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UNIVERSITY OF STIRLING.

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NATURAL   ANTI-REALISM.

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ACKNOWLEDGEMENTS.

ABBREVIATIONS.

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

CA   'Can Analytical Philosophy be systematic and ought it to be?'

            in TRUTH AND OTHER ENIGMAS (henceforth TO pp. 437 - 459.

CSP   'Common Sense and Physics' in PERCEPTION AND IDENTITY

            Ed. G.Macdonald pp. 1 - 40.

EI   ELEMENTS OF INTUITIONISM.

FD   'Frege's distinction between sense and reference'

            in TO pp. 116 - 145.

FPL   FREGE: PHILOSOPHY OF LANGUAGE.

IF   THE INTERPRETATION OF FREGE'S PHILOSOPHY.

JD   'The justification of deduction' in TO pp. 290 - 319.

P   Preface to TO.

PB   'The philosophical basis of intuitionistic logic'

            in TO pp. 215 - 248.

PL   'Platonism' in TO pp. 202 - 215.

R(1963)   'Realism' in TO pp. 145 - 165.

R(1982)   'Realism' in SYNTHESE 52 pp. 55 - 112.

RP   'The reality of the past' in TO pp. 358 - 375.

RVA   'Realism vs. Anti-realism; a survey with some new thoughts'

            lecture to Stirling University Philosophy Society.

SQ   'The significance of Quine's indeterminacy thesis'

            in TO pp. 375 - 420.

T   'Truth' in TO pp. 1 - 25.

W   'Wittgenstein's philosophy of mathematics' in TO pp.166-186.

WP   'Wang's Paradox' in TO pp.248 - 268.

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. _JD_ 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".[1] This, perhaps, was the understandable backlash against the excesses of the evolutionary moralists and metaphysicians of the late 19th and early 20th centuries.[2] Times, fortunately, have changed.[3] 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. <u>He has it in mind that</u>

<u>instead of conceiving the meaning of a statement of some disputed</u>

<u>class as a function of its classical (i.e. potentially unrecognisable)</u>

<u>truth-conditions, its meaning should be conceived as determined by</u>

<u>the conditions by whose means we might come to regard its assertion</u>

<u>as warranted or unwarranted.</u> 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

$n \geqslant 3$, 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 <u>evidence</u> for a statement of some problematic

kind (R(1963) 146).

This argument, it will be apparent, is a version of the

so-called <u>Manifestation</u> 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 <u>show</u> that grasp of meaning. The argument has a

second incarnation in the form of the demand of intelligible

<u>Acquisition</u>, which insists that all we can learn is how a sentence

is used, for what <u>else</u> 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 <u>teach</u> him about a sentence (i.e. its use), behave just like

someone who understands the meaning of the sentence in question

yet <u>still</u> 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 <u>establishing</u> 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 fiat (PB 217). But to admit that knowledge

of meaning, in the most basic case, must be implicit knowledge is

to invite the demand if 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.

<div align="center">PB 217</div>

Underlying these 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.

(3) 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.

(4) 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.

(5) 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.

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

(7) 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.

(8) 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 _TO_ 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
>
> recognising 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.

<div align="center">PB 221</div>

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 $A \lor - A$). 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 outwith 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, analysible 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 and 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 i
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 recognitional
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 <u>more</u> 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 <u>PHILOSOPHICAL INVESTIGATIONS</u>

concerning private language and following a rule. Thus, for example,

at 59c ' "Understanding a word": a state. But a <u>mental</u> state? '.

Or again;

> Try not to think of understanding as a 'mental process'
>
> at all – for <u>that</u> 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'.

<div align="right">Wittgenstein (1) 61c.</div>

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.[5]

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, divorces 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 inoppertune 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[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 adapt 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 existents ... 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.[7] 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,[8] 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[9]. 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 <u>not</u> 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 <u>Turkish Driver fallacy</u>. 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 <u>not</u> 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 <u>the appropriateness argument</u>. 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:

(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 (kx) bore no relation to Y (- (kxRY))

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 (kxRY).

This somewhat realistic-sounding conclusion, however, needs

amending in several ways to take account of various evolutionary

constraints on the <u>type</u> 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

<u>fallibility/scope argument</u>. 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 <u>our</u> 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

<u>only</u> or even the most usual cause of evolutionary failure; environ-

mental change is a more common killer. But it <u>is</u> a potential cause

of maladaption, 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 <u>sense</u> 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 fulfil!

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 <u>successful</u>, <u>surviving</u> 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 <u>only</u> 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 <u>explains</u> 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[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[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 <u>nature</u> 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

infect 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 rigidness 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 I 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' (JD 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 TD 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 attachement 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 <u>necessity</u> 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.
>
> <div align="right">Dummett <u>IF</u> 444</div>

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.
>
> <div align="right">Wright (3) p.30.</div>

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 <u>concepts</u>
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. (<u>IF</u> 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 injecting 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 PB 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
realisations of the functional structures involved. Satisfaction
of the tests for shared direct recognitional abilities or

unmediated recognitional capacities does not <u>depend</u> 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.[12] 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 <u>functional</u> <u>similarity</u> among language-users.
Recognition of this fact, however, need not preclude the
naturalised epistemologist from suggesting that the best
<u>empirical</u> <u>explanation</u> 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 <u>why</u> 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 TO 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 (ostensively 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[13] 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-realistic 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 austere 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 <u>required</u>
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 <u>shared</u> seems to be that they are grounded in heritable mechanisms
of some kind.One suitable <u>candidate</u> 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.   The Nature of the Impact.

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-realistic 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.

> IF 449 (= R (1982) p.106).

To say <u>whereby</u> 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 <u>epistemologist</u>, 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.

<u>IF</u> 446

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 <u>operate</u>, but that it is also his job to
decide <u>when such capacities exist</u>. 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 <u>announce</u> 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 <u>public manifestability</u> 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 <u>already manifest</u>
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 <u>if</u> such access existed it would
<u>already</u> 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'.
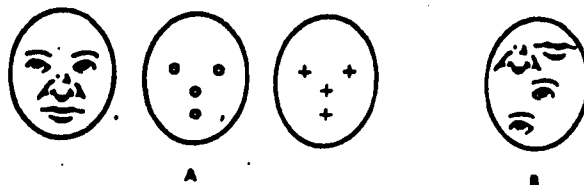
Fig. 1. Comparison between changing the components and changing the schema of a face.

(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,[14] human infants[15] and human adults.[16]

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.[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 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.[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 TO
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.

<div align="center">P in <u>TO</u> xxxvi.</div>

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 <u>meaning</u> 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 <u>dependent</u> 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 flags 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[21]. 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 <u>considers</u> to be appropriate; he need not know

<u>why</u> 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 <u>some</u> 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

<u>human</u> 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 s 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 <u>logical</u> 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 <u>logically</u> 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 <u>indirect route</u> 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

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 _TO_ 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 <u>true</u>

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

<u>consists in</u> 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 <u>only way</u> 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

<u>constitute</u> 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.

                                <u>IF</u> 434.

Our question, in effect, is whether someone might consistently

endorse the latter part of this formulation (the 'objective

reality ... independent of our knowledge) <u>without</u> 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. <u>Given</u> the rejection of classical logic, they say, <u>then</u> 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 Ravnkilde (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 <u>constructive</u> interpretation of the existential quantifier we could not assert even the <u>existence</u> 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 Ravnkilde (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

> _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 _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 sea water 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 <u>facts</u> which warrant our

assertions - in this case, those of science. Such a position

is at least <u>consistent</u> 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 <u>pre-conditions</u> of an evolutionary account. There remains

the matter of the intelligibility of its claimed <u>implications</u>

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 formulable truths of everyday discourse,should

embody an acceptable, if partial and biased, response to mind-

independent reality. Some relation between everyday formulable

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 Ravnkilde

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 theses (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

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 unrecognisably)

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 <u>decidable</u> 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 <u>also</u> 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-realistic _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 Ravnkilde 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?

<div align="right">Rasmussen and Ravnkilde (1) 380.</div>

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 tnis 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) <u>beyond</u> 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 Ravnkilde'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[22] 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 $-\forall x(Fx)$ and $\exists x(- Fx)$ as a means of avoiding the difficulties associated with a constructive interpretation of the existential quantifier. Thus we may exploit the intuition-istic invalidity of the expression

$$L; \quad -\forall x (Fx) \quad \longrightarrow \quad \exists x (- Fx)$$

in order to assert 5' or 6' 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 <u>rule out</u> viz. the constructability of fulfilling instances of the schema $\exists x(- Fx)$ 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 <u>classical</u> treatment of L (in which the inference from $-\forall x(Fx)$ to $\exists x (- Fx)$ is valid) with a <u>constructive</u> interpretation of existential quantification

(in which tne 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 . . 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.

    (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.

    (UC5') For all X; if X is a facet of the material universe
           then X must be knowable by us.

    (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.

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 <u>need</u> be possible to make anti-realist sense of the

claims 5' and 6'.

The natural anti-realist, then, may invoke the intuitionistic

lacuna between $- \forall x \ (Fx)$ and $\exists x \ (- Fx)$ 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.
>
> <div align="right">Lorenz (1) trans. pg.34,</div>

and embrace the humble thought that

> The fundamental indiscernibility of the last detail of
> the thing-in-itself remains,
>
> <div align="right">Lorenz (1) trans. pg.31</div>

<u>without</u> 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.   Evolutionary Epistemology and the Scientific Image.

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 ofthing-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 <u>without</u> 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 <u>truly</u> 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 <u>intelligible</u> as claims about limits, will
still fail to be <u>true</u>. 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[24] 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 <u>possibility</u> 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.63.)

   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 carcase 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 <u>all</u> 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 he says 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 <u>any</u> rational being is compelled to make!

It is the essential <u>primitiveness</u> of the belief-basing and

selecting capacities implicated in scientific theory construction

which therefore leads us to adopt the evolutionary epistemologist's

attitude of <u>critical</u> 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 thoughts 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;

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

<div align="right">Campbell p. 447</div>

7.5 None of this, of course, <u>strictly follows</u> 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 <u>independence</u> 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 tempora'

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 <u>no</u>

'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 <u>not</u>

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 <u>our</u> 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.[25] 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 _TO_ 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 _TO_ 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'.

7.7 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 as affording
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.

<div align="right">van Fraassen p.135.</div>

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 <u>equally</u> 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 <u>what the present</u>

<u>epistemic community could ever observe</u>. Observability is therefore

observability-in-principle <u>and</u> 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.

<div align="right">van Fraassen 16.</div>

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[26].
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 <u>observable</u> 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 <u>tolerance</u>. 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 <u>tolerated</u> 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' <u>maximally tolerated</u> 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 <u>tolerated</u>

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
& the 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[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 _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:

> 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.

B. 272

Yet he believes _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 _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

transcendentals 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 (Findlay 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.

<u>But this distinction is one to which the anti-realist is not</u>

<u>entitled.</u> For the anti-realist, <u>all</u> 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 <u>recognise</u> 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 B303).

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 <u>impossibility</u> 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 <u>also</u> 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[28]. 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

<u>production</u> 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 transcend-
ental 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 <u>our</u> 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 <u>independent</u> 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 $P, Q, R, S_{n1} \ldots_{nx}$. 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 <u>direct recognitional access</u> to the conditions

which make some statements true. It is the quarry of chapter 9

following.

9.   On Blind Men and Martians; an anti-realist's guide to the

     galaxy.

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. 10.7 above) is quite independent of the other

two.   It flows solely from the contingency of human direct recog-

nitional 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 <u>not</u> 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 show 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 <u>the only meaning we can confer on our</u>

<u>sentences must relate to those means of determining their</u>

<u>truth-values which we actually possess</u>.

Dummett. T in <u>TO</u> 24. (My stress).

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 <u>our</u> sensible intuition

is of no advantage to us ... only <u>our</u> 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 <u>to us</u> 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 <u>our</u> 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 θ' and 'Y is not θ' 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 θ of X we must find
some way of making the discrimination of θ intelligible to us.
One way would be by the scientific measurement of wavelengths
of light reflecting off objects said to be θ. In that case,
assuming we find a distinctive wavelength to correlate with θ,
we may claim mediate access to the truth-conditions of the claim
that X is θ. So it may seem we have no cause to concede that
there are true claims in the alien language L_2 with truth-conditions
which are verification-transcendent to users of L_1.

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 θ'. For we know when 'X is θ' 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 L_1) 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 θ which exceeds our own basic visual range then their
sensitivity to θ 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[29]
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 θ. 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 evangelic

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 θ.
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 θ. 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 θ, such and such an object
is not θ, etc. . Try as we may we continually fail to grasp what
property of the objects is at issue. When pressed, the aliens
tell us θ is a secondary quality which they see but which is not
like human colours. And yes, they can draw us pictures of θ -objects.
Except we cannot, alas, recognise the θ-element in their
representations. They do not know how to test scientifically for
θ, 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 θ',
said of some object X, means at all. All we know is when the aliens,

as a matter of fact, call something θ. But perhaps this is

enough. For surely all we had in case one was a means of testing

for θ. So why not, in case two, just use the aliens themselves

as θ-detecting instruments. Wouldn't that, pace our initial

intuition that we have no idea of the meaning of θ in case two

at all, give us just as much information concerning the meaning

of θ 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 θ' is assertible and having an alien

tell us when it is?

The scientist, in case one, has a <u>mediate</u> grasp of the

'meaning' of θ. 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 <u>some</u> 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 θ correlated

with readings on the dials of light sensitive measuring devices etc..

In case one then we do not arrive at our understanding of θ 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 θ in the same

way as they do by our capacity to <u>use</u> θ correctly (i.e. as they do).

The meaning of θ, 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 θ-detecting instruments of a quasi-scientific kind and claim a mediate grasp of θ like that? Of course not. For in that case we would have no independent decision procedure by which to determine whether θ 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 θ'. He would say this in view of our demonstrable capacity to use θ 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 <u>he</u> (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 <u>something</u> of the meaning of the terms involved e.g. we know that if the battery is flat the car (ceteris parabis) won't start. And the rest is uncashed cheques; we <u>could</u> 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 <u>nothing</u> of the distinctive meaning content of θ (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 θ' eludes us. Which is not to say that we know
nothing of semantic interest concerning θ at all. For what we
do know is that θ 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 θ, that the aliens themselves know
the meaning of the term, for we can perform tests of alien
competence in the use of θ based on θ-groupings provided unseen
by some members of the alien community and tested on others.
Thus we may get a group of θ-objects (picked out by an alien)
and ask other aliens whether the objects are all θ. If they
continually get it right — i.e. agree non-collusively as to
which objects are θ and which are not — we must surely grant
their anti-realistically sound grasp of the meaning of θ. 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 Θ', made in L_2, is therefore a claim the truth-conditions of which are transcendent with respect to speakers of L_1. We can tell <u>when</u> 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 Θ is one whose meaning we demonstrably failed to grasp. Even though the claim that users of L_2 grasp the meaning of 'X is Θ' is one we have every reason to accept. We must therefore admit, with the anti-realist, that:

(P1)   There is no sentence <u>whose meaning we grasp</u> which

has verification-transcendent truth-conditions.

For we can neither acquire nor manifest any grasp of the meaning of Θ in case two. But we must also allow that:

(P2)   There may be sentences <u>which we grasp to have</u>
       <u>meaning</u> (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 θ" 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 θ' 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 <u>given us</u> a θ-discriminator but we still did

not understand how it worked i.e. <u>what</u> it measured (except

trivially i.e. it measures the presence of θ). In all these

cases the augmented interpreter is no better off than the

non-augmented one. For we might as well <u>ask</u> 'Is that red?',

'Is it θ?' 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 <u>themselves</u> as opposed to a measure of some alleged

physical correlate to such properties. To understand the machine

would be to understand the <u>correlate</u>, but it would not (for

reasons to become apparent) help us to understand the meaning

of alien sentences which employ the term θ, 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 θ-user, grasps when he learns the meaning of 'θ' 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 <u>complete</u> grasp of the meaning of θ
after all. By virtue of his grasp of the underlying physical
conditions of the use of θ 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 L_2.

The scientific epistemologist, we might say, has grasped
what we now term the <u>underlying</u> conditions of use of θ. But
these need not in any way be associated with the grasp of
meaning which the native speaker of L_2 acquires by exposure
to public conditions of assertability of θ. In which case the
scientist has certainly grasped <u>something</u>, and it is related to
the matter of <u>when</u> θ is assertible as true of some X. But he

has not really grasped the meaning of 'X is θ' 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 θ for some object is obviously not

necessary for a grasp of the meaning of 'X is θ' (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 θ.

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 representer'. 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 θ must turn directly on the lack,

in the home case, of the alien θ _Qualia_. For if we have achieved

scientific measurement of the conditions under which aliens

assert to θ-ascriptions, and can reliably predict such assent,

where _else_ could the difference between our augmented and their

direct grasp of θ 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 recognitional

capacity trained on a given secondary quality such as redness
or θ-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 θ-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[31] is the explanation behind the 'peculiar'

opaqueness of Qualia. Since Qualia are due to processing

they are not themselves codable as input, as information even

though they may _carry_ genuine information[32]. 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.
>
> <div align="right">Dennett (2) p.25</div>

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[33], 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 θ in just the same cases as the alien?

       An initial thought is that it is the directness of the
alien's apprehension of θ 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 θ (which might differ even among aliens) but the
direct nature of their capacity to recognise when θ applies.
The difference in use between a direct and mediated grasp of
the circumstances in which θ 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 θ-objects which

intuitively still afford the beings who employ them no

proper grasp of θ.

Thus suppose[34](case three) the aliens use θ to distinguish

two kinds of violet. One, the θ-violet, looks (to us) identical

to the other (the θ-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 θ-violets have

a distinctive and unpleasant odour which θ-less violets lack.

Supposing θ to be a colour discrimination we lack, we may even

go so far as to make the tie of θ-violet to stinking-violet

(for want of a better name!) lawful. The chemical which tinges

the leaves of the violet θ 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 θ'.

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 θ and the

distinctive odour are not always and everywhere found in

convenient conjunction. So the potential divergence of use

between θ-based and odour-based discriminations is what grounds

the intuition of a difference in meaning between the term θ and

some odour-term θ'. 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 θ and non-θ 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 θ).

The lack of such correlations shows up in our attitudes to

the defeasability 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 θ between native users of θ and

any communities who base their ascriptions of θ on either

different modes of direct recognition of circumstances apt

for the description θ or on some mediate means of recognising

when θ 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 θ was always and

everywhere conjoined with the human-detected presence of θ' up

until a given date. Subsequently, however, we encounter an

object which they identify as having the distinctive look of θ,

but which doesn't smell, to us, of θ'. Would we say that the

aliens are mistaken in their communally agreed belief that

the new object looks θ ?   Surely not, for to paraphrase McGinn,

being θ is best analysed as looking θ, so we cannot plausibly

claim that an object which they say looks θ is actually non-θ.

(See McGinn (3) p.15.) Or would we say that we were mistaken

in thinking that the new object did not smell of θ ? 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 θ' is something other than what we mean

by "X smells of θ'" and that exactly what the alien sentences

involving θ 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 θ.

      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 θ-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 θ'just as we cannot grasp the

meaning of their claim that the violet is θ. And this even

though, as a matter of fact, θ' and θ 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 θ, for the simple

reason that whatever the alternative channel or scientific

method measures it is <u>not θ itself</u>, but only some contingent

correlate of θ. As a result we can always conceive of the use

of the two coming apart without either item (θ 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[36]. 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[37].

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 θ) 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[38] 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 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 <u>necessarily missing</u>.
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 <u>agree</u> 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

constiture 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. <u>Either</u> the given is completely ineffable

and indescribable - in which case it cannot stand as a foundation for

anything - <u>or</u> 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.

<div align="right">Rorty (1) p.299</div>

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.

<div align="right">Lorenz Trans. p.29</div>

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 <u>privileged</u> insights. For science, to the evolution-
ary 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 <u>certainty</u>. 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
<u>certainty</u>. 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 ofinformation'

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 <u>vicariously representable as</u> X, Y or Z;

but this does not make it <u>like</u> 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 <u>internalist</u> 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, <u>still</u> 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 <u>mechanism</u> (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 <u>not</u> 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_ represent-
ations 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 Sellars, 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 naturalised investigations into
the mechanisms of knowing.

10.5 Apart from underscoring his criticisms of classical
mirroring theories, natutalised 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

idealist 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 L_2 may be made
true, when they are true, by circumstances inaccessible to
any native speaker of L_1. 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 <u>logical possibility</u>
(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 <u>our world</u>,
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.

1.   Russell, B. in a letter quoted in <u>DEAR RUSSELL — DEAR JOURDAIN</u>

      I. Gratton-Guinness (Duckworth, London 1977) p.126.

2.   Examples might be Baldwin's genetic logic or Spencer's

      naive realist epistemology (see Baldwin,J. <u>THOUGHTS AND</u>

      <u>THINGS OR GENETIC LOGIC</u> (New York: Macmillan, 1906) or

      the account of Spencer's thought given by Capek, M. in

      'The development of Reichenbach's epistemology' <u>REVIEW</u>

      <u>OF METAPHYSICS</u> 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

      Wuketits cited in the Bibliography.

4.   The quotes are taken from Frege's review of Husserl's

      <u>PHILOSOPHIE DER ARITHMETIK</u> (C.E.M.Pfeffer, Leipzig, 1981)

      published in <u>ZEITSCHRIFT FÜR PHILOSOPHIE UND PHIL.KRITIK</u>

      vol.103 (1894) pp. 313 - 332. They are translated in

      P.Geach and M.Black (Eds) <u>TRANSLATIONS FROM THE PHILOSOPHICAL</u>

      <u>WRITINGS OF GOTTLOB FREGE</u> (Blackwell; Oxford, 1980) p.79.

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).

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).

7. On this see A.Brennan 'The Moral Standing of Natural Objects'
    in ENVIRONMENTAL ETHICS 6, (1984) p.35 – 56.

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

NOTES (continued)

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/scope 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

representationsand truth, classically conceived. This

divergence is the conclusion of the Fallibility/scope argument

of 2.5.

NOTES (continued)

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.
    > (Portielje, A.F.J. (1921) 'Zur Ethologie BZW Psychologie
    > von Botaurus Stellaris' ARDEA 15, 1 - 15. Quoted in
    > McCabe (1) 506).

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.
    (Shaw and Pittinger (1977) 'On perceiving change' in
    H.Pick and E.Salzman (Eds) MODES OF PERCEIVING AND
    PROCESSING INFORMATION (Lawrence Erlbaum Associates,
    Hillsdale, New Jersey.)).

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
    assymetry 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.))

18. E.g. Hacaen, H. (1962) 'Clinical symptology in right
    and left hemisphere lesions' in V.B. Mountcastle (Ed)
    INTERHEMISPHERIC RELATIONS AND CEREBRAL DOMINANCE
    (John Hopkins University Press, Baltimore). See also
    Susan Carey and Rhea Diamond 'From piecemeal to
    configurational representation of faces'.
    SCIENCE 195 (1977) 312 - 314.

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.

NOTES   (continued)

21.   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.

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

23.   As reported in The Guardian, Thursday July 19, 1984, p.13.

24.   The account of Bayesian theory which follows owes much to
      Putnam's exposition in REASON, TRUTH AND HISTORY (see
      Bibliography) pp. 188 - 196. Classical accounts include
      R.Jeffrey 'Valuation and acceptance of scientific hypotheses'
      in PHILOSOPHY OF SCIENCE XXIII, 3 (July 1956) p. 237 - 246
      and L.J.Savage THE FOUNDATIONS OF STATISTICS (New York,Dover,1972).

25.   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.

26.   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.

NOTES   (continued)

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 <u>CYBERNETICS AND THE PHILOSOPHY OF MIND</u>

(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
>
> <u>processes</u> 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

<u>drilling process</u> 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 <u>PERCEPTION AND COGNITION: ISSUES IN</u>

<u>THE FOUNDATIONS OF PSYCHOLOGY</u> ed. W.Savage (Minnesota:

University of Minnesota Press, 1978).

33.   See 'What is it like to be a bat?' in Nagel,T. <u>MORTAL QUESTIONS</u>

(C.U.P. 1979).

34.   This example is due to Andrew Brennan of The University of Stirling.

NOTES (continued)

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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