the end result in pointing. Thus, 'the meaning of a word must ultimately be *shown.*[10] If we cannot trace an expression to what is given in experience, then the expression has no meaning.

So the method of analysis requires us to begin with sentences which are logically unproblematic and then, following Hume, reduce them to the data of experience. If this process utilizes only logical resources, objectivity and clarity will be achieved. The central thesis is nicely articulated by Hempel: *'Every proposition… of experimental science…*

which is not merely a meaningless sequence of words, *is translatable, without change of content, into aproposition in which appear only physicalistic terms, and consequently is a physicalistic proposition.*[11] That is, all meaningful statements are reducible to or explicitly definable by statements containing only observation terms and these reductions must be capturable in deductive logic.

This last requirement follows Russell and the early Wittgenstein. It means that the reductions must abide by the formation and transformation rules of first order predicate logic.[12] Formation rules determine what counts as a proper sentence of the language and the transformation rules prescribe the ways in which those sentences can be derived from one another or transformed into other sentences. Those who have taken even the most introductory course in deductive logic will know that the semantic correlates of these rules are truth preserving. For instance, one rule is that when *(A & B)* is true, you can infer *A, B,* or *(A v B).* When *(A & B)* is true, then those other three statements must be true.

The most ambitious undertaking of the project of reduction was Carnap's 1928 *Der logische Aufbau der Welt (The Logical Construction of the World).* As Quine remarked: 'Russell had talked of deriving the world from experience by logical construction…Carnap… set himself to the task in earnest.'[13] Carnap says there that he is the first to take Mach's ideas seriously (1963a:16), for the *Aufbau* is an attempt at the 'reduction of "reality" to the "given"' using the techniques of logic. ([1928] (1967):7) It is an attempt to spell out what Mach called the 'constitution' of any concept by establishing a rule for replacing any assertion containing the concept by assertions containing other concepts. Thus, Quine once called the *Aufbau* a 'dazzling sequel' to Russell's project.[14] If a problematic concept can be logically reduced to or logically defined by more basic, unproblematic concepts, it is *eliminated* in favour of the simpler concepts. Carnap's project in the *Aufbau* is to show how all our meaningful concepts are logically constructed[15] from the basis of unanalysed and unprocessed perceptual data. And this was the aim of logical positivism: to present 'an empiricism which recognizes only sense perception and the analytic principles of logic as sources of knowledge'. (Reichenbach 1949:310)

With Hume and against Mill, the logical positivists allow an exception to the principle that all meaningful concepts or statements must be reducible to concepts or statements about experience. Mathematical and logical statements are meaningful despite their lack of connection with experience. Some argued that they are empty—as Wittgenstein suggested, they are compatible with any observation. Others argued that they are analytically true—the definitions of '2',

'4', '+', and '=' are such that '2+2=4' is true by definition or convention. 'Their validation naturally requires no empirical evidence; they can be shown to be true by a mere analysis of the meaning attached to the terms which occur in them.'[16]

But all non-analytic statements, the logical positivists insist, must be connected to experience. There must be some experience that is inconsistent with a statement, or else it is empty. Theoretical concepts must, in Braithwaite's words, 'be related to some and not to all of the possible facts in the world in order to have a non-vacuous significance'.[17]

Thus, we are to confront a statement with a fact and discover whether the fact is such as it is described in the statement. If we cannot arrange such a confrontation, the statement in question is literally meaningless, it is a 'pseudo-proposition'. Because it has the grammatical form of a declarative sentence, it appears that it says something. But this is a mere appearance, for really it expresses nothing at all. As Comte held, it is as nonsensical to deny such a statement as it is to assert it. Carnap writes:

> Let us suppose by way of illustration, that someone invented the new word 'teavy' and maintained that there are things which are teavy and things which are not teavy…how is one to ascertain in a concrete case whether a given thing is teavy or not? Let us suppose to begin with that we get no answer from him: there are no empirical signs of teavyness, he says. In that case we would deny the legitimacy of using this word. If the person who uses the word says that all the same there are things which are teavy and things which are not teavy, only it remains for the weak, finite intellect of man an eternal secret which things are teavy and which are not, we shall regard this as empty verbiage.
>
> ([1932] (1959): 63–64)

Here we find the most systematic onslaught on metaphysics to date. Sentences predicating something of the 'Absolute', the 'good', 'essence', 'God', 'Ego', 'the Infinite', 'transcendental entities', the 'thing-in-itself, etc. are said to be meaningless. They are not formally true and there is nothing we could possibly experience to verify or falsify them. At best, they might express an attitude or feeling towards life.

Heidegger's work was often chosen as an example of 'the accumulation of senselessness within the framework of metaphysics'. (Neurath [1932] (1987): 4) Neurath quotes Heidegger as saying:

> What is to be investigated is being and nothing else. What about this nothing? Does the nothing exist only because the not, i.e.,

> negation exists? Or is it the other way round? Does negation and the not exist only because the nothing exists? Dread reveals the nothing. What we were in dread of and why was 'really'—nothing. What about the nothing? The nothing nihilates.[18]

Neurath says that from 'such verbal clutter' one can form sentences which afterwards admit of no answer to the question: What do you mean? The Heideggarian cannot point to the referents of his terms and cannot say how his assertions might be verified or falsified. Reichenbach echoes this sentiment:

> There are philosophies, indeed, which were so vaguely stated that every school of philosophy was able to give them interpretations corresponding to its own views. Many a philosopher derives his significance from the obscurity of his exposition rather than from the weight of his ideas, and I should like to believe that such ideas would have lost their persuasive power had they been formulated more precisely and coherently.
>
> (1944:23)

The logical positivists also thought that the claims of metaphysics often break the rules of the logic of our language. Neurath compares metaphysics with the following situation:

> [S]omeone tells us that he met a pair of twins, Franz and Peter, in a neighbouring town; Franz was so similar to Peter that one could not help mistaking him for Peter, whereas Peter could always be recognized at once as Peter and clearly distinguished from Franz.
>
> ([1932] (1987):5)

We need not make a trip to this town to see whether this is true or not: *'The analysis of scientific language spares us such trips—and other detours.'* (5) For the logic of our concept 'indistinguishable' is such that if *a* is indistinguishable from *b*, then *b* must be indistinguishable from *a*, and this truth is denied in the story.

But it is the first of the metaphysician's two supposed crimes that will concern me in what follows—the charge of a lack of a 'criterion of application' for terms or the failure to specify empirical truth-conditions for sentences. (Carnap [1932] (1959):65) The complaint is sometimes put in terms of 'operationalism'.[19] The meaning of a concept lies in what an investigator is prepared to do with it by way of experimentation. The concept of mass must be defined in terms of the operation of weighing, the concept of length defined in terms of the

operation of manipulating measuring instruments, etc. And no operation or experiment is relevant to claims such as Heidegger's.

One motivation the positivists had for applying these scientific requirements to philosophy was that philosophers, like physicists, often talk about reality. Einstein sometimes claimed that the empiricist principles of Hume and Mach were necessary for physics. But if physicists must abide by the verifiability principle, so must philosophers who pronounce on the nature of reality. Thus Reichenbach attacked the attempts by philosophers to deal with the issue of space and time in an *a priori* fashion. (See 1949:307–11.) The metaphysician 'who professes to find a logical flaw, a contradiction of a vicious infinite regress, in one or other of the ways in which we commonly describe the world, and so comes to such startling conclusions as that time and space are unreal, or that nothing really moves, or that there are not many things in the Universe but only one' is the guilty party. (Ayer 1970:64)

The verifiability criterion thus ousts metaphysicians from a place they are ill-suited to occupy. Metaphysicans might think of themselves as doing the same work as scientists, only doing it more profoundly; they might think that they are uncovering a deeper layer of facts. Given that the answers to philosophical questions have swung like a pendulum from generation to generation, this belief seems misguided. There is no separate entrance to truth for philosophers' (Reichenbach 1949:310)—they must, with scientists, abide by the empiricist principles.

But we shall see in what follows that, at least initially, the logical positivists failed to put metaphysical and other non-scientific work in its proper place, for that place is surely not on the bonfire Hume thought extreme empiricists would have to make.

THE STRONG VERSION AND ITS CONSEQUENCES

The empiricist tradition traced in chapter 1 reaches its apex in the early statements of logical positivism. After a number of objections were put to the first formulations of the verifiability principle, there was much debate about how to best revise it. Some of those amended versions of the principle are close to the more appropriate principles which will be considered in the chapters that follow. But it is the stronger versions which I shall take as representative of logical positivism. For the amendments were generally taken by the philosophical community to be flailing attempts to resuscitate a dead theory and no matter how temperate or sensible subsequent versions may be, it is the stronger ones which get referred to and denigrated

today. Since many philosophers point to the demise of the verifiability principle as proof that any empiricist criterion of legitimacy is folly, we shall have to set out clearly that strong position and analyse just what was wrong with it.

There is, however, a second reason for examining the early versions of the verifiability principle. The logical positivists, we have seen, initially had ambitious aims and a rigorous framework for achieving those aims. We shall see that each liberalization of the verifiability principle to some extent betrays these aims. The logical positivists could not, in the end, find a principle that would deliver the goods they most wanted. The early ones came closest.

On the strongest version of the verifiability principle, a meaningful statement is one which in practice could be conclusively shown to be true or false.[20] There must be some experience which one could in fact have that would settle the truth-value of the statement.

Since genuine branches of knowledge must concern themselves with the sensical and shun the nonsensical, this criterion of meaningfulness was to have radical consequences. We must, for instance, '*reject all philosophical questions,* whether of Metaphysics, Ethics, or Epistemology'.[21] For the 'general thesis of logical empiricism' is 'that there is no third kind of knowledge besides empirical and logical knowledge'. (Carnap 1963b:1000)

Various domains of knowledge were scrutinized with this view in mind, including metaphysics, ethics, psychology, sociology, theology, economics, history, poetry, and painting. We have already glimpsed what the consequences were for philosophy; and in what follows, I shall examine in more detail the implications for it as well as for a few other domains.

If ethics claims to consist of knowledge about what is right or wrong, it is meaningless, for such knowledge is not possible. Ethical statements are not empirically verifiable and they are not deducible from empirical statements. Thus they do not assert or say anything. One view is that they express or manifest emotions or feelings.[22] To say that something is good is akin to blushing or smiling. Another is that they express what one expresses when one shouts 'Boo-hiss!' or 'Hurrah!'[23] Another is that they are rules, imperatives, or commands:

> The rule 'Do not kill', has grammatically the imperative form and will therefore not be regarded as an assertion. But the value statement, 'Killing is evil', although like the rule, it is merely an expression of a certain wish, has the grammatical form of an assertive proposition. Most philosophers have been deceived by this form into thinking that a value statement is really an assertive proposition and must be either true or false. Therefore,

> they give reasons for their own value statements and try to disprove those of their opponents. But actually a value statement is nothing else than a command in a misleading grammatical form. It may have effects upon the actions of men, and these effects may either be in accordance with our wishes or not; but it is neither true nor false. It does not assert anything and can neither be proved or disproved.
>
> (Carnap 1935:24)

Other positivists argued that ethical statements are meaningful only because ethics is in fact a science. The ethicist formulates hypotheses about what people desire (Schlick thought this was pleasure and the absence of pain) and why they hold the principles they do and then tests the hypotheses by observing people's behaviour. It is thus legitimate to ask 'What is actually approved?' But it is meaningless to ask 'What is *worthy* of being approved?'[24] Ethics withers away in the sense in which we tend to think of it, as not about what people desire, but rather about what is good, right and just. Ethics gets reduced to the study of desire, motive and behaviour.

It is not to be concluded that the logical positivists were unconcerned with moral matters. When faced with the claim that his philosophy was concerned exclusively with logic and epistemology, Reichenbach is reported to have said: 'But no! That is not true. The whole movement of scientific philosophy is a *crusade.* Is it not clear that only by ending the dogmatism of irresponsible claims to know moral truth, that only by clarity and integrity in epistemology, people can attain tolerance and get along with one another?'[25]

This sentiment did not stop some of them from championing particular causes. For instance, Carnap and Neurath, like Russell, engaged in left-wing politics.[26] Perhaps Wittgenstein's attitude that some things are inexpressible but important characterized many of the logical positivists as well, yet did not make its way into their writings. Or perhaps some of them thought, as it seems did Russell, that there is no truth in the realm of morals and politics— only pressing problems that need passionate action.[27]

A worse fate befalls traditional psychology, for the scope does not exist for the strict empiricist to treat it as an extremely important arena for passionate action. If psychology is construed as being what introspection tells us, it is not a genuine form of inquiry and knowledge. If psychology is to become a branch of the unified sciences, it must either take the form of behaviourism, which has it that psychology studies the behaviour of human beings in response to the physical environment,[28] or it must claim that psychological statements are reducible to statements about the neurological states of

human beings. Either way, as Carnap puts it: *'all sentences of psychology may be formulated in physical language…all sentences of psychology describe physical occurrences, namely, the physical behaviour of humans and other animals'.*[29]

So we find Hempel arguing that the content of the psychological concept of being in pain reduces to the circumstances under which sentences of the sort 'Paul is in pain' are verified. Paul's weeping, saying that he is in pain, certain changes in his central nervous system, etc. unpack the proposition 'Paul is in pain'. This proposition 'can be re-translated without loss of content into a proposition which no longer involves the term "pain" but only physical concepts'. And the concept of anger is, or eventually will be, reducible to 'a physiological analysis of the nervous system or other organs'. (Carnap [1938] (1949):418)[30]

The consequence of this account is that 'every descriptive or explanatory step which makes use of such terms from introspective or "understanding" psychology as "feeling", "lived experience", "idea", "will", "intention", "goal", "disposition", "repression", etc. is 'proscribed as non-scientific'. (Hempel [1935] (1949):375) The psychological concepts that people actually use to describe and explain their behaviour are rejected as meaningless.[31] Like ethics, if psychology is to survive at all, it must be radically reformed.

Philosophy too is not what most philosophers take it to be. We have seen that the positivists insisted that philosophy cannot continue to hold that constraints resulting entirely from thought can be set on science.[32] But it is not only *a priori* metaphysics that must go.[33] Some questions of epistemology fail the empiricist test as well.

Consider, for instance, the issue of the inverted spectrum, an issue which we saw Wittgenstein take as spurious. Some philosophers have held that I might not see the same colour as another person, despite the fact that all of our judgements and actions with respect to the colour agree. The very statement of this problem involves the assumption that there is no way, even in principle, to verify or confirm that our qualitative sensations are the same. The issue is thus a meaningless one.[34]

What is left for philosophy is logical analysis. Philosophy is not a theory or a body of statements which purport to be true. Rather, it is a *method* for clarifying our statements. (Carnap [1932] (1959):77) It must show which statements are meaningless and it must clarify our meaningful statements by showing in just what way they are connected to experience. Philosophical problems are thus not about matters of fact, but about matters of language. Scientists answer questions and philosophy clarifies them, weeding out the spurious ones. Thus although philosophy is not quite a branch of science, it can

'make a special contribution' to the advance of science. (Ayer 1936a: 50) Philosophy consists 'in the *logical analysis of the statements and concepts of empirical science.* (Carnap [1932] (1959):133)

Most of the positivists also took the verifiability principle to declare theology and the belief in God meaningless. Carnap says, echoing Comte:

> Systematic theology claims to represent knowledge concerning alleged beings of a supernatural order. A claim of this kind must be examined according to the same rigorous standards as any other claim of knowledge. Now in my considered opinion this examination has clearly shown that traditional theology is a remnant of earlier times, entirely out of line with the scientific way of thinking in the present century.[35]

Theology is 'outside the scope of the scientific method'; its 'dogmas have the same character as statements of traditional metaphysics'.

Many theists attempted to square their belief in God with the verifiability criterion by arguing that evidence or verifying experience *can* be found—'perhaps the regularity of the cosmic process, perhaps the experience of visions or mystical intuitions, perhaps the occurence of miracles.'[36] Or perhaps some people have had a direct experience of God.

The logical positivists tended to concede that, as long as theological statements have such an empirical or physicalist interpretation, they are perfectly alright.[37] But most who believe in God believe in something that goes beyond what one can experience. Some would argue that going beyond experience is the very essence of spirituality and it is this which is denied by logical positivism:

> to say that one was immediately acquainted with a transcendent being would be self-contradictory. And…one could not say that one was immediately acquainted with Him as enduring for ever. For this, too, would be self-contradictory. Neither would the fact that people were acquainted with God, in this sense, afford a valid ground for inferring that the world had a first cause, or that human beings survived death, or in short that anything existed which had the attributes that are popularly ascribed to God.
>
> (Ayer 1937:151)

Religious vision and mystical experiences are also dismissed. As Ayer says: 'in describing his vision the mystic does not give us any

information about the external world; he merely gives us indirect information about the condition of his own mind'.[38]

Even if such experiences are shared by many, they are discounted. MacIntyre argues that we can only infer the invisible from the visible (say, fire from the smoke we can see) if we have a prior experience of the connection between the two. We cannot infer the existence of the divine from 'an apparition' because there is no such prior experience.[39]

It was also charged that theists are not really sincere about the links they identify between their beliefs and experience. Whatever the empirical consequences the theist claims for the statement of God's existence, Braithwaite suggests that if the facts turned out differently, the theist would likely not take the statement to be refuted. Rather, the religious statements would be reinterpreted to fit the new facts. For instance, if the empirical interpretation of theism is that it is an explanation of the course of history, then the theist must be prepared to say that 'had the course of history been different in some specific way, God would not have existed'. (1955: 7) And theists are unlikely to say that.[40]

In the end, most of those who wanted to uphold religious discourse in the midst of the new analytic philosophy argued that theological discourse was not indicative: it did not try to say anything about the world. Braithwaite argued that a 'religious assertion is used as a moral assertion' (1955:11) and Zuurdeeg argued that theological discourse is 'convictional'; the speakers assert something 'which is "real" *for them*'. (1958:45)

OBJECTIONS AND AMENDMENTS

We have seen that the consequences of the strong version of the verifiability principle for non-scientific branches of inquiry were severe —non-scientific discourse is swept away as being meaningless. But this severity was tempered by what is known as the 'left wing' of the Vienna Circle—in particular by Carnap and Neurath. The 'right wing'—led by Schlick and Waismann—were more conservative in that they tended to resist liberalizations of the verifiability principle.

There were many difficulties with the formulation of the verifiability principle as what can in practice be conclusively verified. First, it was objected, the meaningfulness of a hypothesis should not turn on technical or contingent possibilities or predicaments; on the possibility that we may be 'hindered by factual circumstances, such as defective human capacities'. (Schlick [1930] (1979b):157) If verification here and now is what is required, then the belief in the other side of the moon was meaningless at the time the logical positivists wrote, for there was then no way of testing it. (See Lewis [1934] (1949):138.)

Second, on the strict criterion, a number of other kinds of statements which seem to be perfectly respectable are unverifiable—they are without meaning or content. These include statements about the past and statements about the future. We cannot now verify or falsify the statement 'There were exactly 100 skunks within a 40-mile radius of Lethbridge exactly 50 years ago today.' And there is no observation which would verify the statement 'There will be more than 100 skunks within a 40-mile radius of Lethbridge exactly 50 years from now.' Yet each statement strikes us clearly as being meaningful and as being either true or false. The fact that, on the strongest verifiability principle, these statements are literally nonsense makes the strong principle most unattractive.

With respect to statements about the future, the problem was thought to be solved by a modification which virtually all of the positivists advocated. They turned to the thought that it is the logical impossibility (as opposed to the physical or practical impossibility) of verification that makes a hypothesis nonsense.[41] Statements about the future are meaningful on this view, for the required verifiability is verifiability 'in principle'. One does not have to be able to produce the conditions under which the statement can be verified, one merely must stipulate what the conditions would have to be. 'Wait and see' is a method of verification. And so is 'Count, exactly 50 years from now, the number of skunks within a 40-mile radius of Lethbridge.'

Things are not so easy for sentences about the past. Ayer, in the first edition of *Language, Truth and Logic,* suggested that they be treated as predictions for what future historians will have to say about the matter.[42] Hahn agrees: we predict that, 'as the existing sources are examined again and again and more thoroughly, as new sources are found, and as a better knowledge is gained of the lawfulness of the course of historical events, historians will confirm the [hypothesis]'. (1987:44) And von Mises argues that 'about the past something can be said only in so far as it has left consequences (traces) that can still be examined today'. (1951:220) These consequences include written records, personal reminiscences, traditions and anything that is considered source material by historians.

But a rather serious problem arises for those hypotheses about the past which seem to be meaningful and either true or false, yet which can be reasonably assumed to have left no traces. The statement 'On October 9, 1980, Cheryl Misak had two pints of beer' is such a statement. So is 'An eclipse of the sun happened 1000 years before my birth' and 'Churchill sneezed exactly 47 times in 1949.'[43]

Some of the positivists, most notably Ayer,[44] accepted the consequences of the verifiability principle here. These statements do not latch on to any reality. They are neither true nor false. The

problem is that this result seems entirely counter to the common sense the logical positivists held in such esteem.

One way to circumvent the difficulty would be to allow counterfactual methods to be methods of verification. Although it might not be possible for beings of our kind, here and now, to verify a hypothesis, if there had been beings (perhaps even of a different kind), at a different time, and if they had verified the hypothesis, then it would be meaningful.

But reliance on counterfactual conditionals (if P had been the case, then Q would have been the case) was problematic for the logical positivists. Recall that the reductions of meaningful statements to statements about sensory experiences must comply with first-order predicate logic. And there is no way to cram a counterfactual conditional into that logic. The truth table definition of a conditional (if P then Q) statement has it that when the antecedent P is false, the whole statement is true:

P	Q	$P \rightarrow Q$
T	T	T
T	F	F
F	T	T
F	F	T

But the very nature of a counterfactual conditional is that the antecedent is false—it is counter to fact. If the truth table definition of the counterfactual conditional is identical to the truth table definition of the conditional, we have the very unintuitive result that any counterfactual conditional is true. If the definitions are not identical, it is unclear how we might characterize the counterfactuals in terms of truth tables. It is unclear how we could know the truth-values of 'if P were the case then Q would be the case' by knowing the truth-values of P and Q

The fact that counterfactual conditionals cannot be formalized in standard logic makes them untouchables for the logical positivists.[45] The statement regarding Churchill's sneezes cannot be verified by the following sort of condition: if there had been people around in 1949 who counted Churchill's sneezes they would have verified or falsified the claim that he sneezed exactly 47 times in 1949. Thus, although 'verifiability in principle' might rescue statements about the future from the dustbin of Verifiability in practice', it seems that nothing can do a similar job for statements about the past.

Many thought that another problem with the liberalized criterion of verifiability in principle was that some spurious sentences are pronounced meaningful. C.I.Lewis,[46] for instance, argued that such a

principle declares the hypothesis that human beings are immortal to be meaningful. It is a hypothesis about our future experience and 'our understanding of what would verify it has no lack of clarity'. ([1934] (1949):142) But he thought that the hypothesis of immortality was not a proper subject matter for science and that the verifiability principle is supposed to ensure that all inquiries are unified with science.

Schlick saw no objection here. 'Wait until you die' is an appropriate method of verification and so the hypothesis of immortality is indeed meaningful. It is a subject of science, despite the fact that the method of verification is one that only the individual can undertake and despite the fact that science cannot set up a formal experiment to try to verify or falsify it. ([1936a] (1979b):470–71)

Most of the logical positivists, however, sided with Lewis. Ayer says:

> it is self-contradictory to speak of a man as surviving the annihilation of his body. For that which is supposed to survive… is not the empirical self but a metaphysical entity—the soul. And this metaphysical entity, concerning which no genuine hypothesis can be formulated, has no logical connection whatsoever with the self.
>
> (1936a: 198)

Indeed, Ayer defines the self with reference to bodily sense contents and thus thinks that it is a contradiction to speak of a bodyless self.

The abandonment of the test of conclusive verifiability also opened the door to problems about confirmation and induction. Once it was decided that no empirical proposition could be 'absolutely' verified,[47] the concepts of weight, probability, and confirmation seemed to step in to replace the concept of verification. What is required of a meaningful statement is some degree of observational confirmation or disconfirmation, which can be 'indirect and incomplete'. (Carnap 1963b:880)

This thought sparked an intense interest in inductive logic within the Vienna Circle. Carnap worked, almost to the day of his death, on a confirmation theory which provided strict rules for making rational inductive inferences. Rather than inductive reasoning resulting in the acceptance of a universal generalization, it results in a degree of confirmation or a probability assignment; in the assignment of a number to a generalization or prediction. The thought is that one could achieve a confirmation so close to 1 that certainty was preserved. Thus, Hume's problem was to be avoided:

> The old puzzle of induction consists in the following dilemma. On the one hand we see that inductive reasoning is used by the scientist and the man in the street every day without apparent scruples; and we have the feeling that it is valid and indispensable. On the other hand, once Hume awakens our intellectual conscience, we find no answer to his objection. Who is right, the man of common sense or the critical philosopher? We see that, as so often, both are partially right. Hume's criticism of the customary forms of induction was correct. But still that basic idea of common sense thinking is vindicated: induction, if properly reformulated, can be shown to be valid by rational criteria.
>
> (Carnap, 1962a:318)

Carnap's criteria go beyond the standard requirement in rational choice theory that an agent's probability assignments be 'coherent'. Changes or transformations in one's probability assignments must be influenced only by observational results, must be effected step by step in response to incoming data, etc. These requirements are idealized and they presuppose infallible memory.

To see why Carnap's pioneering work in inductive logic did not, in the end, provide a satisfactory analogue of verification, three things must be noted. First, Carnap's logic could not characterize the scientific practice of confirmation, as his systems were designed for extremely simple and artificial languages. As Quine wrote in a referee's report on Carnap's 1950 manuscript, Carnap sets out to

> devise, in explicit terms, a general measure of the degree to which a statement of evidence may be said to confirm a hypothesis. Since what is sought is a numerical function of pairs of *statements,* the formulation must be relative to the language in which the statements are couched. The author chooses a simple language, poor in power of expression, thereby reducing the proportions of his problem…extension to a language of serious proportions [one 'adequate to the general purposes of science'] involves problems concerning which there is no glimmering of hope.
>
> (Quine and Carnap 1990:400)

Second, we must remember that the spirit of logical positivism was characterized by what I believe Alberto Coffa (1991) has termed 'deductive chauvinism'. Confirmation or inductive reasoning simply cannot be formalized to the standards of deductive logic.[48] Certainty cannot be preserved, for the truth of the premises simply does not

guarantee the truth of the conclusions, and inductive logic, even for artificial languages, is much more messy, complicated and inelegant than the streamlined but severe elegance of deductive logic.[49]

Indeed, Nelson Goodman's 'new riddle of induction',[50] a variation on Hume's problem, had as its target these very theories of inductive confirmation. Goodman shows that not all regularities result in the formation of a habit of expectation. We can define a predicate 'grue' as follows: an object is grue if it is observed to be green and is first examined before January 1, 1998 or if it is first examined after January 1, 1998 and it is observed to be blue. The hypothesis 'all emeralds are grue' has, in 1995, just as much inductive support as does the hypothesis 'all emeralds are green'. For, on the grue hypothesis, any emerald I examine now which is green is also grue. The problem, Goodman suggests, is to spell out some principled way of determining which inductive inferences are good and which are not.

But inductive inference and confirmation theories based on probability rest on the enumeration of observed instances. We cannot appeal to non-enumerative considerations to bolster one inductive conclusion over another. There is no way, which will satisfy the logical positivists' requirements for rationality, to distinguish what we are sure are rational inductive inferences from grue-type inferences. All suggestions make inductive inference too human for the tastes of at least the right wing of positivism. All attempts say something like 'the difference is that one of those inferences was actually the product of human inquiry' or 'the difference is that one of those predicates is already entrenched in our language'.[51]

As far as most of the positivists were concerned, we might as well go with Hume's non-rationalist solution—we are in the habit of making one of those inferences and not in the habit of making the other. On such accounts, we are left without an objective foundation for knowledge in experience. Reichenbach sums up this response to non-rationalist solutions to the problem of induction when he says that Hume failed to see that his solution was no solution at all. ([1948] (1959):142)

Another kind of problematic statement concerns those about the mental states of others; for instance: 'Thatcher experiences pain when she has a toothache.' We have seen that the positivists offered a behaviouristic account of mental states in which statements about the mental states of others are merely statements about their behaviour and/or physiological processes. I can know that others feel pain by observing their pain behaviour. Such behaviour is what constitutes having a toothache. The positivist thus tries to out-manoeuvre solipsism, the view that only I and my mental states exist, by suggesting that the observation of the behaviour of others allows us to

make an inference to the conclusion that the mental states of others exist.

Lewis, however, argues that behaviour is not enough to warrant such an inference. A robot could have a swollen jaw, moan about, etc., and we would want to ask whether it had an *ache.* The answer is surely 'no'. Behaviourism, Lewis thinks, cannot be right[52] and so he offers the following suggestion for how I can know that another person has a pain: although I cannot experience or verify the pain of someone else, I can *imagine* it and thus it is meaningful to say that someone else is in pain. ([1934] (1949):144)

Here we see a very broad conception of verifiability—if something can be imagined, it is verifiable. Someone could, presumably, imagine the Absolute and then all sentences about the Absolute would be verifiable. If imaginability is the criterion, and if we are to stay away from a Berkeleyan doctrine about the limits of imagination, almost anything can make the grade.

Ayer was also eventually prepared to adopt a criterion much more generous than the one he initially proposed. Of any given sentence, we must ask, he says, whether any observations would be 'relevant to the determination of its truth or falsehood'. (1936a: 25–26) But again, metaphysics seems to be encouraged on such a broad criterion. Ewing lists some arguments which Ayer's new principle would allow:

> The cosmological proof, for instance, starts with the premise that something or other exists, this being regarded as given in experience; the argument for an Absolute Mind including all human minds professes to start from the incomplete and incoherent character of our experience, which is held therefore to point to a more complete experience, and to be supported by the empirical facts of co-operation and love; the realist view of physical objects claims to be based on the experience of perception either as in itself a proof of their existence…or as a premise from which causal inferences can be made showing that they probably exist.[53]

Eventually, most of the logical positivists came down from the ambitious denunciations of metaphysics to very modest claims. Carnap argues, for instance, that only the metaphysics of the likes of Bergson and Heidegger are meaningless. (1963b:875) And Ayer argues that metaphysics is a 'secondary system' as opposed to a 'primary system'. A primary system contains 'purely factual propositions' which describe the 'actually observable'. A secondary system 'legislates for possible as well as actual cases and can also contain terms which are not directly related to anything observable'. A

secondary system is legitimate if it has 'some explanatory value'. Thus, hypotheses and terms which 'are not related directly to anything observable' are meaningful if they have explanatory power. (1973:33)

But the problem with these liberalizations is that what was distinctive about the verifiability principle in the first place—its confident classifications of statements as meaningful or meaningless—is lost. In the early 1950s, Carnap's description to Einstein of how the verifiability principle no longer tied a meaningful statement to what was given in experience prompted Einstein to remark that 'if positivism were now liberalized to such an extent, there would no longer be any difference between [that] conception and any other philosophical view'. (Carnap 1963a:38)

Indeed, the suggestion was made that the verifiability principle captured only one kind of meaning and left others untouched and unscathed. Of course, this threatened to reduce verification to the trivial thesis that only scientific statements have scientific meaning.

The issue arose around the sub-atomic hypothesis, which had replaced the atomic hypothesis as the archetypal statement about unobservable entities in science. It would seem that the only line for the positivists to take about theoretical entities is to follow Mach in treating them as, at best, helpful instruments.[54] But, for the most part, the logical positivists were anxious to make proper room for theoretical entities in science.[55] Lenzen ([1938](1955)), for instance, argues that the existence of electrons is to be inferred from experimental phenomena—the behaviour of oil droplets between charged plates and tracks recorded in photographs of cathode discharges.

But this sort of verification requires the notion of causation, as the behaviour of oil droplets is supposedly *caused* by the existence of electrons. While Lenzen seems happy with a full-bodied, realist concept of causation, not all of the positivists were. Many followed Hume in arguing that there is nothing in experience corresponding to the notion of a necessary connection.[56] As Schlick says, 'a causal claim by no means has the logical character of an assertion, for a genuine assertion must ultimately allow of verification'. ([1931](1979b):187)

Thus Lewis preferred to argue that the sub-atomic hypothesis had 'at least some degree of meaningfulness'. ([1934] (1949):140) And he is willing to grant other kinds of statements, such as those about the past, other 'types of significance'. (1929:150) When Lewis first presented this thought—that sentences could have some degree of meaningfulness or other kinds of meaningfulness—it was firmly rejected by Schlick. He stressed that understanding a sentence *consists in* knowing 'exactly the circumstances to which it is fitted'.

([1936a](1979b):460) Shadowy feelings of being acquainted with the words are not enough for understanding. There is no gap, as Lewis claims there is, between what we definitely understand and what we definitely do not.

When all was said and done regarding the verifiability principle, however, many of the logical positivists were willing to embrace Lewis' claim that the principle only captured one kind of meaning. Looking back, Carnap says, '[o]nly later did we see that it is important to distinguish the various meaning components, and therefore said in a more precise way that such theses lack cognitive or theoretical meaning'. (1963a:45)

It turns out, however, that, even on this extremely liberal— perhaps even trivial—principle, the other kinds of meaning components are not supposed to aspire to much. Carnap goes on to say that statements 'often have other meaning components, e.g. emotive or motivative ones, which, although not cognitive, may have strong psychological effects'. (1963a:45) But having a psychological effect is not much for a statement to aspire to. Most aspire to objectivity or to having a truth-value. And even the most liberal verifiability principle tried to deny this to non-scientific statements.

Finally, in our story of the weakening of the verifiability principle, some of the positivists argued that the verifiability principle is not a proposition that is true or false, but rather, merely a proposal which can be accepted as a matter of convention.[57] For the question which bothered Wittgenstein arose sharply for the logical positivists: what is the status of the verifiability principle, given what the principle itself requires? The problem, of course, is that the logical positivists' account of meaningfulness seems to be a metaphysical theory and so, by their own standards, it seems that the verifiability principle must be abandoned. As it has recently been said, 'it is ironic that, at a distance of 50 years, [Ayer's] *Language, Truth and Logic* reads like a paradigm metaphysical tract'.[58]

If the verifiability principle does not itself pass the test for significance, it has to be adopted, it was thought, as a matter of choice.[59] One must apply what Carnap called the principle of tolerance to different views of meaning: 'It is not our business', he says, 'to set up prohibitions but to arrive at conventions'. (1937:51) Our philosophical commitments, rules of logic and epistemic principles are conventions which we choose to adopt (on grounds of, say, utility) and thus, they are neither true nor false. In 1963 Feigl said that

> It is today generally agreed among logical empiricists that the criterion of factual meaningfulness is to be construed as a norm proposed for the purpose of avoiding unanswerable questions…

> By regarding the meaning criterion as a proposal rather than as a proposition it becomes impossible to subject it to its own jurisdiction or to ask whether it is true or false.
>
> (Feigl 1963:237–38)

But this kind of claim most certainly takes the punch out of the verifiability principle. It can no longer be used to declare statements meaningless *tout court.* One can say merely that, for those who choose to adopt the verifiability principle, certain statements are meaningless. But of course the metaphysican, theologian, and many others, will not choose to adopt the verifiability principle. As Ayer recently said: 'I treated the verification principle as a prescriptive definition. But why should the prescription be obeyed? I evaded this awkward question by defying my critics to come up with anything better.' (1992c:149)

Thus, a kind of relativism seems to follow from the suggestion that the verifiability principle is not an empirical statement. On the conventionalist version of this suggestion, what is true for someone who chooses one language will be false for someone who chooses another. This was thought, not only by most of the logical positivists themselves, to be an unacceptable conclusion. As Ewing says, in that case, 'a philosopher may assert anything whatever he pleases'. (1937: 350–51)

But Carnap thought that some languages are better than others on pragmatic grounds—grounds concerning their convenience or usefulness. The way to evaluate philosophical ideas is to evaluate their consequences—their 'pragmatic utility'. (See Creath 1990:8.) Whatever the worthiness of this thought (we shall turn to it when we examine Peirce's work), it goes against the grain of much of the spirit of logical positivism. First, the semantic argument for the verifiability principle disappears. We no longer have an argument to the effect that sentences which fail to meet the principle are meaningless; they simply will be taken to be meaningless by those who accept the verifiability principle. Second, the right wing of logical postivism disdained pragmatic justifications. It wanted to know what postulates were actually true, for it wanted a secure foundation for knowledge.

We can see this last point if we look to the controversy regarding the meaningfulness of the realism/non-realism issue. Many of the logical positivists thought with Mach that the debate between realists and non-realists was metaphysical and hence spurious. But others saw the very spirit of the positivist program to be a realist spirit and thus tried to preserve realism from the fate which the verifiability principle seems to have in store for it.

Since realists hold that reality exists and has its character independently of what any human being thinks, they are committed to the claim that if all minds should disappear from the universe, the stars, for instance, would still go on their courses. Lewis suggests that this is a meaningful claim. It is unverifiable by humans, but that is merely one of those contingent 'predicaments'. He says that a mind like ours would experience the stars on their courses if, contrary to the hypothesis, such a mind were to be present to have such experiences. (Lewis [1934] (1949):142–43)

Schlick, at times,[60] also argues that the realist claim is legitimate, but avoids reliance on those problematic counterfactual conditionals of the sort 'were a mind to have been present, then…'. We have good reason to think that the realist hypothesis is true, he argues, for there are countless regularities in the world which are independent of what happens to human beings. Experience shows no connection between minds and the courses of celestial bodies. Clearly, conclusive verifiability or even verifiability in principle is not what is in question on Schlick's view, but rather, the having of *some reasons* in favour of a hypothesis. The fact that regularities exist which are not influenced by what people think about them is a reason to think that the regularities involving the stars are uninfluenced as well. ([1936a] (1979b):480) This is an inductive inference or perhaps even an inference by analogy. For Schlick to go to such lengths to retain the realist spirit of logical positivism indicates just how important that spirit was.

Indeed, even those of the logical positivists who abandoned the realist spirit for conventionalism were not very tolerant of those who declined to adopt the verifiability principle. As Coffa notes, accepting the principle of tolerance did not prevent these positivists from frequently forgetting their official view and dismissing *tout court* statements which are unverifiable. (Coffa 1991:320–26)

What the logical positivists were faced with was the following situation. They had certain aims which they wanted a criterion of meaningfulness to ensure. The criterion was to unify inquiry by requiring all statements to measure up to the one standard of legitimacy, namely, the standard set by the natural sciences. Metaphysics and other spurious branches of inquiry were to fall by the wayside while branches such as ethics and psychology, if they were to be redeemed, had to become behaviouristic. It turned out, however, that any criterion strong enough to achieve these aims proved too strong in other respects. It disqualified, for instance, statements about the past and statements about theoretical entities in science. If, however, the criterion was weakened to allow these statements a place in inquiry, metaphysics was able to sneak in and formal izability

was compromised. To see how serious this dilemma was, we must turn to the issue which was most responsible for the demise of logical positivism: the fact that the verifiability criterion, on any construal which preserved the aims of the positivists, made science impossible.

THE VERIFIABILTY PRINCIPLE AND SCIENCE

In the 1950s it became clear that logical positivism had to struggle to uphold two mainstays of scientific practice: scientific laws and dispositional terms.[61] A scientific law is a universal generalization which ranges over an infinite domain—a statement of the form 'All *As* are *Bs*'. All gases have such and such a property, all samples of H_2O freeze at 0 degrees Celsius, etc. No finite number of positive instances will verify such a statement, for as Popper pointed out, verification here requires the completion of an infinite number of tests—it requires something logically impossible. ([1934] (1959): 62–64) We have seen that Hume made a similar point, namely, that statements about all *As* being *Bs* go beyond what has been observed, and we have had a glimpse of how the logical positivists tried to deal with the problem set by Hume. Here it arises in a particularly urgent way.

Those positivists who could not see their way to legitimizing inductive inference had to take an unattractive view of laws. The early Carnap, for instance, argues that a generalization such as 'All men are mortal' is merely about the human beings we know who have died and that 'the sun will rise tomorrow' is not a statement about what the sun will do, but rather, an oblique description of what I have experienced in the past. Inference to something new, something we have not yet experienced, would be 'magic'. ([1928] (1967):290–92)

Schlick too says:'As we know, it is possible to test only the individual statements that are derived from a law of nature.' ([1931](1979b):188) And: 'the problem of induction consists, of course, in asking for the logical justification of general propositions about reality… We acknowledge, with Hume, that there is no logical justification for them; there cannot be any because they are simply not genuine propositions.' ([1931] (1979b):197) Laws or universal generalizations are not true or false; they are not 'valid for eternity'. (Waismann 1977b:40) They should not be thought of as universally quantified statements—statements which begin 'For all *A*s…' or 'Take any *A* you like…'. Rather, their 'real meaning' is that they are rules or 'directions' for action and for the formulation of singular statements.[62] Genuine assertions—particular statements—are derivable from a universal statement. The universal statement is only a sentence schema, a 'sentential function'. When the variables in the sentence

schema are replaced by particulars, the statements become meaningful.[63]

Reichenbach, who initially thought that Hume's problem was a pseudo-problem ([1930] (1959):78), later came to see its force and spent much effort trying to 'vindicate' induction. For he thought that science could not do without it. He argued against views like the early Carnap's, and held that it is an 'indisputable basic principle' that laws and predictions do more than merely summarize past experience. They are also predictions of what will happen in the future. ([1933] (1978a):407) The scientist wants to know how to evaluate such statements *as predictions,* not as observation statements pertaining to some other time. Science cannot do without such predictions and so the verifiability principle poses a life-threatening attack on the very heart of what the positivists wanted to uphold—empirical science.

Against Schlick, Reichenbach argued that the attempt to hold on to universal generalizations by recharacterizing them as rules for behaviour also goes against the grain of science, for that is not how scientists characterize laws. To say that lawlike statements are not assertions is to seriously undermine scientific practice.

Reichenbach tried to vindicate induction on the basis of a relative frequency account of probability. He thought that Hume was right in asserting that, for all we know, the world may be irregular and we cannot know anything about the future. But he argued that if anything might give us knowledge about the future, it is induction. Hence, the use of induction is not justified in the strict sense in which the logical positivists used that word, but it is vindicated 'pragmatically': it is rational to use it. If there is a true probability assignment, the rule of induction (which tells us to infer that the observed frequency approximates the long-run frequency) will lead eventually to it. ([1935] (1949):480–82) But it turns out that Reichenbach's vindication fails, as it vindicates not only the rule of induction, but an infinite number of other rules as well.[64]

The way most of the positivists eventually tried to get around the problem of universal generalizations was to characterize a notion of confirmability or verification in known cases. One could partially confirm a law, even if conclusive verification is out of the question. We have seen that the later Carnap rejected scepticism about induction and argued that inductive inference could be justified. (1962b:177–82) He thought that one could order the probabilities of hypotheses according to the relative weight of the evidence. We have seen however, that not only do such proposals not solve Hume's problem, but, as Ayer says,' [t]he concept of confirmation that we ordinarily employ when we speak of a series of observation statements as confirming a scientific hypothesis' cannot be formalized. (1992b:302)

A second kind of important statement in science also proved highly problematic. These are statements containing disposition terms, such as 'soluble', 'elastic' and 'transparent'. And scientific theory is rife with them, for as Feigl says, terms like 'mass', 'heat' and 'force' are 'condensed expressions for regularities of events or behavior exhibited under appropriate conditions'.[65] Sentences containing such dispositional terms express the fact that certain objects behave in a certain way under certain conditions.

On the logical positivists' account, the statement 'object *x* is soluble' seems to be reducible to the observation statement: 'if *x* is placed in water, then *x* will dissolve'. And the statement 'object *x* has a temperature of *c* degrees' seems to be equivalent to 'if a thermometer is in contact with *x* it will register *c* degrees'. But problems abound for such reductions.[66]

As we have noticed, the extentionalist definition (the definition given by standard modern logic) of a conditional $(A \rightarrow B)$ is such that the conditional is false when and only when the antecedent A is true and the consequent B is false. So if an object is not in contact with a thermometer, the antecedent is false and the conditional will be true. Untested objects will get the disposition attributed to them, most certainly an unwanted result. And making the statement a counterfactual conditional (were *x* to be in contact with a thermometer, then…) is of no help, for we have seen that the counterfactual conditional cannot be characterized by truth tables. For one thing, the antecedent of such a conditional is always false.

Carnap sought to solve the problem about dispositional terms by suggesting that they can only be partially defined: the meaning of a scientific term is only partially specifiable by observables and logic. They can be defined only for objects which meet the test conditions. The meaning of dispositional predicates is thus un determined in cases where the antecedent of the conditional is not fulfilled. (1936: 439–52)

But the reductionist's aim cannot be satisfied by such partial definitions. The aim of logical analysis is to *eliminate* the terms to be reduced in favour of logic and observational predicates. If meaning is attributable only for decidable cases, so that we cannot attribute the disposition to an individual upon which the relevant experiment is not performed, we do not have an adequate account of the meaning of dispositional terms. As Ayer says, 'to say that such a statement is neither true nor false, under this condition, is no great improvement on having to say that it is true both that the table is soluble and that it is not'.[67]

Thus, it seemed that keeping science and the verifiability criterion within the boundaries of standard logic was too confining.[68] But giving

up on that requirement meant abandoning some of the very ideals of clarity, rigour and precision which motivated the movement in the first place. The contortions necessary to make it plausible that the statements of science can be reduced, by means of first order predicate logic, to statements about what is observable seemed, especially to the philosophical world outside the Vienna Circle, to sink the reductionist program.

Indeed, it was in reaction to such deductive chauvinism that Thomas Kuhn (1962),[69] Paul Feyerabend (1981), Norwood Russell Hanson (1958) and others began to argue that the structure of science does not have the deductive structure attributed to it by the logical positivists. If we want to understand science, we must not try to 'rationally reconstruct' it, but we must turn to the historical and sociological development of theories or research programs.

On these sorts of views, theory choice is seen to involve utility, the goals and desires of individual scientists, competition between scientists, etc. Justification is no longer thought of as something carved out of the certainty of experience by deductive logic. And there is nothing pure or objective about observations; they are theory-laden interpretations which do not provide us with an objective touchstone to knowledge. An observation report is always interpreted in the light of the currently accepted theory. If a different theory is adopted, that observation will be reinterpreted.[70] So the very distinction between observation sentences and non-observation sentences upon which the logical positivists relied so heavily is put into question by this sort of philosophy of science, which in many quarters became the 'received view'.

The fact that the logical positivists' own vision of science was undermined by the verifiability principle and deductivism, left the door wide open for this alternative vision. That is, the fact that science, as the positivists conceived it, could not be conducted, made it look especially plausible that science was not the rigorous logical inquiry the positivists had made it out to be.

POPPER'S ALTERNATIVE

Not all philosophers of science abandoned positivism for the non-rationalist alternative. As we shall see in chapter 5, some didn't abandon the spirit of positivism at all. Others were attracted to the position advocated by Karl Popper. Popper, like the logical positivists, thought that science had a rational, deductive structure, but not the structure defended by positivism.

We have noticed that Popper thought that the verifiability principle was too narrow in that it ruled out scientific laws and universal

generalizations. But this was only a part of his attack on logical positivism, an attack which perhaps was invested with extra energy because Popper was often taken to be advocating a kind of verifiability principle himself.

Popper thought that the verifiability principle was also too broad in that it admitted hypotheses which Popper thought were surely not scientific, hypotheses such as those put forward by Marxists and Freudians. Popper charged that these theorists could find confirming evidence everywhere—no matter what the phenomena, they would argue that their theories were confirmed:

> What I found so striking about these theories, and so dangerous, was the claim that they were Verified' or 'confirmed' by an incessant stream of observational evidence. And indeed, once your eyes were opened, you could see verifying instances everywhere. A Marxist could not look at a newspaper without finding verifying evidence of the class struggle on every page, from the leaders to the advertisements; and he also would find it, especially, in what the paper failed to say. And a psychoanalyst, whether Freudian or Adlerian, assuredly would tell you that he finds his theories daily, even hourly, verified by his clinical observations… It was precisely this fact—that they always fitted, that they were always 'verified'—which impressed their adherents. It began to dawn on me that this apparent strength was in fact a weakness, and that all these 'verifications' were too cheap to count as arguments.
>
> (1983:162–63, see also 1962:267)

Popper thought that it was indeed important to distinguish empirical science from other bodies of assertion that might be confused with it. The criterion he suggested for making this distinction was falsifiability —scientific statements are falsifiable and non-scientific statements are not. Scientific statements must be testable or capable of conflicting with experience:

> But I shall certainly admit a system as empirical or scientific only if it is capable of being *tested* by experience. These considerations suggest that not the *verifiability* but the *falsifiability* of a system is to be taken as a criterion of demarcation. In other words…*it must be possible for an emprical scientific system to be refuted by experience.*
>
> ([1934] (1959):40–41, see also 1962:267)

The structure of science, Popper argued, is as follows. Hume showed us that induction cannot be justified: science does not confirm hypotheses. Rather, science disconfirms them. We start with a hypothesis which can be falsified and then conduct experiments to see if we can falsify it. Popper's deductivism has it that science goes along the following lines: $H \rightarrow I$, $-I$ therefore $-H$, where H is the hypothesis to be tested and I is an experimental implication.

So Popper adhered to some of the principles held dear by the logical positivists: the importance of observation and the rigour of deduction as the means of justification. And he manages to hold on to the foundationalist ideal better than the positivists.[71] The reason he abandons induction is that it does not justify hypotheses with the kind of certainty afforded by deduction.

Where Popper veered away from the logical positivist program was in his attitude to the verifiability principle. He held that it is an arbitrary verbal stipulation to identify the distinction between science and pseudo-science with that between sense and nonsense. His criterion demarcates science from metaphysics—it is not to be taken as a criterion of meaningfulness. His criterion 'separates two kinds of perfectly meaningful statements; the falsifiable and the non-falsifiable. It draws a line inside meaningful language, not around it.'[72]

Popper's point is that what the logical positivists had demarcated was not the meaningful from the meaningless, but rather, their (mistaken) version of the scientific from the non-scientific. A tremendous amount of work would have to be done if one wanted to argue that the scientific was co-extensive with the meaningful. The positivists, charged Popper, were 'trying to kill metaphysics by calling it names'.[73]

A question arises here about the sort of argument that is available for or against a particular empiricist criterion. It will strike those who are uninterested in the naturalist project of setting science on a pedestal that, whatever else they are, many sentences in ethics, metaphysics and epistemology are not meaningless gibberish, whereas it struck the logical positivists that such sentences were meaningless. But surely there must be some reason, which is independent of one's prejudices about which kinds of statements are legitimate, for adopting a criterion of legitimacy. That is, if a criterion of legitimacy is to be non-question-begging, we cannot begin with a penchant for natural science, identify its unique features, and then require every other branch of inquiry to share those features. Clearly, the logical positivists were motivated partly by the thought that science is glorious and metaphysics spurious. Just as clearly, many others do not share this thought and it is thus shaky ground upon

which to erect a criterion which demarcates the spurious from the non-spurious.[74]

We might, of course, escape this difficulty by identifying, in a relatively uncontroversial way, the aim of some branch of inquiry and then finding a criterion *for that inquiry,* which would promote the aim. We would then not be delivering a semantic criterion of meaningfulness, but a criterion of legitimacy for a branch of inquiry, given a certain conception of that inquiry. Such a view was at times adopted by some of the logical positivists. Feigl, for instance, says that 'the vindication of the adoption of and adherence to, a meaning criterion must refer to the purposes one aims at in using the language of cognition'. (1963:238) He identifies the aim of the scientific enterprise as the provision of knowledge which is susceptible to intersubjective test and then concludes that something like the verifiability principle is required.

This argument, however, does not sit well with the scientistic or science-glorifying orientation of logical positivism. For it is as good as an admission that the verifiability criterion is applicable only to science and is not to be extended to other branches of inquiry, with other aims. We shall see in the next chapter that if one drops the scientistic orientation, an empiricism constructed along such lines has considerable appeal.

We shall see also in chapters 4 and 5 that there have been some very general arguments made recently about the nature of language and meaning which may seem to circumvent the problem about begging the question. But we shall see that one of the key ways we have of evaluating even the criteria which result from such general arguments is to see how they square with our thoughts about which sort of statements *must* be legitimate. No matter what the argument, it appears that our intuitions or, if you like, prejudices about what is legitimate will inform any criterion of legitimacy. All we can do in this regard is make sure those intuitions are as uncontroversial or as shared as possible. And this was something the logical positivists failed to do.

Before we turn to how others have fared in this regard, we must look at two other controversies which will also not go away.

CONTROVERSIES ABOUT EXPERIENCE AND TRUTH

The logical positivists held that the notion of experience must be restricted to what is delivered by the senses.[75] But there was controversy over the nature of sensory experience and observation reports. With the exception of Neurath, there was a general

agreement that there was something given to us in experience, something raw and unencumbered by the observer's language, theories, or conceptual scheme. The problem was to then say just what that was. Some, with Mach, held that observation reports are about private sensations and others held that they are about public physical events.

Waismann, Hahn, the early Ayer, the early Carnap[76] and the early Schlick[77] were phenomenalists, arguing that what one is directly and infallibly aware of is one's own private experience. The objects of what one immediately experiences are 'sense data'; what can be pointed to is something qualitative, a sensory *feeling*. Experience is a kind of a static flash of some quality, such as 'here, now, blue'. (Carnap 1934:45–46)

One reason for embracing phenomenalism is what is called the 'argument from illusion'. Sometimes we perceive physical objects to have properties which they do not really have—the stick in the water looks bent and the chair looks as if it is getting larger as I approach it. Since the stick is straight and the chair remains the same size, what we see must be something else—something like a mental image which represents the stick and the chair. Similarly, when we hallucinate, the object we 'see' is not really there. What we see must be one of our own sense data. Since illusions and hallucinations are indistinguishable from veridical perceptions, we must say that what we see in any case of perception is our own sense data.

In order to avoid what seemed to the positivists to be weird entities such as sense data, the position was sometimes put in terms of statements. Sense data statements are of the sort 'It seems to me that I see blue here and now.' Such statements are infallible, as a perceiver cannot be mistaken about what *seems* to her to be the case and the content of such a statement is qualitative—the content is something like a feeling.

A rather large problem, however, remains—one which we saw defeated Russell. It seems that an experiencer cannot communicate such qualitative content to others, for only the experiencer herself can fully understand a sense datum sentence. If all of my experiences are my own private sensations and if all terms derive their meaning from such private sensations, then another person cannot understand what I mean by any term. She would have to have my sensations, which she cannot. As Kraft says, 'Qualitative content… belongs to the private sphere of each person and is inaccessible to anyone else.' ([1950] (1953): 43)

Indeed, the demonstratives involved in sense data statements such as 'here', 'now', and 'this' refer only to the present: 'At the forefront… as immune from all doubt, stand those propositions which give

expression to a matter of personal "perception" or "experience" (or whatever the term may be) that lies *in the present.'* (Schlick [1934] (1979b):379)

But of course, if meaning or content is inaccessible to others, then solipsism seems to be entailed. All that I can know are how things seem to me; I cannot have knowledge of how things actually are. The difficulty with the view is stated well by Lewis:' [if] nothing can be known but what is verifiable in the subject's own experience at the moment when the knowing occurs…knowledge would collapse into the useless echo of data directly given to the mind at the moment, and meaning would terminate in the immediate envisagement of what is meant'. ([1934] (1949):133) This, Lewis thinks, is 'a reduction to absurdity of both knowledge and meaning'.

If not a reduction to absurdity, the view that meaning and knowledge are matters which are private to a subject at least undermines the notion of objectivity prized by the right wing of logical positivism. If the only things that one can know are the immediate contents of one's mental states, we are a far cry from the objective foundation for knowledge which was the initial aim of logical positivism. What we have, rather, is a throughgoing subjectivism, where what can be known is what seems to the subject to be correct.

Some of the phenomenalists followed the early Wittgenstein and embraced solipsism. In the *Aufbau,* for instance, Carnap sees that what he calls 'methodological solipsism' is entailed by the thought that first-person experience is the basis for the construction of concepts. But these phenomenalists did not take themselves to be committed to idealism, the position that reality is mind-dependent. Some thought, with Mach, that they could avoid such a non-realist position by disparaging the entire debate. Schlick, for instance, at times argued that the question 'does the external world exist, or is the world only my sensation?' is a meaningless one. The realism-idealism debate is an instance of spurious metaphysics: 'both parties, at bottom, have not the least notion of what they are trying to say'. ([1932b] (1979b):262) But this move did not satisfy all of the positivists.

Neurath, Feigl (1963:238), the later Ayer (1992a:25–26), Reichenbach (1938:149–50), and Hempel rejected phenomenalism, largely because they took it to imply that there can be no intersubjective or public understanding of one's private 'protocol' language. That seemed an unembraceable conclusion. Verifiability must be intersubjective or in principle open to all observers, for the very aim of science is to provide knowledge which is susceptible to intersubjective testing. (See Feigl 1963:238.) The purely private is irrelevant for science, meaning and knowledge.

Neurath provides a further argument against phenomenalism; a general argument which does not presuppose the aims of the logical positivist program.[78] Like the later Wittgenstein, he argues that one can learn and continue to use only an intersubjective, physicalist, language:

> only one language comes into question from the start, and that is the language of physics. One can learn the language of physics from earliest childhood. If someone makes predictions and wants to check them himself, he must count on changes in the system of his senses, he must use clocks and rulers; in short, the man who supposedly is in isolation already makes use of the 'intersensual' and 'intersubjective' language.
>
> ([1931a](1983):54–55)

We must, Neurath thinks, begin by asking how a child could learn to use a phenomenalist language. What one points to in order to teach a child must be, on the phenomenalist view, something private. Of course, if it is private, it cannot be pointed to. Either phenomenalism is self-contradictory ('point to something that cannot be pointed to') or it leads to the false conclusion that language cannot be taught. And, again like Wittgenstein, Neurath asks how we could know that we are continuing to use the *same* language without having physical things such as clocks and rulers against which to measure our perceptions. Positivism will be in trouble if it construes sense data as private and incorrigible, for then we should never be able to learn the meanings of terms. The basic language must be part of physical language. The sentences which seem to refer to one's private sensations must be logically equivalent to sentences which describe some physical state, some spatio-temporal situation involving objects or things.

Thus, rather than trace meaning back to statements such as 'It seems to me that here, now, blue', the physicalists argued that meaning must be traced back to statements of the sort 'This thing is blue' or 'A perceives at time *t* and place *p such and such*'. All meaningful statements can be reduced to the intersubjective 'thing-language'. (Carnap [1938] (1949):415–16) Such sentences are objective in that they are not to be specified in the subjective terms of what strikes *me,* here and now.

Notice, however, that statements in the thing-language do not have the same status as statements of the sort 'It seems to me that I see blue here and now.' Whereas it is hard to see how I could be mistaken about what I seem to see, it is easy to see how I could be mistaken about what some person *A* sees at a certain time and place and how *A* can be mistaken about what he sees. That is, the phenomenalist's

first-person statements make a real claim to incorrigibility, whereas the physicalist's statements cannot.

The physicalists, then, abandoned one of the important initial aims of logical positivism[79]—the quest to ground knowledge in something about which we cannot be mistaken. For that founda tionalist project requires that the basic statements be incorrigible or epistemologically secure. The foundationalist is after a foundation of rock, not of shifting sand.

The foundationalist aim, notice, was at the heart of the realist project. We have seen that beneath the logical atomism which underlies logical positivism is the claim that there are objects in reality to which our sentences are connected through experience.[80] A statement is verified by comparing it with what is given in experience: the validity of a basic statement depends on its agreement with the given. If we ensure that every admissible statement is connected to an object in reality, we shall ensure that knowledge is built on a secure foundation. The purpose in setting out a body of elementary sentences in the first place was to have that body serve as an objective basis for knowledge—for testing other, non-elementary sentences. As Schlick, the leading spokesman for the right wing of logical positivism, says:

> We think it self-evident that the problem of the foundation of all knowledge is nothing else but the question of the criterion of truth. The term 'protocol propositions' was undoubtedly first introduced so that by means of it certain propositions might be singled out, by whose truth it should then be possible to measure, as if by a yardstick, the truth of all other statements.
>
> ([1934] (1979b):374)

Schlick thinks that in this story, 'there is nothing to prevent— indeed everything, in my view, to justify—our employment of the good old phrase "agreement with reality"'. (376) He, unlike some others, does not want to give up the notion of the 'unshakeable points of contact between knowledge and reality'. (387)

So we have the following twist. Phenomenalism promoted the realist dream of incorrigibility, objectivity, and a secure foundation for knowledge. But at the heart of phenomenalism was a subjectivism or solipsism which was an anathema to realism. To avoid that subjectivism, the claim that knowledge is objective because it rests on an indubitably secure foundation had to be abandoned. For the only way for the foundation to be beyond doubt was for it to be subjective. And here we can see the controversy regarding the conceptions of truth and objectivity at play in logical positivism.

The left wing of the Vienna Circle, especially Neurath,[81] was happy to abandon foundationalism for an epistemology that puts fallible inquirers at the centre of truth and objectivity. Neurath argued that the basic statements have interpretive content and that a statement cannot be compared with the given to see if it is true, but only with other statements.[82] We judge a statement's truth by seeing whether it coheres with other empirical statements. 'Each new statement is confronted with the totality of existing statements that have already been harmonised with each other.' (Neurath [1931b] (1983):66) The new statement is called correct if it fits with our body of settled belief.

Neurath then advocates a holism which is similar to Duhem's and, we shall see, anticipates the most prominent contemporary defender of holism, W.V.O.Quine. For Neurath goes on to say:

> What cannot be incorporated is rejected as incorrect. Instead of rejecting the new statement, one can alter the whole existing system of statements until the new statement can be incorporated; in general, however, this decision is taken with hesitation.
>
> ([1931b](1986):66)

That is, one can alter the background theory rather than the hypothesis which is being tested. But such a drastic revision would have to be backed by impressive reasons.

It is a short step from here to the coherence theory of truth—to the claim that truth is a matter of coherence with already accepted beliefs:

> if a genuine sentence contradicts accepted genuine sentences and is sacrificed, we call it 'false'; *to ask for a further 'criterion of truth' makes no sense.* There is no court of appeal *outside* the totality of sentences. We do not therefore speak of 'verification by means of the given'.
>
> ([1932](1987):6)

We are a great distance now from Schlick's correspondence theory of truth. Truth, holds Neurath, is merely a matter of fitting with what inquirers have already accepted. It does not transcend inquiry; it does not correspond with reality.

The later Carnap is also set against the idea that we confront sentences with reality and he is led to a different brand of non-realism, with the principle of tolerance at its centre. That principle, we have seen, has it that all choices of language are to be made on 'pragmatic' grounds or on grounds of utility. This view seems to entail a kind of

relativism, where truth is relative to the language chosen[83] and where there might well be two incompatible, equally good, languages. That is, the pragmatic grounds upon which the choice of language is to be made might well underdetermine the best choice; there might well be *no* best choice.

Of course, many in the positivist camp objected strenuously to such views.[84] It was argued, for instance, that coherence with an already accepted set of beliefs, as opposed to what is objectively given in experience, does not enable us to distinguish what is true from what is a consistent fairytale. And Ayer just thinks 'one obvious and fatal objection' to such a view is that if there are two mutually incompatible but internally consistent sets of beliefs, then it seems that both are true. There is no way of deciding which is the true one, and we are thus landed with a contradiction. (Ayer 1964:179)

We shall see that such issues will remain pressing for those verificationists who, with Hume, Neurath and Carnap, find that the criterion of legitimacy leads to the conclusion that justification and truth are human-centred. They must make plausible the thought that the best we can have are beliefs which enable us to get on with the common affairs of life. And they must make plausible the thought that this does not entail that there is no truth and knowledge to be had.

As we examine more verificationist positions, this kind of non-realist epistemology will appear again and again. But no one will capture its spirit better than Neurath. Inquirers, he argued, are not like boat-builders constructing a ship in a drydock with new and watertight parts. ([1932] (1983):92) Rather, we are like sailors adrift on a leaky ship at sea, making minor repairs where we must. We are not able to dismantle the ship and rebuild it, but rather, we must go on with what we have, making it the best it can be.

To ask for knowledge more certain than that which allows us to go on, or that which keeps us afloat, is to ask for something metaphysical. The demand can come only on the heels of a metaphysical distinction between the 'real world' and knowledge of it. ([1934] (1983):108–9) As Hahn says:

> As against the metaphysical view that truth consists in an agreement with reality—though this agreement cannot be established—we advocate the *pragmatic* view that the truth of a proposition consists in its *corroboration.* Of course, truth is thereby divested of its absolute, eternal character; it is made relative and reduced to human terms, but the concept of truth becomes *applicable!* And what purpose could be served by a concept of truth which was inapplicable?

(1987:43)

Thus, at the end of the day, those logical positivists who were not caught in the phenomenalist bind of upholding objectivism while being committed to subjectivism turned to pragmatism[85] and to a non-transcendental or human-centred account of truth. Let us now turn to the founder of pragmatism, C.S.Peirce, who had remarkably little influence on the Vienna Circle, to get the full story on pragmatism and verificationism.

3
PEIRCE AND THE PRAGMATIC MAXIM

THE SPIRIT OF PRAGMATISM

We have seen a tendency toward pragmatism in the work of Wittgenstein, Carnap, and Neurath. The left wing of logical positivism in the end embraced two themes of pragmatism: an epistemology which made pragmatic virtues such as utility and simplicity relevant to theory choice and the thought that truth is something like corroboration. This is unsurprising, for the thought at the very heart of pragmatism is the verificationist idea—our philosophical theories must be connected to experience and practice.

Although the positivists wrote well after the first pragmatists (Peirce, James, Dewey), they do not seem to have been directly influenced by them. Ayer wrote a book on Peirce and James titled *The Origins of Pragmatism,* where he claimed that Peirce's position

> allows no truck with metaphysics. Its standpoint is very closely akin to that which was later to be adopted by the logical positivists. Peirce's pragmatic maxim is indeed identical…with the physicalist interpretation of the verification principle.[1]

Ayer discovered these similarities late, in 1968, whereas some others had noticed them earlier.[2] There is, however, good reason for not following chronology here; for examining pragmatism after logical positivism. Pragmatism, I shall argue, presents an advance on logical positivism.

The only pragmatist I shall discuss is the founder of the doctrine, C.S.Peirce, who lived from 1839 to 1914. For one thing, only Peirce presents us with a careful attempt at working out the details of verificationism. For another, there is a nice theoretical connection between Peirce and the logical positivists. Peirce, as Neurath notes, was one of the first philosophers who combined an interest in logic with an interest in empiricism. He deplored the lack of logical training

of James and other American philosophers. And he had the kind of scientific background that the Vienna Circle would have respected.[3]

Pragmatism, in Peirce's hands, is the position which says that we must attend to the consequences of an assertion. This requirement arises in two ways—from a view of what it is to fully apprehend an assertion (a semantic theory) and from a view of what an inquiry which is aimed at truth requires (an epistemological theory). Both, I shall argue, provide decent arguments for a verificationist principle of legitimacy.

The difficulty encountered by the positivists was to establish the connection between experience and legitimacy with both sufficient precision and sufficient generosity. The trouble with the strong versions of the verifiability principle was that they put into jeopardy hypotheses about the past, hypotheses which assert that all As are Bs, hypotheses in the subjunctive or counterfactual mood, etc. The trouble with the liberalized versions was they were so vague or weak that any hypothesis passed the test. A criterion needs to be found for what constitutes the required ability to manifest knowledge of experiential consequences which is neither so loose that it is ineffectual nor so strict that it rules out areas of discourse which seem to be perfectly well understood or which seem objective.

Peirce struggled with this issue for decades. He took the insight of pragmatism to be that there is a connection between knowing the meaning of a hypothesis and knowing what experiential consequences to expect if the hypothesis is true. The 'spirit' of pragmatism is captured in the following maxim: 'we must look to the upshot of our concepts in order rightly to apprehend them'. (CP 5.3)[4] follows on this view of what it is to understand a sentence that it reflects badly on the content of a sentence if no consequences can be derived from it. Either there is no content to speak of or the content is inadequate.

Running alongside this semantic doctrine of Peirce's is an epistemological view about inquiry—a view which also motivated verificationism for Hume and for the logical positivists. Hypotheses, Peirce insisted, must be such that they do not block the path of inquiry. Those with no consequences impede inquiry, for they fail to give us anything upon which inquiry can fruitfully fasten. Inquiry into them is bound to be barren and attention is bound to be directed away from worthwhile pursuits. Thus Peirce rejects Leibniz's theory about pre-established harmony because

> nothing can be deduced from this theory…this stamps the theory as one of those to which Auguste Comte applied the epithet *metaphysical,* that is, unverifiable. To accept it as sufficient would be to block the road of inquiry.

(CP 6.273)

We shall see below that Peirce offers some substantial reasons for the claim that adopting or considering an unverifiable hypothesis places obstacles in the way of inquiry; it is not mere prejudice in favour of science and against metaphysics. Indeed, we shall see that Peirce thought well of a certain kind of metaphysics and did more than dabble in it himself.

THE QUEST FOR A GENEROUS CRITERION

Peirce, especially in his early writings, sometimes put forward a verificationism which was as strong as the kind found in the early work of the logical positivists. He says that he wants to formulate a criterion which will serve as a standard for identifying 'metaphysical rubbish' or 'gibberish'. (CP 8.191) Knowing the meaning of an expression, he argues, is knowing its 'effects, direct or indirect, upon our senses'. (CE 3, 266) And thus:

> we come down to what is tangible and practical, as the root of every real distinction of thought, no matter how subtile it may be; and there is no distinction of meaning so fine as to consist in anything but a possible difference in practice.
>
> (CE 3, 265)

But at other times Peirce distanced himself from the suggestion that the content or meaning of a hypothesis is *exhausted* by its observational consequences. There are, he argues, three aspects of understanding, and the pragmatic aspect is but one. In order to grasp a term, an interpreter must have a three-fold competence. She must be able to: first, pick out what objects the term refers to; second, give a dictionary-like definition of the term; and third, know what to expect if hypotheses containing the term are true.[5]

Peirce takes his three aspects of understanding to spell out completely what someone must be able to do in order to grasp a concept or know the meaning of an expression. Pragmatic meaning is the feature of statements that the third aspect of understanding is about: it is the set of consequences or predictions which can be derived from the statement. It is knowing what to expect if the statement is true.

This is an argument for verificationism which appeals to commonsense thoughts about what it takes to understand a statement. It seems right to say that a person does not have a complete grasp of the predicate 'is hard' if she is unable to say what

would be the consequences, say, of dropping hard things, or of getting hit on the head by a hard thing. If one understands a sentence, one must be able to say what to expect if it is true or false. Its consequences are a part of what the sentence means and if we know something about the consequences, then we know something important about the content of the sentence.

Peirce does think that the pragmatic aspect of meaning is the most important aspect. Sometimes he says this merely in order to counterbalance neglect—philosophers have not seen that consequences are relevant to understanding, so Peirce emphasizes them. But sometimes the emphasis has more substance. The pragmatic aspect of meaning provides a criterion of meaning identity in a way that the other aspects cannot. As James put it, there can be no difference anywhere that doesn't make a difference elsewhere. A purported difference in meaning which makes no practical difference is no difference at all; if two hypotheses have the same set of consequences, then they express the same content.[6] It is pointless to suggest that they differ in connotation or denotation.

Nonetheless, Peirce's primary suggestion is not that the third grade of meaning exhausts meaning, but rather, that we do not have a *complete* grasp of a sentence if we do not know what to expect if it is true. And this suggestion allows him to escape an objection to the logical positivists' verifiability principle. As Blanshard put it: 'That I cannot *verify* [a certain sentence] seems clear enough, but that [it] conveys nothing to me at all seems merely absurd.' (1962:210)

We surely understand *something* when we encounter some of those sentences the logical positivists wanted to dismiss as completely meaningless. 'The Absolute is perfect' and 'Killing is wrong' are not on a par with 'sentences' such as 'Glishsnizzle plush'. Peirce's view accounts nicely for this fact. There are aspects of understanding other than the verificationist aspect. There is no one thing in which understanding or meaning consists and a person can more or less understand a statement. In this account lie the resources to say what it is that we understand about unverifiable sentences. We can, for instance, offer definitions of some of the terms found in them.

So although the pragmatic maxim is a semantic thesis about what it is for a sentence to have meaning, it forms only a part of a theory of meaning. It should not by itself be regarded as an account of meaningfulness.

Another important difference between Peirce and the logical positivists lies in their respective notions of prediction, expectation, or consequence. In his early work, Peirce's 'expectations' are similar to what we find in the logical positivists' verifiability principle. The kinds of consequences which one must be able to derive from a

pragmatically legitimate hypothesis are of the sort: if you do *A*, then you will *observe B.* This kind of condition is one which quickly leads to a condition of acceptance. If you do *A* and you observe *B,* then the hypothesis from which you derived the prediction is verified or ought to be accepted. If you do *A* and fail to observe *B,* then the hypothesis is falsified and you ought not accept it. And the fact that you could derive such a prediction from the hypothesis confers upon it legitimacy.

But Peirce, unlike at least the right-wing logical positivists, was a fallibilist. He insisted that no belief could be such that we could not be mistaken about it. Every one of our beliefs, including those about mathematics and logic, is in principle subject to revision. This means that, even in his early work, Peirce did not suggest, with the early logical positivists, that such verifications could be conclusive. Nor did he suggest that observation provided a touchstone for reality. Indeed, we shall see that the senses came to play less and less of a role in Peirce's account of expectation, prediction, or consequence.

A further difference between Peirce and the positivists is in their attitudes toward subjunctive and counterfactual conditionals. Early on, Peirce used indicative conditionals in formulating the consequences which must be derived from a statement. Thus he says that the meaning of the statement 'this diamond is hard' is something like 'if you scratch it, it will resist'. He sees that, on this account, one cannot say that a diamond which is never scratched is hard. We saw that the logical positivists ran into exactly this counterintuitive result with respect to disposition terms such as 'hard'.

But Peirce, unlike the logical positivists, did not think of consequences as deductive consequences, so that, for instance, a consequence of *P* is *P v Q* where *Q* is any proposition one likes.[7] Although he took deductive logic to be important, he was prepared to go beyond it. He was thus able quickly to see the folly of using indicative conditionals to specify the expectations one derives from a hypothesis. He says that when he first examined the statement about the diamond, he seemed to have 'wavered in his own mind' and is now adamant that the 'will-be' be replaced by a 'would-be'; that the indicative conditional be replaced by a subjunctive conditional. Knowing the meaning of an expression is knowing practical effects of the sort: if you were to do *A,* you would observe *B.*[8] The consequences which concern pragmatism are those which would occur under certain conditions, not those which will actually occur.

Peirce took this issue to be so important that for the rest of his life he harangued 'nominalists' for failing to see that habits, dispositions, or 'would-be's are real. A disposition is more than the total of its

realizations and a subjunctive conditional can be determinately true or false.

Introducing the subjunctive to verificationism is an important move for the pragmatist. It gives inquiry an entirely open-ended character, a feature which enables Peirce to avoid a mistake made by some other verificationists. Peirce accuses Comte of asserting that the knowledge of the chemical composition of the stars was something out of our reach —something beyond experience or beyond the phenomena—because, at the time, there was no way of determining it.[9] He then says: 'But the ink was scarcely dry upon the printed page before the spectroscope was discovered and that which he had deemed absolutely unknowable was well on the way of getting ascertained.' (CP 1.138) We would now say that the 'impossibility' of answering this question was merely technological.

The pragmatist, armed with the subjunctive conditional, will insist that a hypothesis must be such that, were we to thoroughly investigate the matter, there *would* be some experience relevant to it, not that there is *now* some experience relevant to it. The pragmatist can thus avoid foreclosing an inquiry in the way that Comte is supposed to have. Unanswerability here and now cannot be a suitable criterion of spuriousness, for such a criterion would put an end to fruitful inquiries as well as fruitless ones.

So the use of the subjunctive provides the wherewithal to make a distinction between a hypothesis whose very content is such that it is unverifiable and a hypothesis for which we happen not to have the means available for verifying it. In the second class of statements, we can place those for which we presently lack the technological know-how to decide upon, mundane statements about the past, statements about the very small or the very large, and others for which we may eventually find ourselves in a position to decide. These kinds of statements are responsive to the kind of evidence we are familiar with, we just happen not to have any evidence with respect to the issues in question.

Candidates for the first class might be the Inverted Spectrum Hypothesis, the claim that the contents of mental states are utterly private, and the hypothesis dreamt up by Russell that the universe and everything in it (including fossils and memories) came into existence five minutes ago.[10] No matter how far inquiry were to be pushed on these matters, nothing *would* be mustered as evidence for or against these claims.[11]

So one thing the verificationist who incorporates the subjunctive can say is the following. Rather than hold that a hypothesis is legitimate only if: 'if you do *x,* you will observe *y*' we can add: 'if you were to do *x,*

you would observe *y*' or perhaps even: 'if you would have done *x*, had the opportunity existed, you would have observed *y*'.

We shall examine this last counterfactual strategy in more detail in the next chapter, when we look at some contemporary philosophers who advocate it. There we shall see that it is a temptation which the pragmatist ought to avoid. Peirce, despite the fact that he had the wherewithal to adopt it, does in fact avoid it. He sticks with the 'if you were to' and keeps his distance from the 'if you had'.

The point I want to make here about Peirce and the subjunctive conditional is that he wanted his empiricist criterion to declare such conditionals to be legitimate. He did not want to rule out nearly as much as the positivists did. He thought that hypotheses about what would be, about universals, about possibilities and about unobservable entities were on just as solid ground as hypotheses about medium-sized observable entities.

And he thought that some metaphysical hypotheses were perfectly good. Metaphysics, he says, 'in its present condition' is 'a puny, rickety, and scrofulous science'. (CP 6.6) But it need not be so, for many metaphysical hypotheses are meaningful and important: 'instead of merely jeering at metaphysics…the pragmatist extracts from it a precious essence'.[12] A position which regards 'metaphysics as moonshine' is, he thinks, pernicious. (See MS 313, p. 25.) A decent empiricist criterion of meaningfulness will legitimize 'higher matters [such] as honor, aspirations, and love' (CP 6.492) as well as 'Pure Being, Quality, Relation, Agency, Freedom, and the like'. (MS 313, p. 25) So whereas the logical positivists wanted to establish that all metaphysics (and perhaps epistemology and ethics as well) is spurious, Peirce only wants to establish that some of it is. There is bad metaphysics and there is good 'scientific' metaphysics. It is the business of the pragmatic maxim to identify which is which: 'once accepted…[the maxim] speedily sweeps all metaphysical rubbish out of one's house. Each abstraction is either pronounced to be gibberish or is provided with a plain, practical definition.' (CP 8.191)

Thus, Peirce was committed to providing a criterion more generous than the strict empiricist criterion, the maxim he advocated in his early work. He attempted to do this in two distinct ways.[13]

EFFECTS ON THE INTERPRETER

Peirce's first route to a verificationism which allows for beliefs which are not part of physical science is a semantic route—it turns on his theory of signs. That theory stresses the role of the interpreter of a sign so that the meaning of a sign resides primarily in the effect it has on the interpreter,[14] not in what it denotes or what it connotes.

We have seen that when Peirce considers signs which are sentences, he argues that an important part of the meaning of a sentence is the consequences it has. But his liberalization of his earlier empiricist criterion goes further than the point that consequences are merely one aspect of meaning. He suggests that these consequences need not be anything like expectations in experimental or observational contexts. They are expectations of how a person who believes the statement will behave. They are the consequences of believing a statement—the effects on the train of thought or actions of those who believe it.[15]

Here we have an altogether new proposal. Rather than focus on the conditions under which one should accept a statement, Peirce advises that we turn to conditions that are fulfilled once the statement is accepted. For instance, if someone accepts *A,* we might expect her to accept *B,* if *A* entails *B.*

The problem with this proposal is that it lands one on the horns of a dilemma. If, as Peirce sometimes suggests (CP 5.476), all that is required of a pragmatically legitimate hypothesis is that it should, if believed, make some difference to how the believer thinks or acts, then everything will make the grade. Those who believe Russell's hypothesis that the world and everything in it, including fossils and memories, was created five minutes ago, may use it skilfully in inferences. And they may found a lively religion, paying homage to the powerful god who recently created the universe. These must surely count as effects on the trains of thought and behaviour of interpreters and thus this version of the pragmatic criterion is too weak to do any work at all.[16]

If the pragmatist requires not just any old effects on the interpreter, but something like *rational* effects, then the above problem is avoided. And Peirce does sometimes say that pragmatic meaning 'consists in the total of all general modes of rational conduct which …would ensue upon the acceptance of the symbol'. (CP 5.438) But here we find ourselves on the other horn of the dilemma. For now we have to undertake the impossible task of specifying, for any given sentence, which consequences for the interpreter's beliefs and actions are rational and which are not.

Such an attempt is doomed to fail. First, determining what thoughts and behaviour are rational upon the acceptance of a particular sentence would be a Herculean task. Is founding a religion a rational consequence of accepting Russell's hypothesis? How are we to answer this question? Peirce himself does not even try.

Second, on such a proposal, we would abandon a central aim of verificationism—the aim of saying something *general* about legitimacy which will allow us to distinguish between the spurious

and the non-spurious. We would engage rather in the extremely messy business of trying to determine, for any given sentence, how it ought to be best interpreted and controversy, rather than clarity, would reign.

Many will think that this mess, like it or not, is what we must deal with; that the quest for some more general demarcation of the legitimate and the illegitimate is bound to be fruitless and even pernicious. It seems, for instance, that the logical positivists, under the guise of saying something general and neutral, merely forced upon us their conception of what is rational—namely, their conception of the method of physical science. But let us put these reservations aside for the moment and see whether Peirce can overcome them.

A NON-QUESTION-BEGGING ACCOUNT OF EXPERIENCE

Peirce's second route to a more generous verificationism is epistemological—it involves his extremely broad construal of experience. We have seen that pragmatism requires legitimate hypotheses to have practical considerations; considerations which have it 'that if one exerts certain kinds of volition, one will undergo in return certain compulsory perceptions'. (CP 5.9) Certain lines of conduct will entail certain kinds of experiences. But what sort of hypothesis meets a verificationist criterion depends on how the notion of perception or experience is characterized. The way in which Peirce characterizes it allows hypotheses about metaphysics (and, we shall see, other contentious matters) to have experiential consequences.

Peirce thinks that Comte's mistake was that he understood verification to be that 'the hypothesis should contain no facts of a kind not open to direct observation'. (CP 7.91) Such a view is too narrow, Peirce argues. It would, for instance, rule out memory of the past.

For Peirce, experience is a much broader notion—it is anything that is forced upon one. Perception is not just a matter of what our eyes, ears, nose and skin report. He says:

> anything is, for the purposes of logic, to be classed under the species of perception wherein a positive qualitative content is forced upon one's acknowledgement without any reason or pretension to reason. There will be a wider genus of things *partaking* of the character of perception, if there be any matter of cognition which exerts a force upon us.
>
> (CP 7.623)

He adopts this minimalist conception of experience partly because he sees that 'going back to the first impressions of sense' 'would be the most chimerical of undertakings'. (CP 2.141) A notion of experience as the infallible data provided by our senses or as the guide to whether a belief corresponds with the world is not to be had. Peirce was never tempted by the picture adopted by logical atomism or by the right wing of the Vienna Circle. He wants no truck with what is now called the Myth of the Given.[17]

Peirce argues that all we are aware of are 'perceptual judgements'—our *descriptions* of the first impressions of sense. These can be true or false, as they are beliefs rather than something like 'raw feels'. A perceptual judgement is a description of whatever hold a subject had on what actually impinged on her and is thus subject to error. Peirce says: 'Practically, the knowledge with which I have to content myself, and have to call "the evidence of my senses" instead of being in truth the evidence of the senses, is only a sort of stenographic report of that evidence, possibly erroneous.' (CP 2.141) The evidence of my senses is always interpreted evidence.

This means that experience does not give us an 'accurate' picture of the external world. 'We can only *indicate* the real universe; if we are asked to describe it, we can only say that it includes whatever there may be that really is.' (CP 8.208)[18] Sensory perceptions only 'provide positive assurance of the reality and the nearness of their Objects' without giving any 'insight into the nature of those Objects'. (CP 4.531)

Once it is seen that sensory perceptions are not authoritative because they are accurate and infallible, their authority needs to be accounted for. Surely we do and should take them very seriously. They often, for instance, overturn other beliefs and provide a standard against which other beliefs can be tested.

Peirce argues that sensory judgements are authoritative in the sense that they force themselves upon us. A perceptual judgement is what we are compelled to accept; we have no control over the matter. And 'it is idle to discuss the "legitimacy" of that which cannot be controlled'. (CP 6.522) The 'hardness of fact' lies in 'its entirely irrational insistency'. (CP 7.659)

It is important to see that, on this view of perception, the senses do not figure in an essential way. The key feature of perception, observation, or experience is its insistency. And that is fully general. Experience, on this view, is not tied to what our ears, eyes, nose, and skin report. The course of life has developed certain compulsions of thought which we speak of collectively as Experience.' (CP 8.101) And any compulsion of thought will do. An experience does not have to originate in one's senses, for any judgement that is compelling, surprising, brute, unchosen, or impinging is an experience, regardless

of what causes us to feel compelled and regardless of whether we can identify the source of the compulsion.

One way which Peirce puts this point is via a distinction between two kinds of experience—'ideal' and 'real'. The latter is sensory experience and the former includes experience in which 'operations upon diagrams, whether external or imaginary, take the place of the experiments upon real things that one performs in chemical and physical research'. (CP 4.530)

With his contemporary, Mach, Peirce argued that these diagrammatic experiments figure in mathematical and deductive inquiry.[19] They involve 'experimenting upon [an] image in the imagination, and of observing the result so as to discover unnoticed and hidden relations among the parts'. (CP 3.363) The mathematician, for instance, draws subsidiary lines in geometry or makes transformations in algebraic formulae and then observes the results:' [h]is hypotheses are creatures of his own imagination; but he discovers in them relations which surprise him sometimes'. (CP 5.567) Since surprise is the force of experience, the upshot of such reasoning counts as experience.

Peirce is not here resurrecting the notion of introspection to which Comte objected. He is not claiming that there is a special, infallible faculty for observing one's own mental states. Peirce insists that the distinction between 'ideal' (or internal) and 'real' (or external) experience cannot be firmly drawn. External facts are simply those which are 'ordinarily regarded as external while others are regarded as internal'. (CE 2, 205) The distinction, he says, between the two sorts of experience arises because the inner world exerts a comparatively slight compulsion upon us, whereas the outer world is full of irresistible compulsions. But nonetheless, internal experience also can be 'unreasonably compulsory' (CP 7.659): 'the inner world has its surprises for us, sometimes'. (CP 7.438) He intends to leave the difference between the two sorts of experience vague: 'We naturally make all our distinctions too absolute. We are accustomed to speak of an external universe and an inner world of thought. But they are merely vicinities with no real boundary between them.' (CP 7.438)

We have seen that, with the exception of Mill, empiricists have argued that mathematical and logical statements are empirically empty but significant on other grounds. They have a special status which exempts them from refutation by experience and from the empiricist test for significance.

Peirce goes against the grain of tradition here and suggests that we ought to expose mathematical and logical statements to the empiricist criterion.[20] Anticipating a bold twentieth-century move in philosophy, which we shall explore when we turn in the next chapter to Quine's

view, Peirce debunks the analytic/synthetic distinction by arguing that mathematical and logical statements cannot be insulated from evidence. Experiments performed on diagrams will provide the relevant observable data for such statements.

That is, Peirce thinks that the distinction between mathematical/logical statements and scientific ones need not, and ought not, come with the baggage of the analytic/synthetic distinction, or other related distinctions, such as that between the *a priori* and *a posteriori.* Part of what philosophers intend to assert when they uphold the analytic/synthetic distinction is that the former kind of sentences are true come what may, whereas the latter kind are open to revision. A fallibilist like Peirce will reject this thought without rejecting the idea that there is a difference between the statements '2+2=4' and 'that block is cubic'. All statements are open to revision, but there may be other differences between kinds of statements. One kind may be the sort we are more hesitant to revise, whereas we may be quick to revise the other kind. And one kind may require consequences in sensory contexts, whereas the other may require consequences in thought-experimental contexts.

The point is that one can distinguish between two sorts of things without setting up a rigid dichotomy. Peirce insists that *all* statements, scientific, mathematical, or whatever, must be subject to the pragmatic maxim. All statements must answer to experience of one kind or another. This is a dissolving of dichotomies. But one ought not to expect the dissolution of a dichotomy to dissolve all differences.

Thus Peirce, like Comte, Duhem, and the logical positivists, is concerned with the unity of inquiry. But his concern does not, at least in his considered and best view, manifest itself in the identification of all branches of inquiry with scientific inquiry. One of his principal contributions to the debate is the idea that the empiricist must not try to drive a wedge between different sorts of experience and between different sorts of inquiry. Rather, we must begin with a neutral account of experience—one which does not prejudice certain sorts of investigation at the outset- and see which branches of inquiry are sensitive to it. The pragmatist begins with the assumption that all branches of inquiry aspire to legitimacy, objec tivity, and truth.

Thus, one must not be an empiricist of the sort 'who on the basis of an *all-embracing scientific attitude* applies the same critical and constructive methods in all areas of research, argumentation and analysis'. (Neurath 1987:132) For science, the pragmatist will argue, ought not to embrace in a stranglehold all other inquiries. Rather, one ought to be the sort of empiricist who applies the maxim that all legitimate statements must have consequences in all areas of research,

argumentation and analysis, paying careful attention to what sort of consequences each area demands.

Let us see whether Peirce's distinction between the two sorts of experience can do any work. Perhaps the distinction is best made by his discussion of practical and theoretical belief. The 1902 manuscript 'Reason's Rules'[21] has it that a practical belief such as 'anthracite is a convenient fuel' will manifest itself in a disposition to behave on the part of the believer. The believer would, for instance, sometimes use anthracite were it handy and were he in need of a fuel. And 'sensible' or empirical consequences can be derived from the hypothesis. For instance, if *(ceteris paribus)* you were to light a piece of anthracite, it would burn.

On the other hand, a 'purely theoretical' belief has to do not with 'habits of deliberate action' nor with sensible consequences, but with a special sense of 'expectations'. As examples of theoretical hypotheses Peirce offers: 'there is an imaginary circle which is twice cut by every real circle' and 'the diagonal of a square is incommensurable with its side'.

Let us take the claim that the diagonal of a square (i.e. the hypotenuse of a right-angled triangle) is incommensurable with its side.[22] Pythagoras' Theorem tells us that the square on the hypotenuse is equal to the sum of the squares on the other two sides. Say we want to know what the diagonal of a square is whose sides are both 1 unit long. By Pythagoras' Theorem, the diagonal is $\sqrt{2}$ units long, for $\sqrt{(1^2 + 1^2)} = \sqrt{2}$. The trouble is that we cannot express this measure as a finite numerical ratio. We cannot arrive at a ratio $x{:}\,y$, where x and y are natural numbers and the ratio of the diagonal to each side is $x{:}y$. No natural numbers are such that $x/y = \sqrt{2}$ alternatively, no natural numbers are such that $x^2/y^2=2$. $7^2/5^2$ is close, but is 1.96. $17^2/12^2$ is even closer, but is 2.0069444. And there are proofs that no pair of natural numbers will suffice.

Thus, the diagonal of a square is incommensurable with each side—there cannot be a pair of natural numbers such that the square of one is two times the square of the other. The diagonal in our example is $\sqrt{2}$ units long and $\sqrt{2} = 1.414\ldots$ It has a decimal expansion that cannot be finitely abbreviated, as can the decimal expansion of 2.000…, which can be abbreviated as 2.0. The decimal expansion of $\sqrt{2}$ does not have a recurring finite pattern. The problem for the empiricist here is that certain lengths will have irrational numbers for their values, such as $\sqrt{2}$, but no actual physical measurement can be an irrational number.

Peirce does not see an insurmountable problem for the pragmatic maxim here. He argues that although it is 'difficult to see what experiential difference there can be between commensurable and incommensurable magnitudes', there are nevertheless different

expectations: 'a belief about the commensurability of the diagonal relates to what is expectable for a person dealing with fractions; although it means nothing at all in regard to what could be expected in physical measurements'. (MS 596, p. 32, see also CP 5.541)

The difference between a practical and a theoretical belief, says Peirce, is that the former involves sensation that is 'muscular' and the latter involves sensation that is not muscular. (CP 5.540) Purely theoretical beliefs result in expectations that can be tested only in (traditionally) non-empirical ways—they are tested in diagrammatic experiments, reasoning, and theory.

Pragmatism holds that if a hypothesis results in an expectation—here in the general sense where it means a prediction that could be overturned by recalcitrant experience—then it is not 'metaphysical jargon'. If a theoretical hypothesis involves an expectation in a purely theoretical context, then the unexpected can surprise the believer. That possibility is enough to show that the hypothesis is legitimate. It has the pragmatic aspect of meaning in that it has consequences and the consequences it has are appropriate for the kind of inquiry of which it is a part.

The thought that practical or experiential consequences include consequences in theoretical contexts is tolerably clear. And from it we can get to the thought that hypotheses which do not have what are usually taken to be empirical consequences can nonetheless pass a verificationist test. For Peirce broadens the notion of the empirical to include expectations in theory. A hypothesis must in principle answer to something; it must be such that it could be overturned, that experience could surprise us. But what mathematical and logical hypotheses must answer to includes experience in diagrammatic and theoretical contexts.

It is important to see just how significant a break this suggestion of Peirce's is from the empiricist tradition. The point of any verificationist criterion is to demarcate the meaningful, the legitimate, or the objective, and empiricists have insisted, in what we have seen cannot help but be a question-begging way, that the objective and the sensory are somehow one and the same. As Ferré puts the logical positivists' response to any proposal that we broaden the notion of experience: 'what is to prevent all manner of subjective delusion from masquerading as "verifying" experience? The insistence on sense-experience and the quest for objectivity and dependable truths are one and the same.' (1961:40)

Peirce breaks with the thought that sense-experience is one and the same as objectivity. He insists that statements be responsive to something, where what they are responsive to is a wider category than sense-experience. Of course, not just anything will do. For instance, if

'spiritual illumination from on high'[23] is such that it is taken to be infallible and not subject to refutation by mere worldly evidence, then it cannot count as experience.

In the next section we will see in more detail how Peirce's criterion might function. The point here is that Peirce breathes a new life into verificationism. Not only can we see how highly theoretical statements are legitimate, but we shall see that there is nothing in principle to exclude judgements about, for instance, moral matters.

THE CONTEXT OF INQUIRY

Peirce maintained, especially in his later writings, that pragmatism was best seen not as a true statement, but as a *method*—a method of 'ascertaining the meanings of hard words and of abstract concepts'.[24] This idea might seem to provide the verificationist with an escape route from the difficulty that the verifiability principle seems itself to be unverifiable. But Peirce himself does not take it—we shall see below that he confronts the difficulty head on. Rather, his claim that pragmatism is a method is designed, I think, to lead to a substantial justification of it. Peirce hopes that it will be seen that such a method is the only way to avoid emptiness in inquiry. Thus, it should be followed.[25]

Hence the view that a sentence must have (one or another kind of) experiential consequences is not only justified by our intuitions about what is required in the understanding of a sentence. It is also justified by an epistemological argument about what an inquiry which aims at truth requires,

The argument begins with the thought that our hypotheses, be they philosophical, scientific, mathematical, or moral, must not be useless. In order for a hypothesis to avoid uselessness, something must turn on it. Wittgenstein expresses this point well when he says that a cog upon which nothing turns is of no significance,[26] if we take 'significance' here to mean 'importance' rather than 'meaning'. And in order to have something turn on our hypotheses, they need to be such that we can expect something and that those expectations can, in principle, be met or not met. So a hypothesis must result in expectations—it must have consequences for the course of experience. Again, the difference between Peirce and the logical positivists here is that Peirce does not think that those expectations must involve our physical senses.

Here we have an answer to the question of what a verificationist criterion is a criterion *of*. The early logical positivists were clear about this issue—their criterion was one of literal meaningfulness. A sentence that met it was meaningful and a sentence that failed to

meet it was nonsense. We have seen that their program was doomed partly because this thought could not be made to work.

The onus is on the verificationist to replace it with something that can work. Peirce offers the following. The pragmatic criterion identifies an especially important part of what it is for a statement to have meaning. For those sentences which do not exhibit it are of no use in inquiry and can be said not to aim at truth. Those sentences which do have pragmatic meaning are candidates for truth-values—they can be part of an inquiry which has truth as its aim. The pragmatic maxim serves to determine 'the admissibility of hypotheses to rank as hypotheses'. (CP 5.196, see also 2.511)

An examination of the different sorts of hypotheses to which Peirce applied the pragmatic method can set us on the road to a principled way of determining what it takes for a hypothesis to meet the criterion. For hypotheses in different sorts of inquiry require, Peirce suggests, different sorts of content. The kind of practical consequence required by a hypothesis depends on the aim of the inquiry in which the hypothesis is functioning.[27]

When Peirce applies the maxim to hypotheses in science, he takes 'practical consequence' in a full-bodied positivist spirit. Scientific hypotheses must have consequences for sensory experience; the scientist must be able to say that if P is true, then 'if you were to do *A,* *B* would be observed'. Otherwise, the hypothesis cannot be tested inductively and it is of no use in scientific inquiry.

Notice the similarity with Popper's view here. A verificationist criterion which insists on consequences for the senses serves only to demarcate scientific from non-scientific hypotheses. That is, it is a test which only scientific hypotheses must pass. Failing to pass the test is not a failure of meaningfulness, but rather, an indication of non-scientific status. For, Peirce will say, the statement might well have other, non-sensory, consequences. But if it is to be used in science, it must have a certain kind of content—that associated with consequences of the sort 'if you were to do *A,* you would observe *B*'.

The justification for the applicability of this strong principle in the domain of science is that at least one of the aims of scientific inquiry is to make predictions about the physical world. Thus, a hypothesis which can be useful in science must have consequences for the physical world; consequences which involve sensory observation and which can be used as the basis for predictions. If a hypothesis is to be of any use in science, it must be possible to describe two different states of the universe, one which would hold if the hypothesis were true, the other which would hold if the hypothesis were false.

It was this kind of absence of consequence which prompted Einstein to argue that the ether hypothesis was spurious.[28] It was agreed after

many experiments (Fizeau, Michelson-Morley, de Sitter, Trouton-Noble) that there could be no effects of ether on bodies. Lorentz suggested that, once certain assumptions were adopted, whatever effects might be produced by ether would be precisely cancelled by countereffects. The Peircean pragmatist would argue that such a hypothesis, which produces no observable effects, is not a fitting subject for scientific inquiry.

Similarly, the hypothesis '*The world and everything in it* came into existence five minutes ago' fails to meet the standard. The emphasized part clearly purports to refer to the world. Yet there is no observable difference whatsoever between the observable consequences of this hypothesis and the consequences of the one we standardly believe. We can say nothing about what would be different if the hypothesis were true or false. The statement purports to have a kind of content but it does not have the practical consequences which ought to accompany content of that sort.

The mistake made by the logical positivists was to reduce the class of the meaningful to the class of the scientific. Peircean pragmatism holds that the only sort of statement for which observable con sequences must be derived are statements which purport to be about the physical world.

The other kind of statement that is traditionally vindicated by empiricists is mathematical or logical ones. We have seen that Peirce also thinks that these statements are legitimate, but whereas traditional empiricists (with the exception of Mill) exempt formal statements from the verificationist criterion, Peirce proposes to expose them to it. They have practical consequences in thought experiments or experiments on diagrams and this, Peirce argues, is what they require.

Indeed, there seems to be another way in which mathematical and logical statements are connected to experience, as Peirce conceives it. Proofs and valid deductive arguments are such that we cannot see how we could believe otherwise than what they conclude. If we understand a proof, we have no choice but to accept the result. We often do not even require a proof in order for a mathematical or logical statement to impose itself upon us. *'2+3 =5'* and *'~(P&~P)'* do so without further ado. But, as with any kind of judgement, understanding here requires much in the way of background belief and such statements are fallible. Although we cannot easily imagine circumstances under which we would revise them, they are in principle subject to overthrow.

It is important to see that there is a principled reason for Peirce's discrimination between the sorts of consequences relevant to mathematical statements and those relevant to scientific statements. Whatever else they might be, mathematical objects are not objects that

exist in the physical world; they are in some sense ideal objects.[29] But if mathematical statements do not purport to be about the external world, then it would be unreasonable to require that they have consequences for the external world. Sometimes mathematical statements will have practical applications or applications in empirical science, but they need not.[30]

What must not be lost sight of is that, on this reading of the pragmatic maxim, mathematical and logical statements are not merely formal. Tautologies, for instance, are not, as Wittgenstein and others suggested, empty of content or compatible with any state of affairs. They have content, for they have practical consequences in theoretical manipulations, such as proofs in propositional logic.

By focussing on the context of inquiry and on the aims of the various types of inquiries, we can see also that many of the kinds of statements which troubled the logical positivists (and which, we shall see, trouble some contemporary verificationists) are legitimate. Take, for instance, universal generalizations. They purport to be about the world. So we need to be able to derive from them expectations for sensory observation which can in principle be disappointed. And we can do this: one would expect that if the universal generalization 'all As are *Bs'* is true, then no matter how long and wide one looks, one will not come up with a counterexample—with an *A* that is not a *B.* A universal generalization can never be conclusively verified, but that is not a requirement of the pragmatic criterion.

Hypotheses about the past also claim to be about the world and they also have the requisite consequences. We expect all the evidence (memories, written records, fossils, etc.) to cohere with, or provide evidence for, a true hypothesis about the past. If no evidence is presently available, we can still draw the required conditionals. They will be of the sort: if we were to uncover evidence about *x,* that evidence would point to the truth of *P.*[31] Because of the open-ended subjunctive nature of Peirce's expectations, there need be no counterintuitive consequence here of the sort: if there in fact is or would be no evidence for the statement 'Churchill sneezed 47 times in 1949' then it is a spurious claim.[32]

Indeed, we can see how even hypotheses about morality can *prima facie have* legitimate aspirations. Although Peirce himself did not see it, his verificationist view is unusually hospitable to moral judgements, for a case can be made for perception or experience in the moral domain.[33] We often find ourselves compelled in moral matters and, as in mathematics, this compulsion can take two forms. The first is what has been called 'intuition'—upon observing a certain act we simply 'see' that it is odious.[34] The second is that we find some

reasons, arguments and thought experiments compelling and may, in light of them, revise our moral judgements.

As with other kinds of observation, observation in the moral domain is fallible. What is intuitively obvious in any kind of inquiry can be discredited. But we need not conclude that obviousness should be given no weight. We *must* take our background beliefs seriously in inquiry; if we did not, inquiry would grind to a halt. We need a body of stable belief against which to judge new evidence and hypotheses. Plausibility, obviousness, or coherence with our other beliefs must speak in favour of hypotheses.

And observation in moral inquiry, as in other domains, is laden with background belief. The pragmatist ought to admit straight away that morality is such that there will be much disagreement about what is compelling, for there will be differences in people's capacities, acculturation, and background beliefs. On the account of truth outlined in the next section, it may be that, while moral judgements aspire to truth, not all will attain it. But this thought can simply be taken on board; it should not lead us to abandon talk of correctness in moral matters. For no is free of theory or background belief. We might say merely that the baggage which accompanies the sort of experience relevant to most empirical and mathematical hypotheses is more uniform than that which accompanies most moral hypotheses. That is, the background theories and capacities of scientists and mathematicians seem to be to a greater extent shared. That said, we must be careful also to notice the tremendous amount of underlying agreement in moral matters as well as the diversity of background theory and belief in science and mathematics.

Thus, once the notion of conclusive verification is replaced by the notion of expectation, with its subjunctive nature, the class of problematic statements for the verificationist narrows considerably. It will be quite easy for scientific and historical hypotheses to qualify themselves. And once the notion of sensory verification is replaced by a notion of verification by the appropriate means (appropriate to the aims of the inquiry the statement tries to qualify itself for), it will be quite easy for a logical, mathematical, or moral hypothesis to qualify itself.

It is important to see that this ease is desirable. For the criterion in question is first, a criterion of an aspect of understanding and then a criterion for admission into a kind of inquiry, not a criterion of truth, of warranted assertability, or even of plausibility.[35] The search for a criterion for these stronger notions is a search which is far too ambitious. What the pragmatic maxim identifies is a hypothesis which lacks the pragmatic dimension of meaning and thus cannot get off the

ground in inquiry. It identifies hypotheses which are ill-suited to the kind of inquiry to which they pretend to belong.

Thus it should be no surprise that most statements will pass the test. This will be no disaster for the pragmatist, who does not share with logical positivism the aim of getting rid of vast tracts of inquiry. Most of the work done by the pragmatic criterion will be in metaphysics and the statements that it will be set against will be of the sort that, for instance, Wittgenstein warned against. Here it can tell us why we have the feeling that private phenomena and their accompanying philosophical views are spurious and it can tell us why that feeling is right.

Peirce plausibly suggests that metaphysical hypotheses, unlike mathematical hypotheses and like scientific hypotheses, purport to be about the world:

> Mathematical reasoning has for its object to ascertain what would be true in a hypothetical world which the mathematician has created for himself,—not altogether arbitrarily, it is true, but nevertheless, so that it can contain no element which he has not himself deliberately introduced into it… The metaphysician, on the other hand, is engaged in the investigation of matters of fact.
> (CP 8.100, see also CP 3.428)

Thus metaphysical hypotheses should have consequences for sensory observation. Peirce's view is set against those who think that metaphysical theses are *a priori*-demonstrable or refutable by pure reason and immune to refutation by empirical evidence.[36]

We have seen that Peirce wants to debunk the distinction between statements which are true or false, whatever the course of experience might be, and those which are true or false, contingent upon experience. He argues that all sentences must face some sort of experience. He notes that metaphysics is said to be inscrutable 'because its objects are not open to observation'. (CP 6.2) But the inscrutability of metaphysics or the 'backward condition of the discipline' is to be blamed not on its non-observational nature, but on the fact that 'its leading professors have been theologians'. (CP 6.3) For metaphysics is indeed an 'observational science'. (CP 6.5) It

> really rests on observations, whether consciously or not; and the only reason that this is not universally recognized is that it rests upon kinds of phenomena with which every man's experience is so saturated that he usually pays no particular attention to them.
> (CP 6.2)

Legitimate metaphysics rests on empirical observation of a 'banal' sort. (CP 1.184, 1.242)

Peirce contrasts this sort of observation with the kind found in science, which 'essentially involves special, new experience. A scientific man is simply one who has been trained to conduct observations of some special kind, with which his distinctive business begins and ends.' (CP 6.568) The scientist's phenomena are 'remote from everyday life' (CP 6.562), as they require special instruments, precautions, and skill. The phenomena observed by metaphysicians, on the other hand, are 'harder to see, simply because they surround us on every hand; we are immersed in them and have no background against which to view them'. (CP 6.562, see also 1.134) Commonplaces, Peirce argues, are underrated; observing them is 'observation in a peculiar, yet perfectly legitimate, sense'.

So it seems that Peirce thinks that metaphysics purports to be about the world, but about it in a way that makes the relevant kind of experience that which anyone can have. A metaphysical hypothesis, in order to be pragmatically legitimate, must have ordinary observational consequences, for 'there is no conception so lofty and elevated that it cannot be fully defined in terms of the conceptions of our homely, instinctive everyday life'.[37]

Notice that some hypotheses find themselves doing service, or trying to do service, in more than one kind of inquiry.[38] For instance, some of the mathematician's (and logician's) more theoretical hypotheses are what traditionally have been classified as metaphysical. The hypothesis in mathematics that there are actual infinite sets (accepted by Plato and Gödel, rejected by Aristotle and Kant) is about what is in the world. And to assert or deny the law of the excluded middle in logic, $-(P\&-P)$, is to say something about the world as well as to advance a proposition in logic.

Peirce would argue that the acceptance or rejection of such hypotheses will make a difference in theory, thus they are legitimate as far as mathematical and logical inquiry goes. It is another question, however, as to whether they are legitimate as metaphysical hypotheses, as to whether they are connected to ordinary experience. That is, a thesis which is found in more than one branch of inquiry must show itself to be legitimate as far as the requirements of each branch go. The discussion about truth and reality below will suggest that, with respect to a thesis such as Platonism about infinite sets, Peirce would think it spurious for metaphysics and, with respect to the law of the excluded middle, Peirce would think it legitimate.

The question then would remain for Platonism whether illegitimacy in the metaphysical domain ought to speak against its use in the mathematical domain. The answer requires an account of whether the

Platonist hypothesis has an independent use in mathematics, or whether it makes a metaphysical claim even there.[39]

What about the philosophical statement of the pragmatic maxim itself? Does it have the required connection to experience? Unlike the logical positivists and most other empiricists, Peirce thought that the statement of his verificationist maxim itself must pass the verificationist test. He refuses to give it an exalted status, placing it above the test, and so takes the 'self-refuting' objection to be a serious one. He says that Comte's verificationism, which Peirce thinks tells us to entertain only what we 'directly perceive', 'refutes itself, for it is *itself* an opinion relating to more than is actually in the field of momentary perception'. (CP 5.198, see also 7.91)

The pragmatic maxim, Peirce suggests, does have the appropriate kind of consequences. The area of inquiry it finds itself in is the study of method, the study of what Peirce calls methodeutic. (CP 2.105ff) It is perhaps at the level of highest generality in theory, for it specifies a method for evaluating the basic legitimacy of theories in various branches of inquiry. So it must have consequences in theoretical contexts, in this case, it must result in different theories being adopted from those which would be adopted by a non-pragmatist. And of course, it does.

Thus, by looking to the context of inquiry and to the various aims of different kinds of inquiries, the pragmatist can answer the objection that the pragmatic maxim does not pass the test it sets up. It does indeed pass, once it is seen that the maxim itself need not have consequences for sensory observation.

In what follows, we shall see how the pragmatic maxim makes a difference to metaphysics—to the notions of truth and reality.

TRUTH AND REALITY

Although Peirce does not give us any explicit details as to what the ordinary observation and experience relevant to metaphysical inquiry are,[40] we can see what he is getting at when we look at how he constructs his own metaphysical hypotheses.[41] He argues, for instance, that the notion of a relation is best elucidated by developing a system of graphs or diagrams for relations. He experiments on these graphs to show how the various *n*-place relations are related to each other. And he argues that a full and complete understanding of these graphs can shed light on some problems of algebra. That is, if you construe relations in the manner in which he suggests, there will be substantial (and beneficial) effects on reasoning. And when he wants to find out 'what does the word *probable* mean?', he says 'Pursuing

that method [the pragmatic method], we must begin by asking, what is the use of calculating probabilities?' (MS 211, p. 5)

But perhaps the pragmatic maxim does the most work in Peirce's account of truth. His criticism of the correspondence view of truth is that it is pragmatically spurious—it has no consequences. The correspondence theory holds that a proposition or belief is true if and only if it 'corresponds to' or 'gets right' a mind-independent reality. The relationship of correspondence holds or fails to hold independently of human beings and what they find worthy of belief. No matter how much evidence we had for a hypothesis, that hypothesis could be false, for the truth or falsity of a hypothesis is a matter entirely of that hypothesis' relationship with the belief-independent world. Thus, the correspondence theory is insistent that it might be the case that there are no consequences of a hypothesis' being true. It might be the case that a true hypothesis does not have the consequence of appearing true to us—it might fail to fit with the other data or experience, it might fail to fit with our well-confirmed theories, etc.

Peirce argues that the notion of truth must be connected with the practical business of inquiry. If we want to understand what truth is, we must ask what we would expect of a true hypothesis. Peirce argues that we would expect that, if inquiry were pursued on the matter, the hypothesis would cohere with experience and with our other beliefs. That is, we would expect it not to be overturned by recalcitrant experience or argument if it were true. Peirce then makes this the central thought in his account of truth: truth is that which would survive the tests of inquiry. Truth is the best that inquiry would do.[42]

This is clearly a non-realist account of truth. A realist epistemology has it that truth transcends or goes beyond our beliefs about what is true, whereas a non-realist epistemology links truth with what we would find best to believe. It refuses to disengage the notion of truth from the notion of human inquiry. And that is virtually a corollary of the pragmatic maxim itself.

Peirce's view is similar to Neurath's. Inquiry is the process of acquiring beliefs by making adjustments to our body of background belief. We revise our beliefs (and add or subtract beliefs) so as to better account for and deal with experience. If we were to get beliefs that forever and best accounted for experience, that is all we could ask of them. It would be pointless to then ask whether they are really true or not. Peirce uses a metaphor similar in spirit to Neurath's boat. Inquiry 'is not standing upon the bedrock of fact. It is walking upon a bog, and can only say, this ground seems to hold for the present. Here I will stay till it begins to give way.' (CP 5.589) If the ground does not give way, then we do not doubt our beliefs. That is, we do not engage

in 'tin' or 'paper' Cartesian doubt, where we doubt everything that is uncertain. (MS 329, p. 12) Inquiry is ignited by the ground giving way; by experience really upsetting or surprising our expectations or beliefs.

Most of the logical positivists, we have seen, did not follow Neurath in arguing that knowledge is like a leaky boat to which we make piecemeal repairs. Rather, they tried to provide a rational reconstruction of knowledge by which they could show the chains of justification reaching back to the infallible foundation. The fallibilism of Neurath and Peirce are dramatically opposed to this picture. Knowledge is embedded in human practices and history. We cannot detach knowledge from this context and examine bits of it in a logical and disinterested way.

In taking human inquiry seriously, Peirce's epistemology also takes seriously the notion of the community of inquirers. We saw that Wittgenstein's advice was that we should not start with our own case but rather with the thought that we live in a world populated with others. Peirce also starts with this thought and has at the centre of his position the claim that if we are to understand truth and knowledge we must begin with the community of inquirers and with what they would find best to believe. This fact can clear up what should be a lingering doubt regarding the treatment which Russell's hypothesis ('the world and everything in it was created five minutes ago') has had thus far.

Peirce, like the logical positivists, provides a criterion of legitimacy (a belief must have consequences) and, in most moods, a criterion of meaning identity (two beliefs which have the same consequences have the same meaning). A tension arises between these criteria with respect to hypotheses such as Russell's. It is supposed to be spurious because it has no consequences which differ from the consequences of the standard hypothesis.[43] The suggestion has been, in other words, that the hypothesis fails the test for legitimacy because there is another hypothesis to which it is identical with respect to consequences. But why not say the same of the standard hypothesis? What is it about the standard hypothesis that makes it, but not its equivalent, a candidate for truth-value?

A certain epistemological view is clearly required to accompany the verificationist or pragmatic criterion here, for both the standard hypothesis and Russell's hypothesis have consequences—they have exactly the same consequences. Peirce's epistemology, with its focus on actual inquiry, will hold that it is an important feature of this story that the standard hypothesis has been invoked as the best explanation of phenomena. The standard hypothesis has been arrived at by inquirers because it is the best explanation of what we have observed

(fossils, history books, the accumulation of decay products of radioactive isotopes, etc.), so it, on Peirce's account, already has something going for it.[44]

Alongside induction and deduction, Peirce places a third kind of inference: abduction or inference to the best explanation. We encounter a surprising phenomenon *C,* which would be unsurprising if *A* were true. Thus, we can infer that there is some reason to suspect that *A* is true. There is reason to admit *A* into our inquiries, try to deduce consequences from it and test those consequences by induction.[45]

It is important to see just why this response to the puzzle of Russell's hypothesis will not please the realist. The brands of verificationism we have examined thus far fit naturally with various non-realist epistemologies. In Peirce's case, that epistemology holds that a rational belief is the best belief for us, given the evidence and argument that are available, and a true belief would be the best belief for us, were inquiry to have gone on for as long as would be fruitful by way of acquiring evidence and argument. The fact that explicit reference is made in the very account of truth to what we find best to believe means that what counts in favour of a belief can, in principle, be wider than that to which the realist has traditionally stuck.

The realist usually wants to say that all that can count in a belief's favour are logical considerations and empirical evidence for and against it.[46] We saw that this was a mainstay of the right wing of logical positivism. The non-realist, such as Peirce or someone on the left wing of logical positivism, can, on the other hand, maintain that while two theories might be empirically equivalent (underdetermined by the empirical data), they need not be underdetermined by all considerations. For the non-realist is not restricted to thinking that only logical and empirical considerations are related to the truth of a hypothesis. One hypothesis may be better, on some other criteria, than the other. The non-realist can help herself to these other criteria, such as being an inference to the best explanation (with all the factors that might go into 'best'), simplicity, coherence with other beliefs, etc. Truth is the best belief for us to have and 'best' here will be laden with all sorts of our values.

So of hypotheses which are underdetermined by the data, the pragmatist can say the following. One may be spurious because it is a mere varient of the hypothesis with the proper pedigree for knowledge. Or the hypotheses in question may in fact turn out to be not underdetermined by all the data at all; they may be underdetermined merely by the data that we currently have in hand. As inquiry progresses, we may discover consequences of one which are not consequences of the other.

If, however, we have a case of genuine underdetermination, that is, two hypotheses with respectable pedigrees for which it would not turn out that inquiry would decide between the two, then the pragmatist will say that there is no fact of the matter at stake here. There needn't, after all, be a fact for every matter into which we might inquire.[47]

It should be clear by now that Peirce's view is not the kind of pragmatism which is most popular today, which we will encounter in chapter 5. Peirce does not hold that since truth is connected to inquiry, the product of any old inquiry is true or that we ought to replace the notion of truth with that of rational belief.

Peirce thinks, rather, that we must assume that there would be an upshot—a single answer—to any question we are investigating. The assumption is required in order to continue to inquire; inquirers must assume or hope that, if we were to inquire diligently into any given question, we would arrive at the right answer. For 'the only assumption upon which [we] can act rationally is the hope of success'. (CE 2, 272) This is not to say that there will in fact be an upshot to our inquiries, for Peirce's point is a point about what inquirers must hope for if they are to make sense of their practice of inquiry. Refusing to make the assumption is to block the path of inquiry and that, Peirce argues, is the cardinal philosophical sin. If we are to go on in our practice of inquiry, we must assume certain things. Without the hope that there is an answer to the question at hand, there would be no point in debate or investigation. If we are to leave the path of inquiry unobstructed, we must assume that there is a truth of the matter with respect to the issue we are investigating.

Thus, we must not rest content with the thought that if someone or some group believes P and some other believes $-P$, then both P and $-P$ are true. The Peircean pragmatist will reject this idea, for the working assumption of inquiry is that there would be one answer to the question under investigation. We have seen that sometimes the Peircean may be willing to give up this assumption, but then she will say not that incompatible answers are both true, but that there is no truth of the matter at stake.

But this is not the only sense in which Peirce holds that, while truth does not transcend the process of inquiry, it does transcend particular inquiries. He also makes it very clear that what we find best to believe here and now cannot be taken to be the truth. For our beliefs might well be overturned as inquiry continues and it is only when inquiry has been pursued as far as it can fruitfully go that we have the truth in our hands. And of course, we can never know when we might be in that state.

So on the Peircean pragmatist's view, truth neither transcends inquiry nor is it relative to particular inquiries. The pragmatist's conception of reality adds to this undermining of the traditional dichotomies of realism/relativism and objectivism/subjectivism. Peirce holds that there are 'two views of the real—one as the fountain of the current of human thought, the other as the unmoving form to which it is flowing'. (CE 2, 471) The first is the typically realist view which holds that a belief-independent external reality causes our beliefs. The second seems to be Peirce's view, which holds that we should 'regard the reality as the normal product of mental action, and not as the incognizable cause of it'. (CE 2, 471) On this position, reality is still independent of what we happen to think about it because what we happen to think today may be very different from what we would think of it, were inquiry to be pursued as far as it could go.

But Peirce also wants to subsume the realist view of reality; he thinks that the two views are compatible. It is just that the pragmatist is unhappy with the thought that the realist position can stand on its own. If you ask the realist the pragmatist question, if you ask the realist how the existence of a real physical entity will manifest itself, she must reply that, if we were to inquire into it, it would impinge upon us. This is exactly what pragmatism takes the consequence of a real thing to be—it is something that would force itself upon our attention.

Thus, Peirce argues that the pragmatic account of reality 'is also highly favorable to a belief in external realities'. (CE 2, 470) Idealism —the view that it is a 'mere fairy tale to say that outward objects *exist,* the only objects of possible experience being our own ideas'—is 'completely false'. For the force of experience 'jabs you perpetually in the ribs'. (CP 6.95) This should be taken as an indication that something exists independently of our beliefs about it, but there is nothing more we can say about the matter. As Hume saw, we have something to say only if we restrict ourselves to 'the narrow capacity of human understanding'. Those philosophers who are arrogant enough to think that they can go beyond what we can experience, and what we have dealings with will find themselves persuaded of conclusions which are so extraordinary, and so remote from common life and experience that they will have no authority. Best to avoid this kind of theorizing altogether.

One thing to keep in mind is the fact that most of the brands of verificationism I look at in this book arise either from views about what we can comprehend or about what our inquiries require. To move from either of these positions (about the kind of statements which *we* can understand or which *we* can use in inquiry) to a position about ontology, about what the universe actually consists of, would be

a cheat. That is, one should not conclude from the fact that, say, we cannot fully understand statements about *x,* that *x* does not exist. We should not conclude that what there is in the universe is what we can comprehend.

Here there is a complicating twist. The verificationist who is a pragmatist about truth is well advised to heed the warning which is contained in the realist thought that there may be things beyond our understanding. The verificationist ought not conclude that what we can understand or what our inquiries require exhausts what there is. But in heeding this warning, is she not then committed to the thought that what is true and what is real transcends human inquiry?

Well, no. For the verificationist or pragmatic maxim will move in at this point to do some important work. While the pragmatist ought not to take that step from semantics or epistemology to ontology, she can say that nothing fruitful can be said about the ontological question except that the step to it cannot be taken. We cannot speculate or theorize about that which transcends our experience and, if we want to avoid romping down fruitless paths, we ought to resist the temptation.

It might be objected that this move 'epistemologizes' truth. But truth is a property of our hypotheses and theories—it *is* an epistemological concept. And reality, insofar as it is the object of our hypotheses and theories, insofar as it is what we inquire about, is also fair game for epistemology. While we can say that there may well be things we cannot comprehend or get at through inquiry, we would do well to follow Peirce and focus rather on the notion of reality which is the object of inquiry.

There are, of course, many more questions to be answered about the adequacy of this view of truth and reality and many objections to be addressed. I have tried to do this elsewhere.[48] Here my aim is only to show how verificationism and non-realism again find themselves in each other's company and to indicate how some thorny problems with verificationism can be cleared up by a verificationist who has given up certain realist aims.

The conceptual connection between verificationism and an epistemology which puts human inquiry at its centre is stated again by Peirce's summary of the pragmatic insight: 'We must not begin by talking of pure ideas,—vagabond thoughts that tramp the public roads without any human habitation,—but must begin with men and their conversation.' (CP 8.112)

4
WHAT IS IT TO UNDERSTAND A SENTENCE?

DUMMETT AND THE ACQUISITION ARGUMENT

We have seen that a number of arguments have been put forward for one or another kind of verifiability criterion. From Hume, the early Wittgenstein, and the logical positivists, we have the argument that if one wants to understand an unclear sentence, one ought to break it down into its constituents and match those constituents with sensory impressions. If there are no such impressions, the sentence is obscure; it has no clear meaning. From the later Wittgenstein, we can extract another semantic argument: meaning is use and so there must be some ability which one has if one understands a statement. We have also from the later Wittgenstein and from Neurath the thought that the maintenance of the 'is right/seems right' distinction requires a verificationist criterion. This is not a position primarily about meaning, but rather, one about what must be the case if we are to make sense of objectivity. From Peirce we can take, first, the semantic point that if a hypothesis lacks consequences, it lacks a dimension we would have had to have got right were we to have a comprehensive understanding of it. And second, we can take the point that if a hypothesis is to be useful or to play a role in one inquiry or another, there must be something we can expect if it is true and something we can expect if it is false.

It is the later Wittgenstein's arguments about meaning which have inspired what seems to be a new wave of verificationism, led by Michael Dummett.[1] He argues that the central notion in a meaning theory ought to be the notion of verification; the meaning of a sentence must be given in terms of the conditions under which it is verified. This theory stands in opposition to the truth- conditional theory of meaning, which holds that the notion of truth is most important, where truth is something which is independent of the speaker.

On Dummett's view, the central notion in a theory of meaning is clearly tied to the speaker or understander: it is the idea of evidential

conditions or conditions under which the speaker is warranted in accepting the statement in question. He rejects two similar notions—those of falsification and consequence—arguing that verification encompasses these others. The verification of the truth of the negation of a sentence S is identical to the falsification of S. And 'a statement cannot have consequences for action, actual or potential, beyond the range within which we can obtain evidence for or against it'. (1991: 320)

Notice that this last thought takes 'consequences' to be something like the observable consequences of a statement on the world. Dummett does not mean to suggest, as did Peirce at one time, that the required consequences might be the effects of accepting a statement on the interpreter's train of thought and action. In that case, Russell's hypothesis could well have consequences on action, despite the fact that nothing serves as evidence for or against it that wouldn't serve as evidence for or against the standard hypothesis. Nothing much came of Peirce's suggestion, although in the next chapter we shall see it resurrected by some of those philosophers who try to improve on Dummett. Dummett, however, thinks that the consequences a statement must have are consequences for sensory experience—consequences which, if they pan out, can count as evidence for the statement in question.

Dummett starts with the difficult question of what the meaning of a statement amounts to. The answer, he says, will rest on an account of what makes language function as language. (1975:99) We want to know what a speaker knows when she knows a language and thus a meaning theory is also a theory of understanding.[2] Dummett's answer ties meaning or understanding to verification— to 'the evidence which justifies the assertion of a statement'. (1978a: 370) For him, 'an understanding of a statement consists in a capacity to recognize whatever is counted as verifying it'. (1976:110–11)

Because he is proposing a general theory of meaning, he thinks that the verificationist criterion at its heart will not be required to pass itself, as it were. It will be 'part of a *theory* explaining how the rest of the language' works. (1992:133) 'Of course', Dummett says, '"meaning" and "verification" belong to the English language, but, for the present purpose, they would figure solely as theoretical terms'. (1992:133) The meaning they have comes entirely from their role in that theory and thus Dummett takes himself not to face one of the problems which plagued the logical positivists—the problem that the verifiability principle itself is neither analytic nor verifiable.

Ayer (1992c:149) says that Dummett has hit upon the solution to the problem. But this seems too quick. In order for Dummett's strategy to make a proper dent in the problem, we need a principled

way of distinguishing the requirements that must be met by a theoretical statement and other kinds of statements. We have seen Peirce make this move, but it is absent in Dummett's account.[3] Indeed, we shall see below that Dummett is not keen on views which take the meaning of a term to be its role in a theory. Some reason must be given for the exception he is willing to make for the statement of his verifiability principle if it is to avoid the charge of being *ad hoc.*

Dummett's argument for his brand of verificationism is an elaboration on that given by Neurath and the later Wittgenstein. The grasp of a statement can be acquired only by reference to conditions which the speaker can experience. In order to teach a concept to someone, you must be able to link the concept with experiences the learner can have. Otherwise, you simply could not get across to her just what it is for the concept to apply. The grasp of a concept must be acquired by acquiring dispositions to fit one's utterances with evidence. We come to understand a concept by learning when, i.e. under which evidential conditions, it is appropriate to apply it.

This argument—an argument from the acquisition of language—leads directly to verificationism. If there are no evidential conditions under which we might learn a particular concept, if a concept is purported to transcend the evidence for or against it, we cannot grasp it. Someone who claims to grasp it is making a spurious claim.

The Acquisition Argument leads to verificationism via another, more global, route as well. The argument applies to the acquisition of all concepts, including metaphysical ones. Dummett's strategy is to settle metaphysical disputes by starting from the 'bottom up'— with considerations about meaning. And when he does this for the realism/idealism dispute and the associated concepts of truth and falsity,[4] verificationism is again entailed.

By avoiding the 'top down' approach, which would start with the metaphysical issue itself, our task, Dummett says, is made much easier. For it is not clear how to decide the metaphysical disputes. He expresses sympathy with the positivist thought that metaphysical positions have no non-pictorial or non-metaphorical content. (See 1991:10–12.) But when we start from the bottom up, with the meanings of statements, we start with something familiar:

> Their meanings are already known to us. No hidden power confers these meanings on them: they mean what they mean in virtue of the way we use them, and of nothing else. Although we know what they mean and have come, in the course of our childhood and our education, to learn what they mean, we do not know how to represent their meanings; that is, we learn to use

> them but do not know precisely what it is that we learn when we learn that.
>
> (1991:13)

In order to gain a complete understanding of what our expressions mean

> we need to scrutinize our own linguistic practices…with the eventual aim of attaining a systematic description of them. Such a description will give a representation of what it is for the words and expressions of our language to have the meanings that they do. It must embrace everything that we learn when we first learn language, and hence cannot take as already given any notions a grasp of which is possible only for a language-speaker.
>
> (1991:13)

Such a description will be a meaning theory and once we are equipped with the right theory, we can resolve our metaphysical disputes. We will be led to adopt a particular metaphysical picture of the nature of reality, but that picture will have 'no additional content of its own…its content is a thesis in the theory of meaning, and…beyond that, it is no more than a picture'. (1991:15)

Dummett places our grasp of the concepts of truth and falsity under scrutiny. What results is the anti-realism which is his trademark. The concepts of truth and falsity are applicable only to statements which we are capable of verifying or falsifying. For we acquire the notion of truth by recognizing conditions for the truth of statements. (1978a: 362ff) Our understanding of the notion of truth is such that we cannot understand it as applied to sentences about which there is absence of evidence.

Dummett characterizes realism as the position which maintains that the principle of bivalence holds for a certain area of discourse, such as statements about the physical world, mental states, mathematics, the future, the past, time, morals, theoretical entities in science, etc. The principle of bivalence has it that, for any sufficiently precise sentence *S, S* is determinately either true or false, whether or not we can tell which it is.[5] Realists hold that a sentence's meaning is spelled out by its truth-conditions, conditions which might go beyond our ability to recognize them as obtaining. The connection with the kind of realism I have been referring to in this book is clear. The truth or falsity of a statement is something that is independent of, or transcends, inquiry; it transcends the availability of evidence we might have for or against it.

Anti-realists, on Dummett's construal, maintain that the principle of bivalence need not hold.[6] Only if we might recognize whether the sentence is true or false does it have a truth-value. If there are no assertability conditions[7] for a sentence, if there is no evidence that could justify one in asserting or denying it, then it has no truth-value; it is neither true nor false. The principle of bivalence does not hold. So, unlike the realist, the Dummettian anti-realist will 'hold that, whenever a statement is true, it must be possible…in principle, for *us* to know that it is true, that is, for beings with our particular restricted observational and intellectual facilities and spatio-temporal viewpoint'. (1976:100)

It is the Acquisition Argument which does the work in Dummett's 'solving' the metaphysical dispute between realism and anti-realism. The realist or truth-conditional view of meaning holds that our understanding of a sentence consists in understanding truth-conditions, conditions which go beyond experience. But how are we to acquire such understanding, if the only way we acquire understanding is by reference to conditions we can experience? It seems that we cannot.

Dummett thinks that any difficulties for the verificationist theory pale in contrast to those for the truth-conditional theory. The latter must first

> explain in what a speaker's grasp of the condition for the truth of a statement consists; and, secondly…show how other features of the uses of sentences…can be derived from what is taken by the theory to be its meaning as characterized by the core notion. A solution to the second problem requires an account of how the condition for the truth of a statement determines what we shall count as establishing its truth.
>
> (1992:144)

Dummett holds that these are requirements of an adequate theory of meaning and the realist cannot meet them.

The Acquisition Argument is connected to the Wittgensteinian thought that meaning is use.[8] Understanding consists in certain abilities to use the expression in question. For instance, to grasp the concept square

> is to be able to discriminate between things that are square and those that are not. Such an ability can be ascribed only to one who will, on occasion, treat square things differently from things that are not square; one way, among many other possible ways, of doing this is to apply the word 'square' to square things and not to others.

(Dummett 1978b: 7)

Dummett holds that, in thinking about what meaning is, one must begin with the public communicability of language. This thought is also close to the claim that the meaning of a sentence is a matter of its use or role as an instrument of communication.[9] It is a short step from here to the view that the meaning of a sentence cannot be anything which is not made manifest in the use made of it. If one knows the meaning of a sentence, one must be able to manifest that knowledge. For our grasp of the meaning of *P* consists in our ability to make correct use of *P.*

This thesis of 'comunicability of content' is also bound up with Wittgensteinian thoughts about the private. The content of a judgement must be such that it can be communicated and 'an individual cannot communicate what he cannot be observed to communicate'. (1978a:216) If a subject is judging that *P,* it must be possible, in principle, to know that she is judging that *P.* Meaning is not a private matter: 'The meaning of…a statement cannot be, or contain as an ingredient, anything which is not manifest in the use made of it, lying solely in the mind of the individual who apprehends that meaning.' (1978a:216)

Dummett often refrains from making the global argument sketched above about the grasp of our notions of truth and falsity and engages rather in local arguments which conclude that we ought not to assert the principle of bivalence in a particular domain. He says that a

> verificationist theory of meaning will involve that there are gaps in reality; that is to say, that there are meaningful statements, which we can understand and whose truth or falsity we can therefore conceive of establishing, but for which, nevertheless, the question whether they are true or false has no answer; they concern a region of reality that is simply indeterminate.
>
> (1992:146)

The point here is that the fact that we can entertain a thought[10] is no guarantee of its latching on to a determinate reality. If we are wondering whether a particular class of statement has the kind of meaning the realist claims for it, we need only ask how we acquired the concepts involved in those statements. The anti-realist about a particular class of statements, Dummett says, will argue that 'in the very nature of the case', certain kinds of statements are such that we could not acquire a grasp of them. Thus reality is indeterminate with respect to them.

The first domain of inquiry upon which Dummett turns his gaze is mathematics. He argues against Platonism, the realist position which holds that abstract mathematical objects exist independently of us. He sides rather with intuitionism, which holds that we can grasp the meaning of a mathematical statement only if we have the ability to recognize, produce, or understand a proof of it.[11] His argument, of course, is that the only way we can come to grasp mathematical statements is by means of such abilities to recognize' when it is appropriate to assert them.

Unlike the logical positivists, Dummett is a revisionist with respect to logic and mathematics. We have seen that the positivists were revisionists about the social sciences and ethics—such areas of inquiry must become behaviourist or must wither away. But they left mathematics and logic alone. Dummett, on the contrary, holds that mathematicians and logicians may have to change their practices where they conflict with verificationist scruples. If, for instance, the notion of infinity is not one which we can manifest our use of, it has no place in mathematics.[12]

Statements about a person's attributes or character can also be called into question by the anti-realist; and here Dummett says that the dispute is not a 'live one'—'very few people would seriously adopt a realist attitude'. (1978a:148) He examines the claim Jones was brave', where Jones, no longer living, was never placed in circumstances which called for bravery. The realist about personal attributes would argue that, despite the fact that we shall never be in a position to assert or deny the hypothesis, despite the fact that we shall never have any reasons or evidence for or against it, it is either true or false. For the truth-conditions for a putatively undecidable sentence go beyond our ability to decide whether the sentence is true or false. Jones' character—'conceived of as an inner mechanism which determines his behaviour—must either have included the quality of bravery or lacked it'. (1978a:150)

But Dummett thinks that here we have a clear instance where reality is indeterminate. In the absence of evidence for or against Jones' bravery, we must say that it is not the case that either he was brave or he was a coward. The question simply has no answer. Dummett's verificationism is opposed to a realist account of character —there is no mechanism, which might or might not remain hidden from us, which underpins a person's character. There is just characteristic behaviour.

Dummett also examines statements about the past, a domain which we saw Peirce and the logical positivists struggle with. The realist very naturally wants to say that the statement The number of geese on the capitol at 5:15 a.m. June 3, 1959 was even' is true or false, despite

the unavailability of evidence for or against it. Its truth or falsity transcends evidence or verification procedures, which in the case of statements about the past include memory, testimony, written and fossilized records, etc. Dummett must deny this view. He says:

> Of any statement about the past, we can never rule it out that we might subsequently come upon something which justified asserting or denying it, and therefore we are not entitled to say of any specific such statement that it is neither true nor false: but we are not entitled either to say in advance that it has to be either one or the other, since this would be to invoke notions of truth and falsity independent of our recognition of truth or falsity.
>
> (1978a:364)

He acknowledges that this denial goes against the grain of some strongly held intuitions (1978a:xxxviii) and we shall see below that some of his detractors fasten precisely on this fact. Many diagnose the defect in Dummett's position to be an unduly narrow construal of evidence, which leads to unintuitive claims about gaps in reality. But we shall also see that the project of broadening the notion of evidence is not any easier than it was in Peirce's day.

THE OBJECTION FROM SEVERITY

The difficulty is that, pretheoretically, we seem to want to say that there are countless perfectly well-understood sentences that have no empirical assertability conditions. Crispin Wright offers this list of statements threatened by Dummett's position:

> unrestricted spatial or temporal generalizations, many subjunctive conditions, descriptions of the remote past, hypotheses about the mental life of others or of animals. If it is to be insisted that knowledge of truth-conditions has to be a recognizable capacity, then in cases like these there is not, or need not, be anything in which this alleged knowledge can consist.[13]

Many think that some or all of these kinds of statements are clearly meaningful, and hence any view which denies them meaning is defective.

We have seen that the logical positivists ran into trouble with these statements, especially with universal generalizations and statements involving subjunctive conditions. The positivists' reaction to this

problem was to try to broaden the original verifiability principle and weaken the requirement of reducibility so that they could cope with such sentences. The trouble has arisen for Dummett's position in a charge by Anthony Appiah, who claims that Dummett harks back to the positivists' 'earlier, less careful, statements of verificationism', where verification is construed as conclusive and as here and now. (Appiah 1986:45)

Appiah focusses on statements about the past. We have seen that most of the positivists attempted to arrange things so that such statements were admitted into the domain of the meaningful. Appiah seems to think that the liberalized criterion of confirmation in principle (as opposed to conclusive verification) succeeds in this respect. In chapter 2 I suggested that it does not, but that need not deter us in asking the question of Dummett. For he seems unwilling to bend even as far as his predecessors: 'what matters, for the meaning of some form of statement, is what is taken as a *conclusive* ground for asserting it'. (1978a:xxxviii)

Dummett later takes this statement back[14] and sees that taking it back

> greatly complicates the form that a 'verificationist' theory of meaning will assume: it must operate, not with a simple notion of direct verification, but with a more general notion of canonical grounds, qualifed by what, if anything, is counted as overthrowing them.
>
> (1987b: 284)

This more complex notion of verification would include not only 'what experience compels us to acknowledge', but also what best explains phenomena, so that a 'historical conjecture may commend itself as neatly explaining what would otherwise be puzzling'. (1987b:284) But in the next breath Dummett distinguishes between the above kind of reason for accepting a historical conjecture and having direct evidence for it—and says that 'we may maintain that only the latter goes to determine its content'. (1987b:284)

Given Dummett's vacillation here and given the fact that he still finds the class of problematic statements to be so wide as to include statements about the past, universal generalizations, and statements about other minds, it seems fair to say that he does require something very strong. For if the required evidence for a statement is defeasible, as opposed to conclusive, then it seems plausible to say that we can have defeasible evidence for some of these kinds of statements.

Appiah thinks that we should have learned from the demise of logical positivism that a criterion which is so severe is untenable. He

takes the defect in Dummett's position to arise from the fact that at times Dummett takes anti-realism to be an extension of intuitionist philosophy of mathematics. On the intuitionist view, if a mathematical statement is true, there must be a procedure or proof by which we can come to recognize it as true. When Dummett argues for anti-realism in one domain or another, he tends to start with the mathematical case and proceed from there to the other areas of inquiry. After opting for the anti-realist, intuitionist view in mathematics, he then must replace the notion of proof with something more general. And it seems that the natural replacement for proof must be conclusive verification.[15]

Dummett, Appiah says, thinks that verification must be an 'all or nothing process' and 'absolutely decisive'. (Appiah 1986:41) But this requirement is 'simply hugely implausible and totally unmotivated'. (1986:55) For in the non-mathematical or contingent case 'it is not even slightly plausible that conclusive verification is always…a possibility'. (1986:41) The mathematical model is 'ferociously misleading'. (1986:38)

The only candidates in the non-mathematical realm which might aspire to conclusive verification are those 'it seems to me to be the case that I have the experience of blue, here and now' sentences—sentences reporting immediate experience. Appiah makes some of the points we canvassed in chapter 2 against the logical positivist's use of such statements. He says that even if we wanted to acknowledge this special class, 'this would add few candidates for truth-conditions'. (1986:42) And given their utterly private or subjective nature, they have no use in linguistic *communication,* a use which Dummett sees as necessary.

Appiah's own suggestion is that we adopt a particular broad account of evidence or verification. He thinks that his move will allow him to be 'sympathetic' to verificationism but also sympathetic to realism about empirical reality. (1986:xvi) It is entirely unwarranted, he thinks, to hold that a judgement has no truth-conditions (Dummett) or is meaningless (the early logical positivists) simply because of our current limitations on verifying or falsifying it. A different, and better, question is to wonder about the legitimacy of 'a judgement for which it is impossible that any creature of our kind could ever find evidence'. (1986:55) Dummett has not explained 'why *our* limitations are relevant' (1986:44) as opposed to the limitations of others, in other places, times, etc.

His suggestion as to how verifiability ought to be construed is as follows. We must look to what we can verify, if we think of our 'cognitive powers' as they actually are and think of our physical powers and technology as being extended in certain counterfactual ways. On this view, the sentence 'It rained somewhere on Earth a

million years ago' is verifiable 'because if a person with my cognitive powers (or yours) had been around a million years ago, that person could have confirmed it, if true, or disconfirmed it, if false'. (1986: 60) Thus Appiah holds that

> What is required is not that there should be a test that someone with our physical capacities could perform, but rather that there be a logically possible test, one that we human beings with our actual powers might or might not be able to carry out, which would, if it had been carried out, have given that person reason for justified belief.
>
> (1986:57)

Sentences about events that span geological periods (such as the formation of a mountain) are thus verifiable: if someone were to live long enough and were to observe the event, she would have a reason for a justified belief about the issue.

Appiah thinks that this move will rehabilitate the sentences which are problematic on Dummett's account; it will allow the verificationist to be a realist or to hold that sentences in Dummett's problematic classes do have determinate truth-values. He says:

> All realism requires is that it is possible, for any event which was at some time verifiable, that evidence should have left a currently detectable trace. And that is guaranteed simply by the logical possibility of there having been a long-lived person accessible to us now.
>
> (1986:83)

The fact that, as things currently stand, we cannot confirm or disconfirm most statements about the remote past has only to do with our physical capacities, not our 'cognitive capacities'. The latter include 'limitations of memory, attention and computational capacity' (1986:59) and Appiah thinks that they, and only they, are the capacities which the verificationist must hold constant.

We have seen that the idea that verifiability cannot be concerned with contingent physical capacities was accepted by the logical positivists. Appiah goes a step further and identifies the capacities with which verifiability *is* concerned—cognitive ones. As long as the barriers to confirmation are not cognitive, the verificationist can ignore them.

We should not, however, be too quick to embrace Appiah's criterion. The logical positivists would have been wary of its reliance on counterfactual conditionals, such as 'had someone counted the number

of geese on the capitol at 5:15 a.m. June 3, 1959, and had she remembered the figure, and had she reported that figure to us now, that figure would be even'. A blanket rejection of counter- factuals is something I have suggested need not be a part of the contemporary verificationist package, but other scruples ought to stand in our way and they certainly stand in Dummett's way.

One way of getting at the problem here is to ask what reason Appiah has for thinking that while currently unverifiable sentences are unproblematic, sentences for which beings of our kind could never find any evidence *are* problematic. Why is he prepared to see anything at all in verificationism? And what is the principle behind his thinking that cognitive but not physical capacities are relevant to legitimacy? Why not endow ourselves with counterfactual cognitive capacities as well as physical ones? Since our cognitive capacities are clearly linked to the physical capacities of our brains, the distinction here cries out for the articulation of the principle behind it.

Once we try to answer these kinds of questions, we are quickly led to an examination of the principles behind the verificationist urge. My suggestion is that Appiah's proposal to adopt a broad counterfactual notion of verification undermines those very motivations.

One reason a philosopher might have for thinking that unverifiable statements (in some sense) are spurious is that she wants to connect the notions of truth and objectivity to human inquiry. One thought of Peirce's, for instance, is that truth is the best belief for beings of our kind to have; truth is what our inquiries would produce, were they to be pursued as far as they could fruitfully go. On such a view of truth, sentences which beings of our kind could have no evidence for or against will not be sentences which *could* prove best for us to believe. If nothing turns on the truth or falsity of a statement, there is nothing for inquiry to latch on to; there is nothing for the inquirer to go on. Thus, they are not admissible in an inquiry with truth as its aim.

If one is attracted to verificationism for this kind of reason, it is best to stay well away from what Nicholas Jardine has endorsed as 'counterfactual bravado'. (1986:30) It is best to stay well away from construing our physical capacities counterfactually so that inquirers can, for instance, travel back in time to verify statements about the remote past. For if we construe human inquirers as being something which they in fact are not, but which they might be or might have been, we shall be quickly led to some untenable positions.

For one thing, we would have to hold that what would be taken to be true by fallible inquirers is true.[16] For presumably, the suggestion is that we think of inquiry as being extended so that we send back in time a group of inquirers who would settle the matter of the number of geese on the capitol at 5:15 on June 3, 1959. But who would be

those inquirers who would do the verifying and falsifying in the past? They would be inquirers with our very fallible capacities for observing, counting, measuring, etc. Surely we can almost count on them to fairly often get things wrong. If the verificationist who adopts the pragmatist view of truth engages in counterfactual bravado, she will be led to the position that a statement *S* about the past is true if you or I or some other fallible inquirer went back in time to check and, after checking, took S to be true.

The pragmatist is thus well-advised to eschew the temptation to expand inquirers' physical capacities to what is logically possible, but not actual. Such a move is contrary to the spirit of the pragmatist view that truth is the best that actual inquiry would do under favourable circumstances. The proposal to take counterfactuals into consideration connects truth with an inquiry that is too far removed from our inquiries.

But not only pragmatists who connect truth and objectivity to human inquiry ought to be wary of the counterfactual strategy. Those who make the much less controversial connection between meaning and human inquiry ought to be wary as well. As Dummett says:' [i]f a verificationist theory of meaning is to be accepted at all, then the notion of verification which it employs ought to be modelled on our actual practice in coming to recognize statements as true'.[17]

We have seen that Dummett's argument starts with the thought that language is, in essence, a means of communication. This suggests that meaning must be something that is publicly accessible and that we must focus on how we are able to learn a language and communicate to others. Once these points are brought to the fore, it seems obvious that Dummett is right to stress that a meaning theory about our language must be about *us* and about *our* capacities. A meaning theory of our language will not be concerned with hypothetical beings whose abilities and constitution are radically different from our own: '[a]n appeal to hypothetical beings is of no help to us in giving an account of the meaning *we* attach to the sentences of *our* language'. (1991:348)

Thus, it is important to see that the reason Dummett's criterion is severe is not merely because he begins with the mathematical case. There is a principled reason for the severity and that is that the Acquisition Argument requires a strong verificationism. It proceeds upon the thought that if we are to learn a language, we must be able to check on the fit between someone's assertions and the conditions under which they assert it, as well as the use to which they put the assertion. And those requirements are clearly about what actual speakers do. That is why Dummett takes our limitations to be relevant.[18]

Finally, one who adopts verificationism for straightforward empiricist reasons will also not be keen on the use of counterfactuals to rescue statements about the past. For if the temporal, physical, and other restrictions on verificationism are eliminated altogether, verificationism loses all appeal for the empiricist. What empiricism is after is a view of ourselves in the world which is down to earth, which does not appeal to anything beyond observation and inquiry. If we do not have restrictions on the endowments of knowers, then we do not have something that is empirical enough for the empiricist.

Of course, what the empiricist will be faced with is a continuum of restrictions, ranging from none at all to the here and now. A line will have to be drawn somewhere. But that is not to say that the line must be at an arbitrary place. When the empiricist searches for the relevant principle, one important consideration will be to ensure that the connection between our epistemological notions and actual inquiry remains intact. And the counterfactual move, I suggest, severs that connection.

The issues here are complex. We do not want to rule out those sensible counterfactuals which Peirce was fond of (had we scratched that diamond, it would have resisted). But, a counterfactual can be brought in to rescue any hypothesis (were we to have empirical evidence for the Inverted Spectrum Hypothesis, it would pass the verificationist test) and so we ought to be wary of them, at least when the antecedent removes us far from our actual procedures of inquiry.

For example, we can imagine the following situation regarding Russell's hypothesis. Were a voice from above to declare 'I made the world five minutes ago',[19] it seems we would have a kind of evidence for Russell's hypothesis; were the voice to declare 'I made the world 5 million years ago', it seems we would have a kind of evidence against it. And why not imagine such a voice asserting that mental states are private or that they are public?

If the voice of God were to boom out so that everyone were to hear it, and were we to satisfy ourselves that no tricks were being played upon us by human forces, and if the voice pronounced on other matters and turned out to be reliable, then the verificationist would have to think seriously about her position on the hypotheses the voice was pronouncing upon. For it seems that in such a case, we would have *some* reason for thinking that what the voice asserted about, say, the age of the universe was also right.[20] We would have, if you like, an inductive argument in support of the pronouncements—an argument based on the reliability of other, testable, pronouncements.

But if the voice were to speak on the privacy of mental states (or perhaps only on the age of the universe), empiricist would rightly not count that as evidence for the hypotheses in question. For the

empiricist insists that any belief must be responsive to experience and it is still the case that there is no experience which such claims could be responsive to.[21]

Of course, given that we in fact do not have reliable and publicly accessible evidence from on high, we need not take such hypothetical examples as speaking on the legitimacy of Russell's hypothesis. Subjunctive consequences of the sort 'were you to ask God and were He to reply, then He would say *P* or 'were a voice to boom down and declare *P* to be true, then we would be warranted in believing P' are far too remote from what actually goes on in inquiry for the empiricist.

Edgington makes a similar point in a reply to Appiah. The verificationist holds that if P is true, then it is possible for someone to know that it is true. Edgington notes that a position which claimed that an omniscient God secures the reality of the world can be thought of as a kind of verificationism. It would hold that if P is true, then it is possible for the omniscient God to know that it is true. But Edgington stresses that this is merely verificationism in letter, rather than in spirit, for the spirit of verificationism is that 'whatever the limits of attainable knowledge, the notion of truth cannot transcend them'. (1985:36) The kind of verificationism which invokes God 'may be no more than an idle consequence of other philosophical views which does no metaphysical work'. (1985: 36) If restrictions on the endowment of inquirers are entirely relaxed, verificationism is 'vacuous'. (1985:37)

Appiah says 'I think I am an empiricist: "empiricism" is a broadly encompassing term.' (1986:xvi) But he is right, I think, to express some doubt about this matter. An empiricism as counterfactual as his severs the link between experience and the notions of legitimacy, objectivity, meaning, truth, or whatever. And once that link is gone, there is nothing left of empiricism.

THE OBJECTION FROM QUINEAN HOLISM

W.V.O.Quine was closely connected to the Vienna Circle,[22] but nevertheless is usually regarded as having dealt it a death blow in his 'Two Dogmas of Empiricism'. (1953b) We shall see, however, that the connections remain strong—Quine is an empiricist who shares the positivists' respect for science and logic and he is, in his own way, a verificationist.

Indeed, Quine's position has all of the ingredients for the Acquisition Argument upon which Dummett's verificationism rests.[23] In (1960) Quine argues that in acquiring or learning a language, a native speaker has to go on the encouragement and discouragement of

his utterances in observable situations and the utterances of others in observable situations. The radical translator or field linguist is in the same position. Learning a language is entirely a matter of acquiring a set of dispositions to fit one's utterances to observable situations. In linguistics, 'one has no choice' but to be a behaviourist: 'Each of us learns his language by observing other people's verbal behavior and having his own faltering verbal behavior observed and reinforced or corrected by others… There is nothing in linguistic meaning beyond what is to be gleaned from overt behavior in observable circumstances.' (1990b:38)

It seems a short step from here to Dummett's conclusion that our understanding of a statement cannot go beyond what we can observe. We cannot learn a statement for which there is no evidence. But Quine does not take the step. Rather, he argues that we cannot, sentence by sentence, pronounce upon meaningfulness or legitimacy. That is, he argues against the thought which seems to be at the very heart of verificationism.

Quine takes the idea that a synthetic sentence comes with its own bundle of empirical content to be one of the great mistakes of empiricism. With Duhem and Neurath, he points out that a hypothesis does not by itself entail observational conditionals. Only when taken in conjunction with a number of auxiliary hypotheses does a hypothesis entail that 'if we do *x*, we shall observe *y*'. Thus, rather than the hypothesis in question, any of those auxiliary hypotheses could be taken to be confirmed (or verified) if we do *x* and observe *y* or disconfirmed (or falsified) if we do *x* and do not observe *y*. '[O]ur statements about the external world', Quine argues, 'face the tribunal of sense experience not individually but only as a corporate body'. (1953b:41)

One corollary of this Quine/Duhem thesis is that synthetic statements cannot show themselves to be objective or legitimate by passing a verificationist test. Since no statement entails observation statements, entailing such statements cannot be a criterion of anything.

Thus the distinction between statements which are 'analytic' (found in mathematics and logic) and those which are 'synthetic' (found in science) is undermined by the Quine/Duhem thesis.[24] This leads Quine to propose an epistemology where the two kinds of statements are on a par. We must be holists and view both kinds as constitutive of our fallible, evolving, interconnected body of belief.

Quine's favoured metaphor to describe this epistemology or holism of confirmation[25] is as follows. Our belief system is like a web, with mathematics and logic in the centre, gradually shading into highly theoretical hypotheses and then into sentences about particular

observations at the periphery. Both mathematical and empirical hypotheses are confirmed or disconfirmed depending on where, in light of evidence, we choose to make adjustments in our web of belief.

So Quine holds a rare thesis in the history of empiricism, one which we have seen is held also by Mill[26] and Peirce. Mathematical and logical statements also face the tribunal of experience—they are not true come what may. In Quine's version of this fallibilist thesis, mathematics plays a central part in any scientific theory, and since the smallest unit that can be tested is the theory, mathematical hypotheses are tested along with the rest. Confirmation and disconfirmation are not restricted to the empirical but extend to the logical and mathematical. Because of their central place in the interconnected web of belief, they will not easily be overturned; but, in principle, they are as susceptible to disconfirmation as any other hypothesis and, in practice, scientists may find themselves in a position where it seems best to revise a mathematical hypothesis.[27]

Quine's fallibilism is of course not restricted to mathematics and logic and thus it sets him even more squarely against the right wing of logical positivism—against those who thought that observation could provide a secure foundation for knowledge. Observation, Quine maintains, merely provides us with 'the input to our cognitive mechanism'. (1969c: 84) Observation sentences are simply those 'on which scientists can reach agreement…and they are sentences that can be socially checked against their occasions of utterance when we are picking up a language'. (1974:40) They 'can be roughly distinguished from others by a behavioral criterion, involving no probing of sensations. For this is characteristic of them: witnesses will agree on the spot in applying an observation term, or in assenting to an observation sentence, if they are conversant with the language.' (1975b:315)

But fallibilism aside, holism is thought to be incompatible with *any* formulation of verificationism for the following reason: it directs attention away from the adequacy or inadequacy of individual statements and directs attention to whole theories or to the whole of language.[28] Thus, although Quine's position was developed in response to logical positivism, it can also be set against Dummett's verificationism.[29] For Dummett, like the positivists, holds a 'molecular' view such that each sentence, or at least fragment of language, has a determinate content. Against Quine, he thinks that 'individual sentences carry a content which belongs to them in accordance with the way they are compounded out of their own constituents'. (1978a:222) A sentence 'possesses an individual content which may be grasped without a knowledge of the entire language'. (1978a:302) For 'on a molecular account, one knows the language by

knowing the meaning of each sentence of the language taken separately'. (1978a:378) Dummett then takes the issue to be whether we must have the ability to recognize the conditions under which that content is meaningful or legitimate. (1978a:222–23)

The holist, on the other hand and in Dummett's words, thinks that

> it is illegitimate to ask after the content of any single statement, or even after that of any one theory…there is no adequate way of understanding the statement short of knowing the entire language…its meaning simply consists in the place which it occupies in the complicated network which constitutes the totality of our linguistic practices.
>
> (1978a:218)

So the holist thinks that there may be sentences which play a role in language as a whole but for which we cannot say what behaviour would count as a manifestation of understanding, except correctly using them in language as a whole. It is knowledge of the inferential connections between sentences, not knowledge of what would allow us to assert that a given sentence is true, which allows us to grasp the meanings of sentences.

Dummett maintains that such a holist cannot explain how anyone knows the meaning of anything or of how people communicate. For no one knows an entire language and, on the holist's view, it seems to follow that no one knows the meaning of any sentence: 'I cannot know anything that a man believes until I know (or guess) everything that he believes. And so it becomes incomprehensible how anyone can tell another anything.' (1973:599) His argument against holism is like his argument against truth-conditional theories of meaning: holism cannot give a 'credible account either of how we use language as an instrument of communication, or of how we acquire a mastery of language'. (1973:598)

The dispute between Dummett and Quine is not, however, as intractable as it may first appear. Dummett turns out not to be a *carte blanche* molecularist. He is a holist insofar as he takes inferential connections between statements to be relevant to the explanation of the meaning of most statements: a grasp of meaning 'involves apprehending the logical relations of sentences'. (1987a: 271) Quine is right insofar as he thinks that language is an interconnected framework with experience impinging on the periphery.

But Dummett wants to stop here with the Quinean metaphor. He thinks that if he goes no further, he can assign a meaning to an individual sentence: 'this will consist, first, in the position of the sentence in the network: if it is on the periphery, the second

ingredient will be how it is determined as true or false by experience; otherwise, the second ingredient will comprise its inferential connections with neighbouring sentences'. (1987a:272)

He thinks that we must, however, refuse to adopt a stronger holism. The Quine/Duhem thesis goes on to suggest that 'no truth-value assignment to any sentence is ever mandatory in the light of experience' and it is this thought which Dummett rejects. (1987a: 273) For it is this thought which leads to the conclusion that no content can be attributed to an individual sentence. It is holism of confirmation that Dummett is primarily set against.[30]

But if we look carefully at that holism of confirmation, we can see how the holist need not reject verificationism, if it is suitably formulated. Indeed, Quine often describes himself as a verificationist[31] To see how this is possible, we must see how Quine manages to deny the analytic/synthetic distinction—the traditional empiricist's route to retaining respect for mathematics and logic—while not giving up that respect himself.

We have seen that traditional empiricists who adopt something like the analytic/synthetic distinction can say that logical and mathematical statements are meaningful, despite the fact that (in Hume's terms) they fail to correspond to impressions; despite the fact that they fail the test of verifiability. For, on their view, these statements are special in that they are true in virtue of meaning and are therefore true come what may; they are unrevisable. Quine rejects the analytic/synthetic distinction and so needs to offer a different reason for why the empiricist should think that mathematical and logical statements are legitimate.

For him, logic and mathematics are genuine branches of knowledge because they are a part (the very core) of our web of belief or system of knowledge. And having a place in that effort to make sense of what James called the booming buzzing confusion of experience is, on Quine's view, all that legitimacy or objectivity amounts to.

We saw in the last chapter that a verificationism which incorporates a broad account of experience can take theories other than scientific ones to be objective. I have suggested that Peirce's account is broad enough to include, for instance, moral theories in the domain of the objective. It would appear that Quine's own early position that' [a] sentence is observational insofar as its truth-value, on any occasion, would be agreed to by just about any member of the speech community witnessing the occasion' (1974: 39) is also broad enough. *'2+2=4'* 'Torturing children is odious', and The *Mona Lisa* is a lovely painting' might be construed as observational on this definition.

Later, however, Quine insists that the assent must be prompted by the stimulation of sensory receptors.[32] That is, he modifies and narrows his account of experience so that it involves not merely that to which everyone would assent, but sensation. And the stipulation that our web of belief is bound on the periphery by sensory judgements very effectively bars judgements such as the moral from becoming a part of the objective web of belief and leads to a kind of severe verificationism. The analytic/synthetic distinction has been a dogma of empiricism and needs debunking. But the distinction which encourages the thought that moral judgements are not candidates for truth-values, the fact/value distinction, is fine as it stands. Moral judgements have no role to play in the Quinean web of belief. They are not a part of science; they do not face the tribunal of experience. Aside from a 'salient marker' or two, there are only 'uncharted moral wastes'.[33]

So Quine ends up agreeing with traditional empiricists that moral judgements are not objective—they are not candidates for truth-value. They do not enjoy either of the kinds of content that have the traditional empiricist's respect. Hume, on one reading, argued that it is we who spread moral properties on to the world; they aren't there to be found. The logical positivists argued that moral judgements fail the verificationist test of significance; they merely express feelings of approval or disapproval of situations. And they do not have the property which the Quinean holist respects—they are not part of our theories which are falsifiable by sensory experience.[34]

Thus, despite Quine's arguments against the logical positivists' verifiability principle, his position has roughly the same consequences. It restricts legitimate inquiry to science, mathematics and logic. For he thinks that physics and the rest of empirical science constitute our web of belief and that a legitimate branch of inquiry must have a place in that web. Although Quine often takes verificationism to rest on the anti-holist claim that hypotheses carry with them their own bundle of empirical content which can be verified or falsified, he himself can be described as a verificationist who thinks that the unit of meaning is large; it is a whole theory or at least a big part of a theory which must pass the verificationist test. A theory, even our entire system of belief, must be an economical response to the totality of surface irritations. On Quine's view, a hypothesis, in order to be legitimate, must be a part of a theory which answers to sensory evidence for and against it.[35]

Dummett, in his assessment of Quine's impact on logical positivism, sees that Quine is not as anti-verificationist as he is supposed to be. He sees that Quine did not concur with those philosophers who argued that the mistake of logical positivism was

> in its treating verification as the central notion for the theory of meaning. For Quine, the assignment of this status to the notion of verification was not an error at all: the account he himself offered…treated a cousin of that notion, namely that of the compatibility of experience with a set of sentences, as central in just the same way.
>
> (1987a:270, see also 1973:592)

Dummett agrees with Quine that the theory of meaning adopted by the positivists, which resulted from taking the meaning of empirical sentences as being verifiable by 'unconceptualized sense-experiences', was

> wildly implausible as an account of what actually constitutes our understanding of any given sentence; and it had the unfortunate consequence that so separate an account was required of the meanings of mathematical statements that it became little more than a pun to ascribe meaning in the same breath both to them and to empirical ones.
>
> (1987a:270)

Thus, Dummett thinks that one of Quine's 'great contributions' in 'Two Dogmas' was that he offered an essentially verificationist account of language without committing the logical positivist error of supposing that the verification of every sentence could be represented as 'the mere occurrence of a sequence of sense-experiences'. (1978a: 298–99) Dummett says that if we are to learn our lesson from Quine's 'brilliant and wholly accurate diagnosis' (1987a:270) of logical positivism, we must not take verification to be a process to which only empirical statements are subject. We must see, for instance, that a deductive argument which supposedly establishes an analytic truth is 'a species of the same genus'—it is a kind of verification.

So Dummett, like Quine, wants to close the gap between the empirical and the formal. The hard and fast distinction between the synthetic and the analytic maintained by the logical positivists arises because they 'had so specialized a notion of verification'. (1987a:270) On Dummett's view, verification encompasses more. He wants 'a verificationist theory of meaning that can plausibly be taken as representing our actual understanding of sentences of our language'. (1987a:271) We must say what, in practice, we treat as establishing a statement as true. Clearly 'both…observation and inferential reasoning' are involved: 'mathematical statements and pure reports of observation occupy opposite ends of a spectrum'. (1987a:27l)

Not only are Dummett and Quine alike in thinking that language is interconnected and in being verificationists, but they are alike in that both are opposed to realism. Quine's opposition is more problematic than Dummett's, as Quine perhaps embodies most perfectly the empiricist tension that I have pointed to in the preceding pages: being tempted by a realist view of empirical reality and then having that view undermined by the accompanying verificationism. His official statements about truth lean towards realism,[36] but in what follows I shall briefly describe his non-realist, pragmatist, suggestion that truth is the best that our inquiries could produce, the best that we could do by way of accounting for and explaining our experiences.

Quine made famous Neurath's metaphor that we are like sailors adrift at sea, never able to dismantle our boat in drydock and reconstruct it there out of the best materials.[37] We cannot judge scientific knowledge by stepping beyond it and appealing to something higher.[38] He even takes aboard something like Carnap's radical conventionalism with respect to ontology. We are to take

> the conceptual scheme of science as a tool, ultimately, for predicting future experience in the light of past experience…in point of epistemological footing the physical objects and the gods differ only in degree and not in kind. Both sorts of entities enter our conception only as cultural posits.
>
> (1953b: 44)

Quine has had to grapple with the objection that if two conflicting but internally coherent webs of belief are underdetermined by the empirical data then, on his account, they must be both true, or at least both rational. We saw that this kind of objection was put to Neurath by Ayer. Quine often responds by saying that in that case 'we would do well to settle for a frank dualism… Where there is forever no basis for choosing, then, we may simply rest with both systems and discourse freely in both, using distinctive signs to indicate which game we are playing.' (1975b:328)[39]

So Quine's epistemology has at its centre the idea of conceptual schemes unanchored to a certain foundation and the notion of choosing between various schemes. It is a short and natural step from here, whether or not Quine wants to take it, to the thought that truth and objectivity are tied to human inquiry. The main point of disagreement between Quine and Dummett is not over realism.

We have seen that the main point of disagreement between the two is over the Quine/Duhem thesis: the thesis about how confirmation and disconfirmation work. Dummett wants to be able to think of individual sentences as carrying their own bundle of content and

Quine wants to think only of larger units as being capable of this. But we have also seen that both can be, and in fact are, verificationists.

Indeed, Quine could even embrace a kind of sentence-by-sentence verificationism. His fallibilism has it that no judgement is immune from evidence. A judgement which pretends to be above empirical evidence is in fact not so lofty. We can say that it is faulty in that it pretends to be something which it cannot be.

Notice that the thought that no judgement can be taken to be immune from evidence seems to be in tension with Quine's statement that any judgement can be held true come what may if we are willing to make radical revisions elsewhere. But the fact that someone might tenaciously hold on to a belief does not mean that the Quinean must applaud such an attitude. The Quinean can criticize someone who is prepared to say in advance that she will not revise a certain judgement, no matter what evidence may come to light against it. Perhaps such a person is not engaging in genuine inquiry, is not aiming at truth, is not in a state of belief, etc. The Quinean can say that we ought not take any judgement to be true come what may, although people certainly can and do adopt this attitude towards certain judgements.

There are reasons, however, why someone who wants to be a holist and a verificationist ought to distance herself from Quine's particular brand of verificationism, the view that a theory must be part of natural science. All that the Quine/Duhem thesis requires us to abandon is the claim that a judgement must entail, on its own, observation statements. The further requirement that it must be disconfirmable by *sensory* observation is one the holist could well reject in favour of a broader account of observation. We could say that a theory must be disconfirmable by observation, but observation, following Peirce, need not involve the senses.

MORE OBJECTIONS FROM HOLISM

Post-Quinean holists have taken off in so many directions that one hardly knows these days just what the term refers to.[40] We have seen that Dummett himself is not as anti-holist as he might first seem; he does not think that we understand the meaning of a content entirely on its own. But his position remains opposed to other kinds of holism, such as that which holds that the content which is ascribed to someone's belief that P depends on that person's entire network of interconnected beliefs; the meaning of a statement is its role in a language or theory.[41]

Clearly, the kind of strong holism described above is opposed to the atomist tradition exemplified by Russell and the logical positivists, for it denies that what gives a term meaning is its relation to the world.

But since it holds that what gives a term meaning is its role in a theory or language, it is also opposed to Dummett's view that sentences are intelligible because their meanings are derived compositionally from their constituents. Dummett's view is that speakers can communicate because they know the meanings of those constituents and a whole theory is understood because the speakers know the meaning of the constituent sentences. And we have seen that his objection to this strong holism is that it cannot explain, and indeed makes it entirely unclear, how speakers can communicate.

Whatever the outcome of this debate, it seems to me that one thing that we can say is that a different kind of holism gets at something wrong with Dummett's position. Holists sometime see Dummett as the inheritor of the positivist tradition because he too tries to identify the conditions under which a sentence is assertible. The objection then is that understanding a sentence cannot simply consist in something like the ability to tell when the sentence is assertable. Understanding and abilities, or understanding and use, are bound up with one another in a much more complex, holistic, way.

I shall suggest that if this thought is the defining characteristic of what might be called moderate holism, then the moderate holist can also be a verificationist. Moreover, Dummett's verificationism would do well to take on board the holism which insists that verification is a complex phenomenon, not restricted to the model of a scientist deriving observation conditionals from a theory and then testing them.

Appiah, for instance, adds an objection from moderate holism to his attack on Dummett's position. A sentence which is currently unverifiable is one that any speaker will have no reason to either assert or deny. It does not follow that we can have no reason to believe that such speakers know what *would* make *S* assertable. The sentence 'It rained here a million years ago today' is currently unverifiable. Yet the following will serve as evidence that someone assigns correct truth-conditions to it: they use 'rain' properly, they can count to a million, they know how long a year is, and they display a grasp of the past tense. Appiah argues that to suppose that this is not evidence of understanding is like supposing that we know something is fragile only by breaking it:

> Just as we must concede that breaking has a central role in our conception of fragility, so we must concede that assent has a crucial role in the explanation of (declarative) meaning. But it does not follow that we cannot have evidence about what someone would assent to except that they do assent, any more than it follows that we cannot have evidence about fragility other than through breaking.

(1986:80)

His point is that we can know about dispositions to assent, or what would be assented to, by seeing what other sentences 'with syntactically related properties' the person in fact assents to.[42] We are again pulled in the direction of a broader account of evidence. We ought to admit dispositions—the kind of things the person tends to assert—as evidence that she knows the meaning of a sentence which she cannot currently assert.

Notice that this modal knowledge—knowledge of what someone would assent to, given what she does assent to—is substantially different from Appiah's other proposal involving modal knowledge. That first, problematic, proposal was that we could have knowledge about what would be verifiable, were we to have different physical capacities or were our physical limitations lifted. The antecedents of these conditionals require a real stretch of the imagination—if we were able to travel back in time; if we were to be friendly with someone who had lived 700 years, etc. We saw that there is no reason to think that were such antecedents fulfilled, the following sorts of consequents would also be fulfilled: we would know whether Churchill sneezed 47 times in 1949, we would know that it rained on earth exactly 700 years ago today, etc. And the verification which would be provided would be so remote from actual inquiry that the point of being a verificationist seems to evaporate.

Appiah's second proposal encounters no such difficulties. It merely has it that whether there exists evidence for justifying an assertion of a sentence is only one of many things we can under stand about the sentence. We can know other things as well. Peirce argued that we can know the connotation and denotation of words in the sentence and Appiah argues that we can know what would justify the assertion of other sentences constructed of such words.

Perhaps Simon Blackburn has put the moderate holist's point best and in greatest detail. He argues that we can point to 'neighboring abilities'—ones that neighbor the ability to verify or to justify the assertion—in our quest to determine whether someone has understood an unverifiable sentence. These abilities include:

> the ability to construct explanations dependent upon the truth or falsity of the putatively undecidable sentence, the ability to tell why attempts at verification are blocked, the ability to tell things of related sorts, even if not this one, the ability to work out what else would be so if the sentence in question were undetectably true, the ability to embed the sentence in complex contexts, and so on.[43]

If one had some or all of these abilities, one could go a long way in understanding a sentence which was not verifiable. For instance, we can understand 'every even number is the sum of two primes' despite the fact that it is a universal quantification over an infinite domain: 'someone can exercise a capacity to understand the predicates involved, notably by recognizing what counts as a proof that a number is even, and a proof that it is the sum of two primes'.[44]

Blackburn is not set against the very idea of a criterion of understanding for sentences. But he thinks, with Peirce, that there is no one thing in which understanding consists. Thus, the following criterion has better prospects than Dummett's: understanding must be capable of being *exercised,* in one way or another. (1989: 37) I can attribute understanding to another when 'I find method and intelligence in someone's researches, when I can represent his aims to myself, and appreciate his attempts…to fulfil them.' (38)

On Blackburn's criterion, one gets results on certain problematic sentences which differ from Dummett's. Blackburn returns to Jones. We have no evidence for Jones' bravery and perhaps there is no hidden evidence that might be found. Nonetheless, I can understand what someone is doing in the *attempt* to get such evidence: when I find someone checking Jones' army record or asking his dentist how he stood up to fillings. Blackburn's point is that I can have a conception of what it would have been for Jones to have been brave and this conception informs and governs my use of the sentence 'Jones was brave': '[t]his conception shapes the investigations it is appropriate to make, even when they are doomed to failure through an actual evidential vacuum'. (1989:38)

The possibility of finding evidence (and we know, roughly, what sort of evidence it would have to be) for or against his being brave 'gives our activities their point and aim. The lack of guarantee simply does not put us in the position of those in a sham game, "aiming" at invisible targets and in which success is undetectable and has no consequences.' (1989:43)

Thus the question of Jones' bravery and questions about the past meet Blackburn's standard. We know 'what might be done to amass reason for believing such things' (1989:39). Only if 'there is no disciplined process of reasoning connected with them at all' are sentences not candidates for understanding. (1989:41)

Here again we have a suggestion about thinking of our abilities counterfactually which does not require our imaginations to run wild and which is squarely based in the abilities and capacities we in fact have. Our disciplined processes of reasoning and inquiry are *ours,* not an alien's, and if such processes might be applied to a sentence, whatever the chances of their success, that sentence is connected to

experience in a way sufficient to enable us to understand it. And we have enough to satisfy Dummett's requirements about how we acquire a language, for the suggestion has us looking to what we *can* do and taking a small step from there to what we could do.

Blackburn's criterion is clearly a close cousin of the requirement that to know the meaning of a sentence, one must be able to know how to use it. The dictum 'meaning is use' can be cashed out in a variety of ways, depending on how broadly one construes 'use'. The moderate holist will construe it broadly and, in agreement with C.I.Lewis and Peirce, will argue that understanding comes in degrees—there is a continuum ranging from a complete failure of understanding to a complete understanding.[45]

Indeed, Blackburn's suggestion is something the verificationist ought to be able happily to adopt. No one denies the interconnectedness and complexity of language. The challenge for the verificationist is to deliver a criterion which takes that fact into account but which nonetheless allows us to talk about whether particular bits of language are understood, legitimate, candidates for truth-values, or whatever. The suggestion, from the logical positivists and from Dummett, that the criterion must be one which connects legitimacy to actual evidence for the truth or falsity of the sentence, ignores the complexity of both confirmation (as holists of Duhem's and Quine's stripe point out) and of language and understanding (as holists of Peirce's, Appiah's and Blackburn's stripe point out).

We have seen that a recurrent danger in broadening the requirements for the empiricist criterion is that the criterion will cease to function; it will cease to be able to declare spurious sentences to be spurious. Blackburn seems aware of this danger and makes it clear that he thinks that not all sentences will pass his 'insulationist' criterion—the criterion that a sentence cannot be insulated from reason. (1989:40) If we are faced with a 'complete absence of any possible relation to procedures of confirmation or disconfirmation', we cannot understand the sentence in question. (1989:39)

Unsurprisingly, it is the theses of metaphysics which Blackburn identifies as those which may be insulated from procedures of reason. (1989:39) Some philosophers, Blackburn says, might give mistaken theories about how we understand certain sentences or in what their truth consists and these mistakes might lead us to take those sentences to be insulated from reason. Possible offenders are Cartesian theories of the self, the view that the mind is peculiarly transparent to its own self-understanding (1989:47n.22), and theories of the past which are sceptical about the evidential value of traces and memory (1989:40–41). Or philosophers might suggest that mental states are only contingently related to behaviour—another's pain or

feelings are inaccessible to others, thus putting them 'beyond the bounds of confirmation'. (1989:41)

But, in the end, I doubt that Blackburn's criterion, as it stands, can pull any weight. A thesis which fails to meet his criterion is one for which 'there is no good reasoning for or against'. (1989:40) But clearly, proponents of the above disputed theses will think they have good reason to believe them. To go back to the problem as it arose for us initially, the proponent of Russell's hypothesis may well think that there is good reason to believe it—for instance, the God which made the world five minutes ago revealed himself in a dream. That is, proponents of a suspicious hypothesis will say there is reason for believing it and opponents will say that there is no reason. The verificationist wants to step in *at this point,* after the reasons have been given, and say whether the reasons meet the appropriate standards. To say merely that reasons must be adduced is to cut the issue off at the pass, before it gets interesting.

The problem is to specify what counts as 'good reasoning'. One can see verificationism as the attempt to set the minimal requirement a claim must meet to count as evidence for or as a reason for a hypothesis must. The usual empiricist requirement is that only a sensory observation counts as evidence. Blackburn argues that a hypothesis must not be insulated from reason, but this leaves the big question unanswered. It leaves unanswered the question of what kind of reason is required.

The salutory effect of Blackburn's discussion is again to press upon us the need to move away from physical verification here and now to something broader: something more holistic, if you like. Where Blackburn goes wrong, I think, is in moving so far that he breaks the tie with experience. Verificationism has, in the moderate holists' hands, rightly rejected the scientific model. But in Black-burn's version of moderate holism, the baby seems to have been thrown out with the bathwater. The scientific model has been rejected and not replaced with something which preserves a link with experience.

The upshot is that we should construe 'use' broadly, so as to include some of the abilities Blackburn emphasizes—the ability to tell why attempts at verification are blocked, the ability to verify things of related sorts, even if not the thing in question, the ability to work out what else would be so if the sentence in question were undetectably true, etc. But we should not construe 'use' so broadly that we include the ability to use the statement in any old discussion, the ability to construct explanations dependent upon the truth or falsity of the putatively undecidable sentence, or the ability to use the hypothesis in arguments.

And the moderate holist might well, as suggested in the last chapter, argue for different sorts of reasons to be required of different sorts of hypotheses. For instance, we might require those statements which claim to be about the world to be such that there are reasons for believing or disbelieving them and those reasons must make mention of how our sensory experience would be different if they were true or false.

That is, special attention will have to be paid to the Peircean thought that what counts as a good reason varies from kind of inquiry to kind of inquiry. For instance, while it might seem misplaced, as Dummett argues, to have faith in a mechanism underlying a person's character, many think that such faith is well placed in the domain of inquiry about the physical world, including inquiry about the past. It might be argued that in those latter inquiries, an appeal to an underlying mechanism is sufficient for showing the legitmacy of hypotheses in question. This is the kind of ground on which the debates about verificationism will be conducted once we accept the Peircean thought that we must ask what aim a particular domain of inquiry has and then calibrate our notion of a good reason to that.

The debates will also include issues such as whether the philosophical positions Blackburn mentions, for instance, make claims about the world. The controversy here will surely involve the difficult question of what the aims and methods of philosophy are. That is, there is nothing about moderate holism which allows us to avoid the issues which concerned the logical positivists. Starting to get straight on such matters will set us on our way in the quest to determine which questions and areas of inquiry aim at truth and objectivity.

TRUTH AND PRAGMATISM AGAIN

We have seen that a question about the correct account of truth lingers just beneath the surface in debates about verificationism. We have also seen that verificationists are drawn towards non-realist positions about truth. Dummett is no exception. He holds that one must either take truth (and truth-conditions) as the core notion of meaning or take verification (and verification-conditions) as the core notion. He opts for the latter and sees that his task is then to 'either jettison the notion of truth altogether, or seek to explain it in terms of the core notion of verification'. (1992:143) His choice is to refuse to draw a distinction between the concept of truth and that of assertability. (1978a:365) The concept of truth is, if you like, to be replaced by the concept of verification or warranted assertability.[46]

One of the most serious challenges to Dummett's position and to any verificationism fastens on to such notions of truth. For the realist

argues that the verificationist's account of the concept is inadequate. The realist argues that it makes perfect sense and is even highly plausible to say that there may be truths for which we could never have any evidence, or to say that minds which are constituted differently from ours would be able to grasp truths that we cannot [47] This thought is at the very heart of realism: truth might well transcend inquiry. A statement might well be undetectably true.

Realism is thus directly opposed to views of truth which link truth to the verifiable or assertable. The verificationist must deny the realist thought, for she holds that if there really could be no evidence relevant to a claim, then it (on one view) lacks content or it (on another view) is not a candidate for a truth-value.

We have seen that one view of truth which goes hand in hand with verificationism is the following: a true statement is one which, were inquiry to be pursued as far as it could fruitfully go, we would know to be true or false. A true statement is one which we would find worthy of belief, were we to inquire as diligently as we could into the matter. We have seen that Peirce and Neurath adopt such a view and that it seems to be the natural conclusion to Quine's epistemology. Dummett also is committed to something like it, for he argues that if a sentence has a truth-value, we can in principle know it.

Dummett sees that many will find this view of truth and the corresponding claim that reality is often indeterminate a matter of 'intuitive repugnance'. (1992:146) He thinks that his arguments about language acquisition should outweigh this initial resistance. But we have seen that those particular arguments lead to a verificationism and a view of truth which is especially strong, a view which the realist will think is especially repugnant.

I have suggested that one might be able to follow through from those arguments about language to a less stringent criterion, one which takes neighbouring abilities to be relevant. A certain lack of precision is the price that one has to pay for this move, as questions about what constitute good reasons and adequate evidence from domain to domain will become extremely sticky. The positive result is a verificationism which does not dismiss in a wholesale way domains of inquiry—such as that into the past. Indeed, relatively few sentences will be deemed spurious, a feature of the position which many will think is admirable, rather than a drawback.

It should be clear, however, that a Dummettian argument from language and communication is not the only available route to the verificationism/non-realism outlined above. We have glimpsed a few others and here I want to take a moment to articulate more carefully the Peircean pragmatist's arguments against the realist. For they seem to me to be amongst the most persuasive.[48]

Peirce argues that truth is the aim of inquiry and that the aim of any activity ought to provide a comprehensible guide to that activity. One does not have to be a pragmatist (or any kind of verificationist) to accept this. But once one accepts it, the way is laid for the pragmatic account of truth. For only a pragmatically legitimate account of truth will be able to serve as such a guide; only a view of truth which sets up expectations for inquirers will be able to serve as a guide to inquiry. An inquirer who adopts such a view of truth will be able to incorporate those expectations into the practice of inquiry.

What we would expect of a true belief, Peirce argues, is that if inquiry were to be pursued as far as it could go, that belief would survive. It would survive all of the tests that inquirers could set for it. And we would expect that if a belief is true, then if we were to inquire as far as we could about the issue, something—some evidence, consideration, or argument—would impinge upon us to convince us of its truth.

Of course, the realist expects these things as well. However, she wants to go on to say that truth is something which can go beyond inquiry; our expectations might well fail to be fulfilled. But this condition, the pragmatist will argue, is empty. One argument here is an argument about what truth can mean to us.

Pretheoretically, we think that inquiry aims at truth. What we know about truth is that truth is what we aim for in our inquiries. That is what our grasp of the concept of truth amounts to: our access to it is via the concept of investigation. Now if inquiry would no longer be able to improve upon a belief, then that belief would satisfy all the aims we might have in inquiry. It would, for instance, cohere with the rest of our web of belief and with the data, and it would play a part in explaining the data. For if our beliefs are not like this, then inquiry will not be at rest. Inquirers will take it that there is more work to be done, even if lack of time, money, and energy prevents it from ever being done. If inquiry would be at its natural rest, then our beliefs would be as good as they could be; they would be the very best beliefs we could have.

The pragmatist then suggests that there would be no point in withholding the title 'true' from such beliefs. And if there is really no point in withholding the title, it ought to be conferred. Once we get what we aim at in inquiry, once we get the very best inquiry could produce, we have true beliefs. There is no further step to be taken. There is nothing further to aim for in the search for truth.[49] There is nothing to be gained by wondering whether such a belief is *really* true.

The realist thought has it that we must take that further step. It insists that truth transcends inquiry so that, even if a belief were

forever to fulfil all of the aims we might have in inquiry, it might fail to be true. The pragmatist's direct argument against the realist intuition is that it places the inquirer in a strained position. Those in the midst of inquiry aim for beliefs which account for the data, have explanatory power, etc. The realist requires that they must then assume that empirical adequacy and explanatory power are connected to the ultimate goal of truth. They must assume that, were they to get beliefs which accounted for and explained the data, they would get beliefs which were likely to be true.

But for the realist, the link between beliefs with worthy features and the truth is unfathomable. On the realist account, that which would be forever empirically adequate and explanatory might still be false. As long as this is a possibility, the connection between the goals inquirers actually have and the ultimate goal of truth is tenuous. The realist owes us an account of why beliefs which satisfy the lowly aims of inquiry are likely to be true. And the realist owes us as account of why science, say, is a better method for reaching the truth than crystal ball gazing. In the absence of such an account, the leap that inquirers have to make from empirical adequacy, explanatory power and the like is a leap of faith.

5
SOME FURTHER SUGGESTIONS

VAN FRAASSEN AND THE STATUS OF UNOBSERVABLE ENTITIES

In 1980, Bas van Fraassen's *The Scientific Image* startled philosophers of science by returning respectability to much of the logical positivists' picture of science. Although van Fraassen distanced himself from certain elements of that picture, the book is an attack on realism about theoretical (or unobservable) entities in science and a defence of one of the most vigorous empiricisms we shall have the opportunity to examine—'constructive empiricism'.

The realist, in van Fraassen's view, thinks that science aims to give us a literally true story of what the world is like and that when one accepts a scientific theory, one believes that it is true in this sense. The constructive empiricist, on the other hand, holds that science merely aims to give us theories which are empirically adequate and that acceptance of a theory involves only the belief that it saves or preserves the phenomena, not the belief that it is true. This empiricism is 'constructive' because 'scientific activity is one of construction rather than of discovery: construction of models that must be adequate to the phenomena, and not discovery of truth concerning the unobservable'. (van Fraassen 1980:5)

The state of contemporary philosophy of science before *The Scientific Image* is sometimes described as follows:' [f]or three decades empiricism has been losing adherents to realism; only the simplicity and definiteness of the empiricist program, and the occasional philosopher dazzled by the surface of appearance or drawn by the sirens of certainty, served to maintain some adherents'. (Hooker 1985: 154) Van Fraassen puts empiricism back on the agenda; he tries to 'enjoin us all to return to an empiricism unconstrained by logical positivist shackles'. (van Fraassen 1985:300)

Van Fraassen does not offer a theory of meaning or significance and he is set against the 'linguistic form' of empiricism, where a theory is

presented in the language of axiomatic logic and a partial dictionary relates the theoretical bit to the observable phenomena.[1] Nonetheless, he can be fairly seen as a direct decendant of logical positivism. He says:

> To be an empiricist is to withhold belief in anything that goes beyond the actual, observable phenomena, and to recognize no objective modality in nature. To develop an empiricist account of science is to depict it as involving a search for truth only about the empirical world, about what is actual and observable…it must involve throughout a resolute rejection of the demand for an explanation of the regularities in the observable course of nature, by means of truths concerning a reality beyond what is actual and observable, as a demand which plays no role in the scientific enterprise.
>
> (1980:202–3)

We have seen that the logical positivists were also suspicious of anything which went beyond the senses. They wanted to jettison anything that had to be inferred from the observed. But with their suspicious right hand, they took away what their scientific left hand seemed to require. Causation, universal generalizations, dispositional terms and the existence of atomic and sub-atomic particles were all tainted with the suggestion that they could not be reduced to the language of observation. The trouble is that science seems to need such notions.

Van Fraassen, in true empiricist form, argues that talk of causes is metaphysical (1980:212–18), as is talk of laws, necessities (1989), and theoretical entities such as electrons and the like (1980: 204–15). For only what is observable can be a part of our ontology. In this respect, he is a verificationist. He has gone some steps further than the logical positivists in trying to show how science might get along without these notions. But what will mostly concern me here are van Fraassen's arguments for his verificationism and the controversy which has arisen over his characterization of the distinction between observation and theory. For these issues reinforce the points I have tried to make about the empiricist tension and about how the empiricist ought to construe our abilities and capacities.

One of van Fraassen's arguments for constructive empiricism turns on the thought that theories are underdetermined by the data. The choice between theories must be made on pragmatic grounds—simplicity, coherence, explanatory power, etc.—and these considerations are notoriously dependent on something like ideology. (See 1980:202.) They are not relevant to the question of a theory's

truth. They are relative to human concerns, not to the 'relation between the theory and the world'. (1980:88) Explanations, for instance, are answers to questions which we happen to be interested in asking. And generally, pragmatic criteria depend 'on such factors as what theories we have been able to dream up and …also on our interests and other contextual factors'. (1985: 286–87) We cannot 'profess to have reasons for believing these… considerations to yield reliable indications of truth'. (1985:287)

Van Fraassen thinks that, since pragmatic factors do not give us any reason for thinking that a theory is true, they cannot help the realist by deciding which of two empirically equivalent theories is true or more likely to be true. (1980:90) The only way one could link such virtues to truth would be to adopt an unsupportable metaphysical principle such as 'nature is simple'.

So if we took truth to be what we were looking for, we would never accept any statement, for we never have sufficient reason to think that a theory is true. All we have reason to assert is that a theory fits the data and that it is better than others which fit the data because it is simpler, has more explanatory power, etc.

Van Fraassen also sets the following argument against realism:

> [i]f I believe [a] theory to be true and not just empirically adequate, my risk of being shown wrong is exactly the risk that the weaker, entailed belief will conflict with actual experience. Meanwhile, by avowing the stronger belief, I place myself in the position of being able to answer more questions, of having a richer, fuller picture of the world… But, since the extra opinion is not additionally vulnerable, the risk is— in human terms— illusory, and *therefore so is the wealth.* It is but empty strutting and posturing, this display of courage not under fire and avowal of additional resources that cannot feel the pinch of misfortune any earlier.
>
> (1985:255)

We have seen that Peirce argued similarly. We never have good (or extra) reason to believe a statement to be true in the realist sense. We only have reason to believe a statement or theory to be true in the sense that it would be the best we could do by way of accounting for and explaining the evidence. Peirce too thought that it was empty to then ask whether the theory is really true (in the realist sense); to assert that it is really true is to add nothing at all. We ought to conclude that the realist view of truth is of no use to us and that it should be abandoned.

Surprisingly, van Fraassen thinks that the realist view of truth is unassailable and that we must conclude, rather, that we ought to merely *accept* theoretical statements as empirically adequate and deny that they are candidates for truth-values. That is, he distinguishes belief (belief that *T* is true) from acceptance (belief that *T* is empirically adequate) and maintains that only acceptance is relevant for statements which go beyond observation.

Van Fraassen's thought is that truth, as he and the realist conceive of it, is not what science aims at; it is not what makes claims good to believe. There is a truth of the matter with respect to a scientific theory, but it is beyond us. Peirce (and Hume) would argue here that such a conception of truth is spurious and ought to be dropped for the secular view that truth is what would be best by way of belief. Peirce would argue that van Fraassen's attempt to be delivered from metaphysics by restraining talk to talk of acceptance (1980:68–69) will not succeed until he drops the claim that, despite the fact that only empirical adequacy is relevant to science, truth is correspondence with a reality which transcends the empirical.[2]

The attempt to reconcile empiricism with the realist view of truth is not new to us and it leads van Fraassen to adopt a typically strained position.[3] He is famous for being an anti-realist in philosophy of science, for being someone who thinks that scientific theories do not refer to what is real. But the reason he arrives at this anti-realism is because he is an unwavering realist about truth. He thinks that theoretical statements, like observation statements, are to be taken literally. They are true or false depending on how the independent world is: 'I would still identify truth of a theory with the condition that there is an exact correspondence between reality and one of its models.' (1980:197) And he finds that, unlike observation statements, theories cannot be known to make this grade.

One of the manifestations of the strain can be found in van Fraassen's distinction between the observable and the unobservable. At first glance, the line he draws seems to be entirely arbitrary. But on closer inspection, it is not arbitrariness that plagues it, rather a severity due to van Fraassen's failure to follow through on the non-realism which is part of that strain.

Recall that the question arose in the discussion of Mach about whether we see only with the unaided eye, or whether we can also see through eyeglasses, microscopes and the like. This question is related to one which was discussed in the last chapter—what abilities should the verificationist construe counterfactually and what abilities should she construe as those we actually have? Van Fraassen makes the point which I have argued all empiricists must make in some form or other:

> [t]he human organism is, from the point of view of physics, a certain kind of measuring apparatus. As such it has certain inherent limitations—which will be described in detail in the final physics and biology. It is these limitations to which the 'able' in the 'observable' refers—our limitations, *qua* human beings.
>
> (1980:17)

I have suggested that the right view to take regarding our limitations is to refuse to think of our abilities so that they reach into the past or so that they reach toward what we might have been but in fact are not. We should, if we are to capture the spirit of the thought that legitimacy and objectivity are linked to the best we could do, think of our abilities as subjunctively extended. We should think of them as what they would be, were we to push ourselves as far as would be fruitfully possible.

The issue arises in a sharp way for those verificationists, like the logical positivists and van Fraassen, who take the observable to be a narrow category and who think that there is an epistemologically significant distinction to be drawn between what is observable by the senses and what is not. Van Fraassen thinks that observation is theory-laden (1980:14) but nonetheless, he takes the distinction between observation and theory to be paramount. Only entities which can be observed by the human senses can be a part of our ontology.

The way van Fraassen draws the distinction is by taking the observable to be that which we could observe unaided by instruments: 'X is observable if there are circumstances which are such that, if X is present to us under those circumstances, then we observe it.' (1980: 16) Binoculars, magnifying glasses and the like are the sorts of things we see through, for we could see the objects without them. Although we need a telescope to see the moons of Jupiter, we could travel there and see the moons with our naked eye. The moons thus count as observable. (1980:16) If the only way one can 'see' something is with the aid of instruments, then the entities seen are theoretical, not observable. Thus we do not, for instance, see through a high-powered microscope.

This view has prompted much criticism. Ian Hacking finds it arbitrary to suppose that we do not see through a microscope, but that we do see through some telescopes. He thinks that it is not of epistemic interest to find out about 20–20 human vision:

> [i]t is doubtless of some small interest to know the limits of the naked eye, just as it is a challenge to climb a rock face without pitons or Everest without oxygen. But if you care chiefly to get to

> the top you will use all the tools that are handy. Observation is not passive seeing… Observation is a skill.
>
> ([1981] (1985):135)

Hacking does not want to extend our abilities in counterfactual ways. He objects to flights of fancy in much the same way as I did in the last chapter. With respect to travelling to see the moons of Jupiter, he says: 'Perhaps that fantasy is close to fulfillment, but it is still science fiction. The microscopist avoids fantasy. Instead of flying to Jupiter, he shrinks the visible world.' ([1981] (1985):146) The microscopist shrinks a grid and then sees exactly the same shapes and letters as were drawn full size by the original draftsman: 'It is impossible seriously to entertain the thought that the minute disc…does not in fact have the structure of a labelled grid. I know that what I see through the microscope is veridical because we *made* the grid to be just that way.' ([1981] (1985):146) It is not an astounding coincidence that the marks on the shrunken grid happen to be identical with the original.

Hacking concludes that '[w]hen an image is a map of interactions between the specimen and the image of radiation, and the map is a good one, then we are seeing with a microscope'. ([1981] (1985):151) We are convinced that the structures we observe with microscopes are real because we have been successful in getting rid of aberrations and artefacts, we can interfere with the structure in physical ways, different physical principles lead us to observe the same structures, there are intersections with bio chemistry which confirm our beliefs: '[i]n short, we learn to move around in the microscopic world'. ([1981] (1985):152) This is the kind of point our moderate holist would make. Observation is not an isolated event—to be justified in thinking we have made a veridical observation, many connected things must come together.

What Hacking has pointed to here is the oddness of van Fraassen's failure to take our actual procedures of inquiry seriously. It is not the naked eye which ought to be the relevant measure of human limitation for the empiricist, but how humans use their eyes and eye-aiding equipment. The actual procedures of inquiry, fallible and revisable as they might be, ought to be what is relevant to the empiricist. He ought not to be interested in the best the naked eye could do, but the best that observation, as it is actually conducted in inquiry, can do. Van Fraassen's failure to appreciate this point arises, I suggest, because he declines to see truth as the best that our procedures of inquiry could do.

To see the point again, consider Paul Churchland's objection to van Fraassen's distinction between the observable and the unobservable.

Churchland catalogues a number of ways in which an entity or process may go unobserved by us: it may not be spatially or temporally placed so that we can observe it; it may be too small, too brief, or too protracted; it may lack the appropriate energy, being too feeble or too powerful to permit us to discriminate it; it may fail to have the appropriate wavelength or mass; or it may fail to feel the relevant forces which our sensory apparatus exploits. (1985:39) He then says:

> Had we been less mobile than we are—rooted to the earth like Douglas Firs, say…the distinction between the 'merely unobserved' and the 'downright unobservable' would have been very differently drawn. It may help to imagine here a suitable rooted arboreal philosopher named… Douglas van Fiirrsen, who, in his sedentary wisdom, urges an antirealist skepticism concerning the spatially very *distant* entities postulated by his fellow trees.
>
> (1985:39–40)

On van Fraassen's view, one might as well decide to 'relinquish all one's beliefs save those about objects weighing less that five hundred kilograms'; it is just as arbitrary a cut-off point. (Churchland 1985:41)

Churchland also offers, in a slightly different context, a thought experiment in which we imagine someone whose sensory modalities have been surgically destroyed and a computer mounted on his forehead which gives him information about his environment. (1985:42–43) Why should we refuse to say that this person observes objects? And what is the difference between such a person and those actual persons who look through electron microscopes which happen to be detached from their foreheads?

It is important to remember, however, that van Fraassen's attempt at drawing the distinction between the observable and the unobservable is not arbitrary. He is trying to articulate a principle here, a principle not far off from my suggestion that we must focus on actual human capacities and what they might become. Van Fraassen, despite his retaining the metaphysics of a kind of correspondence theory of truth, clearly aims to say exactly how theory acceptance is connected to our limitations. The answer to the question of scientific realism vs. anti-realism is this: 'to accept a theory is (for us) to believe that it is empirically adequate—that what the theory says *about what is observable* (by us) is true'. (1980:18)

The 'for us's' are at the heart of van Fraassen's position and they motivate his insistence that human limitations determine what counts as observable. His suggestion for how to construe these

limitations is, like Dummett's, particularly severe, but it is not arbitrary. The reasoning behind it must be that it is human beings and their capacities that are relevant, not human beings if they were more like Douglas Firs, if they had electron microscopes attached to their foreheads, etc. Van Fraassen says that he has no difficulty with thought experiments about widening the epistemic community to include 'dolphins, extraterrestrials or the products of our own genetic engineering'. (1985:256) But he argues that Churchland's thought experiments about people whose sensory modalities are destroyed and replaced with electronic input or electron microscopes should not be taken seriously.

Van Fraassen's response to the objections which arise from thought experiments is that those scientific realists who are baffled by the idea that the limitations of our capacities should be epistemically relevant are simply left cold by the 'empiricist premise, that experience is the sole legitimate source of information about the world'. '[D]isdain for opinions inflated beyond what can run the gauntlet of experience strikes no chord in their hearts.' (1985: 258) They are simply not in tune with empiricism and will thus find themselves intuitively opposed to it.

So van Fraassen does not give a knock-down argument against the realists' thought-experimental objections, but he tries, rather, to persuade them of the plausibility of the empiricist picture and the epistemology which accompanies it.[4] And that epistemology is one which insists that acceptance (the only epistemically relevant notion for theories) must be linked to what we can in fact observe.

But allowing equipment which aids us in detecting and observing, fallible as it might be, is not engaging in spurious counterfactual reasoning with respect to our abilities. It does not go against the grain of empiricism. We needn't hypothesize that we could be, but in fact are not, beings with the equipment built in. All we need say is that we take (for reasons such as those offered by Hacking) such equipment (whether it is around today or would be around if we continued our researches) to be part of our processes of observation. We may change our minds about the virtues of this equipment and decide that some are or were downright misleading, but nonetheless, equipment and technology are a part of *our* attempt to arrive at an empirically adequate picture of the world—one which would withstand all attempts at refutation. *That* is the reason they should be allowed by the verificationist to 'aid' us in observation.

Again, it strikes me that van Fraassen brushes aside this point because he does not follow through on his suggestion that theory acceptance is a matter of virtues which we think are important. Once that suggestion is taken seriously, it becomes clear that the empiricist

ought to look to our actual procedures of inquiry, to what inquirers actually take (for the kind of reasons offered by Hacking) to aid observation. If van Fraassen were to take that small step from constructive empiricism to the pragmatist account of truth, he would look to how we in fact *would* decide questions. The naked eye would appear beside the point.

WIGGINS AND THE CONVERGENCE REQUIREMENT

Let us return to those philosophers who search for a criterion of legitimacy which is less tied to the senses and more holistic. For it is here, I have suggested, that we will find an acceptable verificationism, if there is one to be found. In David Wiggins' 'Truth, and Truth as Predicated of Moral Judgements', one can unearth the following criterion: a belief must be sensitive to 'the ins and outs of some reality or other' (1991b:150), where no limits are specified in advance on what can count as a reality.

One reason for excavating a verificationist criterion from Wiggins' position is that we can find not one, but three good arguments in its favour.[5] Another is that Wiggins stresses that we must not at the outset prejudice certain kinds of inquiry, a thought which I find especially important.

Wiggins' first argument, which I shall call the Argument from Individuation, is both a semantic argument and an argument about what belief is. Beliefs, Wiggins asserts, aim at truth: if one believes *x,* then one believes it to be true. This is a 'constitutive norm' of belief; it is the very nature of belief. Wiggins argues that if this point is right, then the belief that *x,* must be sensitive to whether indeed *x.* If it were not,

> then we could not interpret beliefs by asking: How do things have to be for *this* state of mind to succeed in its aim or be correct? What does this state of mind have, *qua* the belief it is, to be differentially sensitive to?
>
> (1991b:148)

That is, if beliefs were not sensitive to some 'reality', then we could not individuate them. If there is to be any interpretation of *x* as the belief that it is, as opposed to some other belief, then there must be something distinct from *x,* 'namely how things have to be for *x* to succeed in its aim or be correct'. (1991b:151)

The notion of content or, if you like, significance, is now brought in: 'Suppose that *x* is a sentence. Then finding a content for *x* involves

seeing *x* or its negation as fit for expressing a belief that interpreters can envisage finding the right sort of licence to project upon subjects.' (1991b:151) Finding such a licence is finding what the belief that the sentence expresses is sensitive to. If we cannot discover that, then we cannot discern a content.

We are reminded of Wittgenstein's private language considerations here. For if Wiggins' argument is right, then 'if *x* has content then *x*'s truth cannot simply consist in *x*'s being itself a belief, or in *x*'s being something believed or willed'. (1991b:148) This holds, Wiggins says, even for the judgement that one is in pain.

Wiggins also sees Peirce as his predecessor here.[6] The argument is that beliefs, being what they are, are sensitive to some reality. If they fail to be so sensitive, then they fail to have their own content; we cannot individuate them. Peirce holds that the very notion of belief is such that an inquirer stops believing (i.e. doubts) in the face of a surprising experience that upsets an expectation produced by the belief. Beliefs are such that they automatically resign in the face of recalcitrant experience.

We can expand on Peirce's point and argue that the psychological reality of belief, as opposed to some other propostitional attitude such as choosing arbitrarily what to 'believe', saying that one believes, or lying about what one believes, is such that belief must be sensitive to experience, broadly construed. It must be in principle sensitive to sensory experience and to experience in diagrammatic, argumentative and theoretical contexts. If an inquirer says that she is going to believe *P,* irrespective of what the evidence is or may turn out to be, she is mistaken in thinking that her propositional attitude is one of belief. There is a distinction between deciding that the evidence favours *P* and thereby believing *P,* and deciding to believe *P,* irrespective of evidence. It is not at all clear that, given what belief is, the latter is possible.[7]

Wiggins' second argument is what I shall call the Argument from the Inside, an argument about objectivity and publicity. It starts from the idea that if the reasons I have for believing *P* have no force whatsoever on others, I will feel that something is amiss:

> Suppose I am convinced that something is so. Then it is disturbing to me if nobody else can be brought to agree with me. Why? Well, if something is so *either* it must be capable of impinging on others in the way it impinged on me or I shall have in principle to account for its inaccessibility to all others. And if I could have accounted for that, then I should never have been disturbed in the first place by disagreement.
>
> (1991b:149)

Wiggins advances this argument to suggest that a true belief must be a belief which tends, under favourable conditions, to command convergence or agreement. Again, Peirce is the cited predecessor here. But one does not have to agree with Peirce and Wiggins about truth to see the force of the point for verificationism. The argument draws our attention to the phenomenological fact that one tends to be disturbed if what has impinged upon one does not impinge upon others. If the absence of impinging on others can be explained away by the fact that the others are not in the appropriate position to feel the force of the evidence or arguments or by the fact that the others are defective in some way, the disturbance will disappear. But in the absence of such explanations, one must feel uneasy, for:

> If…there were no prospect at all that arguments founded in what made me think it true should have non-random efficacy in securing agreement about whether *p*, I should be without protection from the idea that (unless I was simply wrong) there was just nothing at issue.
>
> (1991b:149)

The verificationist will want to hook up with Wiggins here. If I think that there is no hope that the reasons I have for believing *P* will convince anyone else, then why do I think that there is some truth of the matter at stake? For there to be a truth of the matter, there must at least be the reasonable assumption that others can be brought to see it. If I have no reason to think this, the verificationist will say that the belief is empty, fails to aim at truth, fails in its claim to be about an objective matter, or some such thing.

There is again an echo here of Wittgenstein's anti-private arguments, but Wiggins gives us a twist on the Wittgensteinian point. The reason that private reasons are insufficient to prop up objectivity is that the very nature of belief is that it seeks convergence. Part of what it is to believe *P* is to think that others should believe it as well or to think that, if others had the evidence and argument before them, they would believe it.[8]

Wiggins' third argument is an argument from interpretation reminiscent of Quine and Dummett. I shall call it the Argument from the Outside. It begins with the conditions under which it is possible for someone to interpret another's belief and finds again that one condition is that the belief must be responsive to something:

> Suppose we have a subject predicate sentence 'item *t* is F'. To interpret this sentence one who does not yet know what it means has to find a propositional attitude such as belief that the

> sentence or its negation is good for the expression of, and then determine what condition that propositional attitude is keyed to, or has to be sensitive to the obtaining or non-obtaining of. For a belief to *be* the belief that item *t* is F the belief has to be both *en rapport* with item *t* and answerable to whether or not the item *t* really has the property F. (If a mental state were in no way sensitive to whether or not item *t* really was F, the state couldn't be the *belief* that item *t* was F.)
>
> (1991b: 150)

This argument rests on the Argument from Individuation, which has it that if we are to individuate beliefs, they must answer to something. The Argument from the Outside adds a point about what must be the case in order to interpret a sentence. If I do not know what a sentence means, I must find out what conditions the belief (which the sentence expresses) is responsive to. If there is nothing that the belief need be responsive to, then I cannot interpret it. If the purported believer asserts that she will believe *P* come what may, regardless of what evidence may or may not come in, then it is a misdescription to call her propositional attitude a belief and it is impossible for me to grasp what she means by the sentence which supposedly expresses it.

Wiggins' arguments pull us even further away from thinking that verifiability ought to require the presence of sensory evidence. We need to find something that a belief is sensitive to, but that something need not be keyed to sensory observation. Indeed, Wiggins takes his position to be friendly to moral judgements as candidates for content and truth-value. In what follows, I shall sketch that position, without entering into the debates which accompany every turn. For my aim is merely to show that, on the broad sort of criterion offered by Wiggins, one can make a case for moral judgements making the grade. We have seen such a case made by a certain kind of Peircean and all that I want to indicate here is that an alternative route, with affinities to Peirce's, is also possible.[9]

Wiggins insists that we start off by placing no limitations on the nature of reality. We must begin by examining the various sorts of beliefs that *aspire* to truth and see whether they respond to something. This insistence has the merit of ensuring that we do not prejudice the question at the outset by taking reality to be physical reality.

The way in which Wiggins himself goes about the task is to spell out what he takes a satisfactory and substantial account of truth to require of a hypothesis. If a hypothesis is a candidate for a truth-value, it will have to have a number of characteristics or marks. And

if an evaluative claim is to be treated as an assertion or as a candidate for a truth-value, it must have those marks. It must be a 'plain' truth. His final formulation of the marks of a plain truth are as follows:[10]

1 Truth is a primary dimension of assessment for beliefs and for sentences that can express or report beliefs.
2 If *x* is true, then *x* will under favourable circumstances command convergence, and the best explanation of the existence of this convergence will require the actual truth of *x…*
3 For any *x,* if *x* is true then *x* has content; and if *x* has content, then *x*'s truth cannot simply consist in *x*'s being itself a belief, or in *x*'s being something believed or willed…
4 Every true belief (every truth) is true in virtue of something.
5 If x_1 is true and x_2 is true, then their conjunction is true.

If evaluative judgements can meet these related conditions, then they will have shown themselves to be legitimate aspirers to truth. I shall confine my remarks to (2), as it seems to be the most serious obstacle in the way of evaluative judgements and it is the site of the verificationist spirit in Wiggins' work.

Wiggins takes the convergence required by (2) not to be *'mere intersubjectivity* or a chorus of agreement'. (1991b:150) In order for the convergence to be relevant to truth, *'the statement of the best explanation of the agreement in the belief needs a premise to the effect that item t is indeed F, and the explanation would be simply invalidated by its absence'.* (1991b:151) Alternatively: *'the best explanation of the agreement in belief that p is inconsistent with any denial on the explainer's own part that p'.* (1991b:151)

In order for moral judgements to meet this requirement, there must be values and obligations which can account for agreement in our moral beliefs. It might seem that some sort of Platonism with respect to values is required here, but Wiggins rejects it. He does not want to say that values and obligations exist as abstract objects. Rather, he argues that moral judgements command convergence in the same way that mathematical judgements command it. And he is a Platonist about neither.

The judgement *'7+5=12'* is agreed upon and the explanation of the agreement is that 'there is nothing else to think'. (1991b: 153) The point of the analogy is that, in the mathematical case, there is no causal relation between minds and objects (numbers). The same holds for the moral case. We believe both sorts of judgements because we are forced to; something impinges on us. But no physical thing impinges upon us.

If it turned out that the best explanation of agreement with respect to moral judgements is that 'that's the way we were brought up to think', then moral judgements would not meet the second mark of truth. But Wiggins thinks that this need not always be the best explanation. He distinguishes two sorts of moral judgements, arguing that one sort can command the right kind of convergence. Those are specific value judgements (*x* is charitable/cruel/kind) as opposed to practical judgements (I must——; he must not——).

Take a specific value judgement: upon seeing a group of young hoodlums set alight a live cat, we judge 'that is cruel'. Gilbert Harman[11] and his fellow non-cognitivists say that the best explanation of our making the judgement is that we were schooled to think that such things are cruel. Wiggins, however, notes that this remark

> raises the question *why* we were so schooled, and whether the mores and institutions that make up the context of the schooling are not themselves a response to something that is simply *there…* Compare the answer to the question why we are schooled that *7+5=12*.
>
> (1991b:157)

Wiggins also argues that, the explanation of the judgement will need to resort to a general theory of objects that provoke various states. The theory will have to say what it was in the hoodlums' act that is similar to other acts that provoke the response 'that is cruel.' That is, the theory will have to describe the standard of correctness for the application of the predicate 'is cruel,' for, even on Harman's view, one can be mistaken in such an attribution. (Such as when one points to a sunset and, without intending anything subtle, asserts That's cruel.') In setting out such a theory, it will be clear that 'we have based our thought that the hoodlums' action was callously cruel upon something that is there to be perceived in it. If so, there is still room for plain truth'. (1991b:158)

Wiggins makes it clear that he is not arguing that, in order for convergence relevant to truth to be in place, all rational inquirers must be in agreement. All that the convergence requirement demands is that 'judgements be open to criticism, and that criticism should always import the question of the prospects of interesting or principled convergence'. (1991b:161) We do not need to assume that everyone is 'party to the norms and shared sensibility that gives these judgements their distinctive content'. (1991b:161)

Neither do we need to assume that the principled agreement must stretch across times and cultures:

> [W]hat really matters…is only that the judgement should represent an answer to a question asked with respect to a given place and time, that the question should have a sense held fixed by reference to the historical context and circumstances of that place and time, and that the answer should be better than all competing answers to that question, *so understood.*
>
> (1991b:162–63)

I will not engage in the debate over whether all of Wiggins' marks of truth are met by some evaluative judgements. It is enough that he has opened the door and shown a possible corridor to the verificationist who thinks that moral judgements might be candidates for truth-values. In the last two chapters, we have seen that a verificationism based on a broad account of experience and on the minimal requirement that a claim must not hold itself above it is at least plausible. Wiggins not only provides more argument for this thought, but he shows us again the possibility of extending it to moral inquiry. Indeed, he has provided a motivation for doing so by suggesting that there is no *prima facie* insurmountable obstacle in the way and that we remain true to the phenomenology of moral judgement by taking it to be answerable to evidence and argument.

PEACOCKE'S DISCRIMINATION PRINCIPLE

In this section I turn to Christopher Peacocke's explicit attempt at getting right the thought behind verificationism. We shall see that it has affinities with one of Wiggins' arguments and with some of the other principles we have found promising. But we shall also see yet another manifestation of the tension between resistance to anti-realism and verificationism.

Peacocke articulates a criterion of 'intelligibility' which he argues does not have the unintuitive results of the logical positivists' verifiability principle and of Dummett's verificationism.[12] This criterion will determine when an alleged concept or content can be declared spurious; when it goes 'beyond the limits of genuine thought' (1992:xi) and hence is not itself genuine. (1992:xiii) By 'content' Peacocke means a thought or the object of a propositional attitude.[13]

Like Dummett, Peacocke thinks of the issue of meaning as turning on what it takes to master or grasp a concept. His 'Principle of Dependence' states that '[t]here can be nothing more to the nature of a concept than is determined by a correct account of the capacity of a thinker who has mastered the concept'. (1992:5) We have seen that this thought leads naturally to some kind of verificationism and it leads there in Peacocke's case as well:

> Suppose that someone suggests that there are concepts that do not conform to this principle. Then the respects in which these alleged concepts slice more finely than the concepts that do conform to it must be nothing to us.
>
> (1992:5)

So, like Dummett, Peacocke offers 'an acceptance condition theory of content'. (1986:101) But he argues that contents about the past and other unverifiable contents *have* acceptance conditions. He says he agrees with Dummett that grasping a sense is knowing the condition for something to be its semantic value (1992:22), but disagrees with the anti-realism that Dummett thinks follows from this thought. (1992:238 n. 16) Peacocke thus sees his account as an advance on Dummett's. Truth-conditions are determined by acceptance conditions, but we can grasp a content which is allegedly unrecognizably true. Being unrecognizably true or false will not be the criterion of spuriousness.

That is, Peacocke wants to maintain the realist intuition that our capacities do not determine what there is. On his view, 'possession conditions' state what is required for full mastery of a concept (1992: 29); they state what conditions have to be met for a thinker to possess a concept. (1992:41) There may, however, be 'possession conditions we can formulate but cannot, as thinkers, instantiate' and there may be 'concepts individuated by possession conditions we cannot even formulate'. (1992:39)

In *Thoughts: an Essay on Content* (1986), Peacocke attempts to set out a general theory of content, arguing that the identity of a content is determined by acceptance conditions. (1986:51) He puts forward the following 'conjecture':

> There is a class of contents whose truth conditions are directly determined by certain of their acceptance conditions; the truth conditions of contents outside this class are determined ultimately by their relations to contents inside this initial class.
>
> (1986:12)

A content's truth-conditions are determined either by its acceptance conditions or by the acceptance conditions of other, related, contents. And, most important for us, a content is marked out by its acceptance conditions.[14]

The reason Peacocke is able to agree with Dummett about the role of acceptance conditions and disagree with him about what that entails is that Peacocke takes there to be two kinds of acceptance conditions. The first are similar to the positivists' verifiability conditions and to

Dummett's assertability conditions— conditions under which one should accept a judgement. The second are conditions which we have seen Peirce (at one time) and certain kinds of holist press—conditions which specify what other judgements one must accept once one accepts the judgement in question. The first are 'grounds' and the second are 'consequences' or 'commitments'. (1986:28) Peacocke defines these notions thus:

> A canonical commitment of the content that *p* is something which, if a thinker finds it fails to hold, constitutively requires him to judge that *not-p*...and to do so for the reason that it fails to hold... A canonical ground for the content that *p* is something which, if a thinker finds it holds, constitutively requires him...to judge that *p,* and to do so for the reason that it holds.
>
> (1986:47)

These criteria are, Peacocke says, 'attributional' and 'reason-oriented':

> They are attributional because if someone fails to be sensitive to the failure of canonical commitments or to the holding of canonical grounds for a content...he cannot be attributed the ability to judge that content. They are reason-oriented because they are framed in terms of reasons for judging.
>
> (1986:47)

So if we want to determine the identity of the content 'this block is cubic', we need to ask what would justify one in asserting it and what 'nondefeasible' commitments one incurs in accepting it. (1986:15) These are canonical insofar as 'we cannot make sense of the idea that someone is judging that very content but does not in one way or another incur these commitments'. (1986:15) And a criterion of identity is provided here: two contents are identical if and only if their grounds and commitments are identical.

Peacocke argues that the acceptance conditions for observational contents such as 'this block is cubic' commit one to a set of counterfactuals about how the object would appear from other positions. In this case the thinker is committed to holding, amongst other things, that the object would appear to be cubic in any position under normal external and perceptual conditions.

Of course, the thinker in question need not explicitly formulate such a commitment. The way in which we can tell what a thinker's commitments are is by observing his behaviour. For instance: 'That they *are* his commitments will be shown by the circumstances in which he is willing to withdraw a judgement of the content.' (1986:16)

So Peacocke argues that the conditions under which a judgement would be warranted are just one sort of acceptance condition; in Peirce's terms, they are just one sort of conditional in which the statement plays a part. Someone can manifest her grasp of a judgement *P* not only by saying what evidence would prompt her to assert its truth (if *Q* then *P*), but also by saying or showing that she is indeed committed to the sorts of things that one who grasps the content must be committed to (if *P* then *R*). And Peacocke's claim is that once we adopt this view, it should be clear that those he calls 'verificationists'—mainly the logical positivists—wrongly scorned judgements which should be seen as legitimate. The commitment model[15] can supply an adequate account of the grasp of contents which go beyond evidence for or against them; it can provide an adequate account of the grasp of contents which transcend verification.

The case of universally quantified statements is dealt with in the following manner. If someone understands 'All *Fs* are *Gs*', she is commited (roughly) to judging, should the question arise, any instance of this schema: if there is an *F* at some place *ø*, it is *G*. Thus Peacocke avoids the claim that a person, even some sort of idealized person, manifests her understanding by being able to recognize what would constitue a proof of or conclusive grounds for a content of the form 'all *Fs* are *G*'. It is this requirement which gets the logical positivist and Dummett in trouble over universal generalizations. On Peacocke's view, the other sort of acceptance condition—a commitment—is brought into play. And it seems to do the job.

Matters are not so straightforward with respect to judgements about inaccessible times and places, such as judgements about the past. Peacocke says that present tense canonical grounds and commitments will not do. There are no present tense contents such that they must be true whenever a past tense content is true.

Past tense commitments will also not do. On Peacocke's view, it is right to say that '200 years ago, there was a tree here' is true if and only if the canonical commitments of 'There is a tree here' were fulfilled 200 years ago. But Peacocke requires that understanding, in this case understanding of temporal contexts, be manifestable *by the understander,* who was not around 200 years ago, say, to vary her position relative to the place and tree in question. Peacocke rightly does not want to resort here to the flights of fancy which we have seen have tempted others. Such an approach, he says, 'is powerless by itself to illuminate the relations between *our* acceptance of a content and its truth conditions'. (1986:12, see also 37)

So Peacocke turns away from the thought that there are acceptance conditions for past tense contents and turns to the second part of his conjecture: the truth-conditions of past tense contents are determined

by their relations to other contents whose truth-conditions are already determined.

These other contents are temporal relations. Grasp of temporal concepts, such as the concept of the past, requires grasp of temporal relations. And we literally perceive these relations. We perceive, for instance, one event following another; we have 'an impression of precedence'. (1986:67)

Peacocke suggests that the following is a canonical commitment of one who judges that event e came before *e′*:

> if (1) a subject's perceptual and memory mechanisms are functioning properly and (2) he is so located that signals from *e* and *e′*...take the same length of time to reach him, then he has the impression that [*e* is before *e′*.
>
> (1986:72)

This is a 'perceptual account of grasp of a temporal relation'. (1986:71)

The account has it that possession of concepts of temporal relations requires the possession of a faculty. This faculty produces mental states in the following way:

> a mental state with one content rather than another is produced because the subject was formerly in a mental state systematically related to the first content. What makes a content a past-tense content is the answerability, in complex and multifarious ways, of judgements of the content to the deliverances of such a faculty.
>
> (1986:73)

Such faculties are supposed to deliver impressions of precedence, motion, acceleration, etc.

Once Peacocke has advanced his thesis as to how we grasp accessible temporal relations, he moves to the inaccessible, such as contents about the distant past. His idea is that the truth-conditions for the accessible contents, in addition to features of our use of concepts of the inaccessible, determine the truth-conditions for contents concerning the inaccessible. Generally, he argues, the intelligibility of verification-transcendent contents (such as judgements about inaccessible times, objects and places) have their truth-conditions determined by the truth-conditions of judgements about contents which we can verify (accessible times, objects and places) and by certain features of our conceptions of the verification-transcendent (the inaccessible). A concept may apply to something inaccessible to a subject *S* if it has the same property which explains *S*'s

application of the concept in accessible cases. We project from the accessible to the inaccessible.

Peacocke illustrates this move with the case of inaccessible places. One can, via perception, grasp the relation 'one pace from' and this relation also holds for inaccessible places. For Peacocke argues that he can conceive of any number of iterations of this relation— a thought can be about a place 100,000,000,000,000 paces away from here. We can thus possess a conception of a network of spatial relations, which includes the inaccessible. We assume that the laws about distance hold throughout this network.

The truth-value links between the accessible and the inaccessible are then as follows:

> '10^{20} paces in that direction is a spherical object' is true if and only if an utterance or thought 'There's a spherical object here' is true when evaluated with respect to the context of 10^{20} paces in the indicated direction.
>
> (1986:81)

The same argument holds for inaccessible times. We project from the observable 'a few moments ago' to the unobservable 'hundreds of thousands of moments ago'.

We should pause here, however, to notice that there is something problematic about making temporal concepts depend on a faculty which is 'temporally sensitive'. (1986:74) Such a move might seem acceptable with respect to secondary qualities such as redness. The concept of redness is marked out by its ground, and its ground is something like: '*x* is red' is warranted if *x* appears red to normal perceivers. There is a circularity here in that the individuation of the concept of redness requires the notion of something appearing red. This kind of circularity is thought to be a distinctive feature of the individuation and attribution of secondary quality concepts. They are at least partly dependent on a human faculty—on human perceptions of the property in question.

But clearly, this circularity is not acceptable in all quarters. Some concepts are not such that we think it suitable to individuate them in such a manner. For instance, something's being an acid is not a matter of normal perceivers perceiving it as an acid. We want to say that acidity is not perceiver-dependent in the way that redness is. (This is not to say that redness is entirely perceiver-dependent, nor is it to say that acidity is entirely independent of the faculties of perceivers.)

Peacocke seems to see this point in *A Study of Concepts,*[16] where he tries to reconcile the individuation of perceptual concepts with a non-

circularity requirement: the acceptance conditions for a concept have to be specified without mentioning or presupposing the concept itself. But the reconciliation harks back to the logical positivists' notion of unconceptualized or raw contents of experience. For Peacocke argues that, to avoid individuating the concept red by mentioning the notion of seeing something as red, we can mention instead non-conceptual contents of the experience of seeing something as red. The required sensitivity is not to redness, which is a conceptual notion, but to something objective or non-conceptual—to a place on a labelled grid of, in this case I suppose, positions on the colour spectrum.

That is, the idea that allows Peacocke to reconcile the two plausible claims is that 'a property or relation can be perceived without being conceptualized'; it can be perceived directly. (see 1994:1) But if one can preserve a principle of spuriousness that does not rule out what the logical positivists ruled out (statements about the past) only by accepting something just as unpalatable from their plate (the notion of direct perception), we are not much further ahead.

But more important than the worry that we are picking up a problematic notion of direct experience is a methodological worry. It cannot be the case that all properties or relations can be perceived directly. Acidity cannot. What about causal connection or odiousness? We need a principle for determining which properties and relations can be perceived directly. The worry is that whenever we are in danger of failing to explain how one grasps a certain concept, we will appeal to something that is perceived directly or via a faculty whose job it is to perceive just that property. It is not clear that we have a principled reason to think that temporality is included in the group of properties which have a faculty all of their own, which can be perceived directly.[17] Thus, many will remain unconvinced by Peacocke's argument regarding statements about the past.

We have seen that statements about the past are perhaps the stickiest sort for the verificationist, who seems to be wrongly suspicious of them, but encounters great difficulty in saying how she can regard them in a better light. Let us turn to what Peacocke has to say about the project which motivates many a verificationism in the first place—the project of determining which hypotheses and distinctions we rightly ought to be suspicious of.

On his theory, it is possible for a thinker to 'suppose that there is a concept of a certain kind and that a particular hypothesis formulated using the concept makes sense even though there is in fact no such concept'. (1992:199) In this case, the thinker is 'under an illusion of content'.[18]

Peacocke takes one example of such an illusory or spurious content to be that which is supposed to arise from the philosophical thought

experiment of the perfect fission of a person. We are to imagine a person with a perfectly symmetrical brain, removed and divided in half, with each half then placed in a perfect replica of the original person's body. Some philosophers argue that

> the questions 'Will I be Lefty?' and 'Will I be Righty?' have entirely definite answers…even if there is no procedure or criterion whatever by means of which anyone could reasonably decide whether one or the other will be I.
>
> (Chisholm 1970:188)

Peacocke's second example is the extreme version of the Inverted Spectrum Hypothesis, which states that someone's visual experience can be qualitatively different from your own even when you are identically situated: even when you are seeing the same object and your brain states and environmental conditions are identical. (1992: 200) We have seen other verificationists set themselves against this hypothesis.

The third is the case of absolute space, 'in the sense in which hypotheses about the relations of objects and events to absolute space seem to be beyond all experimental confirmation'. (1992: 200) On this conception of space, it makes sense to suppose that the 'entire material universe is moving undetectably at a particular uniform velocity with respect to absolute space'. (1992:200) We have seen that Mach also objected to this thought.

Peacocke wants to have the wherewithal to declare the above hypotheses spurious, yet he wants to use a brush which does not tar sentences about the past and unrestricted universal quantifications. So he wants to stay away from the logical positivists' general claim that '[a]ll genuine contents must, if true, be verifiable in such and such ways'. (1992:200) While he agrees with the logical positivists that the above hypotheses are in principle unverifiable, he thinks that a general claim about a verifiability requirement will rule out apparently intelligible hypotheses as well.

Peacocke's replacement for the positivists' verifiability principle is the 'Discrimination Principle' or what in *Thoughts* he called 'manifestationism': 'For each content a thinker may judge, there is an adequately individuating account of what makes it the case that he is judging that content rather than any other.'[19] Such an account is one which 'gives a condition that states correctly and informatively what it is for the thinker to be judging that particular content, a condition that distinguishes judging that content from judging any other content'. (1992:203)

So, as one would expect from the criterion of content identity examined above, a non-spurious content is one for which there is a ground or commitment which distinguishes it from other contents. An account of the canonical grounds or commitments of a content must be 'uniquely determining'. (1986:51)

To show that the fission case does not meet this requirement, a kind of *reductio* is employed, what Peacocke calls the 'deflationary tactic' (1992:207). One supposes that the suspicious content is genuine and then asks how judging that content is distinct from judging another unproblematic or genuine content. If an answer is not forthcoming, the initial alleged content does not meet the Discrimination Principle. The mastery of the spurious hypothesizer's concepts can be explained without recourse to the spurious concepts.

Chisholm, who is supposed to claim that he knows what it is for one post-operative person rather than the other to be the original person, even in a perfectly symmetrical case, cannot distinguish that claim from our 'normal' judgements. Peacocke says that Chisholm 'is simply someone who agrees with our judgements of identity in more normal cases and then additionally insists in the fission case on endorsing the content "It is determinately true or determinately false that Lefty is the original person; and the same holds for Righty." (1992:215) But there is no 'knowledge' which backs up this additional insistence, there is 'no feature of Chisholm's judgements containing the notion of personal identity that can be explained only on the supposition that he has such knowledge'. (1992:216)

With respect to the inverted spectrum and absolute space hypotheses, a second kind of *reductio* is utilized—the 'switching' tactic. (1992:207) Here one aims to show that there is an alternative hypothesis to the initial spurious hypothesis, which is legitimate by the standards of the spurious hypothesis but is such that the spurious hypothesizer cannot give an account of what it is to judge the alternative rather than his own. Thus, there is a violation of the Discrimination Principle—the initial hypothesis is not genuine.

If *A* claims to have a different type of experience from *B* even when they are in exactly the same physical and functional states, *A* must claim something like the following: when *B* is looking at things which look light grey to me, he has an experience of the same kind as I have when I see things that look dark grey to me. Peacocke's switching tactician will then challenge *A* to distinguish that content from the content that things which look light grey to *A* look light grey to *B.* The argument is then that the spurious hypothesizer does not have the wherewithal to distinguish between these two contents.

Peacocke has the resources in his account for such a distinction, for he argues that the concept of an experience of something as light grey

is connected or anchored to a property of objects—the property of being light grey. His suggestion is that the spurious hypothesizer cuts himself off from this anchor:

> [i]n admitting the possibility of extreme inversion, he is prepared to judge that an experience can be of a type that allows its owner to discriminate the light gray things…while simultaneously he accepts that the owner of the experience is in a physical state others are in when they see things as light gray, and yet he holds that the experience in question may not be an experience of an object as light gray.
>
> (1992:210–11)

That is, Peacocke tries to give an account of what our knowledge is knowledge *of* (1992:213) and so our concepts, including the concept of sameness, is anchored. The inverted spectrum theorist does not provide the anchor.

In the case of absolute space, the spurious hypothesizer is asked what it is to exercise 'the concept of absolute location, rather than the concept of location relative to a frame of reference moving with a uniform velocity with respect to (alleged) absolute space'. (1992: 214) For, as we saw in chapter 1, there are no experimental set-ups relevant to the measurement of absolute space and velocity. The spurious hypothesizer cannot say that exercising the concept of absolute space has ramifications for how she would react to the outcomes of such experiments.

As Peacocke notes, these arguments from the Discrimination Principle to the conclusion that a particular content is spurious are not knock-down. (1992:217) They pose a challenge to the spurious hypothesizer—a challenge to say how to distinguish the spurious content from others—and then they show, one by one, how the answers which might be given fail to meet the challenge. But that is not to prove strictly that an adequate answer cannot be given. In this way Peacocke's proposal might seem to differ from many of the others we have looked at, which aim to identify some feature of spurious hypotheses. Spurious hypotheses are ones which no experiment could verify or falsify, ones which no evidence could be gathered for or against, ones which are insulated from reason, etc.

But notice that these positions are also open-ended. It is always open to a defender of an allegedly spurious hypothesis to show how it is indeed susceptible to verification, evidence, reason or whatever. To turn this point on its head, we can see Peacocke as putting forward a view of what he takes to be the identifying feature of spurious

hypotheses—they are such that there is no way one can discriminate between them and alternative hypotheses.

This proposal is very much along the lines of Wiggins' Argument from Individuation. We have seen that Wiggins argues that we must be able to individuate one belief from another. The way we do this is to identify what it is that belief$_1$ must be sensitive to and what it is that belief$_2$ must be sensitive to. Peacocke's variation is to take as the criterion of intelligibility the more general ability to describe how belief$_1$ differs from belief$_2$. On both accounts, if the beliefs are non-spurious, we must be able to discriminate or distinguish between them. We have also seen that this thought was at the heart of Peirce's pragmatic maxim.

Peacocke's argument for the principle is that the following must be right. It is incorrect to attribute to a subject *S* beliefs about finely-sliced things if *S*s abilities do not slice that finely. (1992: 203) So if we know something about *S*s abilities for fineness of discrimination, then we know something about what *S* understands and fails to understand.

Although Peacocke takes his formulation and defence of the Discrimination Principle to be independent of certain semantic doctrines (1992:221), he sees that it is related to those doctrines. For instance, he says that the Discrimination Principle is a necessary condition of the communicability of content. If it is possible to know that someone is judging a particular content, if it is possible to communicate the content, then it must be possible to individuate that content from others. If nothing in the speaker's behaviour can suggest that he is judging *P* rather than *Q* and if nothing can be explained by his judging *P* rather than *Q*? then there is no reason to think that he is judging *P* rather than *Q* A content is communicable only if one person can know that another is judging *that* content, rather than another.

Peacocke thinks, however, that this argument does not link communicability with Dummett's kind of verificationism. (1992: 222) He agrees with Dummett that communicability requires that meaning is determined by use, that it 'requires a form of the manifestation requirement for meaning'. (1992:222) He does not agree with Dummett's claim that 'no realistic truth-conditional theory of meaning could conform to the principle that use determines meaning'. (1992: 222)

But in the broad sense in which we use 'verificationism' in this book, verificationism makes an entry with Peacocke's agreement with Dummett. The 'ultimate rationale' for Peacocke's principle is the Principle of Dependence, the principle that 'there can be nothing more to the nature of a concept than is determined by a correct account of

the capacity of a thinker who has mastered the concept'. (1992:204) We have seen that this principle leads to the claim that, if a speaker understands a content or judges a content *P* rather than *Q* something must be different in her behaviour and/or in the explanations we might give of her behaviour. *That* is the kind of verificationism to which Peacocke is committed.

Peacocke also distinguishes the Discrimination Principle from Dummett's principle that if a statement is true, there must be something in virtue of which it is true,[20] which Dummett takes to be connected to the principle that if a statement is true, it must in principle be possible to know that it is true. If it is not possible to know that *P* is true, then there could not be anything which made *P* true. (Dummett 1976:99) Peacocke thinks that this connection is unwarranted. A statement can be made true by the truth of all members of a family of statements, where it is not possible that all these members can be known by any one person. This is the case, he argues, for universal quantification. 'All ravens are black' is made true by the truth of a very large class of statements of the sort: 'The raven on the post at the corner of 3rd Ave and 14th St, Lethbridge, at 14:05, June 17, 1993 is black.'

Peacocke also notes that the Discrimination Principle is linked to arguments against the possibility of a private language. For instance, one of those arguments rests on the claim that a private language would have no criteria for the correct application of its vocabulary. He says: 'Here the link with the Discrimination Principle is that if there were such criteria, the supposed contents the private linguist introduces would not violate the principle.' (1992:222) Thus, Peacocke is happy to report that Wittgensteinian arguments against private language need not entail the verificationism of the logical positivists or of Dummett, only the less severe Discrimination Principle.

We have seen that, like the principles of certain pragmatists and holists, Peacocke's principle is that there must be *some* difference between two genuine hypotheses—there must be some way of individuating them.[21] But we have also seen that the tough and necessary job for such verificationists is then to specify what kind of difference does make a difference. Peacocke, I think, does not manage to overcome some of the difficulties which accompany this task.

The Discrimination Principle has it that a non-spurious content is one for which there is an adequately individuating account of what makes it the case that someone is judging that content rather than any other. We have seen that there are two things going on here. First, if a content has no grounds and no commitments, it will be declared spurious on this principle. For in that case, there will be no account of what makes it the case that someone is judging it. Second,

if two contents have the same acceptance conditions, then one is spurious. It is spurious not because it has no acceptance conditions, but because its acceptance conditions do not distinguish it from another content.

It might seem that Peacocke here faces a difficulty encountered by Peirce. We have seen that Peirce tried for a while to argue that effects on an interpreter count as consequences. But since any assertion can have effects on some interpreter's beliefs or action, this criterion failed to disqualify anything and Peirce abandoned it.

Peacocke also argues that one way a hypothesis can show itself to be individuated from others is that believers incur commitments when they accept the hypothesis. So it seems that a believer of Russell's hypothesis might well incur a number of such commitments—she might, for example, hold that no one is morally responsible for what they did 'yesterday'.[22]

Peacocke, however, avoids the charge that his criterion allows anything to pass it. For his position is normative in a way that Peirce's is not. Peacocke thinks that 'the identity of a content is determined by certain normative conditions relating to acceptance of the content'. (1986:3) Not just any ground or commitment will do. A canonical commitment is what 'rationally, must be accepted if a given content is judged'. (1986:11)

Presumably, then, the canonical commitments that the interpreter incurs upon acceptance of the content are to be set out in advance. But here Peacocke must encounter the difficulty we found in the way of Blackburn's principle—the difficulty of specifying what sort of commitment will do. It seems, for instance, rational enough to incur the above commitment about moral responsibility from Russell's hypothesis. Does that mean that, on Peacocke's view, Russell's hypothesis is a genuine content?

We do not know the answer to such questions, for Peacocke does not spell out what principle will tell us when a commitment is rational and when it is not. When he does, it will be *that* principle which does all the work, not the principle that there must be either grounds or commitments for a content.

Here is another way of putting the point. Peacocke argues that thoughts are individuated by the following principle: 'If there are conditions which will lead someone *reasonably* to judge one thought but not to judge a second, then the first and second thoughts are distinct.' (1986:117, my emphasis) If a thought cannot be so distinguished from another, it is spurious.

But 'reasonably' needs to be filled in here, or else Peacocke's way of individuating thoughts suffers from the same defect as did that early attempt of Peirce's. A thinker can claim to have any commitment she

chooses and so distinguish a spurious hypothesis from a non-spurious one. If we want to disqualify some of those commitments as arbitrary, or as not being connected to the observable, or whatever, it is arbitrariness or non-observability or some other thing that makes a hypothesis spurious.

A second issue we saw arise in our discussion of pragmatism is as follows. In order to disqualify one hypothesis rather than an indistinguishable one (Russell's hypothesis, say, rather than the standard one), we require a certain kind of epistemology; one which has it that a belief which is the product of inquiry has something going for it already. That is, we must have a way of identifying which of two indistinguishable hypotheses is spurious and which is not.[23] And this identification will be doing much of the work of a criterion of spuriousness. It will tell us what makes a hypothesis spurious, for it will tell us what makes a hypothesis, with the same acceptance conditions as another, the suspicious one of the pair.

In *A Study of Concepts*[24] Peacocke deals with a related issue. He frames the difficulty for his position as follows:

> [i]f there are two equally good interpretation schemes attributing different contents to a given sentence, surely we cannot accept that the Discrimination Principle holds for those two contents. For could not anything that genuinely says what it is for one rather than the other to be the content of an attitude also be used to choose between the two interpretation schemes?
>
> (1992:220)

He answers that 'insofar as, for one practical reason or another, we make a semantically arbitrary choice between the competing schemes, we should not regard the content attributed by either one as giving that sentence's content'. (1992:220) The very arbitrariness of choosing between the schemes means that content is not determined for the sentences in question.

But notice that this answer would not suffice for the general epistemological problem outlined above. First take a parallel epistemological case to the case of semantic indeterminacy. If it is the case that theories are underdetermined by the data, then one must choose between one equally good theory and another. But if one of the theories is simply made up on the basis of the theory which is actually believed by scientists and which actually arose from the practice of experimentation (as the grue 'theory' is made up on the basis of the 'theory' that all emeralds are green), then it would seem that verificationism ought to be able to do some work here. What we are interested in here is what to *believe,* which theory to take as spurious

and hence as not worthy of our belief. It does not suffice to say that an arbitrary choice is to be made.

Now take the case of Russell's hypothesis or of any of the hypotheses examined by Peacocke. The very point of the Discrimination Principle is to provide a principled basis for saying which member of each of these unindividuated pairs is spurious and which is genuine. (The world came into being five minutes ago/ the world came into being *x* years ago [where *x* is one of the scientifically respectable numbers]; my colour judgements are an inversion of yours/ my colour judgements are the same as yours, etc.) And all we are given is a principled reason for believing that one must be spurious. Peacocke's account is left wanting one of those epistemologies which says that practical reasons or reasons having to do with human aims in inquiry are relevant to truth and objectivity.

RORTY AND THE ATTACK ON PHILOSOPHICAL CLAIMS

Richard Rorty does not have Peacocke's problem—he is famous for expousing a radically non-realist epistemology. And sometimes Rorty seems to adopt the broad kind of verificationism we have encountered and endorsed in the previous pages. He says, for instance:

> The verificationist's general complaint about the realist is that he is insisting on differences (between, e.g. bats with private lives and bats without, dogs with intrinsic intentionality and dogs without) which make no difference: that his intuitions cannot be integrated into an explanatory scheme because they are 'wheels which play no part in the mechanism'… This seems to me a good complaint to make, and the only one we need make.[25]

The bit about wheels which turn nothing is from the later Wittgenstein, one of the three philosophers Rorty takes as inspiration. (The others are Heidegger and Dewey.) Rorty's verificationism, however, runs deeper and is much more severe than that which is inspired by Wittgenstein's thought. He mounts a general attack on philosophy with a vigour not seen since the days of the logical positivists. Philosophy as we have always known it is spurious.

The philosophical picture Rorty is determined to explode is that of the mind as a 'great mirror, containing various representations' of the world.[26] Rorty often calls this picture the Enlightenment view, but he sees its roots in Plato. It suggests that Reason has the capacity to grasp Truths or that Truth is a correspondence between a mental

image and objective reality. Rorty thinks that philosophers must break away from its grip. For the questions it encourages require us to try to get outside of our own minds and such efforts are 'fruitless and undesirable'. (1991a:7) They

> generate the sort of pseudo-problems which Wittgenstein hoped to avoid by abandoning the picture which held him captive when he wrote the *Tractatus*…he was right when he later described himself as having been buzzing around inside a fly-bottle. His escape was…a matter…of refusing any longer to be tempted to answer questions like 'Is reality instrinsically determinate, or is its determinacy a result of our activity?' He was not suggesting that we determine the way reality is. He was suggesting that both realism and idealism share representationalist presuppositions which we would be better off dropping.[27]

Rorty, like the logical positivists, thinks that philosophy has busied itself finding 'solutions' to bogus problems. Philosophers engage in debates as if there is something at issue—some truth of the matter—and in this they are simply mistaken. But unlike at least the early positivists, he locates the cause of the mistake in philosophy's aim for certainty and foundations for knowledge. This Enlightenment project, which takes science as a model, must be abandoned and its metaphysical baggage must be jettisoned. ([1978] (1982c):90ff) Staples of analytic philosophy such as the Myth of the Given and the analytic/synthetic distinction are manifestations of a deep confusion in philosophy. (1980:209)

Rorty's alternative picture holds that appeals to reason, standards, and validity are nothing more than conversations in a particular, unprivileged, vocabulary—they have no real 'authority'. Philosophy must recognize this and model itself not on the ways of science, but rather, on the ways of literature. The philosopher must be not an auxiliary to the physicist but an auxiliary to the poet.[28] The philosopher must become a 'kibitzer'—a kind of informal cultural critic. ([1977] (1982c):73) We must abandon the 'spirit of seriousness' and get down to some 'play'. ([1988] (1991a):193–94) Here we have a distinction between Philosophy with a capital 'P'— bad philosophy—and philosophy with a lower case 'p'—good philosophy. (1982c:xv) Philosophy must lower its sights and and become a genre of literature or cultural studies. (1982c:xli–xliii)

Thus, in Rorty's alternative, philosophy should see itself as it really is—as a discussion governed not by truth and reasonableness, but by convention, culture, and personal interests. Indeed, truth is merely what passes for good belief; it 'is not the sort of thing one should

expect to have a philosophically interesting theory about'. (1982c:xiii) Thus he holds that beliefs which are currently approved of are true: 'there is nothing to be said about truth save that each of us will commend as true those beliefs which he or she finds good to believe'. ([1985] (1991a):24) The notion of objectivity must be reinterpreted to mean intersubjectivity or 'solidarity'. (1991a:13) It is what we have come to take as true.

One wants immediately to know who the 'we' is in this claim. Sometimes Rorty says it is 'us twentieth-century Western social democrats' ([1990] (1991a):214), sometimes it is 'Western liberal intellectuals' ([1976] (1982c):44), sometimes 'social democrats' (1987: 565), sometimes 'us postmodernist bourgeois liberals' ([1983] (1991a): 199). One supposes that, on Rorty's view, people who are not members of these groups either have their own truth or they do not count when it comes to determining truth.

And of course, if truth is as Rorty describes, philosophy is not the only area of inquiry which must face up to the fact. Even in science we can identify no standards over and beyond the ones we find ourselves with. Rorty thinks that it has been a pernicious mistake for humanists such as philosophers, historians and literary critics to take the 'objectivity' of science for their model, for there is no objectivity there either.

So Rorty follows through on the view that he shares with the logical positivists. While the logical positivists were happy to tell philosophers that they cannot help themselves to notions such as truth, reality, and objectivity, they were less straightforward when it came to science. Rorty objects to the fact that the scientist in our culture tends to replace the priest as the one who is supposed to keep 'humanity in touch with something beyond itself. ([1987](1991a):35) The logical positivists, despite their scruples against talk of objective truth and reality, often seemed quite happy for the scientist to play this role. But, as Rorty sees, if one argues that it is a big mistake to try to get in touch with something outside of ourselves, then science must also be knocked off of its pedestal. It too is shown to be a matter of solidarity after all: '[w]e need to stop thinking of science as the place where the human mind confronts the world'. ([1987] (1991a):36)

The charge that Rorty has had to face again and again is that his view results in a relativism where any view is as good as any other. He often reponds to this charge in exactly the way some of the logical positivists did. He says that once we drop the spurious Enlightenment vocabulary, the notion of relativism will also be recognized for the spurious concept it is. If we refuse to put forward any theory of truth, then we will not put forward a relativist theory.[29] The charge of relativism is thus supposed to lose its bite. The very notion of a claim's being relative or having relative validity only makes sense if we have

something with which to contrast it— something like absolute or objective validity. ([1986c] (1989a):47)

But the dangers many associate with relativism do not go away so easily. Calling for a dissolution of an entrenched dichotomy such as that between realism and relativism or that between subjective and objective does not mean that one automatically succeeds in escaping the pitfalls of one of the two positions. That is, after the call for an abandonment of a way of looking at things, that way must be replaced by another which *really does* undercut the old way or the old dichotomy. Much work must be done to pull off such a coup and, although it will be clear by now that I think it possible, it strikes me that Rorty fails to do that work.

For one thing, the view that there are no standards and no truth and falsity seems to give us nothing to go on—no beliefs upon which to act and base our lives. Rorty clearly thinks this is not entailed by his position: 'a belief can still regulate action, can still be thought worth dying for, among people who are quite aware that this belief is caused by nothing deeper than contingent historical circumstance'.[30] But he does not say just how this can be so on his picture of justification. For it seems reasonable to think that one would experience paralysis of action if one thought that there was no truth of the matter at stake, that there was nothing to get right or wrong.

That is, what opponents of relativism are often worried about is the inability of the relativist to say anything in response to the likes of the Nazi. We want to be able to say that the Nazi has got things wrong or is immoral, but all it seems the Rortian can say is that the Nazi believes one contingent, cultural-laden theory and we believe another. Rorty at times admits that his position leaves one with nothing much to say. In the 'post-philosophical culture' which he advocates, we can expect the following:

> when the secret police come, when the torturers violate the innocent, there is nothing to be said to them of the form 'There is something within you which you are betraying. Though you embody the practices of a totalitarian society which will endure forever, there is something beyond those practices which condemns you.'
>
> (1982c:xlii)

Rorty is right that the thought that we have no basis upon which to criticize the torturer is a 'hard thought' to live with. But he is wrong, I think, in insisting that one who echews transcendentalism must live with it.[31]

Rorty's advice to rest content with the thought that we cannot criticize is linked to the failure of his response to an old chestnut facing verificationists. Like the others, he must answer the question of how someone who rejects philosophy can wield a philosophical theory (i.e. verificationism) to declare other views spurious. His response is that terms like 'philosophy' are so broad and vague that everyone, 'even those who shun metaphysics and epistemology, will be said to have philosophic presuppositions'.[32] If one has a 'taste' for philosophy, as Rorty says he does, then one will play with notions such as the 'self', 'language', 'knowledge', etc. and Rorty commends his own picture 'to those with similar tastes'. ([1988] (1991a):192)

But as Bernstein suggests, this is not convincing. Rorty does more than commend his view—he *argues* against transcendentalism and other associated philosophical positions.[33] The standards he uses in these arguments are ones he believes are good, not merely ones which he happens to have picked up. That is, Rorty's inability to criticize does not apply only to moral judgements. It is hard to see how he can criticize the metaphysician, the Enlightenment philosopher, and all those who believe in standards and truth.

Rorty does not deny that his response to the charge of relativism—the recommendation that we 'substitute the idea of "unforced agreement" for that of "objectivity"' ([1987] (1991a):38)—is simply to confirm our own ethnocentric prejudices. He happily embraces the view that the beliefs 'we' Western liberals have come to adopt are the best. But, given that he rejects all standards of evaluation, this claim must simply be left hanging.

Rorty thinks that his ethnocentrism is better than others. The 'ironic liberalism' he recommends has a strategy for 'avoiding the disadvantage of ethnocentrism'—it distrusts ethnocentrism by being open to other cultures. (1991a:2) The thought is that we are always trying to enlarge the scope of our community 'by regarding other people, or cultures, as members of the same community of inquiry as ourselves'. ([1987] (1991a):38) 'What we cannot do is to rise above all human communities, actual and possible.' ([1987] (1991a):38)

In this last remark, Rorty brushes up against the pragmatist view I have been encouraging. But, even if this enlargement of the community of inquirers is what liberal societies in fact do (a dubious claim) it is again far from clear that Rorty can help himself to the thought that it is the right thing to do.[34] The Peircean pragmatist thinks it is the right thing to do because she takes truth to be what would be best for that extended community of inquirers to believe. In the absence of such an account of truth, the Rortian pragmatist cannot help himself to the idea that what we should try to do is take all cultures into account.

So Rorty's brand of pragmatism is inferior to the one set out in chapter 3, where transcendentalism is avoided without throwing out the notion of standards altogether. For not only does Rorty's view not give us anything to go on and not give us the wherewithal to criticize, but it is self-defeating in that he cannot help but argue for it.

Indeed, Rorty's contention that all philosophical questions and hypotheses are spurious is itself an odd turn for a pragmatist—for one who insists that theory and practice be connected. The result is that philosophical theory, vocabularies, and debates are deemed to be irrelevant to practice—they are deemed to be pointless. ([1988] (1991a): 181–84)

Rorty (along with a host of other 'post-modernists') has become popular amongst some left-wing and radical thinking people. But his advice to turn to aesthetics and literary theory is odd, for as Christopher Norris says:

> it is, to say the least, far from self-evident that specialised work in these areas could eventually feed back to exert any influence on the way people live, think, feel, vote, and comport themselves in the public sphere of politically responsible action and choice. (Norris 1990:1)

The effect that Rorty and his cohorts have had is devastating:

> we have reached a point where theory has effectively turned against itself, generating a form of extreme epistemological scepticism which reduces everything—philosophy, politics, criticism and 'theory' alike—to a dead level of suasive or rhetorical effect where consensus-values are the last (indeed the only) court of appeal.
>
> (Norris 1990:4)

We might say that, as a pragmatist, Rorty is committed to bridging the gap between theory and practice and that the way he does it is by getting rid of theory and leaving only practice. Here we see the most extreme form of verificationism assert itself. It asserts itself, I conjecture, out of despair—out of the realization that philosophy cannot fit a foundationalist model of justification. Since it is fruitless to try to cram our philosophical justifications into a deductive model with secure premises, so that we are put 'in touch with the way things really are', Rorty thinks we are left with no philosophical justification at all.[35] We must abandon philosophy.

But surely the appropriate response to Rorty here is that it is *his* position which depends on an unhelpful dichotomy—that between

foundationalism and no-standards-at-all. We can grant him the point that if philosophy seeks certain or secure foundations for knowledge, philosophy is not going to be of much use. This is a point Peirce stresses. But following hard on the heels of that point is Peirce's insistence that philosophy need not be so useless. There are other kinds of justifications which can go hand in hand with the insistence that philosophy be connected to practice.

That is, Rorty's dualism between upper case P and lower case p philosophy wipes out with a swipe of the hand all of those subtleties which we have seen Hume, Peirce, and other non-realist verificationists try so hard to articulate.[36] We should, I think, cast our lot in with those attempts rather than abandon ship as quickly as Rorty advises. For the acceptance of his view places one in tension with the enterprise of serious inquiry.

CONCLUSION

We have looked, at times fleetingly, at times in more detail, at the views of a number of philosophers who have seen something in the verificationist idea. Suggestions have been made along the way about how we might reject the mistakes made by some of the idea's proponents and take the best points from others.

We have seen that the thought that a legitimate statement is one which is reducible to a logically equivalent statement about sensory experience ought to be eschewed. If the verificationist idea is to survive, it must link legitimacy to experience in a less strict way than logical equivalance.

We have also seen that it must not confine experience to that which is delivered by the senses. Of all the considerations in favour of this liberalization, perhaps most important is that we must be careful not to set up immediately an equivalence between natural science and objectivity. The verificationist who is concerned to avoid begging the question and who is after a criterion of objectivity which is sensitive to inquiries other than natural science must not set a standard that rules out non-scientific statements at the outset.

Not only have we felt the pull in the direction of a broader account of experience, but we have felt it towards a broader notion of what it is to understand a sentence. Rather than take understanding to consist entirely in knowing what the sensory consequences of a statement are or what the assertability conditions are for it, Peirce, Blackburn, Wiggins, Peacocke and others have encouraged us to see understanding as consisting in a range of abilities.

A criterion which responds to the above demands will find formulation in terms far more generous than those envisioned by the logical positivists. We have seen that the following (related) formulations are the sorts that are promising: a statement lacks legitimacy or objectivity if there would be no evidence for or against it; if it is insulated from reason, where reason is linked to the possibility of public evidence for or against the statement; if there is

no way of individuating the statement from other, already established statements, etc.

These formulations arise not from traditional empiricist arguments about the contents of our minds or the kinds of knowledge we can have (knowledge of formal truths and knowledge prompted by the senses). They can come from semantic considerations about what it is to understand and individuate a content or a belief—there must be something public which that content or belief is responsive to. Or they can come from epistemological considerations—an inquiry which aims at truth requires hypotheses which are responsive to something. Comte's point, that it is no explanation at all to say that something which is itself indistinguishable from the phenomenon to be explained causes that phenomenon, is of this sort. So is the point in Peirce and Hume that the striving after something which goes beyond our abilities and reason is bound to come to naught, or worse, to misleading confusion.

One may find some of these arguments more persuasive than others. But it is not the case, I think, that any one of them must bear the entire weight of verificationism. We can, with Peirce, hold that an argument is not like a chain, where one weak link proves fatal. Rather, an argument is like a rope, where each strand contributes to the strength of the whole.

And the arguments, we have seen, are often bound up with each other. The epistemological version of verificationism is not altogether independent of the semantic version. For at least one thing we can say is that if a content cannot be individuated from another or if a content is not answerable to anything, then it is not useful in inquiry, it is not a candidate for a truth-value, and it is not a part of an inquiry which is aimed at the truth. Thus, we should not take such a hypothesis as something we ought to believe or as something into which we ought to seriously inquire.

We may choose to fix our gaze upon the epistemological claims, rather than upon the semantic claims. In that case, we shall not be tempted to say, as did the early logical positivists, that statements which do not meet the verificationist test are literally meaningless or ununderstandable. That is a good thing, for we have seen that there are dimensions of meaning and understanding which are not captured by the verificationist criterion. While the verificationist does want to link a dimension of meaning and understanding to answerability to experience, she ought not make the link so strong as to be a biconditional of the sort '*S* has meaning if and only if there is some experience one could have to verify *S*.' Rather than think of verificationism as primarily a view about which statements are meaningful, we would do better, I have suggested, to note the link

between meaning and experience and then go on to talk about what is fruitful to investigate and believe.

Despite the fact that we do not have anything as strong as a biconditional criterion of meaningfulness, our moderate verificationism is strong enough to deliver a few substantial things. It can, for instance, preserve and justify our inclination to say that certain statements merely pretend to objectivity. And it can do this without throwing out all of non-scientific inquiry with the bathwater; without declaring all inquiries which stand outside of natural science to be pointless. The criterion will lead us to be suspicious of the objectivity of one inquiry or another and it will encourage inquirers to make their business responsive to recalcitrant experience and argument. But only for the most extremely insulated inquiries will it declare illegitimacy or lack of objectivity. Moderate verificationism resolutely maintains that no theory can think so well of itself that it has no fear of experience. But it acknowledges that not many theories think so well of themselves.

Those statements which do attempt to place themselves above even the extended kinds of experiences and abilities which moderate verificationism requires will likely be highly metaphysical statements and they will be declared spurious. But most of the work of the moderate criterion will not take the form of such declarations. Rather, it will take the form of casting a suspicion over those claims which appear remote from evidence. As Crispin Wright says, sentences which are completely insulated from procedures of verification are not thick on the ground: 'old campaigners like "everything is uniformly increasing in size" and the inverted spectrum suggest themselves for consideration, but perhaps not many more'. (1987:13) This is exactly what the verificationist should expect and be happy with. Power and precision are sacrificed here for plausibility.

Another thing moderate verificationism delivers is a radical alternative to what has often been taken to be the right approach in philosophy—a kind of Cartesian foundationalism, where epistemology is based on first-person knowledge, such as knowledge of our own sensations. The thought is that once we have a secure or certain foundation, we can build our theories and, if we are careful to use only deductive tools, our theories will also be certainly true.

The alternative picture, encouraged by some contemporary verificationists and by some figures in the history of verificationism such as Peirce and the later Wittgenstein, is that one must start not with our individual selves, but with what is common to all or public. We must give up on foundationalism and first-person certainty and look to what is best to believe for the community of inquirers.

One can see the entire history of verificationism as speaking against the Cartesian view. For even those logical positivists who tried to make a go of the foundationalist picture found it impossible. They found that they could not start with an individual's private experience and get to the external or public world. So we have some verificationists (Peirce and the later Wittgenstein, for instance) starting with the public and others (the early Carnap, for instance) starting with the private and finding themselves forced to begin again with the public.

The fact that, for all its modesty, the new verificationism has plenty of substance, is shown also by the fact that it will not be acceptable to all. Many will say that the following is true and is denied by *any* kind of verificationism: 'there may be truths which are not accessible to us'. It is right to think that even a moderate verificationist must be set against this claim. For, even though we have seen that nothing follows from it about ontology or what there is, the verificationist cannot think that truth and objectivity might outrun any evidence our kinds of beings might have.

That is, even the most moderate verificationism has ramifications for the kind of theory of truth and epistemology we ought to adopt. For along with the claim that mental states are private, along with the grue hypothesis, and along with claims that some x is known entirely *a priori,* we must add the extreme version of the correspondence theory. It too is not a matter for serious inquiry and serious belief. Perhaps modest verificationism will begin to appear rather ambitious to some.

But it must be remembered that the fact that candidates for inquiry (in science, mathematics, morals, etc.) must pass a test which requires that they be connected to human experience does not entail that we must scuttle the notion of the external. The possibility of being brought up short by experience provides, if you like, a check with what is not of our making.

One final remark is due. In this volume, I have focussed on empiricism and the objections to it that have come largely from within. That is, I have outlined the problems empiricists have encountered from those who share their general outlook and aims. There has, however, been another tradition from which empiricism and verificationism have been attacked—the tradition which loosely goes from Marxism to the new 'science' of hermenutics, to 'post-modernism'. This tradition has stressed that inquiry is not best seen as the pure, logical, certain enterprise it was made out to be by the logical positivists. Rather, inquiry is intimately connected to the human individual, to society, and to values.

We have seen that such objections have been made by Peirce, Feyerabend, and others working within what might broadly be called the empiricist, or if you like, analytic, tradition. The view that I have been promoting, with its receptiveness to the likes of moral judgements, ought to quell the doubts of the hermeneuticists to the same extent that they would quell the doubts of those who raise such objections from within. That is, the broadening of the notion of experience and the adoption of the attitude of holism see to it that science, and inquiry in general, are linked to human activities and values in a way that ought to make the hermeneuticist and the postmodernist reasonably happy.

Indeed, we have seen that someone who often attracts the post-modernist label—Richard Rorty—ends up with a verificationism stronger than almost any other we have canvassed. And, as I have argued elsewhere (1995a), one of the most famous anti-positivists associated with the hermeneutic tradition—Jürgen Habermas—himself makes certain positivist assumptions which betray his critique of positivism. But that is, of course, another story.

NOTES

1
FOUNDERS

1 I leave Locke out of the discussion partly for reasons of economy, but also because Berkeley and Hume exhibit verificationism in a more straightforward way.

2 We can also attend to the operations of the mind so that we can, say, get an immediate idea of the activity of the mind.

3 Berkeley's idealism is set against what now gets called Locke's 'veil-of-perception' doctrine or theory of representative perception. Locke suggests that real things lie behind a veil of perception and are thus not accessible to us. He argues that this view is, as Bennett (1971) has put it, a reasonable explanatory hypothesis of the fact that many of my sensory states are forced upon me in orderly and dependable ways. That is, the best explanation of the orderliness of my perceptual life is that there are independent objects acting on me. Berkeley also argues against Locke's view that ideas resemble real things. An idea, Berkeley argues, can be like nothing but an idea. (1710:261)

4 [1705] (1901):28, 52. Clearly the modality intended here (the nature of those 'can's) must be elucidated. But that, we shall see, is not such an easy task. The weakest claim would be that by 'what we can experience' Berkeley means 'what is a possible object of experience'. A stronger claim would be that we must actually be able to copy the idea from an experience.

5 For the similarities and differences between Berkeley's and Locke's accounts of meaning, see Bennett 1971:52ff.

6 The problems with Berkeley's interpretation of Locke will not concern me here. See Bennett 1971:47–52.

7 Locke was not altogether happy with the idea of substance, but did not set his empiricist principles against it. See Locke [1700] (1975): 295–317. For the view that Locke merely entertained, rather than accepted, the doctrine of substance at issue, see Bennett 1971:59ff.

8 [1710] (1901):261, see also [1705] (1901):80.

9 See, for instance, Ayer 1936a:11, 53–55. And Peirce thought that Berkeley was the first to formulate the principle of pragmatism; see Thayer 1981:499–507.
10 Another argument starts from the thought that the things we perceive continue to exist when we are not perceiving them. Since the things we perceive are ideas, which exist only in some mind, there must be some mind in which they exist when we are not perceiving them. That is the mind of God. There is some controversy as to whether this is a separate argument from the first. See Bennett for the claim that it is (1971:165–98) and Dancy for the claim that it is not (1987:41–56).
11 [1710] (1901):272, 302, 335–38; [1705] (1901):47.
12 [1710](1901):307. We can also have a notion of the 'relations between things'.
13 See [1710](1901): 250; [1705](1901):23, 25, 29, 32–33, 39–40, 42, 70–71, 74–75.
14 [1710] (1901):253, see also [1705] (1901):39.
15 See Hume [1740] (1978):xx. See Stroud 1977 for a picture of Hume as a naturalist.
16 See Ayer 1959:10, Carnap [1934] (1987):61 n. 1.
17 I shall not enter into the debate about just what the bearers of truth-value or meaning are. I shall use the above terms interchangeably and ignore the defects in the notion of 'idea'. So when Hume wonders whether an idea or term such as 'cause' is legitimate, he can be taken to be wondering whether the statement '*x* is a cause' is legitimate.
18 This is still the received view about Hume, although it is being challenged. See, for example, Strawson 1989 and Craig 1987, chapter 2.
19 See [1933] (1960):337.
20 Kevin Graham suggested the following line of argument to me.
21 See Stroud 1977:17–41 for other examples of lively ideas and unlively impressions.
22 One assumes that Comte cannot be referring to all societies, but to Western ones at most.
23 At times he does say things such as: 'no proposition that is not finally reducible to the enunciation of a fact, particular or general, can offer any real and intelligible meaning'. (1875b:425) But he does not really intend us to think that such hypotheses are literally without sense. Rather, they are primitive and useless in the only legitimate kind of inquiry—natural science.
24 For the roots of this account, see Brown 1994.
25 See 1875a:178.
26 See 1875a:9–10.
27 See 1875b:424.
28 It is this claim which makes Ayer say that Mill provides the 'basis for the modern theory of phenomenalism'. (1952a:21)
29 See [1872] (1973):277.
30 Mill does not follow Hume with respect to induction. Mill argues that induction is justified on the assumption that nature is uniform. The uniformity of nature provides the ultimate major premise of all

inductions. (See [1872] (1973):306–11.) See Strawson (1952:251–52) for an argument against this defence of induction.

31 But see Kitcher 1980 for a reading of Mill which has him holding a more subtle position.

32 See Misak 1994, 1995a and 1995b for an exploration of some of these issues and for a non-utilitarian empiricist/pragmatist position. See Dyzenhaus 1992 for a discussion of Mill on this score.

33 Mach also wanted to be a fallibilist. He believed that immediate perception could provide a self-evident foundation for science, yet he believed that any fallible human being could be deceived about what appeared self-evident. There is clearly some tension here.

34 See [1926] (1976).

35 The fate of Newton's absolutist conceptions, however, is not clear-cut. For a discussion of the Mach-Newton controversy, see Sklar 1974: 157–234 and Earman 1989.

36 See Bernstein 1989:60–61.

37 See [1900] (1986):389–90.

38 See, for instance, Ostwald 1904:151. Not all the objections to atoms arose from philosophical considerations—many, including some of Mach's, arose from experimental failures. See Nye 1976.

39 Lauden 1981 argues that Mach rejected atoms not because they are unobservable, but for other various methodological reasons. For Mach can allow anything for the sake of the economy of science.

40 Sometimes it is unclear whether Mach took the unverifiable to be meaningless *tout court* or meaningless only for science's purposes, as in the following passage, where he suggests both:' [a] thing that is beyond the ken of knowledge, a thing that cannot be exhibited to the senses, has no meaning in natural science'. ([1933] (1960):337)

41 See [1926] (1976): 13, [1906] (1959):361–62, 367–68.

42 See Davidson [1974] (1984) for a recent version of this argument.

43 At times, he does balk. For instance, he says that Newton's famous 'bucket' thought experiment, which concludes that there is absolute motion, is illegitimate: 'No one is competent to say how the experiment would turn out if the sides of the vessel increased in thickness and mass till they were ultimately several leagues thick. The one experiment only lies before us, and our business is, to bring it into accord with the other facts known to us, and not with the arbitrary fictions of our imagination.' ([1933] (1960):284)

44 See [1906] (1959):46. Indeed, in Mach's extension of the notion of experience, beliefs acquired by our ancestors through observation and passed on to us because of their survival value are experiential despite the fact that they are biologically determined or innate.

45 Mach thought that the reason these experiments in the mind are reliable is that the mind is in tune with nature. Evolutionary pressures select minds that mimic the patterns of nature.

46 See Brown 1991 for an exposition of these and other thought experiments.

47 Neurath [1929] (1973):305.

48 Thus Duhem would reject the thesis that the explanatory power of a theory is an indication of its truth; the thesis which is today referred to as 'inference to the best explanation'.
49 [1917] (1990):187. Einstein held a similar view.
50 One suspects that Duhem is not the only empiricist with a religious or metaphysical agenda in the background. He denies, however, that it has motivational efficacy. See the appendix to [1914] (1954).
51 See the discussion of Quine in chapter 4.
52 We have seen, however, that Duhem sometimes thinks that even metaphysics can have something to fear from experience.
53 For Hume's influence, see Einstein 1949a:53; for Mach's see Einstein 1949a: 21, 53, and especially Holton [1973] (1988):244–47.
54 See Reichenbach 1949, Kraft [1950] (1953):30–32, Frank 1949, Frank 1955:68, 73–74, Bridgman 1949.
55 Holton [1973] (1988):243, see also Miller 1984:39–42.
56 1944:289. This comment leads Frank to argue that Einstein agreed with the logical positivists that, once one has a theory, derived in whatever way theories are derived, one must be able to trace it back to sensory experiences. Frank 1949:279.
57 1949a:49. Toward the end of Mach's life Einstein tried to persuade him to accept the atomic hypothesis on the grounds that it, and only it, allowed one to predict the properties of gases.
58 Quoted from a letter to Besso in Holton [1973] (1988):249, see also Einstein 1949a:21, 1933:12.
59 See Einstein 1934:35ff, Frank 1949:274. See Miller 1984 for an account of how a neo-Kantian view of concepts influenced Einstein.
60 See Holton [1973] (1988):250–54, Miller 1984:51, 118ff.
61 See Holton 1978:280, [1973] (1988):250, Northrop 1949.
62 Brown suggests that Leibniz's principle of the identity of indiscernibles is a similar kind of verificationism. If all the theoretical apparatus in the world were to be brought to bear on the question and there was no way of discerning *a* from *b,* then *a* and *b* are identical. We shall see this kind of suggestion resurrected by Peacocke in chapter 5.
63 See Einstein 1954:228. The theory of relativity was a principle theory.
64 Ayer 1974:35. See also Ayer 1992a: 11 and Carnap 1963a:50. Although Russell aligned himself with logical positivism (1950:7 and 1937: In.) he argued against the stronger versions of the verifiability principle. ([1950] (1956):372ff)
65 Russell and Whitehead 1910. His aim was to reduce mathematics to logic. The attempt ran into a paradox, which Russell himself discovered, in the notion of the class of all classes.
66 1935:242. See Ryan 1988 and Schultz 1992 for good discussions of Russell's evolving views on morals, politics and metaethics.
67 Neither is the commitment to good causes—Neurath and Dummett immediately spring to mind here.
68 See, for instance, 1948.
69 See 1948:180–81, 1959:207.

70 Russell himself often wholeheartedly identified his position with Wittgenstein's. See [1918] (1956):177.
71 See Menger 1982:86–87.
72 See Monk 1990:287ff.
73 Here, as everywhere, the reader must remember that I do not use 'verificationist' to refer exclusively to the logical positivists' position. Thus, many of those Wittgenstein scholars at pains to show that Wittgenstein's position was not identical to the logical positivists' should not bristle at my claims.
74 The logical positivists took the claim that the correspondence theory was a part of Wittgenstein's view to be 'obvious'. See Hempel 1935a:49–50.
75 References to the *Tractatus* are given in the usual way and in what follows, I shall drop the '[1918] (1955)' and give only the section number.
76 There is controversy regarding the nature of Wittgenstein's 'simples'. Are they objects of immediate awareness or are they external? Are they particulars or universals? As Ayer says: 'Wittgenstein was very far from making it clear that his primitive "objects" were required to be observable, still less that they were of the order of sense-data. The most that can be claimed is that he did not rule these conditions out.' (1992a: 301)
77 Neurath acknowleged this aspect of the *Tractatus* (see 1938:17), but most of the logical positivists ignored it because it was 'too divergent' from their way of looking at things. (Carnap 1963a:27)
78 See, however, Monk 1990, Barrett 1991 and Nieli 1987 for interpretations which do not ignore them.
79 See Monk 1990:284ff.
80 See for instance Wright 1986. Wittgenstein stated it in the following ways: 'It isn't possible to believe something for which you cannot imagine some kind of verification' ([1964] (1975):89), The verification is not *one* token of the truth, it is *the* sense of the proposition'([1964] (1975): 200), and '[a]ccording to my principle, two assumptions must be identical in sense if every possible experience that confirms the one confirms the other too'. ([1964] (1975):282)
81 Something like this view, we shall see, was held by the logical positivists.
82 Further references to the *Philosophical Investigations* [1958] (1968) shall be by section number.
83 [1958] 1968, Book II, sec. xi, p. 207.
84 Indeed, the fact that we are able to learn a language at all indicates that there must be criteria for correctness. If we can teach the use of an expression, there must be public criteria for its correct use.

2
THE LOGICAL POSITIVISTS AND THE VERIFIABILITY PRINCIPLE

1 Schlick [1929] (1979b):142–43.
2 Carnap [1928] (1967):290, see also Schlick [1930] (1979b):56.
3 A group (the Gesellschaft für wissenschaftliche Philosophie) also gathered around Reichenbach in Berlin. They preferred the label 'logical empiricism'.
4 Some were unable to flee—Kurt Grelling, for instance, was murdered in Auschwitz.
5 It was revived as a journal for analytic philosophy by Hempel and others in 1975.
6 There is a new interpretation of logicial positivism, on which it is a conceptual empiricism—traditional empiricism mitigated by Kant. See, for instance, Coffa 1991. But I shall stick, at least in the early part of this chapter, fairly closely to the standard picture of logical positivism here, where it rather straightforwardly continues in the traditional empiricist tradition. For, even though there is much to be said for the new interpretation, it is the standard picture which defines the role logical positivism plays in subsequent verificationist views. See the Introduction and note 12 below.
7 The logical positivists, however, had an unusual relationship to Humean naturalism. They wanted to reduce philosophy to science, but they at the same time wanted logic to purify philosophy from the results of particular sciences, most notably psychology. Nothing like Hume's theory of ideas is found in the philosophy of logical positivism.
8 Schlick [1930] (1979b):155–56.
9 The settlement, of course, will sometimes take effort. Reichenbach and others struggled with the question of the nature of space and time, causality, free will and determinism, etc. See Putnam 1991:61–62 and *passim.*
10 Schlick [1932b] (1979b):264, see also Waismann [1967] (1979):209–10, 246–47.
11 Hempel [1935] (1949):382.
12 It will also have the axioms of set theory and it could be a higher order language or a modal language.
13 Quine and Carnap 1990:456. Recent interpretations of Carnap deny that he is engaged in the foundationalist project of Hume, Mach and Russell. See Haack 1977, Friedman 1992:17–23 and Coffa 1991:207– 39. For one thing, Carnap thought that the choice of the basic concepts was a matter of convention. My conclusions in this chapter will largely cohere with this claim, but the foundationalist picture was held by many of the logical positivists (perhaps even by the early Carnap—he does cite Mach and Russell as predecessors (see 1963a:50)) and it must be set out as the received view against which philosophers have reacted.
14 Quine 1966:667.
15 The positivists did not try to show how theory arises in a logical way from observation, but rather, how theory can be logically reduced to observation. The two sorts of projects coincide once the reduction is completed, for you can go through the logical steps in either direction. But in scientific practice, theory formation requires leaps of the

imagination. (See Frank 1949:279–80.) The results of those leaps must be reducible to observations.

16 Hempel [1945] (1964):368. Von Mises appears to be an exception here, holding that mathematical statements are fallible (see 1987:173–77).

17 1955:6. Braithwaite poses the problem for the concept of a 'personal God' and says that the onus is on the defender of the concept to say 'how would the world be different' if such a God did not exist.

18 Quoted in Neurath [1932] (1987):4. Neurath has rather unfairly run together here sentences which are scattered across eight pages of Heidegger's. ([1929] (1977):97–105)

19 See Bridgman 1938:115–16. Bridgman, however, did not require *all* concepts to be so defined. See 1951:258.

20 See Ayer 1936a: 35. See 1979:325 for an admission that this was his position. There was also the early claim that the meaning of a statement is the *method* of its verification. See Schlick [1932a] (1979b): 311 and Waismann [1930] (1977a):5. But the identification of meaning and method was never made clear and faded away. See Ryle 1936:1 for a dismissal of the identification.

21 Carnap 1934:21–22. See also [1932] (1959):60, 61, 77.

22 See Ayer 1936a:158–63. We have seen that Russell put forward such a view as well.

23 See Stevenson 1963:16–18.

24 See Schlick [1930] (1939):17–22. Hume too at times suggested that morality is an empirical survey of what people regard as virtuous. See [1777](1975): 163–65.

25 Schuster 1978:56, 57.

26 They even suggested that socialism was aligned with logical positivism. See Carnap 1963b: 867 and Neurath [1929] (1973):317.

27 See Savage 1989:viii on Feigl's attitude toward music and poetry and Feigl 1974:124. Notice that, if this is the attitude taken, nothing prevents one from being passionate about right-wing, as opposed to left-wing politics. The fascist Carl Schmitt thought, with the positivists, that there is no truth or rationality in politics, only a conviction akin to theological conviction. He, however, concluded that politics is a battleground where the strongest will win and the force he favoured was a right-wing nationalism. Indeed, he argued that those who favoured tolerance were bound to lose. See Schmitt [1932] (1976) and see Dyzenhaus (forthcoming) for a discussion of Schmitt on this score.

28 See Schlick [1932a] (1979b):338, Neurath 1987:14–16.

29 [1933] (1959):165, emphasis in original, see also [1928] (1967):94–96 and 1934:71–72.

30 [1935] (1949):377–38. The spirit of this program is still alive, see for instance Churchland 1979.

31 Sidney Hook reports 'the curious fact that all the logical empiricists or positivists I have known were quite vehement in defending the scientific validity of Freud's basic views'. (Hook 1978:34) Popper, we shall see, thought, with Hook, that the theory of psychoanalysis did not pass the test for a scientific theory.

32 This is not to say that imaginative thought was rejected. Neurath lauds those creative thought experimenters who went against the grain of what was *a priori* true in their day. Those who put forward non-Euclidian geometries and even those 'who fancied also a trip throughout the universe quicker than light, in concordance with certain thoughts of Humboldt and Babbage' advanced empiricism against *a priorism.* (Neurath [1938] (1955):12)

33 It was sometimes suggested that metaphysics, like poetry, might have a place in enriching life, but not knowledge. See Schlick [1926] (1979b): 110–11. But Ayer 1936a:37–39 argues that poets do not make the mistakes of the metaphysicians. They do not write nonsense. See also von Mises 1951:287–300.

34 See Schlick [1926] (1979b): 99–102 and [1932b] (1979b):269–70.

35 1963a: 8, see also von Mises 1951:273, Ayer 1936a:173–75.

36 Ferré 1961:18, see also Coppleston 1956:41–42.

37 Carnap 1963b: 881, Ayer 1937:151.

38 1936a: 183, see also Roelofs 1929:195–206.

39 See 1955:257–58.

40 Braithwaite argued that if meaning is taken to be use, rather than verification, religious statements are meaningful—they guide conduct. We shall see when we turn to Peirce that there are difficulties with this suggestion.

41 See Schlick [1936a] (1979b):479–81.

42 1936a:146–48. In 1979 Ayer says he follows C.I.Lewis here. See Lewis 1929:148–53. Ayer later abandoned the suggestion. See 1952b:18–19.

43 See Ryle 1936:1–2 for the eclipse example and Smart 1986:302 for the Churchill example.

44 See 1936a:147–48.

45 Of course, one might extend the logic with modal operators and a non-truth-functional conditional. But it is not clear that such extensions would have been acceptable to the logical positivists. We shall have the opportunity to note in chapter 5 that extending standard logic is a strategy used by some inheritors of logical positivism. Anyway, as I shall argue in chapter 3, the counterfactual suggestion goes against the spirit of logical positivism. That spirit is to ensure that the methods of any inquiry are scientific—the flights of fancy which counterfactual verification requires should not be permissible.

46 Lewis is an unusual figure in this story. He wrote as a pragmatist with positivist sympathies and, unlike most of the positivists, he did not think that anything was given to us in experience prior to interpretation.

47 See Reichenbach 1938:188, Carnap [1936] (1949):123, Neurath [1934] (1983):102–5, Ayer 1936a:126–27, and Hempel [1952] (1970):695.

48 In 1962b Carnap attempted, using probability as a measure of the relation between premises and conclusions in inductive arguments, to combine inductive and deductive logic in one structure.

49 Carnap himself did not take his inductive logic to provide certain conclusions or to be *the* correct logic. An inductive logic is to be adopted on pragmatic grounds. See Creath 1992:154.
50 1955:68–83. Goodman (1951) also elaborated on Carnap's project in the *Aufbau.*
51 This is Goodman's own solution. See 1955:94–98.
52 Another objection to the positivists' behaviourism was that the statement 'he is angry but does not exhibit anger-symptoms' seems to be meaningless on that account. See Ryle 1936:2.
53 1937:351–52. See Henle 1963:169–70 for further examples of metaphysical doctrines with empirical content.
54 With respect to the related question of whether we can observe with the aid of things such as microscopes, some of the positivists replied negatively. See Bergmann [1943] (1953):285–87.
55 See, for instance, Reichenbach [1951] (1953):99–102, Schlick [1925] (1979b):29–30, Feigl [1974] (1981):13–14, Hahn 1987:41, Ayer 1952b:13, Ayer 1973:109–11. Carnap argued that theoretical terms are to be introduced by postulates, connected with observation by 'rules of correspondence'. (Carnap 1956:47)
56 See Ayer 1936a: 56–58, 1952a:25, von Mises 1951:155–59. Mach's thought that causation is merely functional dependence is also picked up. See Schlick [1925] (1979b):36 and [1932c] (1979b):247 and *passim.* Reichenbach 1938 tried to explain the notion of causality with the notion of probability. The world, he argued, consists of sequences of events, with statistical relations holding. Causality is a matter of these statistical relations. He also argued that we can make inductive inferences to unobserved entities. But, as we shall see in the next section, his 'vindication of induction' failed.
57 See Reichenbach 1938:41, Ayer 1952b: 16, 1979:329, Carnap 1937: 51. Carnap invoked this thought regarding the phenomenalism/ physicalism issue, which will be discussed below. See Schlick for objections to the principle of tolerance there. ([1934] (1979b):371, 374 and *passim*)
58 Williams 1986:12. The same might be said of Carnap's *Aufbau* and of any other major logical positivist work. See also Putnam 1991.
59 A variation on this theme was to say that the verifiability principle is analytic or is a definition and so does not have to have empirical consequences. See Ayer 1952b:15–16. The trouble with this suggestion is that the verifiability principle is far from being obviously true and being obvious seems to be a mark of analyticity.
60 See [1936a] (1979b). See [1932b] (1979b) for the line that the whole debate is metaphysical and hence illegitimate.
61 See, for instance, Hempel 1958:58–62, 81–87 and Feigl 1964:237.
62 Similarly, Feigl argued that the principle of induction *'is not a proposition at all. It is, rather, the principle of a procedure, a regulative maxim, an operational rule:'* (1934:27)
63 This account follows Wittgenstein's view of laws. Waismann says: 'the individual experiences are inserted in the hypothesis like cross-sections in a three-dimensional body. *Strictly speaking,* what we can verify is

always only *one* such cross-section. In cases where it looks as if we had verified the same proposition in different ways, we have really verified different cross-sections of the same hypothesis.' (1977b:44)

64 See Salmon 1957:180–82, Lenz 1958:5–6, Reichenbach [1935] (1949): 444–47.

65 Feigl [1943] (1949):17, see also Hempel [1950] (1959).

66 Carnap 1936:440–41 was the first to see the problems. In the 1950s Hempel concluded that the problems for the verifiability principle were insurmountable. See [1952] (1970):676–77.

67 1968:47, see also Pap 1963:559–71.

68 There were other difficulties arising from the confinement to logic as well. For instance, *(S & N),* where *S* is verifiable and *N* is The Absolute is perfect', is legitimate. See Hempel [1950] (1959):112.

69 For a discussion of this debate, see Axtell 1993.

70 Feyerabend 1981:52. He says that the seeds of this idea can be found in Carnap's early work, but are later dropped. Feyerabend 1981:49–50. But see Oberdan 1990 for an account of Feyerabend's failure to appreciate the nature of Carnap's conventionalism.

71 However, Popper, like Carnap, thought that the kind of statement taken by science to be basic is a matter of convention. See [1934] (1959): 104.

72 [1934] (1959):40 n. 3, see also 1983:178.

73 [1934] (1959):38. Popper thought that some metaphysical concepts, such as the concept of atomism, 'may have helped, even in their early forms, to bring order into man's picture of the world, and in some cases they may even have led to successful predictions'. [1934] (1959): 278.

74 We have seen that there was at least one independent argument offered by the logical positivists—the semantic argument that definition must end somewhere and the only way of breaking the circle of definitions is to ground terms and sentences in experience. But we have also seen that the conclusion of this argument—that statements which are not grounded in experience are literally meaningless—proved difficult to uphold.

75 Schlick, however, in his early work, thought that what is 'given' in experience can be perceived in some way other than through the senses. Every assertion about reality must come to rest either in immediate experience or in intuition ([1925] (1974):162–63), such as the intuition of pleasure and of fairness. (29, 37) Rather than pointing to what is in the world, we can point to 'certain feelings that the person being instructed finds present in the reality of his own consciousness'. (37) In the 'natural sciences and the social sciences and history' this 'intuitively given' will be 'mostly' perceived through the senses (163), but in moral sciences it will not.

76 In the *Aufbau* ([1928] (1967)), concepts are constituted from a phenomenalist basis—the basic elements are private experiences or 'for-me-entities'. (93–94) But Carnap's position is complicated by the fact that he thought that the choice of a basis or language was a matter of convention. (279–80) Later he argued that the physicalist language

ought to be chosen because it is intersubjective. See 1934:76–93, 1963a: 50–52.

77 See [1932a] (1979b):295–300.

78 See Ayer 1936a:126–30 for another: a proposition composed entirely of ostensive symbols is not comprehensible. Some classification must be made and as soon as that is done, we are taken away from what is immediately given.

79 As did some of the later, modified, phenomenalist positions. Ayer, for instance, distinguishes two kinds of sense data statements: (1) something informative to myself and to someone else (non-basic and corrigible) and (2) something which refers 'solely to the content of a single experience' (immune from all but verbal error). (1952b: 10–11) Sense data statements which are incorrigible are uninformative and thus, cannot serve as the foundation of knowledge.

80 Russell was appalled at the non-realist claims of Neurath, Hempel and Carnap. See 1937:9ff.

81 See also Hempel 1935a:53–55.

82 [1934] (1983):102. See also Hempel 1935a:50–51. Thus Neurath anticipates the point made by Popper 1959 and Davidson 1983 that the thought that beliefs cohere or conflict with experience is problematic. He also anticipates the alternative picture of science and knowledge given by Kuhn and Feyerabend.

83 See Creath 1990:21–22 and 1992:144–46 for a discussion of Carnap's conventionalis

84 See Schlick [1934] (1979b):374–77, [1935a] (1979b), Ayer 1935: 28–30, 1937:139–45.

85 See also Hempel 1992.

3
PEIRCE AND THE PRAGMATIC MAXIM

1 Ayer 1968:45, see also Frank 1948:59, Wiener [1958] (1966):113, 181, Putnam 1975:272 and Quine 1981d:30.

2 See Reichenbach 1938:49 n. 10, Carnap [1936] (1949):123, Lewis 1934: 65n.

3 For Neurath's remark, see 1987:135. See Trammell 1972:7–8 for Peirce's attitude to James and logic. For Peirce's advances in deductive logic, see Berry 1952, Dauben 1982, Putnam 1982 and Dipert 1981. For an account of Peirce's achievements in science, see Fisch 1982:xvii–xxi and Lenzen 1964.

4 References to Peirce's work are as follows: CPn.m refers to the *Collected Papers,* where n is volume number and m is paragraph number. CEn, m refers to the *Chronological Edition,* where n is volume number and m is page number. MS refers to the manuscript on microfilm *(Peirce Papers).*

5 Strawson's Hume has a similar view—we can refer to causation even though we cannot comprehend it or trace it back to an impression. See Strawson 1989 p. 121ff.

6 See CE 2, 483, CE 3, 108, CP 5.2, 5.196. See James [1907] (1978):30.
7 This is not to say that he failed to see the relationship between *Q* and *(P v Q)*, just that he did not think that this kind of consequence was what the pragmatic maxim required.
8 See CE 3, 266–67, MS 449, p. 52, CP 5.9.
9 See CP 1.138.
10 Russell 1921:160. The logical positivists also wanted to declare this hypothesis meaningless on the grounds that, on it, no criteria could distinguish genuine from illusory memory claims. See Ayer 1951: ii–iii, xix–xx and Waismann 1965:20–21. Locke 1971:119–20 suggests that the fundamentalist biologist Philip Gosse held something close to Russell's hypothesis. He argued that God created the world, with its fossils, rock strata, etc., in 4004 BC.
11 We shall see in the next chapter that this thought needs some tinkering with.
12 CP 5.423, see also CE 2, 128, CP 5.422, 5.453, 5.597, CE 2, 45. Peirce includes the following as being the sort of questions which press for 'industrious and solid investigation': whether there be any real indefiniteness, possibility, indeterminacy, strictly individual existence, distinction between the external and internal worlds, etc. See MS 283, p. 27, CP 6.6.
13 For a more detailed account, see Misak 1991.
14 See CP 5.438, 5.9, 5.13 n.1, 8.191.
15 See CP 5.13 n. 1, 8.191. This is what the pragmatic maxim amounts to in James' hands as well, see [1907] (1978).
16 Peirce occasionally sees this. See CP 5.33.
17 See Sellars [1956] (1963):140 and *passim.*
18 This view might well be described as a kind of Kantianism. Appearances make up the world as we know it and we can know nothing of what it is that the appearances are *of.*
19 Peirce developed a (quantified) deductive logic which he termed 'existential graphs'. See Roberts 1964, 1973, 1981, Zeman 1964, 1968 for details.
20 See MS 318, pp. 28, 29 (towards end of MS). Peirce says that mathematical notions, such as irrational quantity and geometrical equality, are 'highly abstract and abstruse and yet [their] meanings should be quite unquestionable'. He then shows how we ought to expect certain things if they are true.
21 MS 596, pp. 22ff. See CP 5.538–5.545 for a part of this manuscript.
22 My discussion follows Moore 1990:20–23.
23 Peirce says that such 'illumination' cannot be evidence, but does not there give a principled reason for this claim. See CP 8.43.
24 CP 5.464, see also 5.6, 5.206, 5.464, 6.490, 8.191, 8.259.
25 Peirce also thinks that his pragmatic criterion—that a belief must answer to some experience—is justified because the very nature of belief is such that it resigns in the face of recalcitrant experience. An inquirer stops believing *P* in the face of a surprising experience that upsets a prediction derived from *P.* See Misak 1991:55ff for elaboration.

26 [1958] (1968) sec. 271.
27 See CP 3.516, 2.511 n. 1 for remarks which point in this direction. The fact that the demarcating of various inquiries cannot be very precise does not prevent us from making some distinctions. Morris comes close to making a similar proposal. Following Peirce's semiotics, he argues that, for any kind of sign in any kind of inquiry, each of the three dimensions of a sign is present. But 'certain of them are simply subordinated'. Thus: 'Mathematical propositions may have an empirical aspect (many indeed were discovered empirically)…but the language of mathematics subordinates these factors in order to better accomplish the task it is developed to fulfill.' (1938:136)
28 See Feigl [1943] (1949):12–13.
29 See CP 5.565, for a passage suggesting this. Chris Hookway got me to see this point.
30 Indeed the applications of mathematics are generally thought not to arise from mathematics being descriptive, but, rather, by providing models.
31 We have seen that Hahn and the early Ayer make a similar suggestion (see Hahn 1987:43, 282 n.18). Hahn calls himself a pragmatist and refers to Dewey in this paper.
32 I take a different position in 1991:156. See below for even further modifications, some prompted by remarks in Ellis 1992.
33 See Misak 1994, 1995a and 1995b for a more detailed case. Dewey is another pragmatist with this concern. See [1938] (1955):32–33.
34 It is important to remember that the criterion in question is one of admissibility into inquiry, not one of truth or warranted assertability. The pragmatist is not rehabilitating the dubious notion of intuition as a special, direct and infallible route to truth.
35 C.I. Lewis saw this point: the early positivists' kind of verification is required only if the criterion is one of 'empirical knowledge' not merely 'meaningful belief. He thought, for instance, that a belief in other minds was meaningful but not verifiable, as we can 'envisage the conscious experience of another, by empathy, in terms of our own'. [1941] (1949): 391–92.
36 See Broad 1923:18–22 for a discussion of this view of metaphysics. See Lazerowitz 1955:41ff for the argument that if metaphysical theories are *a priori,* they cannot be about the world. And if they are not about the world, it is unclear how we are to understand their claims about appearance and reality, motion, the existence of material bodies, etc.
37 MS 313, p. 29. Frank cites a similar passage of Peirce's when he concludes that, although terms such as 'matter' and 'mind' must not appear in science, they should be 'left to the language of everyday life where they have their legitimate place and are understood by the famous "man in the street" unambiguously'. (1946:502)
38 This goes to show how imprecise any carving up of the various domains of inquiry must be.
39 The Peircean might thus hope to accomplish what Korner calls for: 'a fresh examination of the structure of metaphysical principles and of

their function in the thinking of scientists, mathematicians and logicians, as well as in common-sense thinking and in protecting this examination from the influence of those metaphysicans who claim that their metaphysics is the absolute truth and of those positivists who claim that all metaphysics is nonsense'. (1979:264)

40 Perhaps he means it to be the business of phenomenology: the 'observational science' which requires 'the faculty of seeing what stares one in the face'. (CP 5.42)

41 Peirce, especially at the very end of his life, sometimes forgot his pragmatic restrictions and engaged in a kind of metaphysics the pragmatist ought to shun. I shall only discuss those metaphysical theses, mainly his account of truth and reality, which do abide by the pragmatic maxim.

42 Notice the similarity here to Mach's idea that, were every practical and intellectual need satisfied, we would have the truth.

43 This is a simplification of the issue. The current state of cosmology is not such that there is one standard hypothesis and so 'the standard hypothesis' can be taken to be any one of the scientifically respectable hypotheses. See Acock for the argument that there are differences in consequences between Russell's hypothesis and the standard ones. If the world just now sprang into being and I 'remember' shaking poison in the soup two hours ago, the consequence is that I am not morally or legally responsible for any subsequent deaths. (1983:138–43) This, of course, says nothing about the scientific domain or consequences in sensory contexts. See the next chapter for yet more complexity.

44 Similarly, on Goodman's 'new riddle of induction', the grue hypothesis is equivalent to the green hypothesis—the inductive evidence underdetermines them. We need a principle here to say why the hypothesis we in fact have arrived at (all emeralds are green) as the best explanation of the fact that all observed emeralds are green is better than the hypothesis which is consistent with the data but which we have not in fact posited as the best explanation of the data (all emeralds are grue). Goodman's response, that certain predicates are entrenched, is in the same spirit as Peirce's response. See Goodman 1955:73–83.

45 See Misak 1991:96–100 for a more complete account of the role of abduction, including its implications for Goodman's riddle.

46 Given the gap realism maintains between a belief and evidence for or against it, it is a real question as to why the realist should think empirical evidence so important, why the realist should think that it is somehow connected to truth.

47 Of course it might still be the case that there is this fact of the matter: it is not the case that either P is true or Q is true (they are underdetermined by inquiry) but we can see that R and S are false.

48 Misak 1991.

4
WHAT IS IT TO UNDERSTAND A SENTENCE?

1 Dummett at times aligns his position with the logical positivists' verifiability principle 'the meaning of a statement is its method of verification'. (1992:140–41) For other explicit connections between Dummett and the positivists, see Craig 1982:545–55, Smart 1989:261 and *passim* and Martin 1984.
2 See 1976:69, 1991:105, 83 for the connection between meaning and understanding.
3 Perhaps the content that the statement of the verificationist criterion has is pictorial. See below.
4 Dummett sometimes says that he does not settle the issue between realists and anti-realists—he has only argued that an adequate justification of realism has yet to be provided. See 1987b:286.
5 The correlate in logic—the law of excluded middle—is also to hold: for every statement *S*, the statement *'S or -S'* is true.
6 The anti-realist will refuse to assert the principle, but will refrain from denying it, as the denial is inconsistent in intuitionist logic. See McDowell 1976:49, 53–54.
7 These assertability conditions are not mere psychological states such as '"It is red" is assertable if and only if I am in the state of seeming to have a red thing before me.' Rather, an assertability condition must be something that is external or accessible to others. The internalist, as opposed to the externalist account of content, takes assertability conditions to be psychological states. See Peacocke 1986:13–14 for the distinction.
8 Crispin Wright, formerly an anti-realist styled after Dummett, says that this idea is so familiar (and vague) these days that it strikes many philosophers as a 'harmless platitude'. (1989:53) For Wright's current position, a 'pluralism' about concepts of truth, see his 1992:140–48.
9 See 1978a:216.
10 'Thoughts we can entertain' would have been a better choice of phrase than 'meaningful statements' in the above passage. For it is not clear that Dummett can consistently say that we can understand such statements.
11 He does say, however, that in this and perhaps in the even more contentious cases below, 'I personally have no unshakeable commitment to anti-realism.' (1978a:xxxix) But the emphasis, I think, is on the 'unshakeable'.
12 See Moore 1989 for a discussion of this issue.
13 1987:53, see also 1980a:197. In these pieces, Wright takes himself to be engaged in Dummett's anti-realist project.
14 See 1978a:xxxviii, 1987b: 284.
15 See, for instance, Dummett 1976:109–10.
16 See Misak 1991:142–54 for an expansion of this argument against counterfactual bravado.
17 1973:591. Notice that a focus on our actual practices *should* incorporate a kind of breadth into the account of evidence. For instance, there should be no problem with universal generalizations—we do not

actually require looking at every instance to determine whether or not they are true or reasonable to believe.

18 Appiah sees that behind Dummett's verificationism lies the thought that the meaning of a statement cannot be something private to the speaker and this seems to require that the speaker be able to actually manifest her knowledge. (74) But Appiah thinks that a kind of middle ground is available with respect to those purportedly private questions, such as whether or not someone else's pain is so private a matter that it is not an appropriate object of knowledge or reasonable belief for anyone else. (1986:76–7) One can have such reasonable beliefs about another's pain but, of course, these beliefs will be defeasible.

19 I owe this example to Anthony Appiah.

20 On a related matter, we could accept assertions from those whose procedures were remote from our own (even from 'creatures' who might be constituted very differently from how we are constituted) were we able to ascertain that they were reliable. This, of course, is the issue with those who claim to be 'psychic'.

21 Bill Newton-Smith got me to see this.

22 See Quine and Carnap 1990 and Creath 1990.

23 Dummett sees this; see 1992:143.

24 Quine also argues that all attempts to clarify the notion of analyticity are as suspicious as the notion itself.

25 See Fodor and LePore 1992:37 for the use of this term.

26 Kitcher argues that Mill can be seen as a holist, holding not that every mathematical statement has an associated observation, but that the system of mathematics is justified by its applicability to our experience. (1980:220–26)

27 Quine at one point thought that one might reject the law of the excluded middle in light of recent results in quantum mechanics. Perhaps a better example is Putnam's suggestion that we abandon the de Morgan distributive laws.

28 It is also directed away from the logical positivists' clear chains of reasoning which are supposed to lead ultimately to observation sentences.

29 See Quine 1990b:93–94, Dummett 1978a:218–20.

30 The debate between the two about meaning-holism, as opposed to confirmation-holism, is especially complicated. Dummett argues that the former cannot account for 'how we acquire a mastery of a language' (1973:598), for '[l]earning language involves learning what justifications are required for sentences of different kinds'. (1973:622) Since Quine agrees, in large part, about how we learn a language, sorting out this part of the dispute is bound to be difficult. Indeed, Quine sometimes even says that 'the meaning of a sentence turns purely on what would count as evidence for its truth'. (1969c:80)

31 See 1990a:12–13, 1986a:155ff and van Evra 1994 for further connections.

32 See 1990b:3, 1981b:25, 1981c:40.

33 Quine 1987:5, see also [1978] (1981):62–63, 1986b:663–64.

34 Empiricists have thus always found it easy to drop morality from their epistemology, suggesting that it is something like a human construct. My point has been that all domains of inquiry involve some kind of construction, but that this needn't make us abandon the idea of externality; the idea that something is the case whatever we happen to think. The force of experience, broadly construed, is our fallible, tenuous and theory-laden connection to what is the case, even in moral matters. For a defence and elaboration of these ideas, see Misak 1995b.
35 See Quine 1990a: 12–13, 1986a:155ff, 1975a:80.
36 For a Tarskian disquotation view, see 1953c: 132–38. For a leaning towards the correspondence theory, see 1960:221, 1990c:229.
37 See Quine [1950] (1953):79, 1960:3ff, 124, 1981a:72.
38 Quine inherits from logical positivism the thesis that philosophy is not a separate subject from science. Reality must be identified and described within science, not by metaphyics. (1981a:21) And natural science is not in need of external justification by philosophy. (1981a: 72) Quine advocates the unity of inquiry insofar as he thinks that philosophy and science are in the same boat. There is no privileged vantage point, no first philosophy. He says that philosophy must be 'naturalized'; it must abandon the quest for *a priori* standards and be made continuous with the sciences. It must employ only concepts which are the products of science. The task of epistemology, for instance, is to show how science is derived from sensory evidence. The theory of knowledge must become empirical psychology, and this, we saw, is exactly the revisionist line taken by the logical positivists.
39 Quine here too exhibits the empiricist tension. A 'source' of this position is 'unregenerate realism, the robust state of mind of the natural scientist who has never felt any qualms beyond the negotiable uncertainties internal to science'. (1981a:72)
40 See Fodor and LePore 1992:37–54 for a discussion of Quine's complex relationship to newer brands.
41 See, for instance, Block 1986:627–28.
42 Dummett seems to reject such suggestions where we 'treat certain of our sentences as if their use resembled that of other sentences in certain respects'. (1976:101)
43 Blackburn 1989:34. See Dummett (1978a:134–40) for a rejection of these kinds of abilities. But in 1987a (274), Dummett seems to be in principle happy with Blackburn's kind of 'weak holism'.
44 1989:34–35. Blackburn's own position—'quasi-realism' or 'projectivism'—has it that one can be an anti-realist about a class of statements and require that one who understands the statements have these abilities. She must be able to form the right kinds of conditionals, embed the statements within appropriate propositional attitudes, etc. Thus the quasi-realist will say that the statements do not have determinate truth-values, but we have to behave and speak as if they do. See Blackburn 1984:180n.
45 See Wright 1989:53–60 for a Dummettian anti-realist who seems willing to take on board this thought.

46 Crispin Wright has recast Dummett's Acquisition Argument as follows. Knowledge of truth-conditions must consist in 'a recognitional capacity: the ability to recognise, if appropriately placed, circumstances which do or do not fulfil the truth conditions of a sentence'. (1976:224) Since we cannot recognize conditions which transcend evidence, knowledge of truth-conditions must in effect be knowledge of assertability conditions.
47 See, for instance, Craig 1987:282–90.
48 For a more complete articulation, see Misak 1991:125–68.
49 Of course, we shall never know ourselves to be in the position where inquiry has gone as far as it could fruitfully go; we shall never be in a position where we can say with certainty that a belief is true. But we can say that a belief is the best belief available to us, given the current state of evidence; i.e. that it is a rational belief.

5
SOME FURTHER SUGGESTIONS

1 See 1980:64. He criticizes the tendency to define and formalize science with syntactic methods (53–56) and he criticizes the accompanying view of scientific theories as being sets of statements which are true or false and can be slotted into proof-theoretical or deductive logic. The kind of reductions we have seen the logical positivists attempt were 'one and all off the mark'. (56) Van Fraassen argues, rather, that theories are sets of potential models of reality. See Hooker for the argument that van Fraassen is repeating the strategy of the logical positivists in wielding richer logical tools (model theory) to try to save the core empiricist doctrine. (1985:163–66)
2 Churchland expresses the same thought: 'van Fraassen has not moved quite far enough…if we are to reconsider truth as the aim or product of cognitive activity, I think we must reconsider its applicability right across the board and not just in some arbitrarily…segregated domain of "unobservables". That is…we should move in the direction of *pragmatism* rather than in the direction of a positivistic instrumentalism.' (1985:45) See also Ellis 1985:67–73,
3 Van Fraassen's attempt is explicit: he wants to reconcile 'empiricism and an antipathy to metaphysics with an unqualified belief in hypotheses that describe a supposed world behind the phenomena'. (1980:2)
4 1985:258. Van Fraassen, however, takes his most important response to the objection to be as follows. Churchland argues: 'We could be, or could become, *X.* If we were *X,* we could observe *Y* In fact, we are, under certain realizable conditions, like *X* in all relevant respects. But what we could under realizable conditions observe is observable. Therefore *Y* is observable.' (van Fraassen 1985:257) Van Fraassen argues that the third premise—that we could become like *X*—is justified only by an appeal to science. But since science aims at empirical adequacy, the most that might be justified is the premise that we are empirically

indistinguishable from beings like *X* The conclusion then can only be that all the observable phenomena are as if we are observing *Y,* a conclusion which might be true even if *Y* is unobservable. Notice that this argument also turns on van Fraassen's empiricist picture.

5 Wiggins does not explicitly put forward a verificationist criterion. Indeed, his arguments are designed to show that certain marks are marks of truth. Those marks will be briefly discussed below.

6 See Misak 1991:59–79 for a more complete discussion.

7 The oddity of the phrase 'deciding to believe *P* is the oddity of what is in question. See Williams [1970] (1973) for a discussion of whether we can decide to believe something.

8 This fits nicely with the pragmatic view of truth, which holds that a belief is true if it would be agreed upon, were inquiry to be pursued as far as it could fruitfully go. Wiggins' thought is that inquirers hold that their beliefs would be persuasive to others, were they to have the evidence and arguments before them. The pragmatist would add that a belief that would be forever persuasive is deserving of the title 'true'.

9 Indeed, my interpretation of Peirce and my understanding of the possibilites allowed by the Peircean position have been heavily influenced by Wiggins.

10 See 1991b:147–48. For earlier formulations, see [1976] (1991a):115 and 1980.

11 See Harman 1977:3–10, 103–14.

12 It is not clear how Peacocke uses the term Verificationism', against which he sets his position. Sometimes he seems to have in mind the right wing of logical positivism (see 1992:201), but sometimes he seems to refer to Dummett's anti-realism (see 1992:222).

13 See 1986:26, 1986:5, 1992:203. In what follows, I shall outline the theory of content given in *Thoughts: an Essay on Content* (1986), which shares a framework with the theory of concepts given in *A Study of Concepts* (1992, see 1992:ix). Contents contain concepts. (1992:5) The criterion of intelligibility was initially put forward in 1988 and restated with minor changes in 1992. It fits with both the theory of content and of concepts, but only in 1986 does Peacocke give a detailed account of the grasp of some of the contents which the logical positivists and Dummett found problematic.

14 My discussion will centre around the conditions themselves and how they individuate content. I will not discuss Peacocke's arguments for how they determine truth-conditions.

15 The model used in 1992 is 'determination theory': 'We need…for each concept a theory of how the semantic value of the concept is determined from its possession conditions (together with the world).' (1992:17) The consequences of the two models seem to be the same and I shall stick with the commitment model outlined in 1986.

16 See 1992:77ff and also 1991.

17 Peacocke would respond that objective properties (those that can be perceived directly) are those which can be perceived in different modes

of presentation. We can, for instance, vary the angle when perceiving cubicness. But can we not vary parameters for just about anything?

18 1992:199. One kind of spuriousness which I shall not discuss, as it does not turn on a verificationist point, is when a concept fails a kind of consistency test. See 1992:173ff.

19 1992:203. A similar principle turns up with certain philosophers of mind who adopt a causal, as opposed to functional, theory of semantic relations. Fodor, for instance, argues for the following kind of verificationism: 'You cannot have a symbol which expresses property *X* unless it is nomologically possible for you to distinguish *X*-instantiations from instantiations of any other property.' (1990b:119)

20 See Dummett 1976:89. We have seen this principle crop up in logical positivism and pragmatism as well.

21 Perhaps Peacocke would object to being lumped together with these others, for he objects to Craig's suggestion that the Discrimination Principle is merely a special case of: 'if two things are different there must be a difference between them'. (Craig 1990:279) Peacocke's response to Craig is that his principle is 'something specific to the theory of contents'. (1992:204) But I don't see how that entails that the principle cannot be a special case of that more general principle.

22 See Acock 1983:139–40.

23 Perhaps Peacocke would think that he needn't adopt such an epistemology to make this decision, for his theory of content will tell us how we grasp the usual hypothesis. But it is not clear that, were the unusual hypothesis to crop up first, the theory of content would not give the same results.

24 But not in the original 1988.

25 1982a: 342–43. Daniel Dennett agrees, asserting that if we do not become verificationists in the philosophy of mind, 'we will end up tolerating all sorts of nonsense: epiphenomenalism, zombies, indistinguishable inverted spectra, conscious teddy bears, self-conscious spiders'. (1991: 461) If 'there is *and could be* no evidence in support' of certain views of consciousness, there is no fact of the matter. See also Rorty [1986] (1991 a).

26 Rorty 1980:12.

27 1991a:7. Rorty rightly, I think, portrays Donald Davidson as an advocate of this kind of view. We must abandon the misleading distinction between objective content and subjective scheme. See Davidson [1974] (1984).

28 [1986a] (1989a) and [1986b] (1989a).

29 [1985] (1991a):24, [1986c] (1989a):53.

30 (1989b):189, see also [1985] (1991a):32ff.

31 See Misak 1994, 1995a and 1995b for the pragmatist position which need not live with this thought.

32 Initially in the manuscript of [1988] (1991a), but deleted in the published version. Cited by Bernstein 1991:250.

33 Bernstein 1991. At times Rorty claims to forgo argument, in favour of trying to make 'the vocabulary I favour look attractive by showing how it may be used to describe a variety of topics'. ([1986a] (1989a):9)

34 And it is far from clear that Rorty's recommendation really is to try to find the best beliefs for the entire human community rather than to find beliefs for some narrower, Western liberal community. I have suggested that the pragmatist must here be a pluralist and argue that the best belief might be that *(PvQ)* is the best to believe. See Misak 1994 and 1995b.

35 See Bernstein 1991:238–39 for a similar point.

36 See Bernstein 1991:282–83 and Haack 1993 for a discussion of the crudeness of Rorty's dualisms.

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NOTE

Citations to works listed in the References abide by the Harvard system, where the publication date follows the author: for example, Ayer 1935. For those works where it is not practical to cite page numbers from the original published edition, I cite the original and then the more accessible edition: for example, Comte [1848] (1957). There are, however, a couple of exceptions to this practice, for when there is a well-respected convention in citing works from certain authors, I comply with it. So the *Collected Papers* of C.S.Peirce, for instance, are cited in their usual way, with paragraph number following volume number. Whenever I break with the Harvard system, the details will be announced in a note.

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