UNIVERSITY OF STIRLING.

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NATURAL ANTI-REALISM.

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I should like to thank Professor Neil Tennant and Andrew Brennan for their invaluable help and constant encouragement, and my father, James Clark, for his patient work on the typing.
ABBREVIATIONS.

The following abbreviations are used to refer to works by MICHAEL DUMMETT. For publication details see Bibliography.

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<thead>
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<tr>
<td>CA</td>
<td>'Can Analytical Philosophy be systematic and ought it to be?' in TRUTH AND OTHER ENIGMAS (henceforth TO pp. 437 - 459.</td>
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<td>EI</td>
<td>ELEMENTS OF INTUITIONISM.</td>
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<td>FD</td>
<td>'Frege's distinction between sense and reference' in TO pp. 116 - 145.</td>
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<td>FPL</td>
<td>FREGE; PHILOSOPHY OF LANGUAGE.</td>
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<td>IF</td>
<td>THE INTERPRETATION OF FREGE'S PHILOSOPHY.</td>
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<td>JD</td>
<td>'The justification of deduction' in TO pp. 290 - 319.</td>
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<td>P</td>
<td>Preface to TO.</td>
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<td>PB</td>
<td>'The philosophical basis of intuitionistic logic' in TO pp. 215 - 248.</td>
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<td>R(1963)</td>
<td>'Realism' in TO pp. 145 - 165.</td>
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<td>RP</td>
<td>'The reality of the past' in TO pp. 358 - 375.</td>
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<tr>
<td>RVA</td>
<td>'Realism vs. Anti-realism; a survey with some new thoughts' lecture to Stirling University Philosophy Society.</td>
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<td>SQ</td>
<td>'The significance of Quine's indeterminacy thesis' in TO pp. 375 - 420.</td>
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<td>T</td>
<td>'Truth' in TO pp. 1 - 25.</td>
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<td>W</td>
<td>'Wittgenstein's philosophy of mathematics' in TO pp. 166-186.</td>
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ABSTRACT.

The thesis defines and examines a position ('natural anti-realism') which combines an anti-realist semantics with an evolutionary epistemology. An anti-realist semantics, by requiring that a theory of meaning be also a theory of understanding, cries out for an explicit epistemological component. In urging an evolutionary epistemology as such a component, I seek to preserve and underscore the semantic insights of the anti-realist whilst deflecting the common criticism that the anti-realist must perforce embrace some form of noxious idealism.

An evolutionary epistemology, I argue, can provide a distinctive content for the belief that reality is independent of human thought without needing to claim that anything we can say or think about the world can be conceived as being true or false in full independence of our capacity to know it as such. This content is to be secured in two ways. The first is to observe that language is best understood as a tool of minds which are themselves best understood as the products of a natural process operating in an independently real world. The second is to form a non-transcendent conception of transcendent facts. The accessible evidence concerning the form of the selective process, it is argued, warrants the claim that reality may exceed its humanly accessible contours. For it warrants the claim that man is probably cognitively limited and biased in ways rooted in our peculiar, and somewhat contingent, evolutionary past. The natural anti-realist thus conceives of reality as both independent of, and potentially transcending the limits of, man's particular mental orientation. A largely realistic metaphysics may thus accompany an anti-realist semantics without the lapse into vacuity or incoherence which some commentators seem to fear.
Introduction.

The relation of truth to the recognition of truth is the fundamental problem of the theory of meaning, or, what is the same thing, of metaphysics: for the question as to the nature of reality is also the question what is the appropriate notion of truth for the sentences of our language, or, again, how we represent reality by means of sentences. A consistent naturalism sees us and our representations as both parts of and causal and evolutionary products of (the) world ... For our world is not an aspect of us, but rather we of it. Ultimately, then, knowledge is self-knowledge, not for the idealist's reason that there is nothing else to know but for the deeper reason that to understand what else there is to know ... we must come to understand our understanding of it.

Dummett, M. 314. Rosenberg, J. 147.

Once upon a time it was not uncommon for philosophers to evince a fearsome antipathy towards all things evolutionary. Russell, in belligerent mood, once wrote "Anything evolutionary always rouses me to fury". This, perhaps, was the understandable backlash against the excesses of the evolutionary moralists and metaphysicians of the late 19th and early 20th centuries. Times, fortunately, have changed. But the full impact of the evolutionary perspective has yet, I believe, to be assimilated by the philosophical community. What follows is an attempt to transmit some of that impact to the Realism/Anti-realism dispute within contemporary theory of meaning.
The discussion that ensues straddles semantics, metaphysics and evolutionary biology. This strange and heterogeneous mixture results in a surprisingly homogeneous perspective on mind and language and one which may be of interest to any philosopher impressed by Dummett's criticisms of classical truth-condition semantics but repelled by the idealistic metaphysical overtones of the anti-realist alternative.

Discussions within contemporary theory of meaning tend to revolve around the following challenge; show us what there can be in the meaning of a sentence of a language beyond whatever is publicly manifestable in association with recognisable circumstances; persuade us, if you can, that it is not a spurious conceit to picture the meanings of our sentences as extending beyond that grasp of content which is manifestable in relation to accessible circumstances.

Belief in the latter picture is characteristic of a realist approach to semantics. For grasp of meaning, to the so-called semantic realist, consists in grasp of classical truth-conditions; conditions which, disreputably, are capable of obtaining or failing to obtain in immodest independence of any ability we may possess, even in principle, to come to recognise them as obtaining or failing to obtain. The semantic anti-realist believes that the semantic realist cannot meet his challenge and that he has exposed the theoretical slack in the realist's conception of meaning.

There is a primitive realistic response to the anti-realist's challenge, which has, I think, more to recommend it than any sophisticated versions yet constructed. It is that we most certainly do have a notion of truth, at least, as potentially transcending human capacities to recognise truth, whether there is a problem about how we come by it or not. That notion of truth, indeed, is
essentially implicated in any conception of an independent and
external reality as the object of our speech. Does the anti-realist
seriously propose that, in the light of his challenge, we should
surrender this notion? If not, how is it to be reconciled with
his idea that all grasp of meaning is tied to specifically human
abilities to recognise circumstances as obtaining or failing to
obtain? If, however, the proposal is indeed that we give up the
idea of an investigation-independent reality why should we not
instead regard this consequence as a reductio of either the
legitimacy of the challenge or the supposition that the challenge
cannot be met?

Naturalised (specifically evolutionary) epistemology, I shall
suggest, can help these semantic flies out of the fly-bottle. One
way it does so is by enriching our conception of the role and
status of shared recognitional abilities by placing them inside
a naturalised, ontologically realistic framework of explanation.

Shared recognitional capacities lie at the heart of the anti-realist
analysis; they allow us to attribute grasp of meaning in the absence
of any explicit, non-trivial verbal account which the language-user
might give. The notion of a recognitional capacity (the ability
simply to recognise that a given circumstance obtains or fails to
obtain) is a completely epistemological one as Dummett himself
recognises (R (1982) 106). This fact, combined with the importance
of the role played by such capacities in the semantics, makes it
all the more surprising that the anti-realist lacks an explicit
epistemology. It is the purpose of this thesis to supply what
seems to me (for reasons to be advanced shortly) the most appropriate
epistemology for the task. That epistemology is thoroughly
naturalised in the tradition of e.g. Lorenz, Campbell and Quine (1).
To see our shared recognitional capacities through the lens of that account of knowledge, I shall argue, is to take the vital step towards a rapprochement of realist intuitions and anti-realist semantics. Such a rapprochement proceeds, as we said, by a careful nesting of the anti-realist's insights within the larger framework of an ontologically realistic naturalism. The final result is a position from which we can intelligibly declare that our semantic limitations, correctly diagnosed by the anti-realist, are a special case of the general cognitive limitations and bias which characterises all evolved knowledge-acquiring mechanisms. We need not therefore suppose, as the idealist does, that our conceptions inform the nature and extent of the physical universe itself; but neither may we suppose our knowledge, even in the ideal, to constitute an objective isomorphic representation of the world we inhabit, nor our words to describe reality in a way entirely independent of the investigations by which we could decide upon the appropriateness or otherwise of the assertions we choose to regard them as expressing.
I

SEMANTIC ANTI-REALISM AND EVOLUTIONARY EPISTEMOLOGY;
A NATURAL ALLIANCE?
1. Minimal anti-realism.

1.1 The concern of the present thesis lies with a specific version of semantic anti-realism which it is the business of this chapter to construct. In its original form, Dummett insists (RVA), semantic anti-realism was a colourless and negative doctrine. To be a semantic anti-realist in this sense it was necessary only that one should— for whatever reason—fail to be a realist concerning the meaning of a given class of statements where to be a realist meant to conceive that statements of that class possessed 'an objective truth value, independently of our means of knowing it' (R (1963) 147). It is clear, however, both from the context of the preceding quote and others (e.g. P XXX, RP 359) that even at the most general level, Dummett has a particular form of alternative account in mind as characteristic of the anti-realist stance. He has it in mind that instead of conceiving the meaning of a statement of some disputed class as a function of its classical (i.e. potentially unrecognisable) truth-conditions, its meaning should be conceived as determined by the conditions by whose means we might come to regard its assertion as warranted or unwarranted. This conception brings us closer to the kind of anti-realism with which we are to be concerned. That is to say it brings us closer to what Dummett now regards (RVA) as a specialised form of anti-realism with a distinctive doctrine. I propose that we take as the mark of this specialised anti-realism an admission of the force of a particular set of criticisms of realist semantics, namely those which flow from a recognition of the necessary publicity of meaning. It is this kind of anti-realism, with its distinctively Wittgensteinian roots, which is Dummett's
concern in PB. And it is this kind of anti-realism (actually, one particular version of it) which is the focus of our present enquiry.

1.2 An adherent of realist semantics holds the thesis that to know the meaning of a sentence is to know the conditions under which that sentence would be true. And he holds truth to be a property possessed by sentences in virtue of their describing the nature of an objective and determinate reality - a reality wholly independent of our capacities to probe it. The anti-realist holds the conjunction of these two views to be implausible. This implausibility is most clearly manifest if we examine the case of undecidable sentences. (By undecidable sentences is intended, for example, sentences concerning the remote past, subjunctive conditionals, descriptions of the mental life of animals, claims about the nature of the universe beyond a black hole, mathematical assertions concerning the outcome of infinitary operations (e.g. Goldbach's conjecture, that every even number greater than 2 is the sum of two distinct primes, or Fermat's 'last theorem' that \( x^n + y^n = z^n \) has no solution among the positive integers for \( n \geq 3 \), and so forth.) For in the case of such sentences, since their truth might transcend human recognition, so would grasp of their truth-conditions. That is, our alleged grasp of the truth-conditions of such sentences, in which the semantic realist seeks to locate their meaning, would be a grasp we could not demonstrate in relation to accessible circumstances. By what right, then, do we attribute to ourselves such a grasp? The anti-realist says 'By no right at all' and suggests
instead that we characterise meaning as correlative with whatever we would count as evidence for a statement of some problematic kind (R(1963) 146).

This argument, it will be apparent, is a version of the so-called Manifestation argument which insists there can be no legitimate reason why we should credit ourselves with any grasp of meaning beyond that which relates to the circumstances in relation to which we could show that grasp of meaning. The argument has a second incarnation in the form of the demand of intelligible Acquisition, which insists that all we can learn is how a sentence is used, for what else could possibly be taught us? From this angle to suppose there could be anything more to meaning than can be manifest in use is to suppose that someone could learn all we can teach him about a sentence (i.e. its use), behave just like someone who understands the meaning of the sentence in question yet still fail to grasp its 'true' meaning. This, surely, is absurd. Meaning, on such an account, becomes 'ineffable, that is, in principle incommunicable' (PB 218). But any suggestion that the meaning of an undecidable sentence is incommunicable is patently untrue. The point is just that what we are taught when we learn the meaning of such sentences is not what the classical analysis suggests, namely the classical truth-conditions of the sentence, but rather whatever is taken as establishing their truth.

Yet another route to this anti-realistic terminus may be constructed around the idea that knowledge of meaning, in the most fundamental case, must be implicit knowledge. For suppose that we assume that it must always be possible to give an informative
verbal account of our grasp of the meaning of a sentence. In that case no-one who could not reformulate it informatively in language could be said to know the meaning of a sentence. Two objections are pertinent. First, where our grasp is of a very basic concept (say one of touch, taste, colour or smell) it seems unreasonable to demand anything over and above the ability to respond appropriately in the face of stimuli which are communally agreed to be of the relevant kind (e.g. of a blue object, a sour taste and so on). Second, to assume that no-one can grasp a meaning who is unable to state it otherwise, is to start a regress which makes the learning of a first language a somewhat mysterious fact (PB 217). But to admit that knowledge of meaning, in the most basic case, must be implicit knowledge is to invite the demand for manifestation. For implicit knowledge cannot ... meaningfully be ascribed to someone unless it is possible to say in what the manifestation of that knowledge consists: there must be an observable difference between the behaviour or capacities of someone who is said to have that knowledge and someone who is said to lack it.

PB 217

Underlying those demands of manifestability, however expressed, lie two supporting theses, one entirely general and one specifically semantic. The general thesis, which is operative in the preceding quote is happily described by Dag Prawitz (1 p.11,12) as the insistence upon empirical import for theoretical terms. Thus the term 'knowledge' as it figures in the phrase 'knowledge of the meaning of F' is a theoretical term whose function in a theory of meaning is spurious except insofar as it is connected with observable facts
concerning the speakers whose understanding it is the job of the theory of meaning to model. In the light of this principle the anti-realist's point may be put like this; that the supposition that someone's grasp of the meaning of a sentence F consists in his knowledge of the truth-conditions of F (classically conceived) has no distinctive empirical import lacked by the alternative supposition that the speaker's grasp of meaning is best located in his ability to use the sentence appropriately in relation to accessible stimuli. This latter supposition is both more parsimonious and better able to account for our grasp of the sense of undecidable sentences.

Motivating this entire corpus of conjecture, however, is a specifically semantic thesis which has its roots in the work of the later Wittgenstein. For the whole approach depends upon our taking a theory of meaning to be at the same time a theory of understanding. It depends, that is, upon our identifying what a sentence means with whatever it is that a competent speaker of the language understands when he grasps the sentence. Everything thus revolves around the notion of communicability. As Dummett himself says, his position rests upon taking with full seriousness the view of language as an instrument of social communication.

PB 226

For it is only from this perspective that we can insist that a theory of meaning is essentially a theoretical representation of a speaker's communicable understanding of the language and hence insist also that nothing can legitimately (i.e. non-spuriously) be claimed to enter into that understanding which could not be manifest in relation to
publicly accessible circumstances. This is to say that it is only from this perspective that we can insist that the meaning of a statement consists solely in its role as an instrument of communication between individuals ...

(and) ... an individual cannot communicate what he cannot be observed to communicate.

PB 216

With this formulation we reach the spiritual core of the anti-realist stance. Jens Ravnkilde has labelled this core the principle of the necessary publicity of meaning, henceforth the publicity principle for short. The precise definition of the principle which he suggests, and which I endorse, expresses it as the claim that:

(Publicity principle)
No distinction can be sustained between interpretability or communicability (what a speaker can be known to mean by his utterances) and meaning (what the speaker means by his utterances).

Ravnkilde 11

Let us pause to review the situation as it now stands. The anti-realist, in the somewhat specialised sense I intend the term, endorses a certain flow of criticisms of a classical realist semantics. The chain of reasoning to which he is committed goes as follows:

(Argument of semantic anti-realism)
(1) he accepts a picture of language as essentially an instrument of communication between individuals
(2) This leads him to endorse the so-called publicity principle which identifies meaning with communicable understanding.
Thus it is knowledge of meaning, in the sense of communicable understanding of meaning, which is to be the kind of fact to be given theoretical representation in a theory of meaning.

The demand of empirical import for theoretical terms therefore arises with regard to the claim that any speaker has knowledge of meaning suitable for theoretical representation in such a theory.

It is therefore to be demanded that a speaker, in order legitimately to be supposed to possess a communicable understanding of a sentence, be at least able to manifest that understanding in some distinctive way.

Given (2) that manifestation can only be performed in relation to accessible (i.e. at least potentially public) circumstances.

But distinctive public manifestation of grasp of meaning, given that meaning is correlative with communicable understanding, cannot always be provided where grasp of meaning is identified with grasp of realistic (i.e. potentially unrecognisable) truth-conditions.

So such an account of meaning must be rejected and supplanted by one in which grasp of meaning can always be successfully manifest - as, for example, would be the case in a theory of meaning having as its central notion the idea not of classical truth-conditions but of some kind of condition 'which we must, by the nature of the case, be capable of effectively recognising wherever it obtains'. (PB in TD 227).

The argument thus tells in favour of a kind of verificationism. Truth, it seems, (or better, truth classically conceived) is unsuited
to play a central role in the theory of meaning. A more suitable candidate is the notion of verification. In which case it will follow that:

to know the meaning of a statement is ... to be capable of recognizing whatever counts as verifying the statement i.e. as conclusively establishing it as true.

PB 227

In fact, Dummett here concedes too much to the traditional realist line. For the notion of conclusive verification proves too strong to account for our grasp of e.g. other-ascriptions of pain made on the basis of observed behaviour. Instead of relying on conclusive verification the anti-realist need demand only that there be communally agreed assertion-warranting criteria which focus on publicly accessible circumstances. Just such a weakening of the original strongly verificationist anti-realist doctrine is proposed by Dummett in the preface to TO (p. XXXVIII). The anti-realist thus recapitulates, in part, the historical development of the positivist moving from strong to ever weaker conceptions of the kind of verifiability suitable for his theoretical account of meaning. But anti-realism differs radically from old-fashioned positivism in its attitude towards the class of undecidable statements (such as Goldbach's conjecture). For it is no part of the present project to suggest that such conjectures are meaningless (which is what the early positivists would have had to say). Rather, their meaning is to be located first and foremost in our grasp of how the sense of the statement is built up out of its parts (that is the systematic aspect of an anti-realist theory of meaning). Only then does the test of recognisability come into play.
For to locate the potential empirical import of the knowledge we have now, in theory, attributed to the speaker who is said to grasp that systematic construction, we insist further that the legitimacy of his claim to grasp the statement depends upon the following linguistic ability; that he should be able to decide of some purported proof of the statement whether or not the statement is indeed proven by the consideration then advanced. (For a non-mathematical statement, replace 'proven' by 'warranted'.) It is in this sense (which Neil Tennant (1) and (4) has named the weak recognitional sense — as opposed to the strong recognitional sense which demands that we actually be able to produce a proof, or warrant) that knowledge of meaning is to depend on our capacity to recognise a situation as providing an effective warrant for the statement in question. It is in this sense that our grasp of meaning can never extend (if the anti-realist's arguments are correct) beyond the accessible circumstances in relation to which that grasp could be publicly manifest.

This analysis of meaning has implications for our notions of implication. That is to say, we may find that certain classically accepted implications of a sentence will fail the anti-realist's meaning-tests. In which case, given that the sentence itself is seen to be legitimate, we are led to criticise the particular form of inference which allows us to derive the unacceptable from the acceptable. It might be thought, however, that the only case in which we may properly assert sentences which would fail to meet the demands outlined above is precisely the case where we allow that these sentences are a direct consequence of others which do pass the meaning-tests given in terms of weak recognition above.
To adopt this course is to make logical relations among sentences a primitive feature of the language, a feature which is itself a determinant of meaning. Dummett (RVA) believes that such a stance, though not excluded by any argument so far adduced, is simply irrational. He holds the demand of harmony (see below) to be rationally self-evident and employs it to construct the following argument which permits criticism of the actual use of sentences in our language.

The use of a sentence, so the argument goes (PB 221), is not a single feature but a type of feature. The fact is that there are different aspects to the use of a sentence and it is due to this that criticism of the actual use is possible even in an account which accepts the intimacy of meaning and use. For it is rational to require the systematisation of the various aspects of sentence use. Rational, that is, to impose a requirement of Harmony on the different facets of use. Now there are (at least) two relevant aspects of sentence use. First, there are the conditions under which the sentence is properly asserted. And second, there is what the assertion of the sentence commits us to by way of its inferential links with other sentences. The requirement of Harmony is simply the requirement that what the sentence commits us to (i.e. what can be asserted indirectly simply by uttering the sentence) must be nothing which couldn't be asserted directly if we so wished. Any consequences of a correctly asserted sentence $F$ must be such that they themselves could be properly asserted by us in some situation in which we could place ourselves i.e. for a consequence sentence $C$ it must be the case that in some possible situation stimuli could occur requiring our assent to $C$. This is simply the demand of weak
recognition applied to the consequences of our assertions. It
is thus that, as Dummett puts it, the language as a whole must be:

a conservative extension of that fragment of the
language containing only observation statements.

PE 221

1.3 From the foregoing considerations we may derive, as a special
case, the rejection of bivalence which characterises much of Dummett's
anti-realist corpus. This is important because this rejection
helps track the ontological and metaphysical consequences of the
anti-realist stance which form the ultimate quarry of the present
thesis. An account of meaning which takes assertability and not
truth (classically conceived) as its central notion issues, when
conjoined with the demand of conservative extension, in a rejection
of certain classical principles of inference and logical laws. Chief
among these is the rejection of the law of excluded middle and its
semantic correlate, the principle of bivalence. The law of excluded
middle states 'A or not A', while the principle of bivalence reads
'Every statement is either true or false'. Since my concern is with
the semantic principle, I shall state the argument in that form.
Given the principle of bivalence we can always infer from a
statement P to the truth of the disjunction 'P is true or P is
false' (in the logical case A \lor \neg A). But suppose that the statement
in question belongs to the realm of the undecidables. In that case
we might have no grounds for supposing that we could ever be in a
position to recognise that P is true or that it is false. That is,
we would have no warrant for the claim that there exists a situation
in which we would recognise P as correctly assertible, nor any
warrant for the claim that there exists a situation in which we
would recognise that $P$ will never be correctly assertible. The disjunction 'P is true or P is false' therefore fails the weak recognitional requirement upon graspable meaning. So we cannot simply be allowed, by virtue of a general rule, to pass from a statement $P$ to the assertion of bivalence with respect to $P$. Endorsement of the principle of bivalence for statements not known to be effectively decidable severs the connection between the truth of a statement (now anti-realistically conceived) and the kind of fact we could have been taught as justifying the use of the statement. Otherwise put, if an understanding of $P$ consists in our implicit grasp of the recognisable circumstances in which $P$ could be known to be true or false, then we must be agnostic with respect to the assertion of bivalence in cases where we have neither a demonstration that $P$ is true, nor a demonstration that $P$ is false. Unless we know a statement to be effectively decidable, this argument suggests, we must be agnostic concerning the applicability of bivalence to that statement. This does not amount to a denial of bivalence, but only to a rejection of bivalence as a universal principle i.e. a refusal to endorse its instances without the required proofs either way.

The realist, as Dummett characterises him, believes by contrast in the universal applicability of bivalence even in regard to statements not known to be effectively decidable. He thus believes that it is a determinate matter, in no way related to the possible scope of human investigations, whether or not the conditions for the (classical) truth of a sentence is or is not fulfilled. We may take this affirmation in either of two ways - two ways which Dummett, I think, regards as identical but which I shall later insist are crucially distinct. We may, he says:

regard this as a metaphysical assumption - an assumption
of the existence of an objective reality independent of our knowledge. We can, equally, regard it as an assumption in the theory of meaning, namely that we succeed in conferring on our sentences a sense which renders them determinately true or false.

FD 121

(Call the former the Metaphysical Interpretation and the latter the Semantic Interpretation.)

Dummett, I said, probably regards these as equivalent theses. For the metaphysical view, he elsewhere tells us, is

a picture which has in itself no substance otherwise than as a representation of the given conception of meaning.

EI 383

It is for this reason that he sees his semantic observations as bearing on the traditional dispute between Realism and Idealism, and indeed, as coming out against the realist's notion of the physical universe as an 'objective reality independent of our knowledge'. (EI 382). Dummett thus holds that metaphysics is essentially a picture which reduces to semantics. I shall later insist that it does so only if semantics is taken in conjunction with epistemology and that a fundamental divergence in outlook may thereby be produced between Dummett and the 'natural anti-realist' who conjoins his assertability-condition semantics with a naturalised epistemology. (For future reference let us call Dummett's claim concerning the identity of metaphysical and semantic questions the thesis of metaphysical reductionism.)

1.4 Our characterisation of semantic anti-realism has so far come to this; that all grasp of meaning must ultimately connect with the observable circumstances in relation to which that grasp of meaning
may be publicly manifest. The realm of the observable then, is the primary locus of semantic facts; it is the semantic bedrock at which our demands for the justification of attributions of grasp of meaning must stop. The domain covered by the term 'observable' is to be correlative with whatever area is marked out by the equally pivotal notion of 'shared recognitional capacities'. For 'the observable' as it functions in the anti-realist argument can be nothing other than that which is capable of being brought to public attention by the exercise of basic recognitional capacities. But these notions of 'what we can recognise to be the case' and 'what is observable' are crucially ambiguous. It is the final task of this introductory section to begin the job of pinning them down.

The notion of 'what we can observe to be the case' is ambiguous in precisely the same way as the notion of 'what we can verify to be the case'. Indeed, the anti-realist's point about observability (however it is to be analysed) is at the same time a point about verifiability. For the ultimate case of verification, to which all other cases (e.g. those concerning deeply embedded theoretical sentences) must eventually answer, is the case in which the form of verification is immediate observation. In seeking an appropriate sense of observability, therefore, I shall take a hint from an analysis of possible senses of 'what we are capable of verifying' developed by Crispin Wright (Wright (1 chapt.X pp. 182 - 186) ). Wright notes that this notion could be taken as 'involving a double idealisation' so as to mean;

What we are capable, in principle of verifying - that is to say, what some being with limitations differing from our own only in finite degree is capable in practice of verifying - at some time.

Wright (1) 182.
Similarly we might take as our sense of 'observable' a notion of what some (finitely limited) being could at some time observe to be the case. This rules out appeal to God, whose abilities are presumably of infinite degree, and thus saves us from the total trivialisation of the ideas of the recognisable and the observable. It saves us from the situation in which the observable is isomorphic with the (classically) true. But that is about all it does. For such a sense is probably too weak to sustain any distinctive rejection of bivalence and is at any rate quite unwelcome given the deep motivation of the anti-realist's position sketched earlier. To adopt an *in principle/at some time* sense of 'observable' is to make a nonsense of the thought that we can only learn to read into a sentence the kind of meaning which relates to the sorts of circumstances which confronted us, human beings with our present capacities, when we were taught the use of sentences of that kind. It makes nonsense too of the correlative thought that communicable understanding must be such as could be fully manifest in relation to publicly accessible circumstances with the community of speakers. For the community of speakers, we may be sure, finds accessible only that which is detectable by means of the actual sensory and cognitive apparatus with which it is provided and not that which may be accessible to some alternatively (though finitely) endowed being as yet unknown to them. Publicity of meaning, if it is to be (as I think it should be) a common-sense requirement relating to our natural notions of how we could come to know the meaning of a sentence, *cannot* be publicity in some ideal or non-human community but *must be* publicity within the community in which the concept expressed by the sentence was formed, learnt and (therefore) successfully communicated.
In principle/sometime anti-realism, then, will not do. It will not do because to move out with the actual capacities to recognise a situation as obtaining, if it does obtain, with which human beings are endowed is to ignore the correlation of meaning with communicable understanding on which much of the intuitive force of the analysis depends. But the extreme alternative (in which what is observable is to be read as what we can actually now observe) looks equally unsatisfactory. For we surely have an effective grasp of truth for sentences whose truth is not actually observable but whose truth could be observed by us, endowed exactly as we are, if only we were in the right place to observe it. The extreme alternative, that is to say, rules out the weak recognitional account of grasp of meaning which we opted for earlier, and which seems necessary if we are to preserve enough of our ordinary usage to justify us in regarding our task as the theoretical description of the actual understanding exercised by a competent speaker of the language.

An intermediate position between these two unacceptable extremes may be constructed. And it is this intermediate position which I shall label Minimal anti-realism (minimal, because it is the weakest position compatible with there being any distinctive doctrine to call anti-realism at all). Minimal anti-realism equates the realm of the observable with that which we could in principle recognise to be the case. The 'we' is stressed so as to indicate that it is our present, humanly standard capacities of recognition which are at issue. By 'in principle' we therefore mean that which we could, by the exercise of our present capacities, recognise to be the case were we placed in the correct situation and given the appropriate stimuli. This interpretation does justice to the publicity principle without
impoverishing the class of meaningful sentences beyond all recognition i.e. without implying that we are unable to grasp the meaning of a sentence which, for some contingent reason, we are unable to verify in our present circumstances. What, then, of the sometime/now dispute? Minimal anti-realism, for all present purposes, is, I think, compatible with either temporal specification. But for the sake of definiteness, we may opt for the 'now' interpretation. What is observable, on that account, becomes just whatever is observable now, by a member of the present epistemic community. Any philosopher who finds this choice unacceptable may, however, simply reverse it without affecting any of our subsequent arguments. The temporal restriction seems, however, to be in line with the anti-realist's account of learning meaning, since we learn only by exposure to present events, albeit over a period of time. It is, at any rate, worth noticing that the temporal restriction need not be pernicious in its implications for statements concerning the remote past and distant future. It will, of course, mean that these realms are somewhat underpopulated with regard to true facts (i.e. facts which we can assert to be true of such times including, for example, claims that either A is true or A is false where A is some undecidable assertion concerning the state of the world at some time in the remote past). But all this means is that we cannot rely on a God's-eye view of the space-time worm to donate semantic content, analysable in terms of classical truth-conditions, to undecidable past-tense statements. The question
of the reality of the past is, at any rate, one with which the present thesis has no immediate concern since it seems to be a question unaffected by the conjunction of semantic anti-realism and naturalised epistemology. Our concern is rather with present-tensed ontological and metaphysical assertions and with whatever sense of an external and independent reality the anti-realist can plausibly sustain. For this reason I shall not dwell on the temporal issue, but merely repeat that the minimal anti-realist may be assumed to endorse the equation of the observable with that which is humanly, in principle, observable now.

To sum up, the minimal semantic anti-realist (henceforth 'anti-realist' for short) is one who (a) embraces the principle of the necessary publicity of meaning by equating semantic content with communicable understanding, (b) endorses as a result moves 1-8 of the argument for semantic anti-realism and hence recommends the replacement, as the central element of a theory of meaning, of classical truth-conditions with conditions which we can always recognise as obtaining if they do obtain and (c) explicates this notion of 'that which we can recognise' as meaning that which we could now, in principle, observe to obtain by the exercise (in the most fundamental cases) of whatever capacities for the recognition of circumstances are as a matter of fact standard within the present epistemic community. Clearly, more needs to be said about the nature, role and status of these shared recognitional capacities around which semantic content appears to revolve. It is a pre-condition of this further account and of the modifications to the ontological and metaphysical stance of the anti-realist it involves, that we should first acquaint ourselves with the form of a naturalised epistemology.
In the next section therefore, I outline the relevant parts of one such epistemology and indicate why it seems particularly appropriate to the spirit of the anti-realist analysis presented above.
2. The Epistemological Component.

2.1 It is a feature of an anti-realist analysis that the study of semantics is not to be dislocated from questions of epistemology. This feature is most obviously expressed in Dummett's claim that a theory of meaning, to be acceptable, must at the same time be a theory of understanding; the theory of meaning is thus a theoretical representation of the (practical) knowledge we have when we are said to know the meaning of a sentence. The epistemological component therefore carries over into any discussion of the important notion of a recognitional capacity; for it is in shared recognitional capacities that we locate the warrant for attributions of practical knowledge. Given the consequent intimacy of semantics and epistemology for the anti-realist it is surprising that so little attention has been paid to the epistemological component itself. In particular we might ask what kind of epistemology would be appropriate and whether its presence would affect the implications of the anti-realist analysis in any interesting way? The present chapter is an attempt to tackle the first of these two questions.

2.2 One reason for the lack of attention given to the matter of epistemology may be Dummett's own insistence that although epistemology has a role to play, it is very much a secondary one. In adopting this attitude Dummett is following Frege, one of whose principal achievements, it seems, was 'a shift of perspective which displaced epistemology from its position as the starting-point of all philosophy'. If 61. The upshot of this shift in perspective is the primacy, instead, of theory of meaning or semantics. It seems to me that Dummett takes too strong a line on this matter (see e.g. P XL) and that it is
rather the case that relations of priority between the two areas depend, even within academic philosophy, upon the particular explanatory or argumentative purposes we have in mind.

Nonetheless one of the possible motivations behind Frege's 'shift in perspective' is importantly correct and will constitute a constraint upon our subsequent choice of epistemology. That motivation is the rejection of psychologism or mentalism in the theory of meaning; the rejection, that is, of the identification of meaning (in any allegedly explanatory context) with private mental contents. Frege's resistance to any such identification springs from his observation that the content of a thought may sustain a degree of publicity to which no mental image can aspire. He complains that 'people speak e.g. of such a mental image as if it could be in public view, detached from the imagining mind'. Yet, he says, we cannot even be sure our private image of red, for example, agrees with that of our neighbour. The 'peculiar character' of our image of red, then, is something we cannot convey. The content of a thought, expressed in language, however, is truly public property; 'one and the same thought can be grasped by many men'. Consequently the content of the thought must be distinguished from the images which may accompany the having of the thought.\(^4\)

The potential spuriousness of notions of mental processes, images and the like in the context of a theory of meaning thus demands that we proceed with caution. For we must be careful of exactly how we conceive of an epistemology attaching itself to a theory of meaning if we are to avoid an analogous charge of focussing on the inessential. Recalling the acquisition argument sketched in 1.2 (p. 8) above we may therefore distinguish two possible
interpretations of the points there at issue. On the one hand, there is the psychologistic interpretation which sees the argument as issuing from a consideration of how we in fact come to acquire the concepts of our language. On the other hand there is the transcendental interpretation (which we shall see to be the correct one) which sees the acquisition argument as asking what must be the case (logically) if we are to acquire a certain concept at all.

It is the latter interpretation which is suggested by the comment (IF 74) that a theory of meaning is an attempt to 'render intelligible the phenomenon of interchange in (a) language'; and it is the latter interpretation which sits comfortably with the fundamental characterisation (given in 1.2 above) of the anti-realist critique as flowing from taking seriously the notion of language as an instrument of communication. In the light of this it becomes clear that what is objectionable is the intrusion into theory of meaning of any mentalist epistemology. Such epistemology is intrusive because it simply ignores the transcendental force of the anti-realist's insistence on communicability as requiring publicity and offers instead a psychologistic account of our (alleged) actual grasp of meaning which is totally non-explanatory. What is to be resisted then is the kind of bogus, mentalistic epistemology which allows that (thesis of mentalism)

What gives meaning to the sounds that a speaker utters no longer lies open to view: the meaning he attaches to them depends upon something interior to him, his understanding of the language, perhaps conceived as his implicitly knowing a theory of meaning governing it, and his communication of that meaning to his hearer depends upon the hearer's being in the same interior state.

IF 75
It will therefore be a constraint upon an acceptable use of epistemological notions in our account of meaning that such notions should involve nothing like the thesis of mentalism. The semantic points, such as those concerning communicability and publicity, are thus prior to any epistemological ones insofar as they function as constraints upon the acceptable role of epistemology in a theory of meaning. This, as Dummett well realises, is by no means to diminish the importance of the role of some kind of epistemological component in the anti-realist account. Epistemological concerns enter into that account by a fairly straightforward route stemming from the equation of a theory of meaning with a theory of understanding. Backing this equation, we saw, is the simple thought that a theory of meaning is nothing but a theoretical representation of the knowledge involved in a competent speaker's mastery of his language. Once this is taken on board, however, it becomes, in Dummett's own words, 'impossible to ... keep the theory of meaning sterilised from all epistemological considerations'. (R (1982) p.106.) For our purposes, the most important site of epistemological infection lies in the appeal to shared direct recognitional abilities. The anti-realist appeals to the exercise of such abilities as providing the necessary warrant for attributions of implicit knowledge. (See 1.2). He does so because he endorses both the demand for empirical import of theoretical terms (i.e. 'knowledge') and the thought that it is too much to require of a competent speaker that he be always in a position to give an informative verbal account of in what his knowledge of meaning consists. That is to say, the anti-realist allows that we may know the meaning of various basic terms (e.g. the application of colour, shape, taste predicates etc.) without being in a position to say any more about
the conditions which warrant our use of such terms than is contained in the bare assertion that 'this is red' 'this is round' 'this is sour' and so forth. In such cases our knowledge of the meaning of the terms involved is implicit knowledge which is manifest in use. Manifest, that in our capacity in the right circumstances to recognise that an assertion involving such terms is appropriately made. Our grasp of some of the most basic concepts of our language (roughly, the concepts appropriate to the fragment of our language containing only observation statements) is thus manifest in the direct recognition capacities we exhibit.

The direct justification of our claims to implicit knowledge of meaning, and in some sense the ultimate justification of our claims to all knowledge of meaning, thus lies in our faculties of unmediated recognition. It is at this point that the giving of grounds, expressed in language, comes to an end. It is at this point that the threat of circularity, or infinite regress, in an account of knowledge of meaning finally dissolves. For we may now just point to the faculty of recognition, whose application in specific cases is agreed by some substantial proportion of the community. In its operation our grasp of meaning is manifest and our claims to knowledge of meaning legitimised. At this important juncture, we have entered the space of epistemology. For, as Dummett readily admits;

the claim that we possess ... a faculty for direct recognition of a condition of a certain kind is an epistemological one.

R (1982) p.106
2.3 Epistemology, then, has a real role to play in a developed system of anti-realist semantics. What remains undetermined is precisely what form this epistemology should take. The answer to this question, indeed, is not just undetermined but in principle underdetermined; consistency with an anti-realist approach to language does not force any particular choice of epistemology. There are two prima facie reasons, however, why an evolutionary epistemology would seem to be a happy choice. They are

(1) The active support of evolutionary epistemology for the anti-realist's fundamental intuition that language is essentially an instrument of communication, and

(2) The ability of evolutionary epistemology to comment on the nature and status of the shared recognitional capacities taken as basic in the semantic analysis, itself.

Since the second of these points will be dealt with in some detail in the chapter on recognitional capacities, I shall confine myself at present to commenting on the first. An evolutionary epistemology, I want to say, is not merely compatible with the position of anti-realism, but actually offers it active support. More precisely, it offers active support to a fundamental component of the anti-realist analysis, namely the publicity principle (see 1.2). The publicity principle stated, we recall, that a speaker cannot be held to mean by his utterances anything more than he can be known to mean by them. Meaning is necessarily communicable. Belief in this principle is a pre-condition of anyone's accepting the force of the anti-realist's criticisms of classical semantics. For those criticisms were seen to be essentially of the nature of a challenge;
show me, communicate to me, what more there could be to meaning than is captured by an assertability-condition semantics! The challenge has force only if we accept that any ingredient in meaning must be communicable.

Acceptance of the publicity principle amounts to a rejection of what (in 2.2) we termed the thesis of mentalism; the idea that meaning could depend on something essentially interior, not open to public viewing. Rejection of such a thesis, and the stress, by contrast, on the communicable nature of meaning, is associated with the work of the later Wittgenstein. In particular, it is associated with the observations made in the PHILOSOPHICAL INVESTIGATIONS concerning private language and following a rule. Thus, for example, at 59c ' "Understanding a word": a state. But a mental state? '.

Or again:

Try not to think of understanding as a 'mental process' at all - for that is the expression which confuses you.

But ask yourself: in what sort of case, in what kind of circumstances, do we say 'Now I know how to go on'.

Wittgenstein (1) 61c.

This approach to meaning, and to what it is to grasp meaning, was inherited wholesale by the anti-realist (see e.g. Dummett PB 226, T 19). And it is an approach dictated by a thoroughly naturalised attitude to language. For once we see language as a phenomenon in the natural order we cannot credit it with the ability to do more than it can be observed to do. Anti-realism, to this degree, is a logical outcome of a naturalistic view of mind. Otherwise put, to locate grasp of meaning as an item within the natural causal order is to insist that meaning be exhaustively
determined in terms of conditions which are capable of impinging on us. Unless this is so, the communicability (and hence the learnability) of meaning becomes a mysterious feat, insusceptible of natural explanation. That is one dimension in which a naturalised approach to epistemology (specifically to knowledge of meaning) is appropriate; it supports the anti-realist's premises concerning necessary publicity. The special appropriateness of an evolutionary epistemology shows itself in a related area (as well as in the account of recognitional capacities - see chapter 3). It shows itself in relation to the picture of language as an instrument whose purpose is to affect action. This picture of language as an instrument having a purpose or goal is implicit in the anti-realist's criticisms of classical semantics. Such a semantics, the anti-realist believes, diverts the goal of language from the analysis it offers of the meanings of our words. For nothing in the use of the instrument (language) suggests, so the anti-realist argues, that an analysis of our understanding of language requires or suggests a classical notion of truth. The goal of language, for the anti-realist as well as the classicist, is the making of true statements. But the actual use of language as an instrument affecting and modifying human actions speaks only for the conception of truth favoured by the anti-realist i.e. a conception of truth as warranted assertability. Worse still, language (conceived as an instrument aiming at warranted assertability) may malfunction so long as rules of inference based on the classical conception prevail. Thus we may be led, by an application of bivalence, to assert a conclusion for which no effective warrant can be found. Unconservative extension (see 1.2)
is an evil because it may allow language to miss its goal; to fail as an instrument aimed at the making of warranted assertions.

The anti-realist, then, believes that the nature of language is precisely the nature of an instrument aimed at affecting human action by the making of true statements. And the notion of truth is modified by the goal of affecting human action into a notion of something which is necessarily non-transcendent. This picture of language, I want now to suggest, is perfectly (though contingently) supported by an evolutionary account of the role of language. Thus the most plausible function of language, from an evolutionary perspective, is surely the dissemination of survival-relevant information. The initial function of language, we may say, was probably the sharing of knowledge concerning the environment. An example, given in McDowell (1) p.129, would be where the species makes the move from individual sensitivity to the environment to quasi-linguistic communication in which the benefits of an individual’s perceptions may be shared by others. Thus an individual, seeing a predator, may emit a 'squawk' causing the other individuals to run. The 'squawk' then constitutes another mode of awareness of predators apart from the ordinary perceptual sensitivity to predator-shape or whatever.

Our own language, with all its sophistication, is surely an extension or development of some such capacity. The difference of course is that we are aware of the intentions of ourselves and of others as speakers. Such a development (which generates the possibility of deception and of non-assertoric speech acts – see McDowell (1)) may perhaps be explained, in part, by the observation that as social animals the states and attitudes of our fellow individuals are a vital factor in our selective environment.
Sensitivity to a speaker's intentions is thus as important to us as knowledge of the location of food or of the presence of predators.

What is important, at any rate, is that language regarded as a characteristic with an evolutionary function, must confer some benefits on its possessors. And that such benefits look likely to concern principally the reception of true information about the selective environment, where the reception of that information affects the subsequent actions of the recipient in a survival-enhancing way. So-if language has a function or purpose, in an evolutionary sense (to be made precise in 2.4 following), then that function looks to be just as the anti-realist insists it must be i.e. as an instrument affecting and modifying human actions in a beneficial way. The point to stress is the necessary tie between truth, as it occurs in the evolutionary account, and action. For insofar as we may say, as evolutionary epistemologists, that language aims at making true statements or disseminating true information, we can mean by true only 'true and capable of affecting human action'. The idea that a classical and potentially transcendent notion of truth is appropriate as a pivotal concept in an analysis of the meaning of sentences in human language is thus as inopportune from the vantage point of an evolutionary account of the function of language as it is given the anti-realist's parsimonious attitude towards the application of theoretical terms such as knowledge of meaning.

2.4 We have some cause, then, to regard evolutionary epistemology as a suitable candidate for combination with an anti-realist semantics. Both parties, it appears, respect Wittgenstein's observation that 'it is our acting which lies at the bottom of the language game'. (Wittgenstein (2) 204). It remains, therefore,
to characterise further the notion of an evolutionary epistemology itself and to draw attention to those aspects of such an epistemology which will be especially relevant in the chapters to come.

Evolutionary epistemology falls into place as part of a philosophical tradition whose locus classicus is Quine's 'Epistemology naturalised'. (Quine (1) pp.69 - 91). Quine, seeing in the Cartesian quest for certainty only a 'lost cause' (ibid 74), suggests instead that we focus on the empirical facts relevant to the determination of our picture of reality. He sees no future in the project of rational reconstruction, no way to validate the grounds of empirical science by a strict derivation from logic and sense experience (or even from logic, sense experience and set theory).

That being the case we may abandon the quest for the 'sure and secure foundations of knowledge'. And in so doing we abandon also all reason to rule out the use of empirical science itself in our efforts to discern the relation between theory and data, or meaning and the sensory evidence on which it depends (viz. shared stimulations - ibid 75, 81). Where the goal of epistemology was the logical validation of science, such an appeal to the data provided by empirical science itself was rightly denounced as circular reasoning. But that goal was seen to be unattainable. The new goal, which hopefully is attainable, is to study, in a non-foundationalist manner, how the human subject of our study posits bodies and projects his physics from his data (ibid 83) and in so doing

We are well advised to use any available information, including that provided by the very science whose links with observation we are trying to understand. (ibid 76).
Quine's principal interest is therefore the relation between human input, given in terms of 'sensory irradiations' and human output, conceived as 'a description of the three-dimensional external world and its history' (ibid 83).

What distinguishes an evolutionary epistemology from this more general naturalised approach is the thought that the nature of the cognitive processes and sensory capacities which mediate and make possible this relation is determined by the process of natural selection. Cognition, so this central thought goes, is adaptive. Evolutionary epistemology, in this sense, has little to do with the Popperian project of providing a 'survival of the fittest' account of scientific theories. It is rather a matter of drawing out the philosophical consequences of the idea that mind is dependent on an adapted organ, brain. This latter idea can be found (albeit in a somewhat distorted form) in work by Herbert Spencer\textsuperscript{6} as early as 1855. More acceptable versions of the thesis begin to appear with Lorenz (see Bibliography) who describes innate categories of thought as being arrived at a posteriori by the species (though a priori for the individual) in a form determined by natural selection. Others who adopt the perspective I associate with evolutionary epistemology include Waddington, who writes;

> The faculties by which we arrive at a world-view have been selected so as to be, at least, efficient in dealing with other existants ... they have been moulded by things-in-themselves so as to be competent in coping with them.

Waddington (1) quoted in Campbell p.445, and more recently Neil Tennant (2) (3) and Elliot Sober. But why should we adopt such a perspective?
The principal reason why we should adopt such a perspective (viz. that 'cognitive structures are evolutionary products' - Tennant (3) p.3) is a negative one. There is no reason why we should exempt our cognitive structures from the account we give of our gross physical organs. Why should it not be that, as Lorenz says,

Just as the hoof of the horse is adapted to the ground of the steppe which it copes with, so our central nervous apparatus for organising the image of the world is adapted to the real world with which man has to cope.

Lorenz (1) 25.

In order to subscribe to cognitive adaptionism, we need only to agree that creatures whose cognitive orientation (a broad term designed to compass sensory modalities and basic information processing characteristics) fails to determine appropriate (i.e. survival-promoting) responses to life situations would stand at an evolutionary disadvantage with respect to other creatures, competing for the same resources, whose cognitive strategies tended to work. This seems impossible to deny. Acceptance of this near-tautological proposition, however, is sufficient (given the proviso of heritability or transmissibility - see below) to confer, on whatever physical structures underlie our sensitivity to stimuli and our dispositions to respond, an evolutionary function. To agree that cognitive orientation is functional in an evolutionary sense is to concede at once the relevance of an adaptive story to the nature of man's image of the world. (Whether or not this relevance extends even to the nature of the scientific image of the world is a further question and one we shall face in chapter 7 following.)
But do cognitive structures have such functions? In order to decide we must clarify what is meant by a cognitive structure and a function. Take cognitive structure first. By such a term we may mean, at most, some general strategy of ordering and conceptualising input. It is certainly implausible to suppose that specific items of information are innate and genetically transmissible. (Indeed, the demand of cost-efficiency (see 2.5 following) suggests that general strategies will be preferred to multiple individual units of information.) Candidates for such innate general modes of orientation might be various basic, important and pervasive features of man's natural image of reality. For example, to borrow a list of Neil Tennant's, 'the concept of substance, the notion of a continuant, concepts of identity by various sortal criteria, the notion of event and of cause' (Tennant (2) p.171). More minimally, but sufficient for our ends we may settle for the innate sense of similarity (Tennant's 'sortal criteria') which allows us to learn language and then to share direct recognitional responses to new causes (for example, to agree of a new object that it is red, sour, heavy or whatever). This minimal inherited cognitive orientation lies between the strong notion of inherited concepts and the weak idea that all that is evolutionarily determined is sensory modalities. Nor is this minimal innate orientation seriously to be doubted (as we shall see in our discussion of Quine's Quality Spaces in chapter 3), for a sensory modality without a disposition to sort sensory input into useful arrangements of information would clearly afford no advantage at all. To deny the minimal cognitive adaptionism I am advancing would, in effect, be to commit oneself to the psychologically
and biologically disreputable notion of completely uninterpreted sense data. Indeed, it seems likely that the stronger version detailed above is true. For inbuilt cognitive strategies enabling us to take over successful ways of conceptualising experience evinced in earlier generations would surely afford beings so equipped a considerable advantage. Popper argues for such a case suggesting we interpret some of the Kantian categories as 'genetically a priori' and 'prior to observation' but not 'valid a priori' since they would be the fallible products of selection during the species' contingent evolutionary past (see Popper p.47).

By cognitive structures, then, is meant the physical conditions underlying at least our basic sortal responses and at most certain basic cognitive strategies such as those named in Tennant's list. I am inclined to believe in the slightly richer innate repertoire orchestrated by e.g. Tennant, Popper and Lorenz. But most of our arguments will depend only on the more minimal claim associated with Quine's quality spaces and detailed further in chapter 3 following. Do such cognitive structures have functions in the requisite biological sense?

Normal talk of functions occurs in the context of the explanation of the parts of human artifacts. It is, we say, the function of the plunger relief valve in the oil pump of a Ford Escort to control the oil pressure by occasionally bleeding oil back to the sump. And it is, likewise, the function of the oil pump itself to force feed lubricant to the appropriate parts of the engine (e.g. the small end bush, the gudgeon pin and the cylinder bores). Function, in its normal use, is thus very much context-relative. We talk of the function of X in Y. Talk of the function of X simpliciter makes
sense only insofar as a context is presumed or because we have it in mind that the object was designed with a purpose (whether or not we know it and whether or not it actually fulfils it). Faced with an exotic mass of alien technology the B-movie scientist announces that 'the function of the mysterious machine which recently materialised in front of the Pentagon remains a mystery'. Is it a death ray perceptively trained on Ronald Reagan; or is it a coffee-maker sadly misdirected by the Matter Transmission service? By function, then, we mean either the role of a part relative to a whole, or the end for which a whole object was designed.

Moving now to the application of the concept of function to natural objects (sows, human brains, hearts, mice, moles etc.) we find that one of our disjuncts is missing. The heart we can accommodate; its evolved function is to pump blood. If this was not done, beings like us would die. So selection operates in favour of efficient hearts. But the sow is a problem. It cannot qualify for function by design because nobody designed it. Unlike a part (e.g. a heart) a natural whole has no designed use. It seems odd then to look for its function, for, as a recent commentator suggests; the notion of function gets its primary application in the case of parts of machines and other things with use-purposes.

Purton p.18

In Purton's terminology, the reason why it is nonetheless acceptable to talk of the function of a part of a natural object is that the object has a 'maintained state' regulated by processes of negative feedback. Thus the heart pumps faster in order to maintain levels of vital gases in the blood. It regulates the system in a
goal-directed way, the underlying explanation of which is to be found in the selective account just sketched. Without such regulation we would die before reproducing.

Our ordinary notion of function thus extends to cover the life-maintaining function of parts of natural objects - for example, the physical structures to be found within the human brain. But natural functions too are context-relative. Thus although it is only the parts of natural objects which have functions, what we choose to count as part and whole may vary according to our explanatory interests. Thus a co-adapted bacterium may count as part of a cow's stomach which in turn has a function in maintaining the cow's life. Or a valley may count as a whole eco-system in a state of evolved stability to which some animals contribute by eating certain plants which would otherwise swamp the valley destroying the habitats of its native animal population. With that proviso, however, we may conclude that parts of natural objects can indeed have evolutionary functions, and that to have an evolutionary function it is sufficient that a part contribute to the maintained state of a whole natural object. Where that natural object is an animal, the evolution of the part in question is explained by the fact that a maintained state of fit and healthy life promotes reproduction and so selection occurs in favour of beings with well adapted minds, strong hearts etc.. For mental characteristics, we may be sure, are as essential to the maintaining of life as physical ones. Selection will favour beings whose internal representations enable them to cope with a world they never made. The evolution of appropriate cognitive strategies is thus explained by the contribution of such strategies encoded
in some physical structure within an animal to that animal's survival. Healthy bodies and healthy minds are the legacy of a demanding mother nature.

Basic cognitive characteristics may thus have functions in the requisite evolutionary sense insofar as the presence in an animal of the physical structure which encodes any such characteristics tends to promote the survival and reproductive success of that animal. Cognition and circulation are thus equally respectable as items with evolved functions. Both fit the basic definition, implicit in our overall account of function, that:

A function of I (in S) is to do C **means** I does C and if, ceteris paribus, C were not done in an S then the probability of that S surviving or having descendants would be smaller than the probability of an S in which C is done surviving or having descendants.

Canfield (1) p.287.

(Note: Communication, conceived as the dissemination of beneficial, behaviour-affecting information clearly has a function in this technical sense also - recall 2.3 above.)

Not every characteristic of an evolved being has such a function. Some characteristics may be selected because they accompany, in the genetic coding, a characteristic which does perform some useful task. Basic sensory modes and minimal cognitive orientation are too obviously vital to human survival to be plausibly assimilated to such spin-off characteristics however. They are by no means accidental within the evolutionary context (though they are the result of accidental factors and chance). For their presence in us can be explained by the functions they fulfil. Sensory
modalities enable us to find food and avoid being eaten. In fulfilling this task they co-operate with basic cognitive strategies which sort and identify input. Together, our sensory and cognitive natures bestow upon us the capacity to respond to our environment in a survival-enhancing way. Some minimal cognitive orientation, at least, is thus surely amenable to the kind of explanation in terms of evolved function favoured by the evolutionary epistemologist.

There is, however, one further requirement upon evolutionary explanation which deserves mention. This is the requirement of transmissibility. A characteristic, however advantageous, cannot be given an evolutionary explanation unless we have some idea of the mechanism of heritability involved in its transmission. A materialist theory of mind (in a broad sense; we may espouse supervenience without reduction regarding mental states and still be sufficiently materialist) is thus a pre-supposition of the evolutionary epistemologist. The capacity of DNA to transmit information concerning physical structure (more precisely, it transmits coding for proteins which in turn form tertiary structures in accordance with higher level laws of form) from generation to generation is, on that pre-supposition, enough to ensure the heritability of basic cognitive structures encoded in the organisation of the human brain. And there is, of course, no question but that our sensory modalities are heritable in the same manner.

The combination of a basic materialism with the notion of function outlined above justifies us in adopting an evolutionary perspective with regard to cognitive structures and sensory modalities. It does so by meeting the three requirements of evolutionary explanation (see Bechtel and Richardson's article referred to in note 9) i.e. (1) variation (by mutation and
recombination of DNA and RNA complexes), (2) transmissibility by some intelligible mechanism of variations produced, (3) selection between variations by differential survival and reproduction of phenotypes.

The adoption of the broad perspective of an evolutionary epistemology therefore looks, on even the briefest of reflection, to be compulsory. As philosophers, then, the important question is 'So what?' What are the consequences, for our picture of knowledge and of our knowledge-acquiring capacities, of recognising the adaptive background of cognition?

2.5 The consequences of the adoption of the evolutionary perspective are not simply that cognitive structure and capacities for sensory discrimination are fitted to the environment. If this were so then the evolutionary epistemologist would be guilty of committing what I shall label the Turkish Driver fallacy. The perspiring tourist, critical of the quality of driving in Istanbul, may be told an old and interesting proverb. In Turkey, so it is said, they have only good drivers because all the bad ones are dead. Evolutionary epistemology, it must be stressed, is not just a minor variation on this old and fallacious proverb (as anyone who's been to Istanbul knows). Certainly, such an epistemology does involve claims which have the logical form of the proverb. The form, that is, of an inference to a kind of correctness of knowledge acquired and processed by evolved means conducted by an evolutionary reductio performed on the assumption of invalidity (cf 'creatures inveterately wrong in their inductions have a pathetic but praise-worthy tendency to die before reproducing their kind'. Quine (2) 125). Claims of this nature make up what I shall term the appropriateness argument. When philosophers refuse to take
evolutionary epistemology seriously. they tend to see in it only this one argument. But there is another, to my mind more important, consequence of the adoption of the evolutionary perspective. This I term the fallibility/scope argument. It is this latter argument which adds much-needed provisos to the appropriateness argument itself, thus rescuing it from the Turkish Driver fallacy.

Let us therefore focus on the two kinds of considerations themselves (viz. the appropriateness and the fallibility/scope arguments). The general nature of the appropriateness argument should by now be clear, and I shall not labour it. It may be put like this:

\[(\text{appropriateness argument})\]

For a typical individual \(X\), of a species \(XX\) in an environment \(Y\).

If (assumptions)

\[(1)\] \(XX\) evolved, by a process of natural selection in \(Y\) and

\[(2)\] \(X\) has some apparent knowledge of \(Y\) gained through evolved means of sense and modes of processing

Then suppose (Reductio clause) that \(X\)'s apparent knowledge (\(k_x\)) bore no relation to \(Y\) \((- (k_xRY))\)

In that case \(X\)'s knowledge would fail to aid \(X\) in the pursuit of natural goals (survival and reproduction) in \(Y\).

So \(X\) would fail to reproduce.

So \(X\)-type organisms would generally fail to reproduce.

So \(XX\) would become extinct.

(End of Reductio clause.)

\(XX\) is not extinct.

So \(X\)'s knowledge bears some useful relation to \(Y\) \((k_xRY)\).

This somewhat realistic-sounding conclusion, however, needs amending in several ways to take account of various evolutionary
constraints on the type of relation we may plausibly expect our knowledge to bear to the world. Such constraints form a complex of arguments which, in virtue of their common fallibilistic conclusions, I have gathered together under the banner of the fallibility/scope argument. Before examining these constraints, however, let me say a few words in response to a potential line of objection to the Appropriateness argument as it is presented above. To say (as we did in the reductio clause) that a being's apparent knowledge 'bears no useful relation to the environment' is to say, in deliberately vague terms, that the being in question held mostly false beliefs. If some philosophers would baulk at the use of belief in this context, they may instead think of the animal as holding mostly false belief-analogues. This term is borrowed from Dennett (p.10) and used to stand for our rational reconstruction of the animal's natural programming, given for convenience in intentional terms and based on its observable behaviour. Suppose then that we allow ourselves to speak of the evolutionary failure (the unsuccessful being in the reductio) as holding mostly false beliefs or belief-analogues. We do not suppose that this is the only or even the most usual cause of evolutionary failure; environmental change is a more common killer. But it is a potential cause of maladaptation, and one which bears directly on the central thesis of evolutionary epistemology viz. that our cognitive capacities have been partially moulded by the forces of selective success and failure so as to be competent aids to survival and reproduction. The objection I want now to address is that we cannot make sense of the evolutionary reductio as it is meant to be applied to a creature's beliefs (or belief-analogues) since we could never, on methodological grounds, be justified in attributing mostly false beliefs (or belief-analogues)
to the creature in question. Such an objection, if it were upheld, would undercut our right to use the appropriateness reductio in an epistemological context.

The objection stems from the principle of charity developed by Donald Davidson (see e.g. Davidson p.17 - 20). Davidson points out that our interpretation of actions and/or utterances must always proceed by our first assuming that most of what the subject believes is true and then correlating his actions or words with the pursuit of obvious goals (e.g. eating, avoiding predators etc.).

But suppose we apply charity to the evolutionary failure in the reductio clause? It then seems that, if we are to say it has any beliefs or belief-analogues at all, we cannot regard them as in any large part false. So the reductio cannot be performed in an epistemological setting. For instead of saying that the evolutionary failure held mostly false beliefs (or belief-analogues) we must either say it held none at all or that it held mostly true beliefs but had some rather bizarre desires (e.g. to fall off a cliff-top) which these true beliefs enabled it rapidly to fulfill!

The latter option is as useless to the would-be evolutionary epistemologist as the former. Clearly, in weighing up beliefs and desires in the case of the evolutionary failure we naturally seek more emphasis on belief (or belief-analogues) and less on desire (or desire-analogues). The problem is how to make this a convincing special case rather than an ad hoc stipulation. The way to do so, I suggest, is to regard the principle of charity as itself being derived from the epistemological version of the Appropriateness argument, in a way which makes clear exactly why it is that the evolutionary failure is a special case. Thus we may argue that it is precisely because the holders of false belief-systems tend to
die out or to bungle their interactions with the world that it is legitimate to treat successful, surviving species as holding mostly true beliefs. The appropriateness argument is thus seen as offering naturalised support to the Davidsonian principle in a way which simultaneously displays why charity should only be extended (as it generally is) to successful, established groups of beings. For it is manifestly improper to deploy the demands of charity against the very evolutionary failures whose characteristic non-existence explains the success of the principle as an interpretative tool.

The epistemological significance of the Appropriateness argument thus defended, we may now examine some constraints on its conclusion (viz. the conclusion that the knowledge of a surviving being will tend to be appropriate to its environment). These constraints together make up the fallibility/scope argument mentioned above.

The abilities of an evolved creature to acquire knowledge of the world must depend solely on the range of sensory access to information processed by itself and (in the case of communicating beings) its peers and (perhaps) on any innate categories of thought similarly evolved by differential survival within the species. The nature of capacities to access and process information are thus plausibly tied to whatever constraints are imposed by the evolutionary process itself. The first such constraint concerns the specificity of the selective environment itself. Recall the conclusion (kxRY) of the appropriateness argument (above). The constraint of specificity implies that the environment Y to which X's knowledge-acquiring capacities have had to answer ought not to be identified with any quasi-Kantian notion of the world-in-itself;
nor indeed, with any mere spatio-temporal portion of that world. This is because an environment, for the purposes of evolutionary argument, is simply the set of physical parameters appropriate for judging the fitness of an individual organism. An individual's fitness relates, in an obvious way, to its knowledge of its own environment. Thus, for example, when the relevant environmental factors transcend an individual's knowledge its fitness diminishes since it must ignore pertinent factors in the making of survival-relevant choices. Thus understood, the environment, to which the knowledge-acquiring capacities of an organism are directed (though they may not encompass it in its entirety) is neither the world-in-itself, nor some spatio-temporal portion of it, nor even the world known by the organism. Rather it is whatever enters into survival-relevant causal relations with the organism. (Thus see, for example, Rosenberg (1)). This observation suggests that the nature of evolved knowledge-acquiring faculties will be niche-relative; aimed, that is, at a sensitivity to factors which are relevant to the survival and reproduction of the type of organism concerned. It is evident, of course, that human beings at least, have knowledge which goes beyond their environment (in the strict evolutionary sense of environment). Our point, carefully stated, is not that knowledge can relate only to the selective environment but that all knowledge (even that which transcends survival and reproductive relevance) is gained through forms of sense and modes of processing which evolved in response to the specific nature of a selective environment. The course of possible enquiry, we may say, is thus governed by the form of life; but the possible content of knowledge may still exceed that relevant to the reproduction of life.

The second constraint to notice is that even in this reduced
context (of knowledge as gained and processed by means appropriate to a given form of life in a given local environment) the appropriateness argument has only satisficing\textsuperscript{10} and not optimising force. The word 'satisficing' was coined by H. Simon to describe 'methods that look for good or satisfactory solutions instead of optimal ones'. (Simon, H. p. 64). Its use in the present context is meant to signal that the forms of sense and modes of processing selected will be geared to efficacy rather than detailed veridicality. For efficacy and veridicality (or, if you like, truth) diverge as soon as the parameter of cost-efficiency is introduced into the equation. Selective pressure would bear on the evolution of cognitive mechanisms which generate fast cheap approximations suitable for the practical purposes of the organism. Speed and economy (cf. Tennant (3)) are worth more than accuracy to the being engaged in the struggle for survival.

A third constraint may be located in the picture of evolved perceptual channels and cognitive structures as selected from a random pool of options. I refer here to what Campbell calls the inevitable blindness of the evolutionary process. This is just the familiar point that evolutionary variation is in some sense random, although subsequent selection amongst variations is not. A little care is necessary here if we are to be biologically accurate. Darwin's 'chance variation' is now explained by the random mutation of genes. But 'random' may be a misleading term (hence Campbell's use of 'blind'). For a gene is a string of triplets of nucleotides of which there are only four kinds. So only certain types of variation are possible\textsuperscript{11}. Nonetheless mutation is random in one important sense, namely that:

The alterations produced in a gene and the effects which this alteration will have on the phenotype of the individual which
develops under its influence are not causally connected with
the natural selective force which will determine its
success or failure in producing offspring in the next
generation.

Waddington (2) 94.

In other words, there is no causal link between the nature of
mutations and the pressures of the selective environment.
Retained variations are the most efficient of a blindly generated
pool of options. Contingency and non-optimality thus again
infact the Utopian pastures of the appropriateness argument.

A final constraint (on the abilities of an evolved being
to access and process information) deserves mention, even though
it is unconnected with the specific process of evolution and
hence not properly part of the fallibility/scope 'argument' itself.
It is the constraint of physical structure. Whereas before we
were concerned with the contingencies inherent in the selection
of the apparatus of knowing, we may now consider such limitations
as may proceed from the mere fact of employing any apparatus at all.
We are therefore considering what limitations may be implied by the
thesis of materialism alone. This is relevant because the force of
the evolutionary theorist's assertion that basic forms of human
thought are limited in non-necessary ways is intensified by the
resultant combined belief in the necessary limitedness of any
apparatus at all and in the somewhat accidental, imperfect
(cost-efficient) and biased nature of the particular cognitive
apparatus employed by man. The idea is simple. Heritable
cognitive structure and modes of sensory discrimination must
be physically based. Being so based, they will inherit
operational limitations which are a direct result of their
material construction. As Konrad Lorenz puts it;

Every solid structure, although indispensable as a support for the organic system carries with it an undesired side-effect: it makes for rigidity and takes away a certain degree of freedom from the system.

Lorenz (1) trans. p.28.

Man's picture of reality, so this argument goes, even at its most scientifically sophisticated, is of necessity bound by the physical limitations of the apparatus through which it is acquired. Intelligent thought, we may say, needs the support of a rigid, highly differentiated structure (viz. the human brain); but such a structure, while increasing the possibilities of knowledge in certain dimensions, may also impose some limits on the extent of a being's possible knowledge, beyond which it cannot reach.

This last argument may remain tentative. If accepted, it lends weight to the conclusions of the fallibility/scope considerations. But it is not essential. What is important is that it is a consequence of the adoption of the evolutionary perspective with regard to human cognitive structure that such structure be seen as optimal only subject to constraints. Such constraints, explicit in the fallibility/scope argument itself, are rooted in considerations of (1) random generation of variations (2) cost-efficiency as a selective parameter and (3) the gearing of selective pressure to the particular needs of a given species in a local environment. The conclusion, then, is that the reassurances of the appropriateness argument be tempered with humility. By such reflections we grasp that our primitive view of the world is biased imperfect and limited. This outcome is predictable from
the evolutionary genesis of the capacities which sustain it (viz. our basic sensory modes, similarity spacings and perhaps, some degree of cognitive organisation). Man's primitive or common-sense image of reality is thus revealed as appropriate to, but not uniquely and completely isomorphic with the world with which it copes. (Whether or not such conclusions extend to cast doubt on a realistic view of science is a further question; a spectre to be faced in chapt. 7 following).
3. The Role of Recognition.

3.1 In Chapters 1 and 2, I presented, in outline, the positions of semantic anti-realism and evolutionary epistemology. I showed that the anti-realist account demands an epistemological component and offered some reasons why an evolutionary epistemology might be thought an appropriate choice. It is time now to follow this project through and to see what effects the introduction of such a component might have on the form and consequences of the anti-realist position itself. We begin at that point where the epistemological influence on anti-realism is at its greatest; that is, in the account of a recognitional ability.

3.2 It is useful to distinguish two ways in which the notion of a recognitional ability enters into the anti-realist analysis. It enters first in the identification of our notion of a true statement with one which we are in principle at least, capable of recognising as true. In this context (see e.g. IF 444) the stress on recognisability flows from the conviction that it makes no sense to suppose that we sustain a notion of truth which somehow transcends everything which could have gone into our learning of that notion. Recognisability here functions as a methodological requirement on our possible grasp of the notion of truth. There is, however, a second (not unrelated) use for the notion of recognition; and it is with this second use that epistemology makes its proper entry into the anti-realist scheme of things. In this other context the relevant notion is not one of recognition simpliciter but rather one of unmediated recognition. Unmediated recognition, I want to say, plays a very special role
in the anti-realist's account of meaning. To understand this role we must recall the notion of an implicit grasp of meaning and the constraints put upon the attribution of such a grasp to a speaker of the language.

It was noted (1.2 pg. 9 above) that it is too much to demand of a competent speaker that he be able to give a non-trivial verbal account of his knowledge of the circumstances under which a sentence which he claims to understand would be properly assertible. Nonetheless it is to be agreed that, if we are to make sense of what Dummett terms 'our progressive acquisition of our language' (JO 318) we cannot dislocate grasp of meaning from grasp of recognisable assertion-warranting circumstances. It is also clear that the attribution of such a grasp requires some justification, and that such justification cannot, on pain of circularity, consist merely in the utterance of the string of sounds which comprise the sentence in question. (Recall the 'demand of empirical import for theoretical terms'. 1.2 pg. 9 above.)

The anti-realist's proposal, in the light of all this, is to locate the necessary justification for the attribution of implicit grasp in the ability 'in favourable circumstances, to recognise the condition as obtaining or not obtaining'. (IF 449). In other words, the justification, in the usual case, is to consist in observing a speaker's ability to utter the sentence in whatever circumstances are generally judged to be appropriate. An example of the kind of ability in question would therefore be our ability (FD in IO 129) to recognise an object (in favourable conditions) as being red. It is on this ability that a typical language-master's understanding of the meaning of 'red' depends.
This notion of direct or unmediated recognition is involved with some of the most fundamental intuitions underlying the anti-realist analysis. In particular, it is involved with the idea that an acceptable (i.e. non-mentalistic) model of our progressive acquisition of knowledge of the meanings of the words in our language demands that all intelligible meaning be built on the foundation of some basic fragment of our language viz. the fragment containing only observation statements. For it is only relative to this fragment that we can make empiricist sense of our acquisition of grasp of meaning. ('All inculcation of meanings of words must rest ultimately on sensory evidence'. One of Quine's two cardinal tenets of empiricism. See e.g. Quine (1) 75.) It is in this realm of basic observation statements that our abilities of unmediated recognition are exercised. In this realm, we may say, we find a stripped-down version of the way in which the anti-realist conceives all meaning to attach to sentences. This attachment is somewhat obscured, in higher-level cases, by the roles played by association and inference in our understanding. Even in such cases, however, the explanation of our capacity to acquire such understanding demands that the constituents of the language in which such understanding is expressed have their roots in the realm of the directly observable. It is there that meaning is born for it is there that the semantic features of a sentence ('its structure and the references of its constituents' IF 461) are identical with its use or employment. To use a statement of unmediated recognition is to understand it correctly; we can ask no more, for all verbal explanation has ceased. Since all we can ever be shown, so the anti-realist
insists, is use, then all meaning must be constructed upon such bases. If we are to make sense of our ability to acquire grasp of meaning we must ground that ability in cases where no previous understanding mediates between semantic content and use, i.e. in cases apt for the exercise of direct recognitional abilities.

It seems then that for the anti-realist language must contain what Crispin Wright (Wright (6) 219) has called a 'base-class of statements for which the notion of truth is unproblematic'. Recognition of the truth of statements of the base-class is unproblematic because it is direct. It consists merely in a 'practical discriminatory skill' which we are, as a matter of brute fact, able to be taught by exposure to perceptual stimuli. Without such a base-class of statements, Wright points out, it becomes hard to make sense of the manifestation and acquisition arguments themselves. For the manifestation argument insists that all grasp of meaning be publicly manifestable in behaviour keyed to observable circumstances. A classical truth-conditional account of grasp of meaning fails this test because on such an account grasp of meaning need not imply a recognitional skill of any kind. But without a base-class of statements grasp of which can be displayed by the exhibition of recognitional competences, the same fate would befall the anti-realist alternative. Similarly with Acquisition, where the claim is that our linguistic training cannot instil in us any grasp of verification-transcendent truth for the simple reason that we can only be exposed to non-transcendent circumstances. Here too we must believe in a base-class of statements whose truth-conditions are directly accessible to human inspection if we are to give any substance to the intended contrast.
The necessity of this base-class does not, I think, go unnoticed by Dummett himself who writes:

There must be some sentences for which we are able to perceive or apprehend that which makes them true, that is, to perceive or recognise directly that they are true, since otherwise it is hard to see how we could ever establish the truth of any sentence. This does not apply only to reports of observation, but equally (say) to numerical equations stating the result of a computation.

Dummett IF 444

Upon what does the existence of such base-classes depend?

One plausible thought is that it depends on what Wittgenstein termed agreement in judgments (Wittgenstein (1) prop.242). Such judgments, as Wright points out, must be taken to be of a very basic sort. They must be judgments which we make responsively without reason, under the impact of our immediate environment.

Wright (3) p.30.

Examples would be judgments concerning 'form, pattern, colour, loudness, pitch, texture, warmth, temporal precedence etc.'.

It is because we agree in the exercise of such basic concepts that language can sustain the necessary base-class of statements which we can directly recognise to be true. Our recognition of the truth or falsity of simple sentences involving such concepts is, as Dummett suggests, unmediated in the sense that what makes such sentences true is 'the very thing of which we are directly aware' when we recognise them as being true. (IF 449).
There is thus an important, indeed vital, role for a base-class of statements whose truth is directly recognisable in an anti-realist analysis. This base-class depends, in turn, on common capacities of unmediated recognition. Thus the public claim 'there is a red coffee cup on the table' may feature in the base-class of directly recognisable truths. But it can do so only because we share capacities of unmediated recognition trained on the colour, shape and location of the cup and the table, and because we agree also (equally unreflectively) on the conditions of application of the relational term 'on'.

In my terminology (or rather, in my use of Dummett's terminology), then, it is statements which are sometimes directly recognised as true, and terms (both relational and attributive) which may be grasped to apply by the exercise of unmediated recognitional capacities. That I have a direct recognitional grasp of the meaning of a statement is thus a fact to be explained by pointing out that the exercise of unmediated recognitional capacities is alone sufficient to prompt its assertion. This stipulation has the advantage of separating out the actual capacities referred to from the particular sentences which the employment of such capacities renders directly assertible. Since evolutionary considerations may be expected to say more about our capacities than about our sentences, this separation promises to be an ultimately worthwhile one.

3.3 Unmediated recognitional capacities, and the direct recognitional abilities they sustain, thus lie at the very heart of the anti-realist analysis of meaning. Appeal to such shared capacities makes intelligible our ability to come to grasp
the basic fragments of our language which describe the phenomenally manifest world around us. And the public exercise of such capacities provides the bedrock justification of our claims to grasp the meaning of those fragments which are, in effect, the atomic parts of our language. These atomic parts are apt, we said, for the description of the observable world. Since the anti-realist demands (as we saw in 1.2) that language as a whole be a conservative extension of that part of it which contains only the observation statements, it is obvious that truth, for the anti-realist, can never entirely outrun our unmediated recognitional capacities. Inferentially reached conclusions must preserve the possibility of direct assertion if the inference itself is to be acceptable (cf. the demand of harmony in 1.2). And any compositional analysis of grasp of meaning (such as that given for undecidable statements whose meaning is located in our grasp of the meaning of their parts and how they are joined together) is meant precisely to justify the thought that were the described circumstances to obtain we would be able to recognise them as doing so.

There is some reason therefore to suspect that whatever turns out to be true of the basic judgments, agreement in which is both a terminus of justifications of grasp and a pre-condition of getting language going, will turn out to be true of all judgments whatsoever. It will suffice, however, merely to observe that several important anti-realist claims pivot crucially on the idea of our being able to recognise directly when certain claims are properly made. This claim, made for any particular sentence, is, as Dummett says, a thoroughly epistemological one (If 449). We might therefore expect the contribution of an evolutionary
epistemology to an anti-realist semantics to lie precisely in its ability to comment on the particular capacities of unmediated recognition which form the epistemological core of any such theory of meaning.

Before proceeding with such a line of thought, however, it is worth injects a cautionary note. It would be only too easy, at this point, for the naturalised epistemologist simply to identify the anti-realist's ideas of direct and unmediated recognitional abilities with some physical enabling counterpart among the organs of sense and the physical constituents of the brain. To do so would be to miss the purely functional force of the anti-realist's notion. For we share a direct recognitional grasp of some sentence P just in case we are equally disposed, without reliance on any conscious chain of thought, to assert the truth of P in the presence of some non-linguistic stimulus S, (see P8 in TO p.227). Likewise the claim that we share various capacities of unmediated recognition enabling us to detect the truth of P by exposure to S is meant only as a partial explanation of how agreement is achieved and of why it is repeated in similar cases. Nothing in either case strictly implies that the physical apparatus underlying the common capacities of recognition should be the same. A Martian may have some unmediated recognitional capacity which enables him to recognise directly the truth of the claim that there is a square block on the table. We may thus share direct recognitional abilities and capacities of unmediated recognition without sharing any particular physical realisation of the functional structures involved. Satisfaction of the tests for shared direct recognitional abilities or
unmediated recognitional capacities does not depend on the employment of physically similar organs of sense or even on common modes of processing. The same programme, to become briefly cybernetic, may be instantiated in various software and run on various hardware. It is in the running of the programme, and not its particular physical background, that the locus of anti-realist and semantic interest lies. The test for shared capacities of unmediated recognition is a test for functional similarity among language-users. Recognition of this fact, however, need not preclude the naturalised epistemologist from suggesting that the best empirical explanation of our general agreement in the exercise of unmediated recognitional capacities (especially our willingness to treat new cases in a similar fashion) is that we share basic forms of sense and modes of processing, and appealing to an evolutionary model of selective retention by differential survival and genetic heritability to explain in turn why such capacities are common human property and why they are aimed at just those features of the world which they are. That they are common human property is, from the point of view of the cognitive adaptionist, nor more surprising than that arms, noses and so forth are for the most part uniformly distributed across a population. That such capacities are as they are is to be explained as determined by a combination of our peculiar human needs, chance and the real nature of the selective environment. The nature of our unmediated recognitional capacities is thus seen as a function of the appropriateness argument and the fallibility/scope constraints on appropriateness, detailed in 2.5 preceding.
It seems then that logically speaking the notion of shared capacities of unmediated recognition implies neither common organs of sense nor common modes of processing; it is not necessary that we bring any shared physical apparatus to the semantic task. What is necessary is that members of a linguistic community exhibit certain functional similarities in their basic disposition to respond to given stimuli. Nonetheless the best explanation of such shared dispositions may yet need to refer them to their genetic basis in common physical apparatus. We may make this clearer if we introduce an intermediate step. The notion of shared capacities of unmediated recognition looks to me to pre-suppose (on an empirical level) something like the Quinian account of shared quality spaces. And the best scientific explanation of these, in turn, comes from evolutionary epistemology; let us see how such a proposal might look in practice.

3.4 A quality space, as it figures in Quine's account of learning and natural kinds (Quine (2) pp. 122 - 125) is just an 'innate standard of similarity' which we all share and which underlies our capacities e.g. to learn a first language or acquire a habit. The notion is a purely behavioural one. Two creatures share a spacing of qualities in which a pink ellipse is closer to a red circle than it is to a blue triangle if, for example, a conditioned response to a red circle is more easily elicited again by a pink ellipse than by a blue triangle. What is at work in such cases is a 'primitive sense of similarity' of the form 'a is more similar to b than to c'. And where this similarity sense first shows itself is in our tendency to find certain stimulations similar to one another, and to regard other stimulations as different to these.
Thus Quine also speaks of an 'innate qualitative spacing of stimulations'.

This notion of similarity of stimulations is clearly pre-supposed by our earlier account of a common unmediated recognitional capacity as explaining a shared disposition to assert P in the presence of a stimulus S. For consider how we might learn a use of language involving the application of some unmediated recognitional capacity. We are taught to say P in the presence of some given stimulus, S. We must then go on to find other stimuli which strike us as similar to S and exhibit our mastery of the language by asserting P in their presence too. Thus the very possibility of the semantic use of unmediated recognitional capacities depends on our having a notion of similarity applicable to S, and not so far removed from that of the rest of the linguistic community as to render us incapable of learning P in just those cases which the rest of the community will find relevantly similar also. Thus we may have, for example, a direct recognitional grasp of truth as applied to the claim 'that is yellow' (see e.g.FD in T0 129). To have learned such a grasp, as Quine points out (Quine (2) 121), is to have engaged in a process of assessing the communally agreed applications of the word to samples (ostensibly given) in an attempt to grasp when and where a language-master would be prepared to apply the term in question. It is a fact that we succeed in this endeavour remarkably well; almost anyone, it seems, can become a language-master. Is our success a matter of luck? Quine answers in the negative. If we succeed, Quine says, it is because we are playing 'a game of chance with loaded dice'. 
The dice are loaded for the naturalised epistemologist's reason that we have all inherited a more or less similar spacing of qualities (i.e. disposition to group objects and situations according to intuitions of similarity and difference) as that on which our teachers themselves rely, for example, in their grouping together of various objects as falling under the term 'yellow' (see Quine (2) 125). And this, to anticipate a future topic, is why unconscious recognitional criteria can be equally as active in our acquisition of a grasp of meaning as conscious ones. For all that matters in the learning situation is that whatever criteria the teacher employs be available, consciously or otherwise, to the student. In any case, were it not for some substantial overlap in our subjective innate spacing of qualities our success in the general acquisition of knowledge of where to apply basic concepts would appear unduly fortuitous. Given such an overlap, it becomes a mundane inevitability. It seems we make our own luck.

There is another, tactical, reason for introducing the notion of shared quality spaces as intermediate between the anti-realist's notion of unmediated recognitional capacities and the evolutionary account. It is that the thoroughly *behavioural* content of the Quinian notion will ensure that our epistemology remains answerable to the overarching demand that semantic content be exhaustively manifest in practical use. We are justified in attributing quality spacings only on the basis of gross behavioural evidence; and what such spacings explain is our tendency to group together objects and states of affairs in certain ways. The hypothesis that human beings possess a set of innate similarity spacings is thus on a par with
any similar hypothesis made for some lower animal. Both are 'condensed versions' of behavioural claims testable in the laboratory (see Quine (2) 123). As a characterisation of a priori knowledge then, quality spaces are an acceptable compromise between anti-realist parsimony and the extended empiricism of an evolutionary epistemology. We could not, for example, simply claim that we had evolved an innate a priori capacity to grasp realistic truth-conditions in all cases, for the manifestation of this capacity in basic behavioural dispositions would support no such conclusion. (More on this in chapter 4 following.)

It therefore seems both plausible and desirable to take on board the idea of shared quality spaces as an empirical sub-stratum to the anti-realist's idea of shared capacities of unmediated recognition. For by so doing we guarantee that candidates for the status of direct recognitional abilities respect the demand of exhaustive manifestability. Quality spaces, moreover, are sufficiently economical to be biologically plausible. Any innate cognitive structures ought to be as austers in content as is compatible with their usefulness. First, because the less which is coded-in the better as regards cost-efficiency. Second, because the more adaptable to variation in circumstances the better, environment not being guaranteed stable. Quality spaces, for these reasons, constitute an ideal form of innate knowledge. Cheap to code in, adaptable in operation, minimal in content. A classic evolutionary account may be given of how we should come to operate with such spaces. Innate quality spaces, after the fashion of Lorenz (1) would fall under the rubric of knowledge
which, though a priori in the individual, is a posteriori in the species - learnt by causal interaction with the world in the form of differential survival and reproduction. Which, as Quine himself notes (Quine (2) 126, 127), explains why our subjective spacing of qualities seems to 'match that of the cosmos'. It also explains why we find exceptions to this 'matching', and cases where it has only very limited appropriateness. For our innate quality spaces are subject to the constraints on appropriateness outlined in 2.5. In sum, our innate spacing of qualities is seen to provide an empirically acceptable source of knowledge, subject to various provisos, which is acquired by the usual process of differential survival in relation to the biological usefulness or otherwise of particular tendencies to group objects together according to intuitions of relative similarity.

In this chapter I have tried to show the important role played by unmediated recognitional capacities in an anti-realist account of meaning. Such capacities, implicitly manifest in our use of basic concepts, halt the regress of verbal justifications of knowledge of meaning and explain how we can make empirical sense of the acquisition of language. Although no account of the nature and origins of such capacities is strictly required by an anti-realist semantics, still claims involving such capacities are primarily epistemological ones and hence in principle answerable to epistemological discoveries. The special relevance of an evolutionary epistemology in such a context is that the best available explanation of the otherwise brute fact that such capacities are shared seems to be that they are grounded in heritable mechanisms of some kind. One suitable candidate to play the role of such
heritable mechanisms was seen to be the Quinian notion of an innate (hence physically realised) spacing of qualities possessed a priori by the individual, though a posteriori to the species as a whole.

4.1 How are we to conceive the impact of adopting a naturalised epistemological account of our shared capacities of unmediated recognition? In what follows I consider two options. We may seek a direct modification of anti-realist claims in particular areas by suggesting expansions, within a scientific context, on the range of unmediated recognitional capacities we may be thought to possess. Or we may settle for a more indirect route which weighs the pre-suppositions and implications of the naturalised account of the possibility of shared recognitional capacities against the usual non-realistic and non-transcendent metaphysics of the anti-realist analysis. The direct route will be seen to fail, although it yields some useful refinements to the anti-realist's account of implicit knowledge. The indirect route proves to be a source of greater interest, not to say difficulty, and is pursued throughout the remainder of the thesis.

4.2 The notion of unmediated recognition, we saw, is essential to the anti-realist's empiricism concerning meaning. It is to be invoked in the necessary bedrock of cases where the speaker can give no informative account of even the anti-realist truth-conditions of a sentence but where he nonetheless exhibits a practical capacity to employ the sentence correctly. Recognition of this type is unmediated in the sense that;

neither the speaker nor the meaning-theorist can say whereby he recognises the condition as obtaining. That which renders the sentence true is the very thing of which we are directly aware when we recognise it as being true.

To say whereby a speaker recognises a condition as obtaining is not, then, a job for the meaning-theorist. Rather, as Dummett goes on (in the same passage) to tell us, it is a job for the epistemologist. It is the epistemologist, if anyone, who must explain the operation of such faculties of unmediated recognition as we may possess.

It is tempting, therefore, to think that a sufficiently liberal epistemological stance, availing itself of all the resources of modern science and biology, might somehow shift the boundaries between realism and anti-realism by unveiling an increasing range of previously unsuspected direct recognitional capacities possessed by human beings. And at first sight, some such opening does indeed look to exist. We read that:

The theory of meaning determines what makes a statement true, if it is true; it belongs to epistemology to judge whether we are able to recognise what makes a statement true as obtaining, or whether we are able to establish the truth of the statement only indirectly.

Such passages are misleading. They seem to suggest not just that it is up to the epistemologist to disclose how our capacities for unmediated recognition operate, but that it is also his job to decide when such capacities exist. If this were so, then there would indeed exist at least a possible direct route from the adoption of a naturalised epistemology to a modification of anti-realist conclusions. For the epistemologist may (or so we might imagine) uncover direct recognitional access to the circumstances which constitute the realistic truth-conditions.
of some disputed class of sentences thereby demonstrating that what
had appeared on the surface to be a case of transcendent (hence
anti-realistically unacceptable) 'meaning' is actually a grasp
which in no way surpasses the limits of our recognitional capacities.
In such cases peace reigns between the two rival camps. Just so
long as we have direct recognitional access to the realist's
truth-conditions the warring factions may agree on the form of
a semantic analysis for sentences of the given class. Realistic
truth and recognisable truth are, in such cases, substantially
the same notion.

The epistemologist, however, cannot simply announce that we
possess a faculty for the direct recognition of the realistic
truth-conditions for statements of some disputed class. He has to
prove it. And this, I conjecture, will prove difficult if not
impossible. The reason is that the anti-realist's claim that the
realistic truth-conditions are (in at least some cases) inaccessible,
and hence semantically inert, is based on the over-arching demand
of public manifestability of grasp of communicable meaning (see 1.2).
It is this demand which determines if there is to be a gap between
communicable meaning and our alleged grasp of realistic truth-
conditions. A naturalised epistemologist may discover that our
semantic competence, as it stands, involves the operation of more
capacities of unmediated recognition than we had hitherto suspected.
But such discoveries should only explain what is already manifest
in our practical use of statements. Such discoveries will not
reveal unexpected direct access to realistic truth-conditions for
statements of a given class since if such access existed it would
already be evident in the public (not merely inferential) use of
such statements, i.e. there would be no gap, in favourable circumstances, between our tendency to assert a statement of that class and the obtaining of its realistic truth-conditions. The quote from IF 446 above, then, is misleading rather than in error since it states that the meaning-theorist has already settled the matter of what can count as the semantically acceptable truth-conditions of a statement. And what the epistemologist may do is tell us if those very conditions are amenable to direct recognitional access or not. The quote misleads only if we take the phrase 'what makes a statement true' to refer to its realistic truth-conditions; a common freudian slip among anti-realists, but one we should not attribute to Dummett. Understood as referring to its anti-realistically acceptable truth-conditions, however, we can see that the divergence from realism, if there is to be any, will have occurred before the epistemologist is called to the scene; it will have occurred in the isolation of acceptable truth-conditions on the basis of the demand of public manifestability.

4.3 Two examples may help to make this clearer. The first is, if you will, a control model. It shows how the semantics and the epistemology ought to relate. The second is designed to test the hypothesis (rejected above) that the epistemologist might uncover unexpected direct recognitional access to the realistic truth-conditions of statements of a disputed type. Both examples revolve around the neglected notion of an unconscious recognitional ability.

Example one: This concerns the recognition of individuals. In particular, it concerns the thesis, recently expounded by
Viki McCabe, that such recognition proceeds by the unconscious perception of structural and transformational invariances. We recognise, to take an example, a given face despite various, often radical, componential variations caused by cosmetics, accidents, or ageing. One way of explaining this ability is to suppose that our recognition is tied not to the actual components of the face (nose, eyes etc.) so much as to the relations which these features bear to one another. Such relations are invariant over major componential changes. The supposition then is that the systematic relationships which exist among the components are 'directly available in the visual display as mathematical ratios'. If this is so, then it may be that in apprehending objects in the world we apprehend first and foremost in terms of the invariant structures of such objects. There is a classical demonstration of this which is reproduced in figure one below. We take a face and maintain the relational invariances which it exhibits whilst changing the features. It is still recognisable as a face. But if instead we were to alter the relational invariants and maintain the features it would 'collapse into a partially random aggregate'.

Fig. 1. Comparison between changing the components and changing the schema of a face.

(Reproduced from McCabe p.496.)
Transformational invariance is just a dynamic analogue of structural invariance as described above. Suppose we take an individual (call her Mary) and ask ourselves how we are able to recognise Mary over the years. Part of the answer may be that as suggested above we are sensitive to the structural invariances she exhibits;

Mary is constituted of a unique invariant structure which maintains its proportional ratios over most componential changes.

McCabe 500.

Such an answer is not, however, entirely adequate. To attain the proper generality of scope we need in addition the idea of transformational invariance. That is:

If she loses a limb or becomes pregnant she is still recognisable because her structurally invariant properties are available under a set of acceptable transformations.

McCabe 500.

Clearly, we are not conscious of operating with such mathematical ratios in our daily life. If I recognise an old friend after a protracted absence I am hardly aware of my processing a number of acceptable transformations to identify the invariant structure which is unique to her. Why then should we suppose ourselves actually to employ such methods? It turns out that the supposition has value in the explanation of a number of experimental results. These are exhaustively detailed in McCabe and concern experiments conducted with birds, human infants and human adults.
Assuming then that we are directly aware, in at least some cases, of the schematic structure of our world, the question arises why such awareness is (as it seems to be) unconscious? McCabe ventures the following hypothesis, which accords with our evolutionary perspective on cognition. The unconscious nature of our apprehension of such structures, she thinks, may be due to such apprehension being a task performed by the right hemisphere of the human brain. Experimental evidence is again cited to suggest that information processed by that hemisphere is less readily available for linguistic expression and consequently harder to bring to conscious awareness. 17 Certainly there is a large weight of evidence to suggest that the apprehension of faces is a task performed by the right hemisphere. 18 And damage to the left hemisphere is far more likely to cause linguistic difficulties than damage to the right. These differences between the activities of the two hemispheres may be explained as arising from the order of their evolutionary emergence. The right hemisphere is the more primitive of the two; similar structures appear in our non-human predecessors. The left hemisphere, the seat of our conscious cognitive faculties, has no counterpart in such predecessors. Unconscious recognitional abilities, if they do exist, may therefore plausibly be seen as mechanisms encoding basic survival techniques (e.g. for identifying a mate, or a predator), utilised by non-language using species and preserved in humans in the non-linguistic hemisphere of the brain.

It seems, then, that the naturalised or evolutionary
epistemologist has good reason to countenance unconscious sensitivity to sensory inputs as potentially involved in some of our direct recognitional skills.\textsuperscript{19} What example one shows, however, is that the operation of such unconscious sensitivity falls easily within the scope of the existing anti-realist attitude towards implicit knowledge and the recognition of objects (viz. individuals). For the meaning-theorist, we are told, must not ask 'how or by what the object is recognised' since 'even if there is an answer the subject does not have to know it'. (FD in \textit{IO} 129.) Unconscious recognitional abilities, as they function in this example, cause not even a minor ripple on the anti-realist's pond. The task of the epistemologist here is simply one of tidying up; of showing how the recognitional capacity which we knew we possessed actually operated.

Example two: In this example I try, by drawing on the ideas developed in the previous case, to construct a situation with radical semantic consequences. The attempt fails, but does suggest a minor refinement to the notion of implicit knowledge.

Suppose it were shown that human beings, when in pain, secrete through their apocrine glands some characteristic pheromone or ectohormone which is sub-consciously detectable, in favourable circumstances, by other human beings. Suppose, that is, that we can, without knowing it, smell when someone near us is in pain.\textsuperscript{20} Suppose also, as seems very likely, that the emission of such a pheromone was an event quite insusceptible of intentional control. In such circumstances we would have a case importantly different from that detailed previously. For recall the notion of an unconscious sensitivity to structural invariance. This unconscious
sensitivity had a direct conscious correlate viz. our ordinary capacity to describe or draw a human face by the reproduction of features suitably arranged. This conscious capacity, as Neil Tennant has pointed out to me, recapitulates (without our knowing it) the information on which we base our assertions of the form 'That is my old friend Dave' etc. For this reason, in case one, the unconscious recognitional capacity warranting our assertions had a conscious correlate of identical semantic significance. Perhaps this is not the case in the example of pain. For the conscious correlate of a sensitivity to pheromonal emissions could only be an awareness of pain behaviour. Behaviour which is, notoriously, under intentional control. Because the conscious correlate is, in this case, under such intentional control, it follows that shamming and stoicism are possible for us. The anti-realist, then, taking into account only the consciously available public evidence of another's being in pain (viz. pain behaviour; wincing, screaming etc.) must conclude that the sense of other-attributions of pain is to be dislocated from the realist's conception of the truth-conditions for such statements. For the realist conceives the truth-conditions as simply that it should be with a person F as it is with me when I am in pain (P in I0 xxxii ) i.e. as relating essentially to an inner state of being in pain. Given the options of shamming and stoicism, however, it follows that this latter notion of the truth of 'F is in pain' could apply even in the absence of any consciously available evidence for the assertion that F is in pain. Or, conversely, if F is shamming, warrant for the assertion may be had even though its realistic
truth-conditions are unsatisfied. The anti-realist therefore concludes that the realist's notion of truth-conditions is semantically inert as regards other-ascriptions of pain. He then proposes to replace it with a notion of truth-conditions such that:

the supposedly contingent connections with pain stimuli and pain behaviour are in fact essential to the employment of the word.

P in TD xxxvi.

Meaning and employment being inseparable from the point of view of a theory of understanding, the anti-realist therefore takes it as belonging to the meaning of other-ascriptions of pain that our grounds for asserting them in any particular case are always inconclusive. Consequently he must reject the suggestion that our grasp of the meaning of e.g. 'F is in pain' is dependent on our grasp of bivalence as applied to such statements. Our grasp of such statements does not flow from our grasp of the idea that for anyone F either it is or is not with F now as it is with me when I am in pain. To think it does is to misconstrue the deep grammar of other-ascriptions of pain. Once that error is avoided, however, no temptation remains to accept any notion of truth for such statements involving their having determinate realistic truth-conditions irrespective of our capacity to know them. For to do so is to separate our notion of the truth of such statements from our notion of their meaning.

Is this situation altered if we now credit the anti-realist (courtesy of the naturalised epistemologist) with information concerning an unconscious sensitivity to pain pheromones? No.
For the fact remains that, whether we are thus sensitive or not, shamming and stoicism can fool us. And our semantic characterisation of other-ascriptions of pain ought to reflect this fact. Given this brute fact of human practice we cannot be justified in assimilating any direct access to pain-pheromone emission we may possess to a notion of direct access to the realistic truth-conditions of other-ascriptions of pain. So we cannot be held to understand fully the realist's notion of truth for such statements, and the rejection of bivalence stands. In fact, to make the pheromone hypothesis get anywhere close to a vindication of realist intuitions we have to add a revealing proviso. We must add that our sensitivity to pain-pheromone emission is such that under favourable circumstances (the person is near us, no masking odours are present, we are both biologically normal) no mistake is possible in our assessment of whether another is in pain. Given this we might hold that the gap between the realist's notion of truth for other-ascriptions of pain and the anti-realist's insistence that that notion cannot exceed the bounds of accessible circumstances is closed by a direct causal link. To be in pain would (in principle at least) be to be recognisably in pain, and so the flag of truce might be raised. For there is, we saw, no active dispute so long as the realistic truth-conditions of an assertion are in some way accessible by the exercise of a direct recognitional capacity. If, as in the present case, access is only to some criteria for the obtaining of the realistic truth-conditions, the question devolves upon the nature of the relation between such criteria and the obtaining of the circumstances in question (i.e. F's being in pain). Since this relation is causal,
and not subject to intentional control, it preserves the semantic properties of direct access to the realistic truth-conditions themselves (i.e. it lacks the inconclusiveness, even in the most favourable conditions, which affects accounts of meaning given by reference to pain-behaviour alone).

In the case above the epistemological question of how our recognition proceeds has semantic significance. It might incline us to retain the realist's acceptance of bivalence for other-ascriptions of pain while still analysing the meaning of such statements as relating to recognisable circumstances. But such a case is never likely to arise. For if we had that kind of faultless sensitivity to pain-pheromone emission then our concept of pain in others would be a different concept to what it is. There would, for example, be no such thing as shamming or stoicism under favourable circumstances. And so the public manifestation of our grasp of statements such as 'F is in pain', being generally faultless, would have alerted us in advance to the operation of some direct recognitional capacity albeit of a modally unspecified nature. The job of the naturalised epistemologist, as in example one, would be one of tidying up; of showing how we are able to perform those feats of direct recognition which are already manifest in our use of language.
4.4 Consideration of the two examples suggests one refinement of the anti-realist's analysis, and two lessons. The refinement is needed to allow for the kind of case in which epistemological findings disclose not an unexpected recognitional ability so much as an unexpected recognitional modality such as the unconscious perception of pheromones. In the light of this we should add to the anti-realist's characterisation of implicit knowledge that the speaker and meaning-theorist need not even be aware of the modality of the direct recognitional capacity manifest in a given use, let alone have any idea of the particular criteria on which it fixes. Thus in the example of face recognition we knew the modality (visual) involved but lacked awareness of the particular criteria, viz. structural and transformational invariance, on which it was focused. While in the example concerning pheromone emission and reception we were not even aware of the modality which might play a part in our grasp of pain in others. This brings us to the first lesson to be drawn from all this. It is that the demands of acquisition and manifestation must indeed (1.4) be relativised to a specifically human community if the epistemologist and the semantic theorist are to stand in their customary relation. (Other possibilities will be explored in Part II.) For it is only because we are all human and may be presumed to share whatever capacities of unmediated recognition we have that grasp of meaning may be taught, learnt and generally communicated in full ignorance of any conception of the particular criteria and modalities involved in the warranted assertion of basic judgments. A grasp of meaning may be acquired by teaching it in whatever circumstances the
language-master considers to be appropriate; he need not know why they are appropriate. The student will learn the meaning because he too is sensitive, whether he knows it or not, to just those circumstances capable of impinging on his teacher. This is so, at least, in the normal case. Where someone involved lacks a sensitivity the other possesses complications arise. (See Part II chapt.9). But some shared sensitivity is probably essential to any learning of language at all. We thus arrive at a proviso to the manifestation thesis itself. The proviso is that meaning, though it must be manifest in relation to circumstances accessible (consciously or otherwise) to the community at large, need not be unconditionally manifest in the sense of being manifest tout court, without relativisation to the particular sensitivities of the epistemic community. Unconditional manifestation, on examination, is quite probably an unintelligible demand. But the observation that the demand of publicity of meaning must refer to publicity within a strictly human community has important consequences when considering (as we shall) alternative languages based on alternative sensitivities.

The second lesson concerns the effective nature of the relation between the meaning-theorist and the epistemologist. Thus we may ask who has priority in assessing the legitimacy of some claim to unmediated recognition of the realistic truth-conditions of some disputed statements. As long as we are concerned only with the assessment of such claims made within and concerning our human community, an answer is now indicated in favour of the meaning-theorist. For as we saw, the question what are the intelligible truth-conditions of S is settled by
the application of the demand of manifestation alone. It is only relative to the anti-realistically acceptable truth-conditions of S (i.e. those visibly accessible in our use of S) that the epistemologist is called on to decide if such conditions are directly recognisable or not; and so far as the realist is concerned this is already too late, for it is only if the realistic truth-conditions prove directly accessible that the dispute dissolves.

One implication of this is that one picture of a possible dialectic between the realist and the anti-realist now looks to be an unlikely option, at least within and concerning the human community itself (though it may stand in regard to our assessment of the capacities of a non-human community - see chapter 9). For the picture suggests a dialectic in which:

The realist formulates his conception of what the truth-conditions of the given sentences consist in; the anti-realist protests that on that conception the truth-conditions would objectionably transcend our faculties; the realist replies by disputing the assumptions about our faculties which underlie the anti-realist's protests thus (as he hopes) restoring their accessibility.

McGinn (1) 166.

Such a dialectic involves exactly the strategy employed in relation to example two above. It is a strategy which has also been employed by McDowell in arguments concerning pain, the past and other minds. (McDowell (2) p.131.). That dialectic, however, could only occur if the epistemologist discovered we had unexpected access to the
realistic truth-conditions of a disputed statement themselves. But this supposition, though not unintelligible, seems extremely unlikely insofar as if we had such access, then we might expect that it would make itself felt in our use of the concept in question — e.g. there would, in the case of pain, be no practical gap between our being in pain and our being recognisably in pain (whether or not we are aware of how our knowledge is achieved). If, as seems more likely, the epistemologist uncovers instead some unexpected additional criteria by which we do in fact judge, e.g. whether someone is in pain, then a gap will still be felt between our capacity to recognise the satisfaction of this criterion and the obtaining of the realist's truth-conditions. The anti-realist will thus still insist that no such gap can be tolerated insofar as the realist's truth-conditions are alleged to be a component in an account of the meaning of such statements, since the gap is offensive to the intimacy of meaning and communicable understanding.

We may sum up by reflecting that the true form of the anti-realist's protest, despite its misleading appearance as a point about the actual details of our methods of acquisition of concepts, is rather that the realist's alleged conception of the truth-conditions of the disputed statement is one which is in no practical way manifest in our use of the statement in question. Hence, it becomes unclear how we could have acquired it. We were therefore correct in our earlier presentation of the acquisition argument as being transcendental in its force (2.2 above); not that is, concerned with how as a matter of fact we acquire the conceptions expressed in our language but rather with what those
conceptions can involve if we are to make sense of our having them at all.

It is for this reason that the acquisition argument is best seen as a facet of the logical demand of manifestability and not as an example of armchair learning theory. This, at bottom, is why the naturalised attempt to go direct to modifications in the details of the anti-realist critique fails. For any claim to possess extended recognitional capacities can be legitimate only insofar as those capacities are manifest in our practical use of statements in whose meaning they are meant to figure; but being so manifest they would, in every semantically significant sense, figure already in the anti-realist's account.

4.5 The direct route, it seems, is a dead end. It leads to no significant alterations regarding either the form or implications of an anti-realist semantics. Nor should this surprise us, for the heart of the anti-realist's position involves logical arguments against the suitability of a transcendent notion of truth as a component in a theory of meaning; and its major conclusions involve a revision of our attitude to logically undecidable sentences. Arguments appropriate to these realms, it is clear, are likely to be singularly unaffected by the kind of scientific disclosures introduced by the adoption of a naturalised epistemology. From these purely logical considerations, however, the anti-realist has traditionally been led to suggest revisions in what might best be described as our metaphysical picture of the world. Revisions, for example, in the idea that 'we really do succeed in referring to external objects existing independently of our knowledge of them'. (IF 446)
It is relative to these metaphysical implications that the impact of a naturalised epistemology needs to be most carefully assessed. It is in this connection that we should consider the possibility of an **indirect route** leading from the endorsement of a naturalised epistemology to significant alterations in the anti-realist metaphysics.

We saw in chapter 3 that the notion of shared capacities of unmediated recognition is essential to the anti-realist analysis. After the pattern of the later Wittgenstein, the anti-realist holds that it is a pre-condition of the communicative use of language that we be able to agree in the making of certain very basic judgments. (Wittgenstein (1) 241,142, pp 226-7. Also, for example, Quine (2) 123, Wright (3) 30.) Such judgments would be those into our understanding of which no process of conscious inference or reflection enters; for example, the judgment, under favourable conditions, that an object is blue. Where Wittgenstein talks of agreements in judgments, then, the anti-realist might talk of agreements in the application of statements involving capacities of unmediated recognition. (It always takes the anti-realist longer to say things.) Such statements also mark the point at which the threatened regress of verbal justifications of grasp of meanings is seen to dissolve (see 1.2). Without the notion of an unmediated recognitional ability the anti-realist account would collapse. But with it, given the presence of a naturalised epistemological component, it cannot sustain the radically non-realistic metaphysics to which it is accustomed.

To argue thus is to follow what I have termed the **indirect route**. It attacks traditional anti-realist metaphysics on the basis of
a generally naturalised (evolutionary) view of the genesis and
nature of shared capacities of unmediated recognition themselves.
For recall now the traditional form of an anti-realist metaphysics.
We are to impose a total ban on all transcendent concepts and, for
reasons to be explored shortly, to refuse to endorse any picture
of reality as truly objective and standing independently of our
ways of knowing about it. (Thus see e.g. IF p.446 and recall the
metaphysical interpretation of the semantic claims noted in 1.3
above.) What can we make of such a grim picture if we seek to
give an evolutionary account of how we came to share the capacities
of unmediated recognition essential to the anti-realist's account?
Clearly, we cannot tolerate the complete loss of our external,
mind-independent reality. For on any evolutionary account the
world (in some sense of 'the world') must be seen as objective and
separate; a mind-producing, not a mind-produced, realm. Moreover,
to adopt an evolutionary perspective on cognition is to court
problematic claims of ontological and phenomenal transcendence.
An evolutionary epistemology, we saw, lends support to the
anti-realist's intuitions concerning publicity and the role of
language as a pragmatic instrument of communication. But it also
hints at dimensions of transcendence which threaten to be
anti-realistically problematic. On the evolutionary model, our
basic apprehensions of reality look likely to be imperfect and
biased by our particular needs. Much of what we believe, being
grounded in such basic capacities, may be only partially true.
The universe may transcend the limits of human capacities to know
it. What's more, other beings with other needs, environments and
evolutionary histories may enjoy direct (unmediated) access to
A.J.Llark La
realms of experience we do not have. The knowledge expressed
in their basic judgments may therefore transcend our capacities
to understand it. In short, the evolutionary perspective seems to
suggest a completely realistic metaphysics, whereas anti-realism
has traditionally been associated with idealist tendencies.
Perhaps this traditional association is simply misplaced.
Perhaps the anti-realist is wrong to believe in the thesis of
metaphysical reduction (the claim that all metaphysical pictures
reduce to semantic points) attributed to Dummett in 1.3, wrong to
think that his semantics in any way demands the radical metaphysical
pictures with which it is customarily associated? Should not
metaphysics be rather a function of our chosen epistemology and
not of our semantics?

4.6 Alas, things are not so simple. For the theory of meaning
delimits, on logical grounds, the range of statements for which
we can have a proper grasp of the concept of truth, and hence for
which we have a full and intelligible idea of their meaning. It
follows that what the epistemologist can properly say must answer,
in some way, to the meaning-theorist's demands. This is a point
which eludes, for example, M.Devitt in his recently presented
argument against the identification of the realism dispute
(concerning physical objects) with the semantic dispute (concerning
grasp of meaning). By realism, Devitt understands the view that
physical objects enjoy an objective, mind-independent existence.
By Realist Truth he understands the assertion that statements
have realist truth-conditions. He then writes:

Does realist truth entail realism? It does not. Realism ...
requires the objective, independent existence of common-sense
physical entities. Realist truth concerns physical statements and has no such requirement.

Devitt 77.

Devitt thus asserts that one searches in vain for any relation of dependence between the ontological and the semantic issue. One concerns statements, the other entities: a weak link may be discernible in terms of a relation of inference to the best explanation but that is all (Devitt 77, 78).

Throughout this conceptual separation of semantics and ontology Devitt misses one vital observation. It is that a theory of the world if it is to be a communicable theory must be stated in a language. Consequently any constraints imposed by an acceptable semantic theory upon the possible content of linguistic assertions are, ipso facto, constraints upon the range of possible theories of the world. The bearing of semantic anti-realism upon the matter of ontological realism is thus more indirect than Devitt, at least, thinks that anti-realists intend it to be.

But it is, by the same token, a bearing unaffected by the (doubtless valid) observation that 'theories of language and understanding should not determine theories of the world'. (Devitt 75). An anti-realist theory of language, on the present account, does not indeed determine any theory of the world. What it does do, however, is to delimit the range of alternative theories of the world deemed intelligible enough to be candidates for adoption. The threat, then, is not that the semantic anti-realist analysis should constitute an explicit denial of Ontological Realism, but rather that given the semantic doctrine, the actual content of the assertion of ontological realism looks open to question. Perhaps then, we may take Dummett's
insistence on the logical priority of semantics (CA in TQ 441, IF 62. 69) as just the legitimate observation that only intelligible theories of the world count as real options. The relevance of a semantic anti-realism, in this latter sense, to theories of the world, is quite untouched by Devitt's demonstration (assertion?) of the independence of their respective subject matter. The nature of language may not constrain the nature of reality but it certainly constrains the nature of human thought about reality. Here, surely, is the truth behind the metaphor thesis ('Metaphysics beyond meaning is mere metaphor' Devitt 80) which Devitt finds so objectionable in the works of Dummett. I suspect, however, that Dummett does, as Devitt suspects, have some sympathy for the stronger thesis that the entire content of a metaphysical theory is that of a claim about meaning. This is what I earlier termed the thesis of metaphysical reductionism (1.3 p.18). If so, I believe he is mistaken. And I believe that an examination of the claims of evolutionary epistemology will show this.

In contrast to both Devitt and (probably) Dummett, then, I want to claim that our metaphysics should be determined by the interplay between what we know of the nature of meaning on the one hand and what we know of the nature of the physical conditions which set the limits to the range of our meanings (i.e. the conditions which determine the extent of our recognitional capacities) on the other. Metaphysics, I want to say, should be a joint function of semantics and epistemology. Confusion results from the unfortunate fact that the historical order of events is not like this at all. Historically, I think it is fair to say,
we start with our metaphysical pictures of reality, seek a semantics which can accommodate them and then build an epistemology to make sense of the semantics. Dummett is surely right to combat this by asserting the priority of semantics over metaphysics; but wrong to do so without taking account of the best epistemological account of general cognition we have available. What we must do, then, is to weigh the idea that the pre-suppositions and consequences of that account (i.e. of evolutionary epistemology) simply carry over into the metaphysics appropriate to an anti-realist semantics against the demand that such pre-suppositions and consequences be intelligible in the light of a semantics which associates meaning with recognisable conditions of assertion. It would be odd indeed if they proved unintelligible under such an analysis since the anti-realist stance can, we saw, be seen as flowing from a naturalised view of mind (2.3 preceding). But, as Skorupski (2) has pointed out, such a situation is not impossible; it would show only that naturalism is in some sense self-defeating as a philosophy of mind, since it may lead to a kind of idealism concerning the physical world. Such drastic repercussions, I hope to show, may be avoided by a careful analysis of the interplay between the semantic and epistemological components and some close attention to the logical form of the evolutionary theorist's assertions.
5. Tension among the allies.

5.1 An evolutionary epistemology was seen both to corroborate and supplement an anti-realist view of language. It corroborates it by demonstrating the scientific plausibility of treating language as in essence an instrument of communication whose purpose it is to affect action. And it supplements it by suggesting heritable innate mechanisms, geared to human needs and saliences, as an empirical sub-stratum to the functional notion of shared recognitional capacities. Any such naturalised epistemological account threatens, however, to import realistic elements into the anti-realist's metaphysical picture of reality. This indirect effect of the adoption of a naturalised epistemology may well be thought desirable. It is an important question, however, whether or not such realistic elements can be intelligible to the anti-realist. For supposing them to be unintelligible, and supposing them also to be necessary conditions of an evolutionary account at all, then it would follow that the anti-realist cannot consistently help himself to the image of man and mind developed by the evolutionary theorist. The corroborative and explanatory attractions of an evolutionary epistemology, if this were the case, would be neither here nor there. In investigating this issue our task is by no means as negative as it may therefore sound. For to show the consistency of an anti-realist semantics with a partially realistic epistemology would be to allow the anti-realist to enjoy some of the metaphysical opulence which hitherto has been the sole prerogative of the semantic realist. We begin, though, by enquiring just how the anti-realist regime acquired its reputation for metaphysical austerity in the first place.
5.2 The anti-realist analysis, I have claimed, appears to have radical consequences for our metaphysical picture of reality. Just what can this mean? The notion of a metaphysical picture of reality is not an easy one. Dummett offers the definition of metaphysics as

that branch of philosophy which is concerned with the most general features of reality, that is, of the world as it is in itself rather than with our knowledge of or relation to the world.

If 428.

If this is what we mean by metaphysics then the radical implication of the anti-realist analysis is that there can be no such thing as metaphysics at all! For the picture of intelligible reality as independent, external and determinate, as, in effect, a world-in-itself, is precisely what the anti-realist account seems to rule out. We may, however, be a little more liberal and define metaphysics as concerning our best general picture of the nature, constitution and scope of reality. In which case, the non-evolutionary anti-realist does have a metaphysics, only it is a very odd one. One in which the nature and constitution of reality is actively determined by human investigative potential and in which the scope of reality cannot exceed the scope of man. At any rate, whether we call this position one of radical metaphysics or one which is radical because it is anti-metaphysics is unimportant. What is important, however, is how the anti-realist gets there.

The route, in fact, is quite a simple one. Idealism seems to issue almost directly from the anti-realist's ban on transcendent concepts. A transcendent concept is one whose truth conditions
are meant to be such that they might obtain in full independence of our capacity, even in principle, to recognise them as so doing. The anti-realist, we have seen, identifies meaning with communicable understanding. And as an empiricist he identifies communicable understanding with understanding which can be displayed without residue in use. Where the truth-conditions of a sentence appear such that were they realised we would be unable to know it, there can be nothing in our displayed understanding which suggests that we associate the meaning of such a sentence with such truth-conditions. If we understand them at all, then our understanding must proceed from our grasp of something much weaker than the classical truth-conditions viz. assertability-conditions. At the end of this process of erosion we have no notion of truth for statements independent of our capacity to recognise truth. Can we therefore have any notion of an independent and external reality or have we already placed the fatal foot on the slippery slope to idealism?

In giving up semantic realism we give up the idea that an external and independent reality may make our sentences true irrespective of our capacity, even in principle, to recognise them as true. We thus give up all hope of the straightforward route to ontological realism which says that our grasp of ontological realism consists in our grasp of the notion of realist truth as applying to the statements of our common language. Our concern now is whether that is the only way to make sense of the idea of an external and independent reality or whether there may yet be some other route available to the anti-realist also. If not, then as Crispin Wright points out:

the anti-realist must, it appears, be committed to some
version of the claim that human thought and cognition constitute the world. And what is idealism but that?

Crispin Wright (2) p.13.

Philosophers such as Wright believe, then, that there is a clear and apparently non-optional progression from anti-realism concerning meaning to idealism concerning reality; hence the metaphysical austerity alluded to earlier—the limits of the world are the limits of our knowledge. If we are to assess this alleged progression we must try to make it precise. Let us begin with a preliminary definition of realism.

Dummett suggests that:

The primary tenet of realism, as applied to some given class of statements, is that each statement in the class is determined as true or not true, independently of our knowledge, by some objective reality whose existence and constitution is, again, independent of our knowledge.

IF 434.

Our question, in effect, is whether someone might consistently endorse the latter part of this formulation (the 'objective reality ... independent of our knowledge') without being a semantic realist about the notion of truth applicable to our claims concerning that reality i.e. without accepting the former part concerning realist truth. For such appears precisely to be the position of the evolutionary epistemologist who supports anti-realism concerning meaning within a framework which depends crucially upon the notion of an objective, independent mind-producing reality. Such a position, if the progression spoken of above is correct, must be incoherent.

How is the progression (anti-realism to idealism) supposed to run?
One plausible thought, due to Rasmussen and Ravenkilde, is that the progression turns crucially on the anti-realist's revisionary stance concerning classical logic. Given the rejection of classical logic, they say, then the slide to idealism is inevitable. Thus, they say, suppose someone sought to occupy the position of 'eclectic theorist' combining anti-realism and ontological realism. What could be the intelligible content of his claim that the world was mind-independent? Well, we saw earlier that the ban on transcendent concepts issued in the identity of truth with recognisable truth. Given this, would not the eclectic theorist need to assert that the mind-independent segments of the world are such as not to make any of our declarative sentences describing those segments either true or false.

Rasmussen and Ravenkilde (1) 380.

And what, they ask, can be the intelligible content of this? None, it seems, in the absence of classical logic. For given a constructive interpretation of the existential quantifier we could not assert even the existence of aspects of reality resistant to demonstration in language by the production of instances. Only in the context of a classical logic, they argue, can the conjunction of anti-realist semantics and ontological realism be intelligible, for only in that context can we quantify over aspects of reality without the obligation to provide instances. They are thus persuaded that:

If endorsement of CL (classical logic) entails acceptance of semantic realism then anti-realism entails idealism.

Rasmussen and Ravenkilde (1) 380.
It would not be a caricature of this line of argument to reformulate it as follows. Independent reality, (they claim), is, for the anti-realist necessarily ineffable. But the claim that there is some ineffable reality is senseless in the absence of classical logic. For on a constructive interpretation of \((\exists x)\) nothing can be claimed to exist if it is not demonstrable. And what is ineffable is, naturally, not demonstrable. So the revisionary anti-realist cannot be an ontological realist also.

The term Ontological Realism as it functions in this argument covers two distinct cases which are worth separating. On the one hand it seems to mean (what we ordinarily take it to mean) the claim that the objects picked out and spoken of in human discourse concerning the physical world enjoy a mind-independent existence. On the other hand it also covers the case where the mind-independent aspects of reality are held to be ineffable and precisely not those aspects spoken of in ordinary discourse. Rasmussen and Ravnkilde use a vague formulation which seems to cover both cases. Ontological realism, for them, is the claim that our sentences

\textit{deal with} an objective or mind-independent reality, a reality, that is, that exists irrespective of any capacity on our part to attain knowledge about it.

Rasmussen and Ravnkilde p.379 (my emphasis)

But the term 'deal with' seems too broad; it leaves open whether the mind-independent reality is to be that spoken of in our sentences or whether it is some hidden noumenal realm which our sentences may help us to cope with, but do not properly describe. To clarify matters, then, let us mean by \textit{ontological realism} the usual claim about the mind-independence of the objects of ordinary discourse. And let us
introduce a new term Material Realism, to capture the more minimal claim that there is some mind-independent reality even if it is not that reality (or those aspects of reality) about which we speak.

Rasmussen and Ravnkilde's point may now be put like this. The claim of ontological realism must, they think, be an empty one in the mouth of the anti-realist. For regarding those aspects of reality about which we actually speak, the anti-realist must repudiate any notion of truth which extends beyond human access to conditions of truth. The ontological realist's claim of mind-independence then is just a form of words which can mark no real disagreement with the idealist who thinks the world is constituted by human activity. The independent-world anti-realist must therefore suggest that the mind-independent aspects of reality are not those dealt with in our sentences. He is therefore a material, not an ontological, realist in our new terms. But material realism, they claim, is unwarrantable in the presence of a constructive interpretation of the existential quantifier. So without classical logic, anti-realism implies idealism.

The argument for a radical metaphysics, as developed by Rasmussen and Ravnkilde, therefore has something like the following form:

(1) Assertion condition semantics
(2) Emptiness of claim of Ontological Realism (from 1)
(3) Constructive account of existential quantification (from 1)
(4) Emptiness of claim of Material Realism (from 3)
(5) Idealism (from 2 and 4).
Such an argument might be attacked in various ways. We might deny that (1) implies (3), or that the disjunction of (2) and (4) exhaust the ways of giving content to the denial of idealism, or we might attack the derivation of (2) from (1). I shall suggest, however, that recourse to an evolutionary epistemology, even if we accept assertions (1), (2) and (3), enables us to block effectively the derivation (4) from (3) and hence to halt the progression to idealism.

The intuitive core of the idealist tendency may thus be traced quite directly to the anti-realist's ban on transcendent concepts. We can have no idea of truth for our statements which is not linked to our capacities to investigate their truth, hence:

The committed anti-realist may, in apparent consistency, claim to believe that the world, conceived as a totality of objects, exists independently of his investigations of it; but he may not conceive of his statements concerning those objects as investigation independent, and it is unclear in consequence what serious content attaches to his professed belief in the autonomy of the objects themselves.

Crispin Wright (2) p.14.

This, then, is to be the locus of our problem; how can the anti-realist donate distinctive content to any evolutionary belief in mind-independent reality when all intelligible claims made in language must (on his analysis) fall within the scope of human investigations? For unlike the semantic realist the anti-realist cannot seek distinctive content in the claim that our statements about the world are determinately true or false in complete independence of any human capacities to
determine them as such. But what content, failing that, could the required belief in mind-independent reality have?

5.3 A question which needs to be pressed is just what kind of 'belief in mind-independent reality' is required by the evolutionary epistemologist (and hence by the would-be evolutionary anti-realist). It is, as we have said, a pre-condition of an evolutionary account of mind and language that we conceive of the world (the mind-producing system) as ontologically prior to, and independent of, the activities of the minds it throws up. But it does not follow that the mind-producing system must be thought of as our everyday world, the world of coloured macroscopic solid objects. Indeed the evolutionary epistemologist, as we shall see, is a phenomenal relativist who has cause to deny any such unique identification.

It is not the phenomenal world which the evolutionary epistemologist must take as mind-independent but the world of science. It is the scientific image which must be held to describe the common reality to which various beings are variously adapted. Thus consider a typical evolutionary claim. The claim is that:

The hydrodynamics of sea-water, plus the ecological value of locomotion, have independently shaped fish, whale and walrus in a quite similar fashion ... but the jet-propelled squid reflects the same hydrodynamic principles in a quite different ... shape.

Campbell p.447.
For such claims to be intelligible the evolutionary theorist must claim some right to employ our scientific account of the hydrodynamics of seawater as descriptive of the common reality to which both squid and fish are adapted. In some sense then, he must assume that our scientific accounts of reality enjoy a degree of objective validity, sufficient at least for the world revealed by science to be justifiably taken to describe the real environment in which adaptation occurred. For the evolutionary epistemologist, in particular, the implication is that the world to which our brains are adapted (the mind-independent reality with which they cope) must in some way be that accessible to science. To that extent an evolutionary epistemology could not afford to be radically idealist. The world which makes minds must in some degree be the world which minds know if the mind's explanation of how the world makes minds is to carry any force.

Perhaps, then, some form of Ontological Realism concerning the objects and relations spoken of in decidable sentences of science (e.g. concerning the correct hydrodynamic description of seawater etc.) will be sufficient to secure the required non-idealist base for an evolutionary epistemology. If so, then the evolutionary anti-realist can donate content to such a conception in a fairly simple way (if somewhat superficial). For all he needs to do is to insist that where a scientific claim is warranted (i.e. decidable, even if non-conclusively) that it had the truth-value it does even in advance of the investigation which uncovered the warrant for it. This allows us to locate the content of a belief in mind-independence in a belief in the
pre-existence of the truth-determining facts which warrant our assertions — in this case, those of science. Such a position is at least consistent with anti-realist demands for we may still be agnostic about the determinacy in truth-value of as yet undecided statements, only allowing this picture of mind-independence to be warranted with respect to statements whose truth-value we have (defeasibly) determined already. Such a position may seem strained, but it is an intelligible option, and one which provides at least a prima facie alternative to a radical idealism. It would, I think, amount to what Crispin Wright calls a 'belief in strict bivalence for decidable statements'. Such a belief, he suggests, is:

A perfectly adequate vehicle for the conviction that the world is mind-independent, for it presupposes ... the investigation-independence of those statements — the conviction that the world confers determinate truth-values upon them independently of our actually carrying out any investigation into their truth-status.

Wright (2) p.15

Wright has reservations concerning the ultimate success of such a move as a means of rebutting the charge of Idealism. Let us suppose, however, that the initial tension (between anti-realist idealism and evolutionary realism) can be thus resolved. Would the coherence of the natural anti-realist's position then be guaranteed?

5.4 Probably it would not. The reason for such pessimism is that we have so far only considered the anti-realist intelligibility of the pre-conditions of an evolutionary account. There remains the matter of the intelligibility of its claimed implications concerning man's cognitive status. In this area deep difficulties
loom for the natural anti-realist (evolutionary epistemologist/semantic anti-realist). For he must somehow make sense of the profound acceptance of transcendence which, I shall argue, is embedded in the evolutionary epistemologist's humble conception of man's own cognitive position.

This acceptance of transcendence may be brought out by considering an example given by Lorenz. The example (Lorenz (1) trans. pages 31,32) concerns the spatial knowledge of the water shrew and the sewer rat. But what will concern us is not so much the example itself as the kind of conclusion evolutionary epistemologists tend to draw from such treatments. Lorenz found that a water shrew, when placed in new surroundings, learns its way around by a series of random eccentric excursions. These excursions serve to lay down routes which are then followed by rote. These routes may include long detours or entirely superfluous loops. Still they are faithfully repeated time and again. The water shrew is seen to be precluded from ever finding a more direct route to its destinations. The idea of a short cut, to put it rather anthropomorphically, is alien to its thought. More correctly, the shrew is precluded, by the very nature of its evolved means of coping with reality, from actively seeking out short cuts or direct routes. This is because the shrew is a true kinaesthetic creature; it lays down routes by slow crawling, sniffing and feeling rather than by an outright spatial survey such as we might conduct by sight. The shrew's policy is effective and efficient given its needs and abilities. Its knowledge, however, may be contrasted with that of the sewer rat for the sewer rat is easily able to locate short cuts. The spatial knowledge of the
sewer rat may therefore legitimately be claimed to be more extensive than that of the water shrew. The example thus recapitulates the twin pillars of the evolutionary theorist's account of knowledge given in chapter two. For we conclude, in line with the fallibility/scope arguments, that the water shrew has inbuilt limits:

For the true kinaesthetic creature such as the water shrew it is literally impossible as far as its thinking is concerned to find a short cut.

Lorenz (1) trans. p.32.

And we conclude also, in line with the appropriateness argument, that its apprehension, although limited, is still valid - it reaches its goals. Thus:

The lower form of thought corresponds a priori and adequately to the reality of a higher order but ... only as far as it reaches.

Lorenz (1) p.34.

It is characteristic of the evolutionary epistemologist to extend this conception of cognitive limits, developed in regard to lower animals, to include the intellectual achievements of man. Thus we read in Lorenz that:

We can no more ascertain how much exists in absolute actuality in addition to the facts and relationships rendered in our image of the universe than the water shrew can ascertain that it could short-cut many detours in its crooked path-learning.

Lorenz (1) p.34.
And in Campbell that:

Biological theories of evolution ... are profoundly committed to an organism—environment dualism which when extended into the evolution of sense-organ perceptual and learning functions, becomes a dualism of an organism's knowledge of the environment versus the environment itself. ... At this level he (the evolutionary epistemologist) has no hesitancy to include a 'real world' concept even though he may recognise that his own knowledge of that world ... is partial and limited in ways analogous to the limitations of the animal whose epistemology he studies. Having thus made the real-world assumption in this part of his evolutionary epistemology he is not adding an unneeded assumption when he assumes the same predicament for man and science as knowers.

Campbell (1) p.449.

Certainly, it seems to follow from the evolutionary considerations concerning fallibility and scope (i.e. niche-orientation) that man's phenomenal image of reality will be limited, imperfect and biased with respect to our peculiar needs and niche. Whether the same can be taken to follow for our conceptual or scientific image is another matter and one to which we turn in due course (chapter 7). That there is such a tendency of thought in evolutionary epistemology is not, however, to be doubted. Lorenz calls it 'incomprehensible arrogance' to believe that all rational beings would need to share the laws of thought of man and Anthony O'Hear (O'Hear p.206) reports Hirzel as claiming that science in no way enables us to transcend the limitations of brain and sense organs suggested by the evolutionary model. It may be noted
that were this to follow there is some danger of undercutting
the basis of the evolutionary argument itself, which seems to
require that science give us a picture of the objective reality
in which adaptation occurs. If this danger is to be avoided,
it must be by virtue of the critical ontological realism said
to flow from the appropriateness argument discussed in 2.5 above.
From such considerations it seems to follow (perspectival bias
and imperfection notwithstanding) that we should believe that
the world really is largely as we naturally take it to be.
By extension, the formable truths of everyday discourse, should
embody an acceptable, if partial and biased, response to mind­
independent reality. Some relation between everyday formable
truths and a materially independent reality thus flows from the
observation (consequent upon the appropriateness argument) that:

There is (in phenomenal experience) an 'objective' reflection
of the Ding an sich which, however, does not achieve expression
in the Ding an sich's own terms.

Campbell (1) p.447.

And science, presumably, may then be seen as an extension of
everyday discourse, sharing in its realistic connection to the
mind-producing world and also in its evolved limitations and
imperfections. Drawing all this together, we may now formulate
six theses, found in the writings of evolutionary epistemologists,
which may be expected to give the anti-realist varying degrees of
trouble;

(1) Material Realism; the material world exists in full
independence of human capacities to acquire knowledge
of its nature.
(2) Critical Ontological Realism; the formulable truths of daily discourse embody an approximately correct picture of those parts of reality with which man has been forced to cope.

(3) Scientific Realism; science offers a valid description of mind-independent reality.

(4) Phenomenal Relativism; other creatures, being forced to cope with other aspects of reality, may form very different phenomenal images of reality to our own.

And, more contentiously, supposing (in some internal tension with (3)) our scientific conceptions to be inextricably bound up with our limited, contingent and biased basic sensory and cognitive modes;

(5) Thing-in-itself Realism; there may well be facets of reality to which we have, even in principle, no access and which must therefore continually resist description in language.

and (6) Conceptual Scheme Realism; other beings may be biologically suited to obtaining a grasp of such facets and may therefore sustain intellectual knowledge which transcends man's capacities to grasp it.

The natural anti-realist is now in deep water, particularly regarding assertions (4) - (6). For given the ban on transcendent conceptions it seems unclear what grasp we can have of the notion of forms of thought and experience which we do not possess. Thus Neil Tennant writes that:

An abiding enigma for evolutionary epistemology is how or whether we can make sense of the implied relativity of
conceptual schemes or of access to reality while not ourselves being able to form any intelligible conception of how the world is to a radically different kind of organism, one endowed with different sense modalities and leading a totally alien life.

Neil Tennant (3) p.4

And adds that we should allow no conception of the world as it may be 'in absolute actuality' as opposed to how it seems to be given our modes of perception and cognition. Such an attitude, though it seems to conflict with the Thing-in-itself Realism of some evolutionary writers, is hardly surprising in an anti-realist. For clearly, the assertion of Thing-in-itself Realism (and to some extent of all the Realisms in (1) – (5), especially (3) and (4) ) will be prey to the argument deployed by Rasmussen and Ravnlilde in 5.2 above, which claims that, in the absence of a non-constructive interpretation of existential quantification, no existence claim can be legitimate which precludes the production of some satisfying instance. Since we cannot produce instances of how the world may be in itself, and since we cannot experience alternative phenomenal or conceptual schemes, such dimensions of transcendence look closed to the anti-realist.

A general formulation of our difficulty, then, would seem to be this; how, given anti-realist views on grasp of sense, can we find intelligible the conception that there should be facets of, or ways of looking at, reality which are in detail or experienced nature beyond our capacity to conceive? In other words can we consistently append to assertions (1) – (6) the further claim

(7) Semantic Anti-realism; language is unable to support any grasp of verification-transcendent meaning.
If not, then the natural anti-realist must either give up one or more of the problematic claims or accept that his is a self-defeating position. If, on the contrary, we can make anti-realist sense of some or all of the difficult claims, we shall have shown the compatibility (in a naturalised setting) of semantic anti-realism with a realistic metaphysics in which the nature of reality may intelligibly outrun the limits of man's apprehension of it.
II

TRANSCENDENT CONCEPTS

AND THE

CONCEPT OF THE TRANSCENDENT.
6. Internal concepts of the transcendent.

6.1 Two dimensions of realism have now made demands on the would-be natural anti-realist. One dimension involves realistic claims concerning the status of our actual and potential knowledge. That knowledge must (at times) be knowledge of an external and mind-independent reality if evolutionary claims concerning the nature of adaptation are to carry any authority. The other dimension involves the realistic idea that the real nature of the world may well exceed our capacities to achieve knowledge of it and that the way we know what we do know of the world is a distinctively human one. These two dimensions correspond to what we earlier termed the Appropriateness and the Fallibility/Scope arguments respectively (2.5 above).

We may reserve comment on the first dimension of realism (reflected in these (2) and (3) in 5.4 above) until chapters 7 and 10. A promising strategy for securing the anti-realist intelligibility of claims in the second dimension (i.e. regarding these theses (1), (4), (5) and (6) above) might be to try to reveal the problematic claims as disguised non-transcendent assertions concerning man's own cognitive limits, as diagnosed from within our conceptual scheme. The idea is to distinguish the anti-realistically unacceptable notion of a transcendent concept (one whose conditions of application may apply quite unrecognizably) from the acceptable idea of a concept of the transcendent; a warrantedly assertible claim to the effect that the limits of our warranted assertions (and hence of our understanding) need not be the the limits of the world.
6.2 The goal, then, is to rehabilitate claims (1) and (4) - (6) as non-transcendent assertions concerning cognitive limits. Two preliminary comments are in order. The first is that in seeking to show the intelligibility of these claims, I am not, immediately, seeking to show their truth. In particular, theses (5) and (6) concerning Thing-in-itself and Conceptual Scheme Realism must remain tentative at least until after the discussion of science in chapter 7. The argument I present is designed to show that these claims, as they stand within evolutionary epistemology, are not senseless to the anti-realist, at least if he is careful in his formulation of them. The second preliminary comment concerns thesis (1), the assertion of Material Realism. This will be treated as a corollary of (5), the assertion of Thing-in-itself Realism. The latter thesis claims that there may be facets of reality to which man has in principle no access (intellectual or perceptual). To make sense of this is clearly to make sense of the claim of Material Realism viz. that the world exists in full independence of human capacities to acquire knowledge of it. The advantage of treating (1) as a corollary of (5) is that it deflects a fair criticism of any independent defense of the sense of (1). The criticism is that the assertion of Material Realism has no distinctive content in the absence of a commitment to Thing-in-itself Realism. For if a belief in the independence of the material world did not at least issue in the possibility of humanly unknowable features of reality it would be hard to locate any substantive disagreement between the anti-realist idealist and the proponent of material realism. In such a situation a Material Realist who is not a Thing-in-itself Realist might try
to avail himself of the account of content given in terms of an acceptance of strict bivalence for \textit{decidable} claims developed in 5.3 above. Such a defence, as remarked earlier, is somewhat weak; it still looks unlikely to distinguish him from the anti-realist idealist who may \textit{also} accept bivalence for decidable claims but conceives the bivalence as somehow flowing from our decision procedure rather than preceding it in full independence. One way the realist can make out the difference is by accepting the possibility of determinate but humanly unknowable features of reality - an acceptance expressed in Thing-in-itself Realism; hence the proposal to concentrate on Thing-in-itself Realism and allow Material Realism to flow from it.

The focus, then, is on claims (4) - (6); roughly, that there may be facets of reality to which we have no potential access and that there may be forms of life whose phenomenal and intellectual realities are partially closed off from our full understanding. If we are to demonstrate the legitimacy (= anti-realist intelligibility) of such claims we must pay special attention to the logical form of the evolutionary arguments said to support them.

Claims (4) - (6) flow from what, in 2.5 above, we called the fallibility/scope arguments of evolutionary epistemology. That is to say they flow from arguments concerning the nature of the evolutionary process whereby our own particular investigative capacities were produced. For that process may be expected to generate forms of basic cognition and perception which are contingent, imperfect and selected with special reference to a particular type of being's needs and interests. Two main observations
were said to bear on this. The first was that selection of particular traits takes place from a randomly generated pool of options viz. those provided by chance mutation ('random' here means 'with no causal connection to the particular features of the environment which such mutations will ultimately succeed or fail to exploit'). The second was that selective pressure constitutes a satisficing and not an optimising force (in the sense of satisficing developed at 2.5). It favours whatever is most effective in the actual context in which selection occurs. The prime evolutionary virtue is cost-efficiency. Swift, roughly accurate decisions will be rewarded. Painstakingly detailed processing is intensive of time and energy. Loss of accuracy is preferable to loss of life. Selection is also context-dependent; the utility which is selectively favoured is utility within a specific life-form. What is a good option for a frog may spell extinction for a sparrow. Human cognition, likewise, may be expected to be focussed on whatever aspects of the physical universe were most vital to our ancestors when selection of our present capacities occurred (see Campbell p.421 or Tennant (3) p.33).

In the light of such observations (reservations concerning the scope power and status of human science notwithstanding) we can see why the evolutionary epistemologist may refuse to identify the range of humanly accessible reality (the world which we can investigate) with the full and absolute contours of reality itself. Our knowledge is arrived at by contingent, unprivileged and predictably biased means. So how could the nature of our knowledge transcend the nature of our means of acquiring knowledge? Hence claim (5). We can see also why he allows the possibility that
the reality directly and intellectually accessible to other beings may be radically different to our own. If our range of knowable facts and perceptible properties is limited and coloured by physical apparatus selected from a random pool with regard to the peculiar needs of the human life-form, then it follows that alternative life-forms might directly access other aspects of reality and (perhaps) intellectually picture the universe in terms of mental structures evolved to suit their needs and interests. Hence claims (4) and (6).

The vital fact regarding the anti-realist intelligibility of such claims to emerge from this is that the true content of such claims involves only notions of the genesis and limitations of our own particular cognitive capacities. The evolutionary epistemologist does not, or ought not, presume to go beyond such claims, for to do so is to become embroiled in debate over allegedly transcendent concepts. All he needs, to substantiate claims (4) - (6) is a harmless concept of the transcendent which is expressible entirely in terms of the accessible data of evolutionary theory. There need be no suggestion that we can sustain any positive conception of how the world is in itself beyond reference to the human life-form, nor that we can know what it is like to employ alternative conceptual schemes. Once we realise this, the tension between an anti-realist semantics and an evolutionary view of knowledge and reality begins to dissolve. For the inference from the dependence of meaning on human capacities to the rejection of any conception of the world as it 'really' is, is valid if and only if the sense of 'conception' involved is that of a concrete or positive conception.
That is, a conception which purports to be one of the way the world actually is, as opposed to the bare conception that there may be facets of reality beyond the scope of human knowledge. The latter negative conception is assertible on the basis of the evidence of evolutionary epistemology for the claim that there is a reality to which all cognitive processes are adapted and which is never known in full by any such processes. A failure to distinguish positive and negative senses of 'conception' turns the legitimate rejection of transcendent realism (the doctrine that we can sustain a grasp of concepts not necessarily capable of active manifestation in our activity) into an illegitimate rejection of material realism and cognitive bias – the notion that our grasp of reality is biased and limited and that the material universe from which it grew enjoys a self-subsistent, mind-independent existence.

The commitment of evolutionary epistemology to this latter position is complete and essential, for it studies the relationship between a creature's image of the world and the world whereof it is an image. This relationship is plotted, out of practical necessity, from a human and 'phylogenetically unprivileged' position. Our scientific perceptions of reality form the basis of our judgments of such relations. But they do so out of pragmatic, not theoretical necessity. For we are to conceive our own position as limited and imperfect in ways parallel to those of the creatures we study. Campbell's real-world hypothesis thus enters our system as a necessary internal construct. All our descriptions, theoretical ones included, are to be seen as informed by our human nature and inheriting our human limitations.
We thus conceive reality itself as at least potentially transcending our capacities to achieve knowledge about it. But this conception of a transcendent reality is entirely internal and negative in content, finding its warrant in the scientific picture of the nature of the knowledge-acquiring and belief-selecting mechanisms which we would expect the selective process to favour. The critique of the scope of human intelligibility may thus fall squarely within the scope of the humanly intelligible.

6.3 Suppose such a line of argument were to be accepted. How, precisely, would this enable the natural anti-realist to sidestep the problems of intelligibility raised in chapter 5? The main difficulty for assertions of Thing-in-itself and Conceptual Scheme Realism was seen to be that initially raised by Rasmussen and Ravnhilde in 5.2 above. The difficulty, said to preclude the revisionary anti-realist from avoiding idealism, was that of making constructive sense of the assertion of the existence of facets of reality falling outside our recognitional scope. For in the absence of a classical interpretation of the existential quantifier (which, incidentally, need not amount as they seem to believe it does to the absence of classical logic in toto) or, more weakly, in the absence of any non-constructive interpretation of that quantifier, the anti-realist is, as they say:

committed to a conception of the assertability conditions of quantifications under which an existentially quantified sentence is assertible just in case an instance verifying it can be produced.
But, they ask:

How are instances of aspects of the world that resist capture in language supposed to be producible if not by means of language?

Rasmussen and Ravnkilde (1) 380.

Ostension, they rightly disallow since what is ostensible is experienceable and hence again fails to cover the kind of case in question.

Rasmussen's and Ravnkilde's point is not a problem for the eclectic theorist who seeks only to combine a biological realism (viz. a belief in realism as regards our claims (4) - (6)) with a semantic anti-realism, revisionary or otherwise. To see why we need only reflect on the logical form of the content of such assertions of realism once they are revealed as assertions about human cognitive limits. For that logical form is then seen to be essentially non-existential. The problematic claims are rather negated universals whose assertion is warranted by the extrapolation via the thesis of phylogenetic continuity, of claims made about the nature and limits of the knowledge of lower animals to cover the case of man himself. The claims in the evidential data-base warranting the negated universal conclusion concern only the accessible reality (e.g. the water-shrew experiments) unproblematic to the anti-realist. The deep question, for the revisionary natural anti-realist, is whether this application of the thesis of phylogenetic continuity can meet the demand of the conservative extension of knowledge (see 1.2). For the application of the thesis here may seem to warrant conclusions for which no direct evidence is possible. But the contravention of this demand is,
in this case, more apparent than real. For our concern here is not, despite appearances, with knowledge beyond the realm of direct evidence but with knowledge of the limits of the direct evidence itself. The force of the negated universals (see below) is not to go illegitimately (unconservatively) beyond potential direct evidence but to describe the limits of the realm about which we can make intelligible statements i.e. the realm where direct evidence is possible. It would be strange indeed if the enterprise of describing our semantic scope as limited were to be anti-realistically intelligible only on the defeating supposition that we were properly able to go beyond those limits!

Rasmussen and Ravkilde's slide to idealism is greased by their insistence that the would-be eclectic theorist avail himself of existential quantification in stating his belief in investigation-transcending aspects of reality. The proposed response is that the proper form of anti-realist expression for the present claims (4) - (6) is not existential but negative universal. Thus they should be read as follows:

(4') Phenomenal Relativism; It is not the case that; for all X, if X is a phenomenal image of reality then X must be a phenomenal image of the kind sustained by man.

(5') Thing-in-itself Realism: It is not the case that; for all X, if X is a facet (aspect, relation, description) of the material universe then X must in principle be knowable by us as that aspect, relation or description.

(6') Conceptual Scheme Realism: It is not the case that; for all X, if X is a conceptual scheme adequate to cope
with the world then X must in important respects coincide with our own.

These formulations are clearly in line with our stress on cognitive limits. As long as we stick to those formulations, however, we are at liberty to exploit an intuitionistic lacuna between $\neg \forall x(f(x))$ and $\exists x(\neg f(x))$ as a means of avoiding the difficulties associated with a constructive interpretation of the existential quantifier. Thus we may exploit the intuitionistic invalidity of the expression

$$\neg L; \quad \neg \forall x(f(x)) \rightarrow \exists x(\neg f(x))$$

in order to assert $S'$ or $S''$ without incurring any commitment to grasp problematic existential claims such as:

There is an X such that: X is a facet of the material universe and X is unknowable by us

or:

There is an X such that: X is a conceptual scheme adequate to cope with the world and X is importantly different from our own.

These latter assertions, we saw, imply for the anti-realist what the claims of cognitive limitation specifically rule out viz. the constructability of fulfilling instances of the schema $\exists x(\neg f(x))$ as it applies in such cases.

To see the evolutionary claims as only claims about cognitive limits, then, is to see that there is no real difficulty as regards their intelligibility. For to generate any such difficulty now would require the combination of a classical treatment of L (in which the inference from $\neg \forall x (f(x))$ to $\exists x (\neg f(x))$ is valid) with a constructive interpretation of existential quantification
(in which the assertion \( \exists x ( -Fx ) \) requires the constructability of instances of \( -Fx \)).

Neil Tennant, however, has questioned with what right the intuitionistic lacuna (i.e. the intuitionistic invalidity of \( L \)) is exploited in the evolutionary case. He has pointed out (in conversation) that the lacuna exists in recognition of two possible cases in which one might have reason to assert \( \forall x (Fx) \) without being in a position to assert, for some individual constant \( a \), \( -Fa \).

The two cases being (i) that in which we have a demonstration of the absurdity of \( \forall x (Fx) \) on general principles alone and (ii) that in which we can demonstrate the joint inconsistency of a set of instances \( F_1, \ldots, F_n \) without being able to locate the blame, as it were, in any one instance. Now clearly, the evolutionary epistemologist is not able to claim that his is a case of the second kind. He is not, for example, in a position to produce some set of facets of reality one of which is known to be unknowable, although we do not know which! We are therefore driven to (i). The question then is; what kind of general principles are involved, and can they really result in the absurdity of the universal correlates to 4' - 6' viz.

\begin{itemize}
  \item (UC4') For all \( X \); if \( X \) is a phenomenal image of reality then \( X \) must be a phenomenal image of the kind sustained by man.
  
  \item (UC5') For all \( X \); if \( X \) is a facet of the material universe then \( X \) must be knowable by us.
  
  \item (UC6') For all \( X \); if \( X \) is a conceptual scheme adequate to cope with the world then \( X \) must in important respects coincide with our own.
\end{itemize}
It is probably unlikely that any strict demonstration of the absurdity of the claims (UC5') and (UC6') is to be had. (UC4') seems demonstrably false, however, since we are plainly aware that other beings (e.g. bats) do perceive the world by different means to ourselves hence it seems clear that their phenomenal image of it will differ from our own. Regarding (UC5') and (UC6') however, I do not think that the unavailability of any strict proof of absurdity should be held as conclusive evidence that the intuitionist lacuna is being improperly appealed to. For our quarry is a contingent empirical assertion of the form \( \forall x (Fx) \) and not a mathematical assertion of the strict derivability of \( \forall x (Fx) \) from a set of true premisses. Only in the latter case can we demand that \( \forall x (Fx) \) be strictly absurd i.e. result in a contradiction. The most one can legitimately ask in the empirical case is that there be a cogent argument (i.e. one whose force is recognisable by us) which at least weakly suggests the unlikelihood of UC5' and UC6' above.

The anti-realist, when he moves from the mathematical to the ordinary language domain, may be obliged in some instances to give up the identification of the meaning of a statement with what verifies it conclusively. He may even allow that conditions of conclusive verification may be unrecognisable by us should they obtain. Meaning, in such cases, is to be located in connection with recognisable but non-conclusive conditions of verification.

This potential of the anti-realist to avail himself of such non-conclusive conditions is often overlooked, as we pointed out in 1.2

What we need then, is not a proof by general principles that
the assertion of UC5' or UC6' is absurd but just a cogent argument from general empirical or philosophical principles that it is probably false i.e. a demonstration that weak (non-conclusive) verification conditions for 5' and 6' recognisably obtain.

And that much, I believe, we already possess. Thus we may take as our general principles the theory of evolution by natural selection, the theses of cognitive adaptionism and phylogenetic continuity and the constraints imposed by the fallibility/scope considerations upon the cognitive powers of evolved products.

None of the evidence which warrants the assertion of these contingent claims in any way transcends the range of data allowed by the semantic anti-realist. These general principles do not result in a contradiction when conjoined to UC5' or UC6'. But they do non-conclusively suggest that they are false. Hence they afford cogent if inconclusive argument for the truth of 5' and 6' i.e. they suggest that, if UC5' or UC6' is true, then there must be important provisos yet to be added to at least one of the general empirical principles involved (the most obvious candidate being the stance on cognition derived from the combined theses of cognitive adaptionism and phylogenetic continuity). In the absence of any such proviso we may justly regard UC5' and UC6' as having been shown by cogent argument to be false. To deny that conclusion would require an expansion of our present state of information concerning the origin and nature of human cognitive capacities.

Our previous use of the intuitionistic lacuna is therefore justified under the first of Tennant's two options i.e. that in which we have a demonstration, on general principles alone, of the absurdity of \( \forall x (Fx) \). Except that, having moved away from
the mathematical domain, our demonstration may stop short of being one of absurdity and rest at being one of unlikelihood. By availing ourselves of the lacuna we may assert the falsity of UC5′ and UC6′ without committing ourselves to any problematic existential claims requiring the production of instances. That a presumption exists in favour of the falsity of these does not therefore suggest that we must necessarily be in a position (or be capable of being in a position) to assert for some individual case e.g. that here is a conceptual scheme importantly different to our own or that here is a facet of reality unknowable by us. The former seems more likely to be possible than the latter, but neither need be possible to make anti-realist sense of the claims 5′ and 6′.

The natural anti-realist, then, may invoke the intuitionistic lacuna between \(-\forall x \, (f x)\) and \(\exists x \, (\neg f x)\) in order to sustain the reformulated realisms of 5′ and 6′ without facing the problem of the constructive interpretation of existence claims. He can thus avoid what Lorenz calls the 'incomprehensible arrogance' of the assertion that

... any imaginable rational being ... would have to be limited to the laws of thought of homo sapiens.

Lorenz (1) trans. pg.34,

and embrace the humble thought that

The fundamental indiscernibility of the last detail of the thing-in-itself remains,

Lorenz (1) trans. pg.31

without essaying to sustain any transcendent concepts of the kind ruled out by a consistent anti-realism. With the evolutionary
epistemologist, we assert that we are cognitively limited beings employing contingent modes of conceiving the world. With the anti-realist we assert that we have no positive grasp of the nature of the world save that yielded by those very contingent capacities. By combining the two we arrive at the notion, by no means inimical to common-sense, that the intelligible world over which the meanings of our language range is limited by our capacities to recognise the truth of assertions about it but that there is no reason to believe either that material reality is a product of human intelligence or that human intelligence and semantic scope afford a privileged and exhaustive survey of the material universe. The world itself does not inherit the limitations of man.

7.1 It was the task of the preceding chapter to delimit an intelligible concept of mind-independent and potentially mind-transcending reality. *Mind-independence*, we may now reflect, could be argued for without any implications of actual or potential mind-transcendence. That is to say someone might believe the world is mind-independent in the sense of being ontologically self-subsistent and prior to the emergence of minds, without believing that any of its real aspects may transcend man's capacity to come to know them. Such a person would be disagreeing with the theses of thing-in-itself and conceptual scheme realism attributed to the evolutionary epistemologist, but accepting the bare claim of Material Realism. In what follows I shall offer some reasons for thinking that such a belief (in what we may call the epistemological transparency of every facet of material reality), though not inconsistent with evolutionary findings, is unlikely to be true given what we know of evolved knowledge-acquiring mechanisms in general. The observations which bear on this conclusion are precisely those mobilised in support of the theses of Thing-in-itself and Conceptual Scheme Realism in chapter 6, and used to generate an internal concept of reality as *mind-transcending*. But such observations (essentially, those of the fallibility/scope argument in 2.5) need careful handling if we are to attempt to extend their results to include the findings of human science. The burden of the argument of the previous chapter was that by inspecting our achieved knowledge of the means by which knowledge is achieved the natural anti-realist might be able to conceive reality itself
as potentially transcending our capacities to come to know it, and that he might conceive this without claiming to grasp any transcendent concepts. But is this picture of cognitive limitation, developed in studies of the basic cognitive and perceptual capacities of lower animals truly applicable to the scientific world-view of man? If it is not then the claims of Thing-in-itself and Conceptual Scheme Realism, though perhaps anti-realistically intelligible as claims about limits, will still fail to be true. Such a fate would certainly soften the hoped-for metaphysical impact of combining a semantic anti-realism with an evolutionary epistemology. But if the extension is allowed and natural limitations and bias seen to afflict scientific knowledge, then the question must arise as to the status of the evolutionary conjecture itself. For by what right could the evolutionary epistemologist then quantify over all evolved life-forms in formulating his general account of the relation between cognition and reality?

7.2 Venturing gently into these turbulent waters, we may begin by considering a fairly typical kind of claim in sub-atomic physics. There are, we are told, six kinds of quark (the up, the down, the strange, the charmed, the bottom and the truth - this last being only very recently discovered\(^{23}\)). By drawing on theories which use quarks in their theoretical descriptions, the physicist can explain, in a unified account, the macroscopically disparate phenomena of radioactivity and magnetism.

What is the evolutionary epistemologist to make of such claims? How, if at all, is the fallibility/scope argument of 2.5 meant to apply to the belief that there are six quarks? It hardly needs
stating that the belief in itself is not survival-relevant.
So where does the evolutionary picture intrude? The extension to science, if it is made at all, will clearly not be made by concentrating on individual beliefs. This is the mistake made by, for example, Anthony O'Hear in his recent article 'On what makes an epistemology evolutionary'. For O'Hear fails to identify the only plausible direction of evolutionary influence on our scientific theorising viz. the evolutionary genesis of our basic data-acquiring and belief-selecting strategies. Thus O'Hear asks:

When we come to creatures, such as ourselves, who have explicit beliefs about the world, does the selective elimination of evolution work by knocking out the holders of inadequate theories, or does natural selection work directly on the theories themselves? How, in other words, are beliefs winnowed by nature?

O'Hear p.195

O'Hear, seeing that neither of these is plausible as a means of transmitting any evolutionary impact to high-level scientific theories concludes that evolutionary considerations are irrelevant to claims 'of an epistemological nature' (see O'Hear p.216).
In coming to this conclusion, however, he is failing to give due consideration to a third option. It is that we human beings 'winnow out' our own beliefs; but we do so in accordance with basic strategies, encoded in actual cognitive mechanisms, which are the product of natural selection. In other words it is the holders of unsuccessful belief-basing or belief-selecting mechanisms which natural selection will have knocked out, not the holders of false high-level beliefs or (somehow) false theories themselves.
By a belief-basing mechanism I here intend, roughly, man's perceptual access to the world. If we based our beliefs on sense experiences which stood in no causal relation to the world, we would produce useless beliefs and no doubt die long before we had got close to propagating our genes. Similarly, if we chose among competing beliefs (based, let us say, on satisfactory causally-linked perceptual input) in an irrational fashion, choosing always the belief which is least supported by the data, or which is the hardest to understand, or which we think will be the least useful to accept, we would again be unlikely to survive in a hostile environment. By noting the likely influence of evolutionary factors on belief-basing and selecting mechanisms, the evolutionary epistemologist can (to some extent at least) explain why it is that human beings have the kind of brains which tend to make the kind of theories which work. Evolutionary considerations, if they apply to the scientific realm at all, must therefore apply not directly to specific scientific beliefs (which may be detrimental to survival, or irrelevant, as commentators never cease to insist) but indirectly, via the ways we come to select those beliefs, and the primary access to data provided by the human senses. If our discussion is to be fruitful, then, we must shift it from the locus of specific theory, such as quark physics, to that of general scientific method.

7.3 On any plausible view of the scientific method the conduct of science involves the performance of some range of cognitive operations upon some choice of data. The cognitive operations may include some kind of ranking of competing explanatory
hypotheses in terms of the delicate balance between simplicity and comprehensiveness and utility. (Sober calls this the trade-off between simplicity and fruitfulness.) And the data may be in the form of direct observational reports or it may be more or less impregnated with theory depending perhaps on the extent to which previously accepted hypotheses are assumed in the construction of the evidence upon which some current claim is to be based. But no matter how intricate the web of intervening theory it will remain at root true to say that science takes observational reports as inputs, generates explanatory laws and models as outputs, and decides amongst competing laws and models by employing informal heuristic demands. The explanatory laws and models which get accepted are therefore subject to two sources of constraint. The first source lies with the observed phenomena themselves; a theory must be true to the facts. The second source lies with the structure of human (and perhaps all) rationality; a good theory should be simple, beautiful, comprehensive, suggestive and so forth.

If this picture of the scientific method appears too simplistic it can be filled out in various ways. Probably the most powerful contemporary way to do so is to adopt a Bayesian analysis of the scientific method. This amounts to a characterisation, in formal terms, of the process by which a given belief or theory is chosen over its rivals. Thus the scientist is assumed (this is, of course, an idealisation) to have as data a number of observational reports, and a number of competing hypotheses said to explain them. The probability that the observational reports would be obtained if each explanation were true is assumed to be known (it is often one i.e. each hypothesis implies that the relevant observations
would have been obtained but it may be less - witness the statistical correlations predicted by quantum theory). The scientist's estimate of the probability that a given hypothesis is true (or the correct one to accept) is then to be derived as a joint function of

(a) the probability that the evidence would be obtained if the hypothesis were true (the so-called 'forward probability function')

and (b) The prior probability which the scientist gives to the hypothesis in the first place (the so-called 'subjective probability function').

In other words, subjective cognitive preferences (encoded in (b) above) will play a role in determining which hypothesis a scientist accepts. In one sense this is unsurprising. We all have sets of ingrained beliefs about reality which influence our decisions.

On the other hand, allowing this common fact to intrude into our account of scientific method opens up the possibility that someone, operating with a perverse prior probability function, would pick bad and fruitless hypotheses. Thus, to quote Putnam:

Arthur Burks has ... shown that there are even 'counter inductive prior probability functions' ... such that if a scientist had that metric then as more evidence came in for a hypothesis ... then the scientist would assign lower and lower weight to the hypothesis for a very long time.

Putnam (4) p.192

Putnam asks whether there might be a further set of formal rules specifying what prior probability functions are reasonable
but thinks this unlikely. This informal subjective element, he further speculates, cannot be eradicated even if we move to an avowedly *deductive* account of scientific method such as Popper's. For Popper's approach (consider only strongly falsifiable theories and accept that which you fail to falsify) demands an informal choice over what strongly falsifiable theories we actually bother to test. Many (indeed, infinitely many) weird and wonderful hypotheses may be strongly falsifiable but we shall not bother to test them, nor indeed could we test them all even if we tried. So again 'something like a prior selection is involved'. Nor, in fact, is it the case that scientists do opt only for strongly falsifiable theories. A pertinent example, cited by Putnam, is evolutionary theory itself which is notoriously weak on predictions. Such theories fall rather under the rubric of 'inference to the best explanation'. That is, their attraction is that they unify and explain large quantities of data.

No matter how we try to view the scientific method, it seems, two thoughts intrude. The first is that, as Quine has it, 'whatever evidence there is for science is sensory evidence' (Quine (1) p.75). The second is that the actual *conduct* of science must involve choices which are not strictly data-determined but depend rather on the particular preferences or 'subjective probability functions' of scientists. Let us now examine the implications of these thoughts in a biological setting.

7.4 The relevance of evolutionary observations concerning belief-basing and belief-selecting mechanisms to our view of the status of scientific knowledge now becomes clearer. For the point is that both our direct sensitivities to data and our basic
intellectual preferences concerning how to respond to that data may both be expected to share in the dual aspect of evolved strategies and to transmit this dual aspect, in some degree, even to our more high-level theories. This dual aspect involves the appropriateness of such strategies on the one hand, and their fallibility and limitations in scope on the other.

Thus, to take the matter of our direct sensitivities to data first, science, in being faithful to the phenomena, maintains the original tie established by the selective process between the phenomena as known by a being and the real world in which the being must live. Yet by dealing only with the phenomena which happen to be experienced by human beings it inherits also the species-specific interests and random caprices of fate which combined to render accessible those particular aspects of reality in that particular way. The scientific augmentation of our sensory capacities (via electron microscopes etc.) certainly extends the range of data available. But even such extensions to our capacities must answer to some checks in the gross observational sphere (must issue in some directly checkable observational claims) or we would have no cause to accept such augmentation as veridical. Our belief-basing capacities therefore remain, albeit indirectly, our ordinary observational channels, the contingency and limitation of which is directly suggested by an evolutionary account of their genesis.

Regarding our belief-selecting mechanisms or capacities, the situation is arguably parallel. For it may plausibly be suggested that the basic heuristic and logical principles upon which human beings agree (the basic foundations of science and mathematics)
are at least a partial function of our evolutionary past.

As Ernest Sosa points out in a recent article, if it is permissible to refer to a faculty of sight in explaining 'our remarkable agreement about colours and shapes' then why should we not appeal to an equally inborn 'faculty of reason' explaining our general agreement in the basic intellectual sphere. (Sosa's examples concern agreement about identity and contradiction - see Sosa p.65.)

One way to substantiate this notion of an inborn faculty of reason might be to suggest an a priori element in our assessments of prior probability. Thus although subjective probability functions are no doubt largely the fruits of previous individual experience, they could also include a degree of innate bias comparable, perhaps, to a Quinian perceptual quality space. If this were so then we could, by availing ourselves of the Appropriateness argument, generate a partial explanation of why humans have the 'reasonable prior probability functions' which they do. This would parallel Quine's explanation of the cosmic utility of our innate similarity spacings (recall 3 4 above). Thus we might suggest that a being endowed with Putnam's 'counter-inductive prior probability function' would fail to choose appropriate low level beliefs and hence stand at a basic biological disadvantage against competing 'theoreticians'. Such a being, upon spying the recently savaged carcass of a fellow human, might conclude that it was then even less likely than before that some predatory animal lurks in the nearby caves. Such a strategy does not look conducive to survival and reproduction. For us (not for him) that is the good news; some trust in our innate probability spacings
(if any) would not be misplaced. The bad news is that such innate prior probability spacings, though no doubt adaptively strategic, may still fail to guide us in some very advanced theoretical contexts. To some extent, no doubt, man is capable of transcending such natural prejudices. It is, however, a deep and unresolved question whether man can realistically hope to transcend all such natural 'limitations' in his quest for knowledge. To the extent that he cannot, it must remain an open question whether we might be systematically blind to the potential value of explanations which fail to satisfy our basic cognitive preferences. For such explanations, for that very reason, may never be formulated or tested by human beings. Sober, indeed, has suggested that it might be unwarranted to believe that any cognising being must share the kind of human rationality evinced by reference to the 'parochial feature(s) of our own adaptive machinery' (Sober, p.117). And this could well include the kind of heuristic constraints mentioned above. Against this it may be held that some features (such as the desire for simple hypotheses) naturally result from demands of informational economy derivable from the broad evolutionary bias towards cost-efficient and prompt processing of data, and hence will probably be shared by any evolved rational being. But this, of course, may only mean that there are some mistakes which any rational being is compelled to make!

It is the essential primitiveness of the belief-basing and selecting capacities implicated in scientific theory construction which therefore leads us to adopt the evolutionary epistemologist's attitude of critical hypothetical realism. Reference to the selective history of such basic capacities may explain why man's
mind can make theories which work. But equally, reference to
the fallibility and opportunism of evolved strategies may explain
why (as the history of science well attests) man tends to produce
theories which are locally adequate to restricted sets of data
rather than ones which are absolutely true. We probably do not
have (not yet, and maybe not ever) total access to all aspects
of reality, and the basic strategies we employ in the areas of
belief-formation and choice may, on occasion, mislead us, or
blind us to better options. If both our data base and the
cognitive orientation we bring to bear on it are to some degree
the contingent, imperfect and limited products of our peculiar
evolutionary history, then it is unlikely that anything we build
on them will have the absolute authority of some uniquely true
and complete picture of the real world we live in.

O'Hear's denial of the relevance of evolutionary claims to
an assessment of the status of achieved human knowledge (O'Hear
p. 216) thus looks to be undermined once we recognise the role of
basic observational capacities and, potentially at least, of
cognitive preferences, in theory construction and theory choice.
From this perspective assertions made by evolutionary epistemologists
and queried by opponents such as O'Hear look much more acceptable.

Such assertions would include the thought that:

Scientific thought is not yet, and presumably will never be,
completely free from man's inborn teaching mechanisms.

Wuketits. 10

The thought that:

Evolution has set bounds to the realisation of human power.

ibid. p. 10
and the thought that;

(\text{the evolutionary epistemologist's}) knowledge of (\text{the})
world, even with instrumental augmentation, is partial
and limited in ways analogous to the limitations of the
animal whose epistemology he studies.

Campbell p. 447

7.5 None of this, of course, strictly follows from the observation
that our belief-basing and selecting capacities have their roots in
man's particular evolutionary background. It might be that by fortuitous
genetic saltation man has evolved a brain capable of grasping the
whole truth about the universe, and capable of overcoming all the
natural limitations of direct access to data and innate heuristic
preferences which might otherwise prevent his knowledge reaching
this perfected zenith. If that were the case then the claims of Thing-
in-itself and Conceptual Scheme Realism would have to be dropped. Any
gaps in our knowledge, or divergences of conceptions of reality with
other beings, would be at worst temporary inconveniences. Material
realism could still be preserved simply by observing that on our
best theory, the physical universe pre-dates the emergence of mind.
So even if we believe nothing in the universe can transcend our
ultimate powers to know it, we may still believe in the mind-
independence of that universe. This possibility, strangely, seems
to elude Rasmussen and Ravnkilde (recall 5.2 above) who seemed to
think that a belief in \text{independence} could have no content (at least
for the anti-realist) except as a belief in the existence of
mind-transcendent aspects of reality. But, as Wright observes
(Wright (2) p.14), it must surely be incorrect to think that a
belief in mind-independence requires a belief in the ineffable.

There is, I think, no reason to suppose that we may not locate the substance of the disagreement between the ontological realist and the idealist simply by allowing the realist to believe in a theory of the emergence of mind out of a self-subsistent reality which the idealist cannot endorse.

A scientific realist of this radical nature who sees in science a boundless enterprise of penetration to the noumenal depths of reality, may still accept the evolutionary account of man's perceptual bias and limitation. But he will insist that no similar account of cognitive limitation and bias is in any way implied by the evolutionary picture. In this vein Leslie Stevenson has insisted (in correspondence) on a distinction between

our sense-organs (which are indeed limited in ways presumably determined by evolution) and our concepts. ... ... That our perception is limited does not imply that our conception is similarly limited.

L.Stevenson.

Such an objection is, however, misguided. For the argument so far has not been simply that limitations in perceptions imply limitations in conceptions so much as that the range and nature of our theoretical conceptions may well be limited and biased in ways analogous to those in which our perceptions are limited.

An evolved faculty of reason, so the suggestion goes, is certainly different to an evolved faculty of sense (it may enable us to transcend the imperfections of the sensory faculty); but why should we believe it to be exempt from the considerations of fallibility
and scope usually associated with the products of the selective process? The onus of proof must be on those who consider human cognition to be entirely free of the usual biological and evolutionary limitations to suggest how it could be so. To doubt the evolutionary claims, it seems to me, must involve disputing at least one of the following: the notion that cognitive structures are subject to natural selection, or the notion that human cognitive structures stand in a relation of phylogenetic continuity to those of lower animals or the thesis of materialism itself - the idea that all our mental structures depend on physical ones. In the absence of any such concrete suggestion as to why human thought is not limited and biased by the physical sub-stratums of its existence I see no reason to doubt the evolutionary epistemologist's notion that the world itself extends beyond even its in principle humanly accessible contours, or to doubt that even its accessible contours are ineradically coloured by the particular cognitive organisation we bring to bear on them.

An alternative (if somewhat puzzling) strategy for the Radical Scientific Realist is to accept the force of the argument for cognitive limits but to insist that such limits are 'pro tempore' and may yet be transcended by the use of the human intellect. Thus Wuketits, who was earlier seen to accept the considerations suggesting imperfection and bias in intellectual strategies goes on to say that:

"A new image of man implies man's view of his evolutionary past which is still present and not yet overcome."

Wuketits p.22.

The implication is that once we understand the 'evolutionary past' we shall overcome it; it is thus that the goals of realism
and objectivity in science are to be compatible with the pragmatic fallibilistic implications of the nature of the process which made the brains we employ to do science. The primary task of evolutionary epistemology, thus viewed, is to achieve a proper view of objective reality by subtracting any elements or strategies susceptible of species-biased, contingent explanations rooted in man's evolutionary heritage.

To attempt to do this is, I fear, to risk being left with nothing. For it is by no means inconceivable that there are no 'absolute truths' about the universe to be had; that all truth is truth for a given type of being, having access to a given variety of data, within an intellectual framework adapted to a particular set of needs and capacities. This thought (pursued in chapter 10 following) suggests that the evolutionary epistemologist ought not to see himself as polishing the mirror of nature so as to enable it the better to reflect the absolute contours of reality. Rather, he is refining our view of reality which, though validated pragmatically, is not to be held unique or privileged.

Clearly, however, there is something right about the picture of evolutionary epistemology 'ironing out the bugs' in some of our cognitive strategies. Man can often recognise inbuilt cognitive prejudices which are inappropriate in an extended theoretical context. They may then be abandoned, written off perhaps as a residue of our evolutionary past which refuses to 'work reliably in the "life-world" of modern man' (Wuketits 22). An example given by Wuketits concerns feedback causality (reciprocal causal interaction between elements in a complex structure). This, he says, is a concept we need and now employ but one which sits uneasily
with 'the inborn expectation of linear causality, the inborn cause-effect notion'. The idea is that we explain our unease with the new notion, and hence take a step towards overcoming it, by referring the attractiveness of the linear notion to the simpler conditions which our basic cognitive predilections were formed to deal with. Examples could be multiplied. Einstein's resistance to quantum physics on the grounds of its statistical nature may be seen (correctly or incorrectly) as a result of cognitive prejudices more appropriate to the macroscopic realm. Or (one which should appeal to the natural anti-realist), classical logic might be seen as misguidedly importing principles valid in a simple, concrete context into the entirely different setting of a modern logic replete with abstract and infinitistic claims. Classical dilemma, for instance, is surely a valid principle when it is used with regard to claims concerning physical objects in the near vicinity. This speedy decision procedure for primitive contexts may have become encoded in our brains. Yet it may be (as the intuitionist believes) demonstrably inappropriate in a wider, more theoretical context. The attraction of dilemma is thus explained by its validity in a primitive context; but the criticisms of it may still stand. It is in this way that an evolutionary perspective may help us to explain why it is that, as Dummett puts it:

There are certain errors of thought to which the human mind seems naturally prone.

Dummett. RP in IQ p.374.

But to agree that an evolutionary perspective may help us to understand some of our natural bias and thus aid us in transcending
it is one thing. To believe it can allow us to polish the mirror of nature to the extent of reflecting the unique and unvarnished truth about everything is quite another. It is Rorty's fear that such, indeed, is the project of evolutionary epistemology (see chapter 10). But this need not be the case. For one thing, if our earlier observations concerning the role of some innate weighting of prior probabilities and the potential limitations of the observational base of science are correct, then the probings of evolutionary epistemology will themselves be as limited and biased as any. They may, like any probings, refine our world-view and render it more useful to us. But they could not be expected to elevate it to the rarified heights of a true metaphysical realism. Similarly, although it is undeniable that science allows us to prescind from the realm of phenomenal experiences (see e.g. McGinn (3) p. 112) the resultant discontinuity between science and perception cannot serve to underpin a full Radical Realism. For the issue must then devolve upon the nature of the capacities by which the perceptual is transcended. If scientific progress (including criticism of man's perceptual and conceptual capacities) is indeed bounded and biased by the somewhat contingent perspective of human thought, then the goal of such endeavours will be the improvement of a human picture of reality, and not the production of a positionless one. We may polish the mirror without seeking, in the reflection, the noumenal structure of the material world.

7.6 Let us turn our attention now to the anti-realist; what is his attitude regarding the meaning of scientific statements? The semantic anti-realist must believe, in some sense, that scientific claims may not intelligibly outrun possible observational warrants.
for such claims. Such a demand must be carefully understood, for on the face of it it may appear to rule out too much. Individual claims of quantum theory are, after all, far removed from any obvious observational warrant. The demand, properly understood, is not that every scientific sentence (e.g. 'there is a sixth kind of quark') must have a particular warrant in gross observation. That would be absurd. Rather, it is the weaker demand that every roughly delimited theory should yield some claims in the form of observation statements which we could, in principle, actually check. Thus where our physical theory involves some abstract mathematical description of reality the demand is that:

The justification for asserting that the structures thus abstractly described concretely exist remains the power to explain observable phenomena via the effects on one another that (the posited unobservable objects) have attributed to them.

Dummett. PL in TO p.213

This weaker demand fits nicely with a broadly Duhemian view of the evidence for scientific claims. The view, that is, that it is scientific theories as wholes which have observational implications and that individual sentences concerning the objects and relations posited by such theories cannot be independently conceived of as being true or false. Thus a theory which posits unobservable objects will be falsifiable as a whole by virtue of its observational implications. But individual sentences containing its terms will not have individual warrants (outside the context of the overall theory) in the observable realm, and
so will not be independently verifiable or refutable.

Some of the objects and relations spoken of in a scientific theory will thus be theoretical in the Dummetian sense in which:

A theoretical term is one on which a determinate semantics has not been conferred in the sense that no general procedure has been provided for recognising anything as conclusively establishing or as conclusively refuting individual sentences containing that term.

Dummett SQ in TQ p.405

From such thoughts we can construct an anti-realist critique of a certain kind of scientific realism. For suppose someone holds that every scientific sentence either describes or fails to describe the conditions which obtain in an independently existing realm. This is the extension of ordinary semantic realism to the scientific field. The anti-realist will predictably object. It is his belief (argued at length in chapter one above) that we can conceive of a sentence being true only by associating it with the recognisable conditions which would lead us to assert it. Given the Duhemian point, however, some individual scientific sentences cannot be associated with recognisable conditions of truth or falsity. Instead they function in an overall theory which has an associated complex of observable implications which may be recognised as obtaining or failing to obtain. The semantic anti-realist is thus under some pressure to adopt a non-realistic attitude to at least some parts of scientific theory (witness Dummett's somewhat gnomic remarks in the closing paragraph of CSP). For to the extent that an individual scientific sentence describing e.g. the behaviour of the sixth quark is not associated with its own independent
observable conditions of truth or falsity, the anti-realist is unable to conceive that it could be true. Instead, in quasi-instrumentalist fashion, he must conceive it as only part of a picture which may, as a whole, find warrant in the observable.

A note of caution, however. To say that some scientific sentences are not now to be conceived as individually true or false need not imply that they can never be so conceived. For they might cease to be properly theoretical if we gained (augmented) observational access to the levels of reality spoken of in the theories in which they occur. This would occur if, for example, a quark-microscope were to be built. The claim, then, is not that what is presently a theoretical sentence in a scientific theory could never be known to be true or false. Rather, it is that it cannot be assumed to be either true or false unless and until man gains observational access to the sector of reality of which it speaks. Until then, the sentence itself must, as we said, be understood as part of a picture which helps us explain what is presently observable; a picture which, in the classic phrase, 'Saves the phenomena'.
We may now distinguish three possible attitudes to science (I do not, of course, claim they are exhaustive) and ask which, if any, is the proper attitude for the natural anti-realist.

Attitude 1. Radical Realism - Man has, perhaps by fortuitous genetic saltation, been endowed with a brain which is capable of revealing to us the entire and ultimate nature of all reality. Man is capable of completely transcending his basic cognitive and perceptual abilities to achieve this centreless view. A true scientific statement is one which describes reality from this position.

Attitude 2. Critical Internal Realism - Man has evolved a brain which builds theories adequate to the accessible data. Such theories, however, may not be conceived asaffording unique or privileged pictures of reality. Our access to data may be limited and the kinds of theories we build will reflect also the particular nature of the human mind. A true scientific statement is one which is adequate to any data we can ever gather.

Attitude 3. Conceptual Relativism - Man has evolved a brain which conceives reality in an entirely human and capricious manner. It makes no sense to assume that our science bears any objective relation to an independent reality. Talk of scientific theories as being true is misleading insofar as it suggests any degree of objective validity.

Both the evolutionary epistemologist and the anti-realist have reason to dispute Radical Realism. Evolutionary observations concerning probable cognitive limitations and contingencies of thought suggest that the avowed goal of attitude 1 is unrealistic.
and perhaps even incoherent. And the meaning-theoretic observations of the anti-realist suggest that we may not regard individual theoretical sentences as being true or false descriptions of theory-independent reality, nor endorse any conception of truth for whole theories which goes beyond the idea of their being warranted in potentially available data.

It is the task of the natural anti-realist to combine these observations (thus endorsing Critical Internal Realism) without falling into the attitude of Conceptual Relativism. In giving up Radical Realism the natural anti-realist must beware of allowing a species-specific non-objective account of scientific knowledge to rob him of his right to regard science as descriptive of the common reality to which various beings are variously adapted. For to lose this right is, as we saw earlier (in 5.3 above) to lose the right to do evolutionary epistemology at all.

One way to secure the position of Critical Internal Realism is to adapt a conception of the scientific enterprise formulated by Bas van Fraassen. Van Fraassen's idea is to regard science as aiming at the production of theories which are empirically adequate. An empirically adequate theory is a theory which says only true things about the realm of the observable and measurable (see van Fraassen p.64). Generally speaking, of course, a scientific theory will make claims which go beyond the realms of the presently observable and measurable. A theory will thus have a model (a model is 'any structure which satisfies the axioms of theory' (van Fraassen 43)) which describes how the world is if a given interpretation of the theory is correct. This description of how the world is will include various unobservable or theoretical elements. It is van Fraassen's
claim that we do not need to think of such a model as being literally true in order to believe the theory. In order to believe the theory we need only to agree that the observational sub-section of the theory affords a true description of the world as we find it. As van Fraassen puts it:

The adequacy of ... models does not require all their elements to have counterparts in reality. They will be good if they fit those phenomena to be saved.

van Fraassen p.135.

A theory is thus just a means of modelling appearances (ibid.51). That is not to say, however, that two theories which are equally successful at modelling appearances will be equally good for there are the pragmatic virtues of simplicity, usefulness, relation to human concerns etc. to take into account as well. Appeal to such pragmatic concerns explains why we may prefer one empirically adequate theory over another (cf van Fraassen p.87 - 92).

Science, on this account, aims to produce theories which have models which are true with regard to all the stretches of observable (including measurable) reality in which they are interpreted. But what is observable is, for van Fraassen, just the notion (endorsed by the minimal anti-realist on page 21 above) of what the present epistemic community could ever observe. Observability is therefore observability-in-principle and observability-to-us. It is, precisely, what is observable in principle by us. Simply put:

X is observable if there are circumstances which are such that if X is present to us under those circumstances then we observe it.

van Fraassen 16.
Observation is thus tied to the present epistemic community and science aims at a correct description of whatever is accessible to that community, in the light of the interests of that community. The limits of the range of phenomena dealt with by science are (naturally) the limits of the phenomena accessible to human beings - and these may, without paradox, include our limitations themselves. Thus:

The 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 'observable' refers - our limitations qua human beings.

van Fraassen 17.

Van Fraassen's account sits comfortably with our earlier observations. Human science will inherit, and may even recognise, the limitations of the beings which do science. It is thus that an internal concept of the transcendent is generated; a concept which acknowledges, on the basis of accessible evidence, the possibility of aspects of reality beyond our scientific reach. Human science, thus conceived, is not trained on absolute truth. What it reveals is, rather, something which is probably at least partially true of material reality, revealed in a fashion which reflects also the real nature of the human cognitive apparatus.

Combining these attitudes to science with the evolutionary perspective on our basic observational powers derived from the Appropriateness argument yields a defence of critical internal realism. For the observational sub-section of a good model will
thus answer, in part, to the basic observational powers which we believe to have been moulded to cope with the independent reality in which we compete. Thus our scientific models, insofar as they answer to the phenomena, are not to be disconnected from the real nature of the world. But the models we choose to accept may not be the only models which could account for the same appearances and they may not be the models which would be chosen by some other race with either different kinds of interests (hence choosing models on the pragmatic basis of alternative heuristics) or access to different kinds of observational data (hence having criteria of empirical adequacy different to our own).

The conception of science as modelling the accessible phenomena is thus perfectly compatible with a degree of realism concerning the relation of such models to material reality. They work because they are constrained, in their observational sub-sections, by the ontological order by which man's own capacities of observation were moulded. We conceive of our theories as reflecting that ontological order. But we recognise the limits of our observational powers and the contingencies of our human interests. So we conceive the reflection as incomplete, non-unique and somewhat perspectival.

Our theories will bring out particular features of a real-world phenomenon. But what features and to what extent will depend (a) on what information we have at our disposal and (b) on the particular needs and interests which the theory is designed to serve. These two features correspond satisfactorily to the contingency of the range of real-world phenomena to which man has direct observational access and to the particular kind of interest which man's needs and the nature of the human brain allow
him to have regarding the accessible realm.

In treating science as aiming not at the 'discovery of truth concerning the unobservable' but at the construction of models 'adequate to the phenomena' (van Fraassen 5) the constructive empiricist (as van Fraassen calls himself) proves an ideal mate for the anti-realist. For recall the anti-realist's qualms (7.6 above) concerning our grasp of truth for highly theoretical sentences. Such sentences, involving claims about unobservables, need not now be conceived as being true at all. Rather, in believing the theory as a whole we believe only that what it says about the observable is true. Our understanding of highly theoretical sentences thus need involve no more than our grasping how the entities and relations they postulate serve to aid us in the explanation of the phenomena the theory seeks to 'save'.

In the light of this discussion we may close the present chapter with an informal description of the proposed relation between scientific knowledge and material reality given in terms of a special relation of tolerance. Thus suppose we mean by \( P \) some set of basic cognitive strategies and sensory modalities possessed by a creature of a given biological constitution \( Q \) in some environmental niche \( S \). Then we may call the set \( P \) tolerated by material reality if

- \( P \) provides a \( Q \)-type being with a phenomenal picture of \( S \), and
- a set of reactions and similarity spacings with regard to that picture of \( S \), such that \( Q \)-type beings are enabled to act in a manner conducive to survival in \( S \),

and we may call a scientific theory or world-view \( P' \) maximally tolerated by material reality if

"..."
P is a theory of material reality which has a model able successfully to account for all the observable phenomena. P may thus be conceived as an ideal scientific theory for Q-type beings. Such a theory is related to the material reality it explains by the original tolerance relation obtaining between P and the environment. The justification for calling P a theory of the real world thus rests squarely on the evolutionary justification for taking P to be causally moulded by the world with which it coped.

A true scientific theory is thus identified with one that is maximally tolerated by the observable realm. And there will, of course, be an infinite gradation of tolerances between the minimal (accounting for only a small number of phenomena) and the maximal (accounting for all the phenomena). No maximally tolerated theory has yet been found, and perhaps none ever will be. But the crucial point is this; even if one were found, still the reflexivity of the formulation of the tolerance relation (its relativisation to human and contingent capacities) would rob it of any claim to be the one unique metaphysical truth fated to be agreed by all rational beings.

The intelligible goal of science, we may now say, is not the one true description of the world-in-itself but the production of more and more highly tolerated models of the world we find around us. And a theory is, ultimately, nothing more or less than a useful arrangement of information. Just what arrangements of information we find useful will depend on our human needs and capacities and the particular cognitive orientation we happen to possess.
The strong conclusion to draw from the picture of science as aiming at tolerated models and useful theories would be that even at the ideal limit of human enquiry there might be a plethora of available theories all of which have models which are observationally and heuristically adequate. (Such a conclusion is endorsed by Putnam (1) p.1 - 25.) For our purposes, however, something weaker will do. We may conclude simply that the one final theory (if one is all there is) at the ideal limit of human scientific enquiry is still not the only possible 'correct' representation of reality 

even if relative to our cognitive constraints and observational access there are no visible alternatives. In other words, given the natural possibility of alternative life-styles, needs, capacities and cognitive structures it makes no sense to identify our ideal scientific account of reality with the ultimate nature of the world-in-itself. Just because we do not regard our theories as unique or necessary, however, does not mean we may not regard them as valid representations, in the light of our interests and structure, of the available information. It is this combination of cosmic contingency and limited objective validity which allows the evolutionary theorist his scientific account of the common adaptive environment while admitting the cognitive bias and limitations implied for man by the adaptive account itself.

We may sum up the present chapter by remarking (1) that the natural anti-realist has, it seems, some convincing grounds for believing that his account of cognitive limitation and bias applies even to the realm of scientific enquiry, (2) that he may therefore accept the conceptions of the transcendent enshrined in the theses.
of Conceptual Scheme and Thing-in-itself Realism and (3) that by adopting an account of science as aiming to produce *tolerated* models of an independent reality he can ensure that the constraints of cognitive limitation and bias fall short of undermining our faith in the scientific foundations of evolutionary theory itself.
8. The Return of the Transcendental Object?

8.1 The epistemology and metaphysics of the natural anti-realist may now appear to be assuming a familiar, and familiarly discomforting, shape. For we seem to be witnessing a recognisably Kantian dislocation of Appearances from transcendental reality or the world-in-itself. On the one side we have rational beings and their possibly various phenomenal images and scientific theories. On the other side, ever elusive behind the veil, we have the material reality with which the phenomenal image copes and which science may adequately model. How far, then, has the natural anti-realist now committed himself to recapitulating the much criticised Kantian divide?

8.2 Kant's use of the notion of the world-in-itself has been frequently criticised as at best ambiguous and at worst demonstrably inconsistent. On the one hand Kant clearly believed that the notion of the world-in-itself was both a logically consistent one and an inevitable conceptual construct of human thought about reality. To conceive of the experienced reality of a human subject as Appearance is, he felt, necessarily to conceive of something that appears. But since all that is given to experience is necessarily given in the mind-involving terms of general human modes of perception and thought (viz. the Modes of Sense categories) it follows that of that something that appears nothing can be known. Thus we read that

All our representations are, it is true, referred by the understanding to some objects; and since appearances are nothing but representations, the understanding refers them
to a something, as the object of sensible intuition. But this something thus conceived is only the transcendental object; and by that is meant a something = X of which we know, and with the present constitution of our understanding can know, nothing whatsoever .......... (A 250).

On the other hand, however, Kant believed that all knowledge had to be of Appearances alone. It thus had to relate to what could be given in experience. If it did not so relate it could be nothing for us. Thus, in anti-realistically familiar vein, Kant writes:

We demand in every concept, first, the logical form of a concept (of thought) in general and secondly, the possibility of giving it an object to which it may be applied. (A 239).

Or;

We therefore demand that a bare concept be made sensible, that is, that an object corresponding to it be presented in Intuition. Otherwise the concept would, as we say, be without sense, that is, without meaning. (A 240).

Or again;

The understanding can never transcend those limits of sensibility within which alone objects can be given to us. (A 247).

In such passages Kant may be seen to endorse something very like the anti-realist's demand of conservative extension or harmony i.e. the demand that nothing be assertible indirectly which is not (in principle at least) assertible directly by a human agent (see 1.2 p.15). Further evidence of such a tendency may be found at B 195, A 226 ('the existence of the
thing (is) bound up with our perceptions in a possible experience') and B 724. Kant's empirical realism may thus be plausibly interpreted to involve a kind of semantic anti-realism\(^\text{27}\). This general area of Kant's thought (the insistence that all meaningful use of concepts must relate to conditions of application in a possible human experience) has been termed Kant's principle of significance (Strawson p.16). Given this principle of significance, however, the meaningfulness of the very idea of the world-in-itself is put in jeopardy. The difficulty is simply how to justify, in the light of this anti-realistic strain of thought, the assertion that things-in-themselves are nothing \textit{for us} instead of the assertion that they are nothing at all.

One way to describe the problem is to focus on the constructive interpretation of existential quantification which is a feature of Kant's empirical realism/semantic anti-realism. For Kant's problem, on the surface, is very like that which the natural anti-realist faced in chapter 5. Thus Kant affirms that he intends existential quantification to be understood constructively by saying that:

\begin{quote}
Existence ... has ... to do only with the question of whether such a thing be so given us that the perception of it can, if need be, precede the concept.
\end{quote}

B. 272

Yet he believes \textit{also} that the thing-in-itself cannot be given in perception since it is precisely the notion of a thing which is 'not to be thought as object of the senses' (B 310). Since we therefore cannot even assert that there \textit{is} a world-in-itself we must ask what legitimate role the concept can play. Consistency
with the principle of significance now seems to demand that we drop the notion of the thing-in-itself altogether.

Kant did not want to lose the notion of the world-in-itself. The idea of a noumenal reality was essential to his moral doctrines (see e.g. the discussion of freedom at B xxviii). What's more he seemed, at times, to believe that appearances must be somehow conditioned by the nature of noumenal reality even though we can have no idea of how this occurs or in what respects it may be so. There is the suggestion of such a view at A19 where Kant speaks as if the transcendental object affects the mind (the faculty of representation) to cause sensation. The same thought seems to be behind his references (e.g. A380) to the transcendental object as being the ground of appearances. It surfaces also at A104 where, following a discussion of the transcendental object as an unknown factor X he adds that 'the object is viewed as that which prevents our modes of knowledge from being haphazard or arbitrary'. At least one recent commentator has therefore taken the view that:

The transcendental object expresses the element in experience which makes it compulsory and non-arbitrary. ... It is the element of control in all our experience.

Findlay 27.

Yet it is by no means clear that Kant has any right to such a conception of control. For Kant insists upon our total and unavoidable ignorance of either the nature or the mechanisms of any relation which may obtain between the phenomenal and the noumenal. In this vein he asserts that:

We are unable to comprehend how ... noumena can be and
the domain that lies out beyond the sphere of appearances
is for us empty. A 255.

The problem remains; why to say that what lies outside
appearances is 'for us empty' and not just empty full stop.
As Strawson nicely puts it, are these not things of which we
can comprehend the impossibility rather than things whose
possibility we cannot comprehend? (Strawson 265.)

8.3 Some philosophers, however, would deny that Kant wanted
such a notion of control at all. Thus Bird, for example, argues
that Kant was explicitly hostile to the doctrine which he (Bird)
terms noumenalism - the idea that noumena affect us and cause
outer appearances (Bird, pp.20 - 35). On Bird's view, Kant can
be seen to deny that such a theory could amount to an acceptable
account of perception. The 'physical influence' theory of A390,
Bird tells us, is acceptable to Kant only if it is taken, like
the empirical theories of A386, A387, as a scientific account
operating within the realm of appearances (Bird 34). Conversely,
although we may speak 'as if noumena could be regarded as causes
of our perceptions' this cannot be a genuine theory since no
evidence for it can be given in our experience. Instead, the
idea of noumena is to be the idea of a logical possibility alone.
And this, Kant tells us, is 'very far from being sufficient for
real possibility' (B302). In order for the control theory to
count as a genuine option (a description of a real possibility,
as we may now say) would require, in addition, 'the possibility
of giving it an object to which it may be applied' (A239).
Which is precisely what the reference to noumena involved
precludes us from doing.
If there is any way for Kant to avoid the Strawson-type objections cited above it probably involves the mobilisation of this apparatus. For we now have a distinction between (a) grasping the real possibility of a concept and (b) grasping its mere possibility i.e. grasping that it involves no logical contradiction and that it is therefore at least not impossible that the conditions it attempts to describe should obtain.

In the light of this distinction, and given the Kantian usage of the idea of noumena, we may argue (despite misleading passages such as A240 quoted earlier) that the principle of significance is best seen not as describing what is involved in grasping the meaning of a claim per se but rather what is involved in grasping the meaning of a claim that such and such a state of affairs is really possible. This is what we cannot grasp regarding the claims about noumena. And this why Kant can consistently conclude not that there are no noumena, but rather that:

It is ... an open question whether the notion of a noumenon be not a mere form of a concept.

Kant A253.

The point is that it is only the mere form of the concept that Kant needs. As long as we can think objects as things-in-themselves Kant's moral and metaphysical ends are secured. The fact that we cannot know them as such (= grasp the real possibility that there are noumena) need not, it seems, rob the claim of all sense for us (B xxvi). Unless, of course, we seek to espouse a control-theory as a description of a real possibility. Instead, Kant has made room for faith in an extra-phenomenal reality.
And this manoeuvre can succeed as long as we can grasp the meaning of the claim that such a reality is at least barely possible, even if it is not really possible as far as our knowledge goes. It is thus that the idea of a noumenon is to be a 'merely limiting concept' aimed at curbing 'the pretensions of sensibility' (B311). The illegitimate, positive sense of noumenon is, if we are right, the idea of the concept as descriptive of a real possibility; this idea, Kant tells us, is one we cannot begin to comprehend (B307).

Whether these manoeuvres are successful in reconciling the notion of the world-in-itself with the principle of significance I do not know. Findlay thinks they are, and that the Kantian transcendentalts are not the 'mere surds' which some (e.g. Strawson) take them to be. He views with horror Strawson's surgical removal of the transcendental organs (Findley 377) and believes they are, on the contrary, essential to the profoundest elements of Kant's thought. The important point, for our purposes, is that if Kant has a consistent account at all, it looks likely to depend on the distinction between real and bare possibility just outlined. But this distinction is one to which the anti-realist is not entitled. For the anti-realist, all grasp of meaning comes down to a grasp of conditions of warranted assertability. And the warrants are necessarily such as could, in principle, be given in experience. There is simply no room in such a system for any kind of 'minimal' or 'mere' grasp of a proposition of the kind which Kant felt we could have in terms of our appreciation of its bare possibility i.e. the fact that it contains no logical contradiction. In other words, for the anti-realist all possibility is real.
possibility. For to understand what some claim of the form 'possibly P' means is in part to grasp the conditions which, were they to obtain, we could *recognize* as warranting the assertion of P (recall chapter 1). Which is, in turn, sufficient (in Kant's terminology) for the real possibility of P (see 8303).

The Kantian idea of the world-in-itself is, it seems, crucially ill-adapted to survive in the environment of real possibility where the anti-realist would have to locate it. For the anti-realist semantics, if it is a semantics of real possibility alone, can leave no room for the manoeuvres which may insulate Kant from Strawson-type criticisms. In the absence of such manoeuvres the world-in-itself becomes, as Strawson argues, an idea of which we can comprehend the impossibility rather than one whose possibility ( = real possibility) we cannot comprehend. If, then, the natural anti-realist is nevertheless truly committed to a Kantian metaphysical divide, his situation looks bleak. Can the apparent commitment be avoided, or must our hero fall foul of the traditional objections sketched above?

8.4 The evolutionary epistemologist, building on the account of science developed in chapter 7, might adopt either one of two 'metaphysical' stances. But only the second of these, I shall suggest, is open to the evolutionary theorist who is drawn also to an anti-realist account of meaning. This second option avoids the difficulties associated with the Kantian conception of the world-in-itself.

The first option is the wholesale acceptance of the
indescribable transcendental object. That there is a tendency in evolutionary epistemology towards such an acceptance is undeniable. Thus O'Hear suggests that for the evolutionary epistemologist:

- the world remains elusively and forever behind our representations of it and our methods of arriving at them, whether they are simple observations or more sophisticated theories.

O'Hear p.209.

This return of the transcendental object is, he conjectures, motivated by the observations concerning fallibility and scope and by the denial that the individual is ever a passive receiver of information as opposed to an active and biased interpreter of signals from the unknown outside.

It is easy to see how our own account, as detailed in chapter 7, could be taken in some such way. Thus it would be asked, relative to all the potentially various models of reality which man or other rational beings might construct, what it is that they are all models of. They are, we said, models of independent material reality constructed in accordance with the needs, proclivities and capacities of the beings who operate with them. But material reality, then, must surely take on the aspect of the Kantian world-in-itself looming behind all the various systems. Option (1), then, relates all the theories of science and the images of sense to one (indescribable) world-in-itself. It holds that there obtains a causal connection, or (in the case of written theory) a reference relation between our representations and some unspecifiable reality. All representations
(scientific and common-sense) thus stand on one side of the great divide, with transcendental reality on the far noumenal bank.

There is, however, a second option, which is to retain the notion of multiple valid models and images of reality whilst rejecting all play with the idea of an indescribable single way the world is beyond all these descriptions. Care must be taken, for the evolutionary epistemologist does, of course, believe in one common reality. The suggestion is not that we deny this belief, but that we refuse to allow that common reality to become an indescribable world-in-itself. Rather, we should say it is our reality (the reality shown in our phenomenal image and in our scientific theories) which, however, we apprehend only incompletely and in terms of our particular sensory and intellectual apparatus. The difference is somewhat subtle, but important. On this alternative account the distinction between the world and the world as we (or some other being) know it is one which gets drawn entirely on the side of Kant's Appearances. For the content of the claims of fallibility and bias is given, we saw (chapter 6), purely in terms of the accessible, internal evidence. So it is given in experience. So the distinction, for us, partakes of real possibility and is not merely (as Kant's seems to be) a matter of the consistency of the claim that our Appearances may not be mirrors of some ultimate noumenal reality. Kant, by showing that the supposition of a noumenal realm did not imply any self-contradiction of the form P and ~ P, secured all he thought he needed; room for faith in extra-phenomenal facts. His distinction is thus a transcendental one and not an empirical one.
The evolutionary epistemologist, by contrast, is clearly concerned with an empirical distinction which he believes thrust upon him by his studies of lower animals and his theory of the selective background of cognitive processes in general. Option one, by elevating this distinction into a transcendental claim, makes the mistake of ignoring the basis of the claim in what is actually given in human experience. We could not expect a properly transcendental claim to be so based, and this gives us the clue that there is something amiss with the first option.

Option two seeks to avoid the metaphysical extravagance and methodological oddity of postulating an indescribable world-in-itself. It holds instead that the world which is modelled can be described after all; indeed, describing it is just what the model does. It is just that we are not to believe either that our phenomenal images or scientific models are likely to constitute the only possible means of effective description, or that the descriptions they yield will be complete, unbiased and totally accurate. In this way the transcendental divide is replaced with an empirical one. The world to which the various models, or images, relate is not some unspecifiable noumenal realm. It is rather our world; the world non-uniquely and incompletely described in our models and images. It is our world which is potentially transcendent and whose potential transcendence is internally recognised by the natural anti-realist. We can sustain no conception of any of its transcendent aspects, to be sure, but in recognising the possibility of such aspects we are not inviting a Kantian notion of the world-in-itself. The world we describe is the very world which other beings might describe in other ways, and to various extents.
8.5 One of the attractive aspects of such a story is that it gives due weight to the appropriateness argument which links our known world to the world in which we actually live. Kant's transcendental divide is thus seen to be spanned by an empirical bridge. This bridge allows us to claim that our images and models are causally related to the world of which they are images and models. The natural anti-realist does not, it seems, have to face the probably insurmountable difficulty of giving an account of the assertability conditions of the claim that there is a noumenal reality which stands in no knowable relation to the world of experience. Instead, he may deny the Kantian thought that the world of Appearances stands in no knowable logical relation at all to the world-in-itself and insist that Appearances are knowingly related to the nature of the world-in-itself but with the provisos (i) that the relation is not unique or metaphysically privileged and (ii) that Appearances (including the scientific) are always a joint function of our human nature and the nature of the world-in-itself. The natural anti-realist thus countenances (what Kant does not) a knowable bridge linking Appearances to the world-in-itself. But the bridge is just one of many possible bridges, and our interests and capacities are essentially represented in its construction.

The natural anti-realist is, we may say, entitled to precisely that notion of control which Kant was not. For by seeing our knowledge (where it is a priori) and our sensory and intellectual means of acquiring knowledge as a product of interaction with the world in which we live, he is able to take on board the thought that our ideas of the world are at least
indirectly regulated by the material reality with which they have to cope. Even a priori concepts (if we believe there are any) may be reformed as basic cognitive strategies a priori to the individual but a posteriori in the species. Kant's worry that:

If intuition must conform to the constitution of the objects, I do not see how we could know anything of the latter a priori. B xvii

is therefore resolved. A logical link between concepts and material reality may be preserved even when these concepts (or forms of concepts) are such as appear to be known a priori. Kant could not imagine such a species a posteriori link and so was forced to divorce entirely the world as given under such basic concepts (the world of Appearances) from the world-in-itself.

Perhaps the best way to show the difference between the Kantian conception of the world-in-itself and the natural anti-realist's idea of material reality is to note, finally, that the latter but not the former can be known to be ontologically real. Kant's idea, we saw, is essentially the idea of a bare logical possibility (B307). But where Kant therefore says of the transcendental object that:

We are completely ignorant whether it is to be met with in us or outside us, whether it would be at once removed with the cessation of sensibility, or whether in the absence of sensibility it would still remain. B345.

The natural anti-realist is in no doubt. Material Reality, unlike Kant's world-in-itself, is known to be ontologically prior to minds. Indeed, it is known to be an essential element in the
production of minds. As such there can be no doubt that it would continue to exist in the absence of sensibility.

8.6 In the absence of any commitment to the Kantian transcendental object, our earlier use of the term 'Thing-in-itself Realism' can now be seen as, if not mistaken, at least potentially misleading. The claim (5.4 p107) was that there may be expected to be facets of reality to which we have, even in principle, no access. This was asserted alongside a conceptual scheme realism which recognised (among other things) that other beings might have access to some of these facets and thus grasp what are for us transcendent facts. It is clear from the discussion of 8.4 that the world about which such beings may know is still our world. Clear too that it is the world we model which may transcend the details which our models can display. As such the terminology of Thing-in-itself Realism, with its overtones of a Kantian transcendental distinction, can be seen to be inappropriate.

A new term 'T-Material Realism' may now be introduced to capture the sense of the old claims. Thus we take the original thesis of Material Realism ('the material world exists in full independence of human capacities to acquire knowledge of its nature') and add to it the thought that the full nature of this material reality need not be uniquely or completely described by man's potential investigations into it. This strengthens the claim for it rules out the idea that the world, though independent of man's capacities to know it, is nonetheless necessarily knowable in full and unique detail by the exercise of these capacities. The 'T' thus stands for 'Potentially transcendent' and signals our recognition of
the constraints which the fallibility/scope argument seems to
place on human knowledge and theorising.

To sum up, then, we have denied the accusation that the
account of science as modelling material reality invites the
unwelcome return of the transcendental object. We have argued,
in effect, that from within a given, highly tolerated model $S$
it is sensible to regard other possible alternative models
$P, Q, R$ as models of the reality described by $S$. Similarly,
within $P$, it would be right to see $S, Q, R$, as models of the
reality described by $P$. What makes no sense is to seek after
a standpoint from within no model at all and to ask what
transcendental reality is modelled by $P, Q, R, S_{n1} \ldots n_x$
One nice consequence of this analysis is that we can allow
the possibility of alien epistemologists (perhaps even alien
evolutionary epistemologists) working successfully with a
different model of the 'common reality' to our own! Such
epistemologists may even diagnose man's models as a natural
and explicable outcome of our own biological nature as it
appears to their science. We, of course, might do the same for
them! Each scientific model would therefore be sufficiently
powerful to embrace the working of the other, though they may
each be based on different intellectual strategies and basic
forms of access to data.

So far, then, we have argued that the natural anti-realist
is not to be committed to any conception of the transcendental
object of the kind which led Kant to postulate an inaccessible
world-in-itself. The concepts of the transcendent embedded in
T-Material Realism and Conceptual Scheme Realism are all to be
located on the empirical side of the classical Kantian dichotomy. It remains to consider one further 'concept of the transcendent' derivable from the naturalised analysis. This concept (which is again an empirical one in the Kantian sense) depends on the contingency of man's direct recognitional access to the conditions which make some statements true. It is the quarry of chapter 9 following.

9.1 There remains a third and final concept of the transcendent to be drawn from the natural anti-realist's perspective on language and mind. This third dimension of transcendence (the 'phenomenal relativism' of 5.4 p. 107 above) is quite independent of the other two. It flows solely from the contingency of human direct recognitional capacities implied by the evolutionary account of their genesis given in chapter 3. In recognising this contingency the natural anti-realist recognises also the possibility that there could be other language-using beings whose words are (at times) geared to direct recognitional capacities other than our own. Such beings, I shall argue, could make assertions which we can know to be meaningful yet which involve concepts whose full meaning necessarily transcends our semantic grasp.

9.2 The goal, to be clear, is therefore not to provide, by the imaginative appeal to other investigative capacities than our own, any sense of verification-transcendent truth for the sentences of our own language. Such a project would be doomed from the start. Rather, it is to secure the possibility that some sentences in an alien language, $L_2$, might sustain meanings which are associated with truth-conditions which, though non-transcendent for the users of $L_2$, can be known to be transcendent from the point of view of the users of some home language, $L_1$.

The former project, but not the latter, is doomed by the obvious inability of the imaginative act itself to secure any extra intelligible content for our sentences in the face of the
classic anti-realist challenges of acquisition and manifestation. These challenges suggest that we know the meaning of a sentence only by our ability to use it correctly. That ability can be judged only relative to the accessible circumstances of our employment of the sentence. So we can have no reason to credit ourselves with knowledge of the meaning of any sentence insofar as that meaning is supposed to relate to some transcendent state of affairs. Such knowledge of transcendent meaning is as incommunicable as it is, for the same reason, unacquirable. For all we can be taught is to correlate meaning with accessible states of affairs. Such, then, is a potted version of the 'argument for semantic anti-realism' given in 1.2 p.11. Reflection on such an argument ought to reveal immediately the entirely spurious nature of any conception of transcendent meaning based on the appeal to other, better endowed, creatures. For to suggest that we may acquire such a conception by reflecting on the possible knowledge of such beings is to confuse

1. Acquiring a notion of verification transcendent truth for the sentences of our language,

with

2. Acquiring the notion that there may be some contingent limits on what can be expressed and what meanings can be sustained by the sentences of our language as understood by the community at large.

To think that (2) implies (1) is to ignore the force of the acquisition prong of the anti-realist's challenge entirely. For we lack any account of how mere reflection on the possibility that there are contingent limits on what is accessible to us (limits
which may not apply to some other being) could help us to grasp the meaning of some sentence in default of any way of correlating that 'meaning' with circumstances which impinge on the consciousness of the learner. The natural anti-realist endorses (2) but not (1). He allows, on empiricist principles, no conception of verification-transcendent truth-conditions as involved in the meaning of any sentences we understand. But he recognises that what we can understand may be limited by the particular range of recognitional capacities common to the human race. From the latter flows the intelligibility of the (non-transcendent) concept of the transcendent toiled for in chapter 6 above.

The essential point then is that we may conceive that our present powers could be extended or that some other being might enjoy different capacities to our own without conceiving the meaning of our present utterances to be such that their truth be recognisable only by the employment of such extended capacities. Any attempts to donate meaning to our present utterances by the imaginative extension or alteration of our present capacities to recognise assertion-warranting circumstances falls foul of precisely the same arguments as does a fully fledged semantic realism. Dummett recognises this fact in the 1972 postscript to 'Truth' in which he writes that:

The fundamental difference between the anti-realist and the realist lies in this; that ... the anti-realist interprets 'capable of being known' to mean 'capable of being known by us' whereas the realist interprets it to mean 'capable of being known by some hypothetical being whose intellectual capacities and powers of observation may exceed our own'.
The realist holds that we give sense to those sentences of our language which are not effectively decidable by appealing tacitly to means of determining their truth-values which we do not ourselves possess. ... The anti-realist holds that such a conception is quite spurious, an illusion of meaning, and that the only meaning we can confer on our sentences must relate to those means of determining their truth-values which we actually possess.


Kant, too, regards our grasp of meaning as unaffected by any imaginary extensions or alterations we may make to our ordinary range of perceptual and intellectual capacities. He writes, concerning the notion of sensible intuitions unlike our own that:

This extension of concepts beyond our sensible intuition is of no advantage to us ... only our sensible and empirical intuition can give to them (i.e. our judgments) body and meaning.

Kant. B149.

In the terminology of chapter 8, imagination alone cannot extend the bounds of our grasp of real possibility, which remains always tied to what can be given to us in actual experience.

For all these reasons, then, the mere idea that other beings might enjoy assertion-verifying capacities other than our own must be rejected as a semantically significant factor in our own grasp of the meanings of our sentences. Such reflections, however, do nothing to undermine the alternative possibility mentioned above viz. that the sentences of some alien language $L_2$ may have meanings associated with direct recognitional capacities shared by most users of $L_2$ but lacked by all native users of $L_1$. The thought that
such a situation could obtain is surely a natural one. If the evolutionary explanation of our shared direct recognitional capacities given in terms of common evolved quality spacings and sensory mechanisms (chapter 3) is accepted it seems obvious that other beings, with other partially random evolutionary histories and initially adapted to different kinds of environmental niche, might evolve different quality spacings and sensory mechanisms to our own. They might be able to distinguish smells we cannot, or be unable to distinguish colours we can. They may use sensory modalities we do not even possess. Their capacities of direct recognition, then, could easily be wildly different from our own. All this, I think, is obvious. But the implications of such obvious natural facts for the anti-realist's analysis of meaning seem never to have been properly thought through. For this contingency of capacities of direct recognition stands in some tension with the claim often attributed to the anti-realist, that we can have no conception of evidence- or verification-transcendent truth (see, for example, Devitt p.77). I propose, therefore, to consider various imagined cases in which the faculty of unmediated recognition possessed by a speaker is not, as a matter of fact, one shared by the meaning theorist. This situation, as we shall see, provides the anti-realist with some unusual puzzles and generates the third and final internal concept of the transcendent mentioned above.

9.3 Let us suppose (case one) some being is capable of colour discriminations beyond our unaided reach. We would encounter initial difficulties in translating some of his utterances.
When he says 'X is G' and 'Y is not G' we might be unable to spot the relevant difference between the two cases. If we are to translate what he says as a true claim that G of X we must find some way of making the discrimination of G intelligible to us. One way would be by the scientific measurement of wavelengths of light reflecting off objects said to be G. In that case, assuming we find a distinctive wavelength to correlate with G, we may claim mediate access to the truth-conditions of the claim that X is G. So it may seem we have no cause to concede that there are true claims in the alien language L₂ with truth-conditions which are verification-transcendent to users of L₁.

We are tempted to say, in the above case, that we now know, thanks to the endeavours of the scientific epistemologist, what the aliens mean by 'X is G'. For we know when 'X is G' is correctly assertible and when it is not. Let us, for the present, leave this optimism untarnished. Certainly, there seems to be no ultimate difficulty in assigning some non-transcendent content (in L₁) to the words of such beings once we have isolated (if only by scientific means) the features of public reality upon which some initially problematic description in their language fixes. It is just that if the aliens are able to recognise, without scientific augmentation, some colour & which exceeds our own basic visual range then their sensitivity to G is an important fact which we will need to take into account if we are to translate successfully that sector of their language. We have to know what they can see before we can begin to decide what they mean. And this is a matter for scientific investigation. The complication is not new. Karl von Frisch noted that before signs and signals to which a common bee responds
can be interpreted, it is necessary to form an opinion (on scientific grounds) of what a bee can and cannot see. (They cannot, for example, distinguish blue or red from grey.)

One interesting point which already emerges from the consideration of such cases concerns the relative power relations of the semantic theorist and the epistemologist as discussed in 4.4 above. The notion that the epistemologist has no direct task to perform in the analysis of meaning (see e.g. p.82) can now be seen to be valid only if the community whose language is to be interpreted is a human one. In the case of a non-human community we have no reason to assume (as we do for our own language - see p.64) that those whom we study relate the basic statements of their language to circumstances which we find directly accessible. To learn what the aliens mean may require the scientific augmentation of our own basic capacities, as in the case of the alien colour term Q. In such cases the epistemologist, observing and scientifically investigating the being, its environment and its structure, may have work to do before the semantic theorist can even begin. Such cases, it will be noticed, vindicate the kind of dialectic envisaged by McGinn (4.4 p. 83 above) between the realist and the anti-realist. Thus the human realist may dispute any assumptions about the alien's faculties which might otherwise inspire the evangelical terran anti-realist to embark on a premature critique of the alien's use of his own language. For the grasp of meaning which the aliens can successfully manifest to one another may be crucially more extensive than the grasps of meaning obviously manifest to us by associating their actions with circumstances we can immediately detect. The same complication would affect our capacities of
acquisition of grasp of meaning, and for the same reason. A human child, placed in an alien society, may be unable simply to 'pick up' the language since what is directly accessible to the teacher may elude the pupil. To use the Quinian analysis, we may have no innate quality spacing which makes sense of grouping together various (to us disparate) objects as being $Q$. Since the meaning of complex statements in the alien language may be built on such basic grasps, the human child, unaided by science, may be unable to learn the language at all.

Suppose now (case two) that we have been able to achieve no scientific measurement of the conditions of application of some basic alien term. Let us continue to call it $Q$. If the whole of some alien 'language' were thus afflicted we would be (perhaps) unwarranted in calling it a language at all. But we need only imagine a case where we have achieved sufficient correlations of utterances with true facts to formulate a working scheme of translation. The only snag is that the aliens will persist in saying that such and such an object is $Q$, such and such an object is not $Q$, etc. Try as we may we continually fail to grasp what property of the objects is at issue. When pressed, the aliens tell us $Q$ is a secondary quality which they see but which is not like human colours. And yes, they can draw us pictures of $Q$-objects. Except we cannot, alas, recognise the $Q$-element in their representations. They do not know how to test scientifically for $Q$, just as, (once), we had no notion of a scientific test for perceived colour as correlated to wavelengths of reflected light.

In this new case, clearly, we have no idea of what 'X is $Q$', said of some object X, means at all. All we know is when the aliens,
as a matter of fact, call something $Q$. But perhaps this is enough. For surely all we had in case one was a means of testing for $Q$. So why not, in case two, just use the aliens themselves as $Q$-detecting instruments. Wouldn't that, pace our initial intuition that we have no idea of the meaning of $Q$ in case two at all, give us just as much information concerning the meaning of $Q$ as did the scientific tests in case one? If not, then what is the operative difference between having a machine which, say, gives six blips when 'X is $Q$' is assertible and having an alien tell us when it is?

The scientist, in case one, has a mediate grasp of the 'meaning' of $Q$. He will give us a verbal account developed in terms of sensitivity to wavelengths of light etc. Such scientific or otherwise verbal explanations are, we trust, capable of some practical demonstration; grasp of the meaning of the scientific account is itself to be justified in terms which ultimately involve capacities of correct use demonstrable in relation to circumstances recognisable by the human community, e.g. alien assent or dissent to attributions of $Q$ correlated with readings on the dials of light sensitive measuring devices etc.

In case one then we do not arrive at our understanding of $Q$ in the same way as the aliens do. But it begins to look as if we can show that we grasp the semantic significance of $Q$ in the same way as they do by our capacity to use $Q$ correctly (i.e. as they do). The meaning of $Q$, it may now seem, is the same for the scientifically augmented human as it is for the alien. But the route by which a grasp of meaning is attained is different.

How, then, is case two different? Can we not simply use
the aliens as $\Theta$-detecting instruments of a quasi-scientific kind and claim a mediate grasp of $\Theta$ like that? Of course not. For in that case we would have no independent decision procedure by which to determine whether $\Theta$ was properly applied in any given case. We would have to take it on trust from the aliens. In case one we can imagine a master of $L_2$ (somewhat misguidedly, as it will turn out) turning to us and saying: 'Yes. You have learnt the meaning of $\Theta$'. He would say this in view of our demonstrable capacity to use $\Theta$ only in appropriate circumstances. But no such accolade is imaginable in case two. For what language master would allow that a pupil has learned the meaning of a term if his only decision procedure was to go and ask someone whether the term did or did not apply in some new context? It would be as if a child were to claim to know the meaning of 'proton' merely because his father could convince a scientist that he (the father) knew the meaning of proton! Knowledge of meaning is not transitive. Knowing someone who knows does not, in and of itself, instil any knowledge in us. Putnam's division of linguistic labour - the idea that we successfully use sentences whose meaning we may not grasp as fully as some specialist e.g. 'The car battery is flat' - has its limits. In such cases we always know something of the meaning of the terms involved e.g. we know that if the battery is flat the car (ceteris paribus) won't start. And the rest is uncashed cheques; we could learn more if we needed to. The cheques in case two, however, are not so much uncashed as rubber; they are guaranteed to bounce. For we know nothing of the distinctive meaning content of $\Theta$ (in case two) and, so far as we know, are incapable of learning of it if we tried.
In case two, then, there can be no real doubt that the meaning of 'X is Q' eludes us. Which is not to say that we know nothing of semantic interest concerning Q at all. For what we do know is that Q describes a phenomenal property of the alien's apprehension of the world whose physical trigger for beings of their constitution we have not been able to isolate. We have every reason to assert, of Q, that the aliens themselves know the meaning of the term, for we can perform tests of alien competence in the use of Q based on Q-groupings provided unseen by some members of the alien community and tested on others. Thus we may get a group of Q-objects (picked out by an alien) and ask other aliens whether the objects are all Q. If they continually get it right - i.e. agree non-collusively as to which objects are Q and which are not - we must surely grant their anti-realistically sound grasp of the meaning of Q. For the anti-realist explicitly asserts that it is permissible to allow that a speaker knows the meaning of a basic sentence (even if he can give no verbal account of it in what his grasp of its meaning consists) just so long as he can demonstrate a capacity to use the sentence correctly in relation to circumstances public within the community. In such cases, ordinarily:

The faculty of recognition ... attributed to the speaker will be a faculty of unmediated recognition; neither the speaker nor the meaning-theorist can say whereby he recognises the condition as obtaining. That which renders the sentence true is the very thing of which we are directly aware when we recognise it as being true.

Dummett IF 449.
The difference, in the present case, is just that the meaning-theorist is not himself a member of the linguistic community whose speech he is assessing and hence is not himself necessarily directly aware of the same things as his subject is (there is no 'we' of the kind mentioned in the last sentence of the quoted passage). But this, in the presence of 'unseen competence tests' such as those described above, cannot warrant us in denying to the alien the implicit grasp of meaning we so readily allow to our fellow man.

The claim that 'X is Q', made in L₂, is therefore a claim the truth-conditions of which are transcendent with respect to speakers of L₁. We can tell when it is true, by asking, but we have no grasp (implicit or mediate) of that in virtue of which it is true when it is true. Is this the kind of counter-example to the anti-realist ban on transcendence which the semantic realist requires? Clearly not. For what the anti-realist denies is that the words and sentences of our public language may have meanings best explicated by a notion of transcendent truth-conditions. But even in case two there is no sentence requiring such an analysis. For the claim that X is Q is one whose meaning we demonstrably failed to grasp. Even though the claim that users of L₂ grasp the meaning of 'X is Q' is one we have every reason to accept. We must therefore admit, with the anti-realist, that:

(P1) There is no sentence whose meaning we grasp which has verification-transcendent truth-conditions.

For we can neither acquire nor manifest any grasp of the meaning of Q in case two. But we must also allow that:
(P2) There may be sentences which we grasp to have meaning (in $L_2$) but which are verification-transcendent with respect to a native speaker of $L_1$.

The claim, in $L_1$, that 'The claim that "$X$ is $\emptyset$" has meaning in $L_2$' meets all anti-realist requirements. It is an ordinary claim in our language whose truth-conditions can be recognised to obtain, when they do obtain, by means of the kind of competence tests suggested above. The truth-conditions of the claim that 'X is $\emptyset$' is meaningful in $L_2$ concern the observable behaviour of native speakers of $L_2$ in testing situations we can devise.

9.4 $L_2$ need not be the language of alien beings. It could be the language of our own community as it is apprehended by the members of some sub-section of that community, e.g. the blind. The aliens are a useful expository device but all that is necessary is that some beings should lack a direct recognitional capacity which other beings possess. The ability to recognise colour is a clear case of a direct recognitional capacity which most of us enjoy but which is denied to the blind. Thus a blind person may, by comparing the non-collusive reactions of sighted persons to objects in his (the blind person's) possession, come to endorse a claim like (P2) concerning the meaning of colour terms, i.e. come to conclude that we know the meaning of e.g. 'The book is red' even though he himself could not decide (except by asking us) the truth of a claim to that effect.

Imagine now the case of a blind person who is given a
scientific aid such as a colour-discriminatory bleeper (four blips for red under normal light, two for purple etc.). Merely by virtue of his possession of the bleeper the blind man is surely no better able to grasp the meaning of 'The book is red' than he is without it. It would be as if the aliens, in case one, had given us a $Q$-discriminator but we still did not understand how it worked i.e. what it measured (except trivially i.e. it measures the presence of $Q$). In all these cases the augmented interpreter is no better off than the non-augmented one. For we might as well ask 'Is that red?', 'Is it $Q$?' as look to an instrument whose functioning is a mystery to us. The alien and the instrument are on a par.

It might therefore be thought that what would make the difference is an understanding of how the machine works or of the physics of the phenomena it measures. But this suggestion as we shall see, makes the mistake of assuming that it is possible to achieve a scientific measurement of secondary qualities themselves as opposed to a measure of some alleged physical correlate to such properties. To understand the machine would be to understand the correlate, but it would not (for reasons to become apparent) help us to understand the meaning of alien sentences which employ the term $Q$, or (if we are blind) of human sentences which employ the term 'red'.

Such cases, I shall suggest, force the anti-realist to distinguish:

AR1: Grasp of meaning amounts to the ability to recognise the circumstances in which an assertion is warranted, and
AR2: Grasp of meaning amounts to the ability to recognise when an assertion is warranted.
Ordinarily, the conflation of AR1 and AR2 is harmless. My capacity to satisfy AR2 is generally dependent on my capacity to satisfy AR1. But we have just seen that the two can come apart. Thus the blind man can, by asking us or consulting his instrument, satisfy AR2. But we want to say he has no real grasp of the meaning of e.g. 'The book is red'. Certainly, the augmented individual grasps something of informational significance when he learns, by using his machine, that the book is red. Nonetheless it seems plausible to suggest that in grasping the significance of such a claim he has still failed to grasp all that a sighted person, or an alien Q-user, grasps when he learns the meaning of 'Q' and of 'red'.

Reflection on the home-language parallels of cases one and two therefore suggests that the scientist, in case one, was only improperly allowed a complete grasp of the meaning of Q after all. By virtue of his grasp of the underlying physical conditions of the use of Q he achieves, to be sure, an increment of understanding over and above the parrot-fashion grasp of the humans in case two. But still his grasp seems necessarily less than that of a native user of L2.

The scientific epistemologist, we might say, has grasped what we now term the underlying conditions of use of Q. But these need not in any way be associated with the grasp of meaning which the native speaker of L2 acquires by exposure to public conditions of assertability of Q. In which case the scientist has certainly grasped something, and it is related to the matter of when Q is assertible as true of some X. But he
has not really grasped the meaning of 'X is \(\theta\)' for he has not grasped the public circumstances which are associated by speakers of \(L_2\) with the warranted assertability of the claim. The scientist's grasp of the underlying conditions of the assertability of \(\theta\) for some object is obviously not necessary for a grasp of the meaning of 'X is \(\theta\)' (as the very existence of the aliens demonstrates). Now it seems it is not sufficient either.

The intuition, then, is that the physical story still leaves something out; something which is essential to the alien's grasp of the meaning of sentences involving \(\theta\). Such an intuition is surely a natural one. It seems to be shared, for example, by Colin McGinn who suggests (McGinn (3) p.21) that sensory experience represents the world as 'having attributes whose existence and identity have their source in subjective aspects of the representor'. Such attributes are necessarily incapable of being fully captured by any physical descriptions of the state of the world such as those offered by our scientific models. Secondary quality concepts, McGinn argues, are sense-specific (McGinn (3) p.138). To grasp such concepts requires a certain kind of sensory activity. Primary quality concepts, by contrast, are said to be rooted in the external world alone and hence to be graspable even by beings lacking our kind of sensory experience. The image, which we shall have cause to endorse, is (in the case of secondary qualities) one of a 'subjective grid contributed by the mind.' (McGinn (3) p.72.) The circumstances which warrant the assertion of secondary quality claims, I shall argue, relate
essentially to that subjective grid, and are thus transcendent with respect to any being lacking our kind of grid. Such circumstances can be public in the (anti-realistically) necessary sense only because meaning, for the natural anti-realist, was seen to relate to correct use as manifest within a given community. It is this localisation of the demand of manifestation (noticed in 4.4 p.81 above) which allows us to recognise sense-specific subjective elements as a possible ingredient of public meaning.

Such thoughts, however, need careful handling if we are to expose their anti-realistically sound content. For at first sight it looks as if any difference in meaning between e.g.home and alien speakers employing Q must turn directly on the lack, in the home case, of the alien Q Qualia. For if we have achieved scientific measurement of the conditions under which aliens assert to Q-ascriptions, and can reliably predict such assent, where else could the difference between our augmented and their direct grasp of Q lie? Ultimately, as we shall see, the intuition that Qualia make the difference turns out to be a sound one. But they make the difference only because the use of a sentence keyed to certain perceptions of Qualia can be shown to be potentially different to the use of a sentence keyed either to scientific measurement or to Qualia associated with another sense modality. Thus the Qualia make the difference, but they do so not in the role of the essentially private object but rather in the public role of an essential determinant of a certain kind of use. (Roughly, a use answerable only to consensus criticism within a community employing a given direct recognitiona
capacity trained on a given secondary quality such as redness or 8-ness).

It is not hard to see why Qualia, in the role of private object, are an unsuitable anti-realist basis for the ascription of differences in meaning. For meaning, for the anti-realist, is essentially a public phenomenon within a given community. The recognisable circumstances upon which grasp of meaning is said to depend are public circumstances. Any difference in private Qualia which did not show up in a difference of public use (e.g. inverted spectrum stories etc.) would not constitute a difference in the meaning of colour terms in the mouths of the normal and inverted subject. If it were Qualia alone which made the difference in meaning between the scientist and the alien, or the augmented blind man and the sighted man, then we would have to allow that meaning could likewise vary across our community even though (let us imagine) public agreement concerning the use of such terms is unanimous. Such a thought flies in the face of the Wittgensteinian roots of the anti-realist analysis. Wittgenstein ceaselessly laboured to convince us that all that counts, semantically, is the ability to use 'red', 'yellow' etc. correctly. Learn that and you have learnt the meaning of the colour term involved. The qualitative nature of any 'inner process' which may accompany the perception of colour is semantically irrelevant. The type of beetle in the individual's 'box' is not logically connected to the meaning of his words. (See e.g. Wittgenstein (1) prop 258 - 293.)

Like Wittgenstein (op.cit. prop.305), it is no part of the anti-realist's program to deny the existence of Qualia.
Rather the point is just that as regards semantic significance individual Qualia (qua private object) must be seen to be inert. But just because the individual Qualia are thus inert we need not conclude that it is a semantically insignificant fact that we associate Qualia of some kind with the meanings of certain terms. What our individual Qualia are like may well be (as Schlick, for example, held\(^30\)) incommunicable. But to grasp the meaning of claims involving Qualia may still require that we process our perceptual input in a way which gives rise to a certain kind of qualitative experience e.g. the experience of colour, or of \(\Theta\)-type appearances.

The naturalised epistemologist may seek to locate these intuitions within the context of a general cybernetic approach to secondary phenomenal qualities; such an account explains the opaqueness of the private object while still insisting that to grasp the meaning of claims concerning such qualities it is necessary to process information in a way which gives rise to at least the kind of qualitative experience concerned (e.g. the experience as of seeing a coloured object). A natural anti-realist who endorses such an account may deny Frank Jackson's claim (Jackson p.135) that the place of Qualia in the scheme of things is outside our comprehension. Instead he may assert that the existence of Qualia and the opaqueness of claims about specific qualia to beings lacking certain sensory mechanisms are both matters well within the explanatory scope of a physicalist account of reality. Qualia, on the kind of model in question, are best seen as apparent registrations due to the information detecting and processing equipment employed by a given organism.
This claim echoes some remarks made by Hintikka in which he portrays our conceptual scheme as an instrument the evolved function of which is the registration of information concerning the world. Some of the registrations of such an instrument are said to reflect 'the mode of functioning of the instrument itself'. (Hintikka p.193). That some of our registrations should thus be merely apparent is a conclusion which can only be strengthened by the reflection that the indirect nature of evolution by natural selection is unlikely to provide us with channels of information-processing which are in a technical sense noiseless - that is, channels indicating as output only the real-world events which are taken as input. Indeed, a truly noiseless channel (one yielding perceptual representations without any secondary qualities) may even be a conceptual impossibility. For all information, if it is to be carried at all, must be carried by some medium (cf. McGinn p.95) and that medium, being in and of itself non-informational, will surely add some subjective colouring or 'noise'. Apparent registrations, thus conceived, are, let it be stressed, entirely real. They are - to use an ugly phrase - real apparent registrations; we have them, but they correspond to nothing in the real world. To think that they do, (to believe like Jackson, that the existence of Qualia amounts to a refutation of physicalism) is to confuse processor-phenomena with information.

That processor-phenomena are the wrong kind of thing to be given as input is the explanation behind the 'peculiar' opaqueness of Qualia. Since Qualia are due to processing they are not themselves codeable as input, as information even
though they may carry genuine information. McGinn however, is wary of such a proposal. Secondary quality knowledge is not, he points out, as informationally inert as it seems to suggest. Sensitivity to colour, for example, gives a bee genuine information concerning what plant to alight upon (McGinn (3) p.98). This is surely correct. But the fact remains that the informational content of the bee's knowledge is logically independent of the qualitative nature of the colours the bee sees. All that counts informationally, I would suggest, is the distinction among plants which the bee is thereby disposed to make. These same distinctions could presumably be made in other ways and the information preserved. I shall argue, however, that the meaning of secondary quality claims cannot be associated with their information content alone. To grasp the meaning of such claims it is not sufficient to perform a range of discriminative activities. For the means by which the discriminations are made is also an active element in the meaning of such claims. It is for this reason that the full meaning of claims involving secondary qualities transcends the grasp of beings forced to rely on alternative means of effecting the same discriminations among objects. The meaning of these claims, if this right, can be grasped only by actually processing information of an appropriate sort in a certain way. Thus Dennett, in an unpublished paper, suggests that:

My quale-predicate 'green' is not uninterpreted, nor is it interpreted by an ostension to a private and intrinsic property of something in my mind. Rather it is interpreted ... by being linked to some particular hardware, my hardware.

Dennett (2) p.25

A given set of qualia is thus not accessible to anyone who processes information differently since they are registrations caused not solely by a common object but also by the functioning of the
detecting and processing equipment itself. To address a famous question of Nagel's, that is why we cannot know what it is like to be a bat. But insofar as qualia do not therefore (qua qualia) constitute information about the world itself, their tendency to dissolve in the presence of objectivity is no surprise. The alleged poverty of physicalism turns out to be no more than a praiseworthy economy. For no amount of information concerning how someone else receives and processes data will produce in me the kind of apparent registrations produced in him by actually processing information in just that way.

9.5 The problem, then, is how to remain faithful to such an account (which renders the meaning of our secondary quality concepts transcendent with respect to beings whose sensory and processing apparatus is of a radically different type) while yet respecting the anti-realist's demand that all difference in meaning show up in a difference of use. For, to recall one of our earlier examples, can not the scientifically augmented human use the alien term Q in just the same cases as the alien?

An initial thought is that it is the directness of the alien's apprehension of Q which makes the required difference in public use between humans and aliens. The pivotal issue, so this thought suggests, is not, after all, the qualitative nature of Q (which might differ even among aliens) but the direct nature of their capacity to recognise when Q applies. The difference in use between a direct and mediated grasp of the circumstances in which Q is properly asserted might then be said to lie in a difference in the defeasibility conditions appropriate to the two kinds of warrant in the direct assertion.
question. There is something of value here, as we shall see. But the difference cannot turn on the directness of the alien's capacity alone. For we can imagine alternative direct means of discriminating all and only Q-objects which intuitively still afford the beings who employ them no proper grasp of Q.

Thus suppose \( 34 \) (case three) the aliens use Q to distinguish two kinds of violet. One, the Q-violent, looks (to us) identical to the other (the Q-less violet). But we are happily able to distinguish the two by our own sense of smell (the aliens, we may add, have no sense of smell at all). For Q-violets have a distinctive and unpleasant odour which Q-less violets lack. Supposing Q to be a colour discrimination we lack, we may even go so far as to make the tie of Q-violent to stinking-violet (for want of a better name!) lawful. The chemical which tinges the leaves of the violet Q is also the very chemical which offends our human noses. In such a case we have a direct recognitional capacity enabling us to discriminate between violets in just those cases in which the aliens do. And yet, if our earlier intuitions are correct, we do not want to say that we thereby grasp the full meaning of 'the violet is Q'. So directness alone, it seems, is not enough.

The fault in case three, it may be suggested, lies with the locality of the example. For surely the colour Q and the distinctive odour are not always and everywhere found in convenient conjunction. So the potential divergence of use between Q-based and odour-based discriminations is what grounds the intuition of a difference in meaning between the term Q and some odour-term Q'. There is something fundamentally right
about this thought which can, I think, be extended to cover also the case of the scientific discrimination of objects into Q and non-Q types. It is that the connections of secondary qualities to other aspects of reality is always contingent. Thus there are no necessary correlations between distinct kinds of secondary qualities (e.g. colours and smells) or between scientifically diagnosed states of objects and particular secondary qualities (e.g. being Q). The lack of such correlations shows up in our attitudes to the defeasibility conditions of claims involving secondary qualities (this is what was correct in our initial thought).

And this, in turn, ensures that there will always be a potential divergence in the use of a term Q between native users of Q and any communities who base their ascriptions of Q on either different modes of direct recognition of circumstances apt for the description Q or on some mediate means of recognising when Q is likely to be used.

The crucial observation, in demonstrating the lack of any such necessary connections between various kinds of secondary qualities and between secondary qualities and physical grounds, is that with regard to the warranted assertion of such claims, the native community is the law. Thus suppose (unlikely as it seems) that the alien-detected presence of Q was always and everywhere conjoined with the human-detected presence of Q up until a given date. Subsequently, however, we encounter an object which they identify as having the distinctive look of Q, but which doesn't smell, to us, of Q'. Would we say that the aliens are mistaken in their communally agreed belief that
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the new object looks \( \theta \)? Surely not, for to paraphrase McGinn, being \( \theta \) is best analysed as looking \( \theta \), so we cannot plausibly claim that an object which they say looks \( \theta \) is actually non-\( \theta \). (See McGinn (3) p.15.) Or would we say that we were mistaken in thinking that the new object did not smell of \( \theta \)? Again, surely not. Rather we would treat the new case as demonstrating what was surely obvious all along viz. that what is meant by the alien use of 'X looks \( \theta \)' is something other than what we mean by 'X smells of \( \theta \)' and that exactly what the alien sentences involving \( \theta \) mean is a fact which transcends our capacities of understanding. It transcends them because we lack direct access to the kind of assertion-warranting circumstances which they associate with \( \theta \).

This is even clearer in the case of mediate scientific access versus direct grasp. For suppose the blind man is equipped with a bleeper which, to date, has given four blips only when a normal human observer would assert the presence of red, but which now begins to register four blips in the presence of a palpably green object (under normal light etc.). We might at first assume a machine malfunction. Then we find that there is no malfunction at all—all bleepers signal four in the presence of these objects. We search in vain for any causal interference from the object to the machine. Satisfied that there is no interference and no malfunction, are we to conclude that the sighted community is mistaken in calling such objects red? That surely is absurd. What we ought to say instead is that the machine can only measure some contingent correlate of redness (the use of 'correlate' here is borrowed from McGinn)
which, it now turns out, is not even a perfect correlate at that. The moral of these stories is that even supposing some such correlation were as a matter of fact perfect, still our attitude to any imagined divergence of the two items suggests that to grasp the conditions of application of any correlative item is not, in and of itself, to grasp the conditions of application of the secondary quality term itself. For where such claims are concerned, the communal consensus is law. (Contrast the case of water and $H_2O$. The claim that a substance is water is defeasible by a scientific demonstration that it is not $H_2O$. No such demonstration could ever convince us that an object was not red if we all agreed it looked red.)

Our argument, then, may be summed up as follows:

(1) Grasp of meaning consists in grasp of assertability-conditions.

(2) A claim is defeated only if its assertability-conditions are shown not to obtain after all.

(3) Data involving only correlative items cannot of itself defeat a secondary quality claim agreed by the native community (as shown by the thought-experiments above).

(4) So correlative data can't show that the assertability-conditions of a secondary quality claim do not obtain (from (2) and (3)).

(5) So what they do show to obtain can never be taken to be the actual assertability-conditions of a secondary quality claim (from (4)).

(6) So the assertability-conditions of claims about correlative items and claims about secondary qualities must be recognised as different even if, as a matter
of fact, the circumstances which warrant the two sets of claims happen to be co-extensive (from (5)).

(7) So the meanings of the two kinds of claims are different in an anti-realistically intelligible sense (from (1) and (5)).

This argument secures the intelligibility of the distinction between two conceptions of how meaning depends on grasp of assertability-conditions developed in 9.4 above. For the anti-realist, if he accepts the argument just given, can show why it is that grasp of the meaning of some terms requires not just grasp of when their assertion is warranted (AR2 - which is satisfied also by grasp of the conditions of application of a correlative co-extensive item) but also (AR1) of the particular circumstances (e.g. redness or G-ness) which the native community associate with the truth of claims involving such terms. These particular circumstances are public only within a community equipped with certain sensory and cognitive mechanisms and manifestation of correct use can, in such cases, properly occur only amongst members of a community so endowed. We can thus claim that in case three the aliens cannot grasp the meaning of our claim that the violet is Q' just as we cannot grasp the meaning of their claim that the violet is Q. And this even though, as a matter of fact, Q' and Q serve to mark out the same distinct sets of flowers.

It seems then that where we are dealing with statements involving secondary qualities\(^ {35}\) the circumstances which make those statements true are constituted in part, by the particular sensory channel and mode of processing with which those qualities
are experienced by a native speaker. Where the channel is different, or where it is a mediate one (as in the case of any scientific account) the meaning of the secondary quality claims cannot be fully grasped. This was brought out by a consideration of the public defeasibility conditions of secondary quality claims. They are defeasible only by communal consensus within the native community. No evidence from another channel or a scientific account would defeat a communally accepted alien claim that X looks \( g \), for the simple reason that whatever the alternative channel or scientific method measures it is not \( g \) itself, but only some contingent correlate of \( g \). As a result we can always conceive of the use of the two coming apart without either item (\( g \) or its alleged correlate) being necessarily misapplied.

Such considerations lead the natural anti-realist to a conclusion which goes somewhat beyond that of (P2) in 9.3 above. For (P2) may have appeared to mark only the pro-tempore transcendence, in default of scientific advance, of alien secondary quality claims associated with sensory modes or processing strategies not shared by the home community. If our recent arguments are correct, however, the situation is best described by the more radical claim

(P3) That the full meaning of claims involving secondary qualities can be grasped only by speakers who share the same kind of sensory apparatus and processing strategies as do the members of the community in which such claims were originally formulated.
Where secondary qualities are concerned it seems that the particular kind of direct recognitional capacity employed is partially constitutive of the circumstances it reveals as obtaining. This explains why an individual lacking a particular kind of capacity can never satisfy (AR1) in 9.4 above. For the meaning of such claims is not associated (as primary quality claims more plausibly are) just with circumstances in the world, but also with circumstances consequent upon a particular subjective nature.

The anti-realist, then, must accept that we are in a real sense limited by the semantic bedrock of our language. For we can have no full grasp of the meanings of terms associated with direct recognitional capacities other than our own. Such terms, it seems, have truth-conditions which are necessarily transcendent as regards any community which lacks them. But this does not mean that we do not know when they are true; only that the circumstances which make them true are unavailable to us.

In this fine distinction lies the anti-realist’s salvation. For he must insist that our grasp of meaning is necessarily associated with our grasp of recognisable circumstances of warranted assertability. But our grasp of the meaningfulness of some assertion need not require that the circumstances which are associated with the meaning of some basic term (like $q$) occurring in it must themselves be available for our inspection. The legitimacy of a notion of verification-transcendent truth for secondary quality claims thus flows ultimately from our recognition of our own contingent limitations as regards the range and nature of our direct
recognitional capacities. Such limitations constrain our meanings in precisely the way the anti-realist predicts. But our thought about reality, it seems, may stumble a little further on its own.
10. A new kind of mirroring.

10.1 Various internal concepts of the transcendent have now been formulated which individually and severally defeat the thought (outlined in chapter 5) that the anti-realist is of necessity some form of subjective idealist who is incapable of conceiving reality as in any way transcending the bounds of the activity of the human mind. The natural anti-realist firmly rejects any such thought. He argues that we can, in a perfectly intelligible sense, conceive of reality as outrunning our capacities to know it. But he denies that grasp of meaning should be associated with a grasp of truth-conditions conceived as determined by such an independent and potentially transcendent reality. This hybrid metaphysical stance treats man's semantic limitations as a special instance of his general sensory and cognitive limitations. Our knowledge of meaning, like all our knowledge, is seen as partially determined by our particular (contingent and in detail imperfect) evolutionary heritage. The intelligible world, then, cannot be identified with the world-in-itself. But neither can it be totally divorced (by virtue of the appropriateness argument) from the independent reality in which we function.

In this final chapter I seek to relate this metaphysical picture to two main lines of contemporary philosophical thought about the nature of the relation between human representations and independent reality. One of these is the issue of mirroring associated with the critical surveys of Richard Rorty; to what extent, if any, is the human mind to be conceived as a mirror of nature? The other is the issue of internalism versus externalism
discussed in recent works by Hilary Putnam; is there exactly one correct account of how the world is or are all conceptions valid or invalid only within the context of some particular framework of thought or relative 'to some particular needs and abilities? The two issues are obviously related. To believe that man can aspire to be the absolute mirror of nature is to believe in the one correct account of the externalist philosopher. But there is room for manoeuvre. I shall argue that the natural anti-realist can construct a sense of mirroring which is not committed to the externalist viewpoint. The subject matter of the present chapter, it will be clear, has already been touched upon (particularly in chapters 7 and 8 above). But the influence of the particular methods of depicting the issues employed by Putnam and Rorty is sufficiently powerful to make it worthwhile finally raising the questions in their chosen terms.

10.2 Richard Rorty, famously, dismisses the picture of mind as mirror and with it the idea that the image in the mirror is (potentially) the image of reality as it is in itself. Such a notion of man's representative powers is, he suggests, incoherent. For the notion of representation involved can never be seen to be a correct one, since we can never 'step outside' our current system of thought to examine its relations to a totally independent reality. The mirror theorist's idea of representation, Rorty argues, requires the availability of a fixed perspective (a 'neutral matrix of enquiry') from which to examine the precise nature of the relation between the representations and the things or states of affairs represented. But no such perspective is available for our mental
and linguistic representations must themselves embrace all the possible perspectives we as human beings could occupy. Half of the representational equation is therefore necessarily missing.

There can be:

No transcendental standpoint outside our present set of representations from which we can inspect the relations between those representations and their object.

Rorty (1) 293.

The natural companion of the picture of mind as mirror, he then suggests, is the notion of the world-in-itself lying behind the image in the mirror. It is the world-in-itself which forms the missing half of the representational equation. But the appeal to an unknowable world-in-itself can add nothing concrete to our knowledge. It can be nothing other that the 'purely vacuous notion of the ineffable cause of sense and goal of intellect' (Rorty (2) 663). The only properly intelligible notion of the world, for Rorty, is the notion that the world is constituted by whatever human beings can agree at a given moment exists. The world is thus 'a name for the objects that enquiry at the moment is leaving alone' (Rorty (2) 663).

Rorty's attack on the idea of the world in itself and the correlative idea of the mind as a mirror has its roots in his desire to escape from the foundationalist tradition. This tradition was inspired by the urge to refute the Cartesian sceptic. The tradition therefore assumes, from the outset, that human knowledge stands in need of sure and secure foundations. The search for these foundations is the search for privileged representations among the host of images in the mirror. Images which reflect the
properties of the glass will not do. Philosophy, in this tradition, is the discipline devoted to sifting the many representations in order to discern which are the true reflections of the world in itself. Only these – the privileged representations – can stand as candidates for the bedrock of certainty which is meant to legitimise the structure of human knowledge. The prime candidate for the role of privileged representation has always been the so-called given. The given has meant a variety of things; in general, that which is directly present to the human mind (sense-data or whatever) unmediated by conceptual interference.

This notion of the given has, however, been the subject of intense philosophical criticism by e.g. Sellars and Rorty. Their attack proceeds by noticing that nothing which we can describe can constitute a pure given. For, as soon as we try to describe it, as a red patch or by saying 'Here, now, redness' – or whatever – we invoke a specific means of conceptualisation. The believer in the given then faces a dilemma. Either the given is completely ineffable and indescribable – in which case it cannot stand as a foundation for anything – or it is specifiable and describable, in which case it ceases to command the authority of a pure given. An indescribable given is useless as a base for the rational reconstruction of human knowledge. But a describable given forfeits its privileged status as a conceptually unmediated contact with the world itself.

All attempts to secure the foundations of knowledge, Rorty believes, are likewise doomed to fail. Epistemology, conceived as the handmaiden of the foundationalist program, is therefore dead. With this in mind, we can understand why Rorty combines his attack on the image of the mirror with an attack on naturalised
epistemology. For it is Rorty's view that naturalised epistemology is just a doomed attempt to find a successor subject to epistemology as conceived above (see Rorty (1) 10). Naturalised epistemology, Rorty thinks, is dedicated to the old task of polishing the mirror of nature. It investigates the human mind - the great mirror - with a view to separating the impositions of the mirror from the true reflections of reality. Thus he writes that:

The common motive of Quine's 'Epistemology Naturalised' (and) Daniel Dennett's hints at an 'Evolutionary Epistemology' has been to de-transcendentalise epistemology while nevertheless making it do what we had always hoped it might: tell us why our criteria of successful inquiry are not just our criteria but also the right criteria, nature's criteria, the criteria which will lead us to the truth.

Rorty (1) p.299

By studying the relationship of knowledge to reality the evolutionary theorist might be thought to be engaged in the task of seeking foundationalist justifications for some or all of the representations within the mirror. Such a view is understandable. It might be suggested, for example, by Lorenz's comment that we must: Get to know the imperfections of our apparatus of thought and experience if we want to gain knowledge beyond those imperfections.

Lorenz Trans. p.29

Despite this, the image of evolutionary epistemology as a foundationalist attempt to polish the mirror of nature remains a fundamentally misguided one. To be sure, the evolutionary epistemologist seeks, by examining our evolved means of representation, to gain insight into the nature of the represented
world. He seeks, that is, to improve our knowledge of the world by increasing our awareness of the nature and scope of that knowledge itself. But whatever insights he may achieve, they are in no sense to be regarded as privileged insights. For science, to the evolutionary epistemologist, is an imperfect evolved tool like any other. By its employment we may, with luck, increase our knowledge; but we shall never increase our certainty. Indeed, certainty (of the foundationalist kind) is explicitly ruled out by the evolutionary picture of knowledge as at all stages approximate and imperfect. The evolutionary epistemologist, though he may seek to improve our image of reality, will never presume to elevate any part of that image to certainty. Thus Lorenz also writes:

Nothing that our brain can think has absolute a priori validity in the true sense of the word, not even mathematics with all its laws.

Lorenz. Trans. p.27

Everything, for the evolutionary epistemologist, has the status of a working hypothesis; no more is needed, and no more is possible.

Rorty's misgivings notwithstanding, I shall show that the natural anti-realist's notion of how the mind 'mirrors' an independent world is in no wise the feared notion of the mind sustaining a metaphysically determined and privileged representation of the world-in-itself. What evolutionary epistemology provides is rather a new sense of mirroring in which no parts of the image are held wholly or uniquely correct and in which the image of man is forever embedded in the image of nature itself.

10.3 Rorty fears that the evolutionary epistemologist aims to underwrite a fully realistic correspondence relation between the images in the mirror and the world-in-itself. Both the idea of the world-in-itself and the idea of a correspondence to it are subjects
of attack. Suppose this were the evolutionist's aim. In seeking to secure such a relation he would argue that if such a realistic correspondence were lacking, then man as a species would not have survived. This would, indeed, amount to deploying the appropriateness argument for quasi-foundationalist ends. But the argument would, as Rorty suspects, fail. For it does not take account of the fallibility/scope constraints on appropriateness described in chapter 2, or of the implications of those constraints for scientific knowledge drawn out in chapter 7. I shall not repeat those arguments here, but shall sketch rather the nature of the image/world relation they suggest, in order to show its essential dissimilarity to the traditional mirroring account.

The appropriateness argument had as its conclusion the claim that the knowledge of an individual X, when gained by means of access and modes of processing naturally evolved in the species XX, is likely to bear some useful (i.e. survival-enhancing) relation to the actual environment in which the being lives (assuming the environment to be much the same as when selection for those particular knowledge-acquiring capacities occurred). This conclusion was then amended by the constraints of cognitive bias, cost-efficiency and chance; knowledge-acquiring mechanisms thus formed would be expected to be geared to the particular needs of a species in a given niche, to yield fast, approximate results, and to be chosen from a randomly occurring pool of options. All that follows from the evolutionary arguments, then, is that mind should act as an effective intermediary, for a given being in a given situation, between external input and survival-relevant action. A notion of internal representation may be justified by such a picture. But it cannot hope to justify a notion of mirroring-representation of the kind which Rorty fears it aspires to. Indeed, the arguments/
concerning cognitive limitation and bias are positively inimical to any such project. The evolved mind, for the evolutionary epistemologist, is likely to be as much a mirror of the particular life-style and history of the thinker, as it is of the world itself.

The true aim of evolutionary epistemology, then, cannot be the justification of classical mirror-imagery. This, however, is not meant to deny the obvious facts about a successful system of internal representations. It is rather to deny that such facts justify us in regarding our internal representations as privileged representations in the foundationalist's sense. Thus it is clear that many living creatures sustain and update some kind of internal representation of their (accessible) environment. This functions as a field of vicarious trial and error (in which 'our ideas die in our stead') and a means of preserving and arranging achieved knowledge of the world. Internal representations, thus understood, are distinct from the mirroring thesis itself. They are innocent and philosophically acceptable. This is because there is no suggestion that the internal representations themselves should be anything like the actual environment with which they cope. That is to say, that there is no clue in these internal representations to nature's own preferred way of being represented. Internal representations are just a means to the production of appropriate responses to environmental pressures. They may be pictorial, propositional, computational or whatever. The form is irrelevant, for they are judged not by success in copying (an idea of which we can make little sense) but by success in coping. Thus conceived, the notion of an internal representation has no connection whatever with the foundationalist's idea of an accurate representation.
There is, however, a possible objection to this line of reasoning. The objection runs parallel to one which Putnam once constructed concerning the nature of language. Putnam argued that a correspondence theory and a notion of truth were needed to explain the success of language — how it helps us achieve our goals — even though a meaning-as-use theory was sufficient to explain the workings of language (see Putnam (2) p. 15 – 20 and 129). In a similar fashion it might be argued that if we are to explain success in coping, we ought to make reference to accuracy in copying. This is to argue from utility to metaphysical-truth-as-explanation-of-utility. But the extra step, in all these cases, is both an unnecessary and an implausible one. Our present concern is with the 'coping to copying' argument, and the fallacious nature of this inference is beautifully demonstrated by a quote from the third Appendix to Zeno Vendler's book Res Cogitans. It reads:

Man's native equipment, including his ideas, has developed in response to the demands of the physical world. Does this entail that ideas must be 'similar' to things in the world? No more than a saw is similar to the log it cuts or a sales curve to the activities it represents.

Vendler 218.

Representation — in the original mirroring sense — is alien to the evolutionary vocabulary of coping, succeeding and responding. To the extent that talk of representation is acceptable it reduces to the idea of a (conscious or unconscious) internal code suitable for the confrontation of an external reality. The world is represented by the construction of a symbolic analogue to the
accessible features of our environment. Computational operations may be performed on that symbolic analogue as a vicarious means of choosing among actions. We may ask how successful such a symbolic construction is in helping us attain our goals - we may not ask how similar it is to the world in which it functions. The phrase 'accurate representation of reality' may happily be replaced by the phrase 'useful arrangement of information'.

A sales curve, in the sense of a 'useful arrangement of information' is an accurate representation of the activities of selling in a given market in a given period. But this is accurate representation only in a most indirect and metaphysically uninteresting sense. The world, we may say, is vicariously representable as X, Y or Z; but this does not make it like X, Y or Z in and of itself. This is evident from the fact that it is undoubtedly vicariously representable in an infinite number of ways; or at least in as many ways as there are useful arrangements of information relative to various forms of life. An alternative conceptual scheme, it seems, is not an alternative metaphysical construction of reality but just an alternative arrangement of (the same or different) information appropriate to a set of alternative interests and capacities.

For all that the Natural Anti-realist upholds a version of internal representationalism, then, he abides no implications of metaphysical similarity along the lines of the classical mirror theorist. Internal representation takes as its object reality as it is known relative to a particular set of needs and capacities. It is, in a sense to be outlined below, an internalist theory of representation. Despite this, however, something of the idea of
the mirror remains. For although we do not accept the idea that the human image of reality is the only viable image, and although we do not hold any part of the image certain, still we recognise a partial, pragmatic validation for our basic cognitive orientation. Our modes of sensory access and innate cognitive strategies have indeed served us well and it does not seem unduly optimistic to think that the refined, scientific image of reality we have arrived at by their sustained and self-critical employment does indeed bear some objective relation to the independent material realm with which they cope. Rorty's complaint (which is Putnam's also) that we of necessity lack any independent access to this material reality and so ought not to evince a belief in it looks, in the end, to be unimportant. For the access we have is good enough for our purposes. And although we lack any absolute viewpoint from which to compare our refined images with reality itself, still we have a sense of the mechanism (natural selection) which moulded our basic cognitive natures in response to the pressures of the real world. The brains which do science having thus answered to the demands of the world, it is no surprise that science, done by such brains, should afford a valid means of knowing the world.

In the light of this amended sense of mirroring (essentially the 'empirical bridge' of chapter 8) it becomes clear that we have no need to posit any transcendental divide of the sort Rorty fears. The 'world-in-itself' which forms the other half of the amended mirroring equation is not held to be inaccessible and unspecifiable. Instead it is just the well-accessed and specified world we know; except that we have cause to believe that its total contours may exceed our knowledge, and we have cause to regard our knowledge as
formulated and systematised in models which owe some of their nature to our own cognitive preferences and capacities. But unlike Rorty, the natural anti-realist will not claim that the world is just a name for whatever human beings can agree at a given time exists. For the limits of human agreement are just the contingent and biased limits of human investigative potential. These limits, the evolutionary theorist agrees, set the bounds of our grasp of meaning; but it is mere anthropomorphic conceit to think they therefore set the bounds of reality itself.

10.4 The evolutionary epistemologist, we said, has abandoned the foundationalist project criticised by Rorty. It follows, on Rorty's own definition of epistemology, that the idea of an evolutionary epistemology is a self-contradictory one. For epistemology, for Rorty, is nothing if not the discipline devoted to answering the Cartesian sceptic. Evolutionary considerations can never succeed here, since they are themselves based on observations and scientific conjectures which the sceptic is unwilling to accept. Modern theory of knowledge, as Rorty sees it, is nothing but an undesirable growth which has festered around the old and apparently illegitimate question of how our inner representations can be known to be metaphysically accurate. The idea of an armchair discipline devoted to the resolution of this question is, as Rorty notes, tied up with the Cartesian idea of mind as necessarily accessible to itself. Only thus can pure conceptual enquiry reveal the privileged foundations upon which the edifice of human knowledge can stand. We, like Rorty, have given up this complex of foundational assumptions and aspirations.
Not only do we believe that there are no privileged representations in the mirror of nature - it seems that in the old sense there are no representations there at all. Once representation gives way to response the mirror becomes a tool. If, like Rorty, we identify epistemology with the conceptual examination of images in the mirror in a foundational context, then evolutionary epistemology is a kind of anti-epistemology for it denies the validity of that project itself. I suggest, however, that the identification of epistemology with foundational projects is mistaken and that evolutionary considerations are epistemological in at least one important sense.

Epistemology, Daniel Dennett has suggested, embraces (has embraced) two distinct questions. One - which most philosophers now agree to be misconceived - is the question 'Is knowledge possible?'. This totally general question is clearly inspired by the desire to refute philosophical scepticism. But to ask the question, to begin even to seek the sure and secure foundations of knowledge, is already to concede the sceptic's point. Whenever we choose a foundation for knowledge we also fix its limit and it is always too low; and the foundations we choose tend to be rather arbitrary and indefensible anyway. Sure and secure foundations simply do not and cannot exist; knowledge is a self-supporting, self-correcting structure. These points are made forcibly by Michael Williams in *Groundless Belief*. Rorty is correct to diagnose the futility of epistemology thus conceived. But that is only the first of Dennett's questions. The second, which Rorty fails to consider, is the question (given that knowledge is possible) 'How is knowledge possible?'. This latter question
may take the form (Dennett (1) III) 'How does the nervous system achieve X Y Z?'; or it may take the form 'How could any system (with features a, b, c) possibly accomplish X?'.

The question 'How is knowledge possible?' thus deals with very general matters of design and function. It is just because these matters are so general, so high-level, that they are an appropriate concern for philosophers. Evolutionary epistemology contributes to this enquiry in two ways. First, by addressing the question 'How could a living system come to respond appropriately to its environment?' (the conditions for the production of the mechanisms of knowledge). To which an answer in terms of natural selection is indicated. Second, by providing a wealth of examples of different states of knowledge and different mechanisms for the acquisition of knowledge. Such examples, drawn from the animal kingdom, suggest some of the many ways in which X Y Z may be achieved. Philosophical analysis in turn contributes to evolutionary epistemology by clarifying the strengths and weaknesses of its arguments and suggesting the valid forms of its conclusions. I see no reason to banish all this from the domain of the theory of knowledge. Quine's dissolution of the firm conceptual/empirical barrier removes the main motivation for such banishment. Yet Rorty does just this, focussing all his attention on the (legitimate) question of how, in practice, our knowledge claims are justified. In this he follows Sellars' insistence that justification is just a matter of social practice and that all the rest (empirical theories of evolution etc.) can therefore be of no help in understanding the justification of human knowledge. But surely it is not just the justification but the understanding of human knowledge which is
a suitable topic for philosophical enquiry. We may agree, with Sellers, that human knowledge (in at least one vitally important sense) is a relation to, and among, propositions and not some privileged relation to objects. But propositional knowledge is also a way of knowing about the world. And the scope and status of a being's knowledge (propositional or otherwise) of the world is a topic which is usefully clarified by an evolutionary focus. Rorty, I conclude, is simply blind to the whole complex of legitimate enquiry surrounding the question 'How is knowledge possible?' and hence insensitive to the philosophical value of naturalized investigations into the mechanisms of knowing.

10.5 Apart from underscoring his criticisms of classical mirroring theories, naturalized investigations can give a new twist to the idea of the ocular metaphor on which Rorty tends to blame our sins. In his attack on the image of mind as a 'great mirror' in which are mingled representations which are metaphysically accurate and metaphysically defective (Rorty (1) p. 12) Rorty often focusses on the dominance of the so-called 'ocular metaphor' in Western thought (ibid. 12 - 14). By the misguided assimilation of knowing to seeing, Rorty claims, we generate the metaphysical realist's fallacy of viewing the mind as an organ which either gets, or fails to get, a clear view of the world itself. The twist introduced by the evolutionary perspective, however, is that the mistake lies not in the assimilation of knowing to seeing (seeing is as much a matter of inference as propositional knowing is) but in a failure to appreciate the true nature of sight. For sight, on an
evolutionary analysis, has none of the alleged directness which the metaphysical realist seeks for knowledge. Instead of denying (as Rorty does) that knowing is best understood as a kind of seeing, we may argue that seeing itself fails to provide the paradigm of a direct representational relation to the environment which the classical mirror-theorist thinks it can. Vision, in an evolutionary context, is as indirect a means of access to reality as a bat's sonar. Yet for us (though presumably not for the intelligent bat) the temptation to elevate a sonar based arrangement of information into the paradigm of a metaphysically privileged representation of the world is a minimal one. Evolutionary epistemology thus provides a perspective from which we may appreciate the indirectness of vision, and indeed of any mechanism of knowledge, as a means of access to the nature of reality itself. As Campbell puts it:

The vividness and phenomenal directness of vision needs to be corrected in any complete epistemology ... ...
From the point of view of an evolutionary epistemology vision is just as indirect as radar.  

Campbell 424.

Vision, we may say, is an 'indirect, coincidence-exploiting mechanism', the coincidence in question being the coincidence of 'locomotor impenetrability with opaqueness for a narrow band of electromagnetic waves' (ibid. 414). Fog and glass are exceptions to this coincidence - air and water are not. By stressing the importance of this coincidence and the general indirect and
random nature of evolved mechanisms of knowing the evolutionary epistemologist commands a novel way of defeating the unwelcome implications of the ocular metaphor itself.

Most importantly, however, the adoption of the evolutionary perspective enables us to form a new, more acceptable, conception of mirroring. It enables us to form a pragmatically justified conception of a relation between thought and reality which is non-unique and non-foundational; one which aspires to none of the absolute certainty or metaphysical representativeness to which Rorty correctly objects. The natural anti-realist, adopting this perspective, stands revealed as a mirror-theorist of an unassuming disposition. Mind, he believes, is constrained by evolutionary factors to be a mirror of nature. But it is but one of many possible mirrors each of which may reflect nature in different ways and in different respects. The variety of 'mirrors' corresponds to the variety of needs and the vagaries of chance involved in the emergence and retention of particular cognitive or sensory traits in a given species. This multiple mirroring, when extended into the scientific sphere becomes the notion of multiple tolerated scientific models mooted by the natural anti-realist in chapter 7 above. Such models are (partially) valid descriptions of mind-independent reality which are nonetheless mirrors of the nature of the theory-builder as much as of the world they describe. Neither science nor the senses, then, can be expected to uncover the mirror-theorist's grail—the true unvarnished image of independent reality. What remains, and what suffices for the non-foundational ends
of the evolutionary epistemologist, is the pragmatic, incomplete and partisan 'mirroring' induced by the considerations of the Appropriateness argument. This buys a relation between thought and the world without inviting the metaphysical excesses to which Rorty, and as we shall now see, Putnam so strongly object.

10.6 Putnam's objections to metaphysical excess find their expression in his attacks on 'externalism' and 'metaphysical realism'. Against these he urges what he calls the 'internalist perspective'. The prime characteristic of the internalist philosopher, according to Putnam, is his refusal to ask the question 'What objects does the world consist of?' except from within the context of a particular theory or description. (Putnam (4) p. 49). The idea that there is one absolutely correct, perspective-free description of how the world is (the classical mirror-theorist's grail) is one which the internalist roundly rejects. The externalist philosopher is thus an incarnation of the classical mirror-theorist who believes that:

The world consists of some fixed totality of mind-independent objects. There is exactly one true and complete description of 'the way the world is'. Truth involves some sort of correspondence relation between words or thought-signs and external things and sets of things.

Putnam (4) 49.

Putnam's internalist believes, by contrast, that this idea of one 'way the world is in itself' is one to which we can attach
no sense. Instead he proposes to settle for a multiplicity of valid descriptions of the world formed according to the needs, interests and capacities of particular beings in particular situations. The world as we know it is thus conceived as being cut up into particular objects and relations according to human needs and abilities. As Putnam puts it: 'Objects' do not exist independently of conceptual schemes. We cut up the world into objects when we introduce one or another scheme of description. Putnam (4)p.52.

For all that, however, Putnam insists that his arguments do not imply that there are no constraints on how we slice up reality at all. Internalism, he insists, is not a 'facile relativism'. The constraints are, as ever, pragmatic. To use Putnam's (very evolutionary) example, a conceptual scheme which told humans they could fly would quickly be proven to be misguided (Putnam (4) 54).

Putnam's internalism, then, has much in common with the natural anti-realist's revised sense of mirroring in that it denies the privileged status of human representations and ideas of reality while continuing to resist the 'free creativity' of a subjective idealism. Yet Putnam, like Rorty, is wary of the naturalised approach. The reason, I think, is just that he (again, like Rorty) tends to see in evolutionary epistemology only what we have termed the 'Appropriateness Argument'. By failing to appreciate also the fallibility/scope constraints on appropriateness Putnam finds in the appeal to evolution an objectionably realistic attitude to truth. The evolutionary
epistemologist, he fears, may try to argue that we have been selected so as to be sensitive to the metaphysically true facts concerning how the world 'really' is. In other words he seems to see in evolutionary epistemology a fallacious argument culminating in the classical mirroring thesis.

For Putnam, the evolutionary theorist in philosophy assumes, at bottom, a metaphysically 'realist' notion of truth; truth as 'correspondence to the facts'.

Putnam (1) 230.

But this, as we have seen, is an erroneous view of the intended impact of the evolutionary claims. Far from underwriting any form of metaphysical realism or classical mirroring-theory, evolutionary considerations may serve to undermine such ambitious conceptions of man's epistemological status. Evolutionary epistemology, pace Putnam's fears, is not in the business of offering a 'scientific theory of the noumena' (Putnam (1) p. 226 - 7). Indeed, part of its interest lies specifically in its opposition to any such pretensions. Naturalised epistemology is thus best seen as a source of new philosophical problems concerning the potential scope of language and thought rather than a solution to old ones such as the problem of the Cartesian sceptic. Putnam's other worry, which is that any naturalised argument for cognitive appropriateness must be unacceptably circular, is therefore unfounded. His point (Putnam (1) p. 246) is that the would-be natural metaphysician must rely on the very things (such as causality and observational data) which his argument is meant to justify. And certainly, some such circularity exists. But it is an objectionable circularity
only if the natural metaphysician is taken to be seeking after justification in the old foundationalist sense, rather than explanation and internal, pragmatic validation in the way we have suggested. If we first assume that knowledge is possible, and then seek to understand how it is possible, then the point about circularity has no ultimate force. Putnam's suspicions, like those of Rorty before him, seem rooted in a misconceived image of the naturalised epistemologist as a born-again foundationalist.

In closing, we may therefore describe the natural anti-realist as a modest internalist. For although he accepts an amended sense of mirroring in which our common-sense and scientific models do reflect the real nature of an independent world, he yet insists that the reflections in question be conceived as at all stages biased, fallible and unprivileged. He is thus unwilling to endorse any claims of full metaphysical mirroring (the idea of the one true theory) or to participate in any search for Cartesian certainty. From the evolutionary perspective he favours we may claim for human thought only the limited and pragmatic validity of an instrument successfully adapted to serve a specific set of needs and answering to a specific range of investigative capacities. Man, it seems, has no licence to credit himself with more. But nature, happily, has no cause to gift him with less.
Conclusions.

We have set out a position (natural anti-realism) which combines a semantic austerity with a useful degree of metaphysical richness. The key to this combination has been the injection, into the anti-realist semantics, of a naturalised epistemological component. Such a component was seen to bolster the anti-realist's demand that grasp of meaning be analysed as an essentially public phenomenon and to donate (anti-realistically) intelligible content to the belief in an independent and potentially transcendent reality; a belief often thought to be endangered by the incapacity of the anti-realist to conceive of any of our sentences as being true or false in full independence of our capacity to recognise them as true or false. We have examined several ways in which the naturalised (in our case evolutionary) epistemologist may form intelligible, internally warranted, concepts of reality as potentially transcending our capacity to know it without needing to regard any of our sentences as expressing claims whose truth-conditions exceed our capacities of recognition. And we have suggested that a notion of reality as independent is available, whether we accept the concepts of the transcendent or not, simply by reflection on the form of our best explanation as to how mind and language (with all its anti-realistically described constraints) came about in the first place. To conceive of reality as both independent of, and as potentially transcending the limits of, human mental activity is at once to defeat the thought (which seems to inspire much misplaced antipathy towards assertability condition semantics) that the anti-realist is of necessity some kind of subjective
idealistic incapable of conceiving of reality as logically independent of the form and contents of human mental activity. The other main results of our investigations may be briefly summed up as follows.

(1) Publicity is relative.

Reflection upon the kind of naturalised considerations which might prompt us to choose an anti-realist semantics yielded the thought that the demand of publicity, though perfectly correct, needs to be explicitly relativised to a given community. Language, both the anti-realist and evolutionary epistemologist agreed, is best understood as an instrumentality, keyed to public criteria and geared to effecting the transfer of useful information among the members of a community. Classical accounts of meaning, by adverting to potentially unrecognisable truth-conditions, artificially detach the meanings of our words from the apparent goal of language and render our grasp of their meanings unduly mysterious. Assertability-condition accounts, by keying meaning to the public circumstances in which we acquire and manifest our grasp of it, are able to treat linguistic understanding as a natural fact. But the principle of the necessary publicity of meaning, conceived as a naturalistic constraint upon plausibly projected meaning-content requires only that meaning be public relative to the capacities of verification and recognition standard within the epistemic community in question. It is not, for example, necessarily the case that the meaning-theorist will always share the
capacities of recognition which, insofar as they are standard among the linguistic community, suffice to explain the native speaker's ability to acquire and manifest (to other native speakers) his grasp of meaning. Meaning, in such cases, is public only to the degree necessary to make their grasp of meaning a naturally explicable fact. Publicity, we may conclude, is always a relative matter; we can form no useful conception of publicity tout court.

A side effect of the decision to treat the demand of publicity as a demand for natural explicability is that grasp of meaning, to meet that requirement, need not be relativised to only the conscious sensitivities of a linguistic community. For natural explanation requires only a communal capacity to detect assertion-warranting stimuli. And such a capacity, we saw, may be enjoyed in full independence of the language-user's conscious knowledge of the nature, or even of the modality, of the stimuli involved.

(2) Concepts of the transcendent.

The keying of meaning to circumstances public within a given community was also an active factor in the formation of a concept of transcendent meaning in a home language $L_1$, for certain claims made in some alien language $L_2$. Thus sentences involving alien secondary quality experiences were seen to be necessarily opaque to us even though we could make (by carrying out tests of non-collusive assent and dissent) the warranted claim that such sentences were meaningful to native speakers of $L_2$. Here, then, was one way in which we were able to generate
an internally intelligible conception of transcendent truth. For we thus conceived that some claims in L₂ may be made true, when they are true, by circumstances inaccessible to any native speaker of L₁. Further concepts of the transcendent formulated involved the probable limitation and bias of man's general intellectual pictures of reality given the basis of such pictures in naturally evolved capacities of sense and cognitive strategies. Science, it was here argued, should be seen only as offering tolerated models of reality, acceptable to beings like ourselves, and not as offering privileged, metaphysically accurate reconstructions of reality which are true or false out of all relation to man's particular cognitive preferences and modes of thought. A 'scientific noumenalism' it was thus argued could take no comfort from an evolutionary view of mind.

(3) Our world and the world-in-itself.

For all that, however, it was no part of our intention to deny the validity of man's scientific theories as (biased, limited, imperfect) accounts of the nature of an independent reality. Nor was it part of our intention to recapitulate a radical Kantian divide between the theories of man, or any other being (with the possible exception of God) and an unknown and unknowable world-in-itself. Our notion of a mind-transcending and mind-independent reality was seen to be a thoroughly non-Kantian one, despite some surface similarities. Material reality, as it figures in the account we developed, is distinguished from the Kantian notion of a noumenal realm in
two (related) ways. First, by the natural anti-realist's conception of a known mechanism (natural selection) bringing the apparent into (imperfect and unprivileged) line with the materially real. Second, by the insistence that the existence of a potentially transcendent material realm is to be treated as a real, as opposed to a mere, possibility. It is a notion grounded in the accessible evolutionary evidence for the claims about cognitive limitation and bias. As such it is not, as Kant's clearly was, a notion of a mere logical possibility (or consistent concept) which might be mobilised to curb the pretensions of sense and to clear a space for faith. The mind-transcending reality invoked by the natural anti-realist is much closer to home. It is not the concept of a truly transcendental reality about which man can necessarily know nothing whatsoever. Rather, it is the concept of our world, about which we already know quite a lot, extending nonetheless beyond the particular form and scope of human knowledge of it.

Our final picture of the relation between human knowledge and material reality may thus be described as a mirroring theory of a radically non-classical kind. The human mind, so our story goes, is indeed a natural mirror of independent reality. But it is only one of many possible such mirrors, and in its glass there glistens not just the image of the world but also, and inextricably, the familiar face of man himself.
NOTES.


2. Examples might be Baldwin's genetic logic or Spencer's naive realist epistemology (see Baldwin, J. *THOUGHTS AND THINGS OR GENETIC LOGIC* (New York: Macmillan, 1906) or the account of Spencer's thought given by Capek, M. in 'The development of Reichenbach's epistemology' *REVIEW OF METAPHYSICS* 11 (1957) p. 42 - 67). A convenient summary of the history of Evolutionary Epistemology is given in Campbell, D. (see Bibliography).

3. Witness the recent works by e.g. Quine, Tennant and Wukstites cited in the Bibliography.


5. For this picture of Wittgenstein's (and by extension, the anti-realist's) attitude to meaning as flowing from a naturalised view of mind I am much indebted to a lecture given by John Skorupski on 'Naturalism and anti-realism' (presented as part of Neil Tennant's anti-realism course at The University of Stirling, December 1983).
NOTES (continued)

6. See Herbert Spencer PRINCIPLES OF PSYCHOLOGY (New York: D,Appleton and Co. 1897) (1st Ed. 1855). For details of his position, or a detailed historical account of the various types of Evolutionary Epistemology to be found in the history of ideas, see Campbell (1).


8. A more complex formulation, taking account of the potential multiplicity of natural functions of one part of a natural object, is available in Wright, L. 'Functions'. (See Bibliography for publication details.)

9. An account of the importance of this somewhat neglected requirement (viz. transmissibility) is available in 'Consciousness and complexity; evolutionary perspectives on the mind-body problem' Bechtel and Richardson, AUSTRALASIAN JOURNAL OF PHILOSOPHY vol.61 no.4 Dec.1983.

10. The term 'satisficing' has also been used in economics. There it is explained as follows. 'Suppose there is some policy A that maximises some output for some given set of inputs, and that a simpler rule of thumb B, does almost but not quite as well. To adopt B would be to 'satisfice'. The justification for adopting B is that it is simpler and less costly in management time and training. In other words, if one takes into account all inputs, including management costs, A is not optimal and B is'. (J.Maynard Smith 'Adaptation and
Satisficing' in commentary on Dennett 'Intentional Systems in cognitive ethology' BEHAVIOURAL AND BRAIN SCIENCES (1983) 6 343 - 390). While admitting that 'the situation in animals is analogous' (ibid 370) Smith prefers, for the reason expressed in the final sentence of the quote, to talk of 'optimisation subject to constraints' - the constraints, namely, laid out in the fallibility/cope argument itself. Nothing in the present thesis, it seems to me, turns on which mode of expression we choose to adopt.

11. i.e. 'Mutation can consist of moving one or more bases from the string, or insertion of one or more additional ones, or the substitution of one nucleotide in place of another at a given location'. Waddington (2) 94 See Bibliography.

12. Some philosophers might object to the application of the hardware/software distinction to human beings. Because mind is necessarily embodied, they would say, it makes no sense to talk of human software. There is no such thing; all there is is hardware, the physical being. In essence, I would agree. There is indeed no such thing as human software. But what there undoubtedly is are various descriptions of the hardware, made at various levels of discourse. The hardware/software distinction I have in mind is thus innocuous because firmly non-ontological. By software, I intend a high-level (semantic) description of the same item which, described at the level of atoms and molecules is the hardware itself. Two such high-level
NOTES (continued)

descriptions may be identical even if the corresponding low-level descriptions differ. Which is what is meant by my claim that the same programme may be instantiated in various software and run on various hardware. The functionalist analysis I offer is therefore quite independent of any problematic ontological dualism.

(For a discussion of functionalism, levels of description of physical systems etc. see Searle. INTENTIONALITY
(C.U.P. 1983).

13. H.A.Lewis, in a symposium article entitled 'The argument from evolution' (Aristotelian Society, Supp. Vol. LIII 1979 p.207 - 223) objects to the Quinian account on the grounds that evolved usefulness and truth (or absolute verisimilitude) may diverge (p.214) hence that evolution cannot be invoked to explain our ability to have true expectations (p.216). Such criticisms depend for their force on a misconception of the Quinian claim, and a failure to take account of the entirely behavioural and pre-semantic nature of the idea of a quality-space. For such prior spacings are invoked to explain the possibility of learning a language and not, in any direct way, to justify the truth of judgments of expectation expressed in language. (For a detailed version of this criticism of Lewis see David Cooper's reply in the same symposium.)

It is worth noting that the account we are developing is at pains to stress the divergence of evolved usefulness of representations and truth, classically conceived. This divergence is the conclusion of the Fallibility/scope argument of 2.5.
14. Portielje (1921) studied the importance of the perception of structural relationships for the behaviour of the European Bittern concluding that:

A very schematic imitation of a head on top of a body (e.g. a disc on a pole) is sufficient to elicit defence reactions and that any detail in a head, eyes for instance, does not play an important part.


15. Spelke (1976) showed that 'naive four-month old infants processed informational invariants across modalities' by seating them midway between two movie screens showing different films and playing the soundtrack to one of the films. The infants spent a significantly greater amount of time watching the film whose soundtrack was being broadcast. (Spelke, E. (1976) 'Infants' intermodal perception of events' COGNITIVE PSYCHOLOGY 8 553-560).

16. Shaw and Pittinger (1977) demonstrated that human adults assess growth and ageing by an unconscious sensitivity to topological transformations of shear and strain.

NOTES (continued)

17. Thus, for example, damage to the left hemisphere seems far more likely to cause linguistic difficulties than damage to the right, which tends to cause spatial awareness dysfunction (see Levy, G. (1979) 'Cerebral asymmetry and the psychology of man' in M. Wittrock (Ed) THE BRAIN AND PSYCHOLOGY (Academic Press, New York) or Moscovitch, M. 'Information processing and the cerebral hemispheres' in M. S. Gazzariga (Ed) HANDBOOK OF BEHAVIOURAL NEUROBIOLOGY (Plenum Press, New York.)


19. Further evidence of the existence of such capacities is found in Dixon, N. F. PRECONSCIOUS PROCESSING (Chichester, England; Wiley 1981). See also Review Article 'Not seeing is believing: perception without awareness' CONTEMPORARY PSYCHOLOGY 1982 Vol. 27 no. II.

20. This possibility was first suggested to me by Neil Tennant. Nor, indeed, is it as implausible as it may sound - see Wiener, H. 'External chemical messengers' in NEW YORK STATE JOURNAL OF MEDICINE Dec. 15 1966.
That is so, at least, as long as our concern is only present-tensed other ascriptions of pain. Where other tenses are concerned, ascriptions of pain may join the ranks of statements the conclusive evidence for whose truth no longer exists.

For this formulation of the evolutionary claims and the idea of exploiting the intuitionist lacuna between \( \forall x (Fx) \) and \( \exists x (\neg Fx) \) I am indebted to correspondence with Crispin Wright.


This is essentially the position suggested at the end of my paper 'Meaning and evolutionary epistemology' (Theoria Vol. IL 1983 Part I p. 23 - 31). The idea of presenting it in terms of Explanation vs. Justification and the example of physical object language is due to Neil Tennant.

A similar view is taken by C.A. Hooker who outlines a philosophy of science which he takes to be in accord with what he terms 'naturalistic realism'. The goal of science, on such a view, is just the 'maximisation of human epistemic potential'. See 'Philosophy and meta-philosophy of science' in Synthese, vol. 32 nos. 1/2 Nov/Dec 1975 pp. 206 - 227.
27. This line of thought has been pursued by Carl Posy in 'The language of appearances and things-in-themselves' *Synthese* 47 (1981) 313 - 352 and 'Dancing to the Antinomy; a proposal for Transcendental Idealism' *American Philosophical Quarterly* Vol. 20, no.1, January 1983, p. 81 - 94.

28. The classic account is given by Lorenz (see Bibliography).

We may notice, in passing, that to adopt such a view is not to preclude the possibility that some concepts, or forms of concepts, are a necessary pre-condition of experience at all. It may be that it is only because material reality is such as to allow the successful use of some concepts (e.g. causality, temporal succession, substance etc.) that self-conscious experience is possible at all. Were material reality more chaotic, experience as we know it could be impossible. (On this see Karl Popper, *Conjectures and Refutations* (London; Routledge and Kegan Paul) p. 47 - 48.

29. The observations on bee-sign systems are reported in *The Discovery of Animal Behaviour* John Sparks (BBC Publications 1982).

30. Thus Schlick believed that language could, in and of itself, communicate 'nothing but the logical structure of the green colour' and not 'that ineffable quality of greenness which appears to constitute its very nature'. See e.g. the lectures on Form and Content given at The University of London in 1932, or Oswald Hanfling's account in *Logical Positivism* (Basil Blackwell, Oxford, 1981) pp. 96,97 from which the above quotes were taken.
NOTES (continued)

31. Kenneth Sayre, in CYBERNETICS AND THE PHILOSOPHY OF MIND (Routledge and Kegan Paul 1976) develops just such an account, arguing, for example, that colours and pains; ... simply are not objects of sensory awareness. There are no information processing channels leading from something called 'pain' to the seat of awareness in the subject's cortex. Pain rather is a feature of the informational processes occurring within the final stages of the perceptual cascade. (Sayre 239)

He goes on to say that although the phrase 'I am aware of ...' may be completed by 'a red object' or just 'red' we should not infer that red is a possible object of perceptual awareness. For one may similarly say 'I am drilling a piece of wood' or 'I am drilling a hole'. The hole, though, is part of the drilling process but the block of wood is not.

32. This kind of distinction seems to have been sharply formulated by Clifford Hooker who is reported (McGinn (3) p.95) as arguing that secondary qualities arise out of the mode or medium in which information about the world is given to us. The article referred to is C. Hooker 'An evolutionary naturalist realist doctrine of perception' in PERCEPTION AND COGNITION: ISSUES IN THE FOUNDATIONS OF PSYCHOLOGY ed. W. Savage (Minnesota: University of Minnesota Press, 1978).

33. See 'What is it like to be a bat?' in Nagel, T. MORTAL QUESTIONS (C.U.P. 1979).

34. This example is due to Andrew Brennan of The University of Stirling.
35. Some philosophers (e.g. Putnam (4) pp. 60 - 64) question the firmness of the primary/secondary distinction itself. If they are right, then much of what we naturally believe to be true of secondary qualities alone will actually be true of all qualities whatsoever. I believe that a reasonable distinction can be made however, in terms of the causal efficacy of some qualities (the primary ones) and the causal inertness of others (the secondary ones). This is not meant to imply that our grasp of primary qualities involves no subjective element, but merely that where secondary qualities are concerned there is nothing but the subjective element. If, however, Putnam is, after all, in the right here this would mean that the conclusions of chapter 9 would apply to all statements whatsoever and not (as I have argued) just to statements involving secondary qualities. This would then amount to a quite radical form of relativism in which to grasp the meaning of any claim involved sharing some physical or functional structure with the being who makes it. It is not clear that such a relativism would be a viable option for the scientific epistemologist since it would threaten (as we saw in Chapter 7) to undermine his own position. I would therefore join with Field ('Realism and relativism' in Journal of Philosophy vol.LXXIX no.10 in resisting Putnam's attempt to assimilate the primary to the secondary qualities tout court.)
NOTES (continued)

36. One result of this is that the simple functionalist account developed in 3.3 (p. 61 - 62 above) must be amended. For doubtless we ought to allow as before, for variable physical realisations of the same subjective nature. Some being may surely see our spectrum of colours by employing some other natural mechanisms to our own. Yet as we saw in chapter 9 it cannot be sufficient, in order to qualify as an alternative physical realisation of the same subjective nature, merely to succeed in making a given range of discriminations among objects. How the discriminations are made, it now seems, is a factor also. The earlier analysis given solely in terms of the capacity to respond in appropriate circumstances is therefore inadequate in this new context (i.e. of secondary quality claims). A more sophisticated account of functional similarity is therefore required if the functionalist account is to be retained at all. In line with the cybernetic model developed in 9.4 we may suggest that, where secondary qualities are involved, the grasp of such terms is dependent not just on what we can call external functional similarity - the capacity to pick out the same sets of objects - but also on internal functional similarity. This latter would amount to the capacity to produce the same range of apparent registrations to accompany the discriminative behaviour. There are, however, problems here in the form of a very real threat of circularity. For the ascription of internal functional similarity now seems to depend on our belief that we share a subjective nature instead of warranting that belief. A physical definition
NOTES (continued)

of internal functional similarity which does not appeal to
the apparent registrations themselves is therefore required.
In default of such a definition, any belief in a full
explanatory functionalist account of the content of claims
involving secondary qualities must remain a tentative one.

37. A similar conclusion is endorsed by McGinn (McGinn (3) p.72).

38. They are

(1) T-Material Realism (see page 168 )

(2) Conceptual Scheme Realism (see pages 107,115).

(3) Phenomenal Relativism (see P3, page 198 )
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