TREADING WATER IN NEURATH'S SHIP: QUINE, DAVIDSON, RORTY

CHRISTOPHER NORRIS
University of Wales, Cardiff

ABSTRACT

This article examines what I take to be some of the wrong turns and false dilemmas that analytic philosophy has run into since Quine's well-known attack on the two 'last dogmas' of old style Logical Empiricism. In particular it traces the consequences of Quine's argument for a thoroughly naturalized epistemology, one that would view philosophy of science as 'all the philosophy we need', and that defines 'philosophy of science' in narrowly physicalist terms. I contend that this amounts to a third residual dogma of empiricism and that its effect has been chiefly to restrict the range of post-Quinean debate by setting an agenda which preemptively excludes all interest in the wider (i.e., critical and normative) dimensions of philosophic enquiry. Its influence can be seen in various responses to Quine, among them those of Donald Davidson and Richard Rorty, both of whom adopt a similar, reductively physicalist approach to issues of meaning, knowledge and truth. Where Davidson takes issue with other Quinean doctrines such as framework-relativism and radical meaning variance, Rorty pushes those doctrines right through to a wholesale relativist (or 'textualist') position according to which interpretation is completely unconstrained by the mere fact of a causal 'correspondence' between beliefs and reality. What they both share — and what thus lays Davidson open to a revisionist reading in Rorty's favoured style — is this Quine-derived notion that beliefs can be explained in terms of a reflex stimulus response psychology that finds no room for normative issues of epistemological warrant or justification. For it will then seem plausible for Rorty to claim that any 'beliefs'

© *Principia*, **2**(2) (1998) pp. 227–79. Published by Editora da UFSC, and NEL — Epistemology and Logic Research Group, Federal University of Santa Catarina (UFSC), Brazil

acquired by such a rudimentary mechanism are compatible with pretty much any higher-level theory or description that one cares to place upon them. My article goes on to criticize Rorty's most extreme statement of the case — in his essay 'Texts and Lumps' — and (more constructively) to suggest some ways forward from this post empiricist predicament.

1. Quine: reductive physicalism

For Quine, famously, philosophy of science is all the philosophy we need. What he means by 'philosophy of science' is basically a strong reductionist programme for shedding all that surplus metaphysical baggage that went along with previous approaches to issues of knowledge and truth.[1] Epistemology can be naturalized — rendered properly scientific — by cutting out vague mentalist talk of 'ideas', 'beliefs', 'concepts', 'meanings', 'propositional attitudes', etc., and replacing it with hard-headed physicalist talk of assenting or dissenting dispositions. 'My position is a naturalistic one', he writes. That is to say:

> I see philosophy not as an a priori propaedeutic or groundwork for science, but as continuous with science. I see philosophy and science as in the same boat — a boat which, to revert to Neurath's figure , we can rebuild only at sea while staying afloat in it. There is no external vantage point, no first philosophy.[2]

Epistemology must therefore take a lead from behavioral pyschology which in turn takes its methods and investigative bearings from the natural sciences. Of course epistemologists have typically supposed themselves to deal in issues of knowledge and truth beyond any such merely psychological or naturalistic methods of enquiry. For Quine, however, this is just an old-style delusion of philosophic grandeur which should henceforth be abandoned along

with the residual 'dogmas' (i e , the lingering metaphysical commitments) of logical empiricism [3]

Philosophy of language falls into line by likewise rejecting all mentalist predicates, eschewing any notion of privileged access to meanings or intentions, and adopting a stimulus-response theory of verbal behaviour This despite the problems that arise from Quine's equally well-known thesis of ontological relativity, i e , his case that there is room for doubt with regard to even the most apparently straightforward items of verbal behaviour, as for instance when the native informant points toward a rabbit and pronounces the word 'Gavagai!' [4] There is an interesting passage from Word and Object where Quine actually links this problem about the indeterminacy of translation with Brentano's thesis concerning the irreducibility of intentional idioms One may accept that thesis, he writes, 'either as showing the indispensability of intentional idioms and the importance of an autonomous science of intention or as showing the baselessness of intentional idioms and the emptiness of the science of intention My attitude, unlike Brentano's, is the second' [5] In this respect Quine follows the dominant line among Anglo-American analytic philosphers for whom the issue was pretty much settled when Frege took Brentano's student Husserl to task for allowing his logic to be contaminated by elements of so-called 'psychologism' [6] On this view there is no genuine distinction — least of all a transcendentally valid distinction such as Husserl sought to uphold — between matters of empirical psychology and matters of apodictic warrant [7]

Still there is the question as to whether this charge was justified or whether Husserl's logical researches might possess a claim to genuine analytic rigour, despite being couched in the intentionalist idiom foresworn by Frege's heirs and disciples [8] Just recently some analytical philoso-

phers, Michael Dummett among them, have suggested that perhaps the lines of demarcation are not so clearly drawn, even if — as in Dummett's qualified revisionist account — it is most often Frege (not Husserl) who predictably has the last word in matters of logical truth and accountability [9] Moreover, this leads on to the issue of just how far — and with what philosophical warrant — one can rule out intentional (or intensional) predicates and contexts in seeking to explicate the structure and content of truth For there is, I shall argue, a case to be made that the self-denying ordinance of Quinean physicalism is such as to foreclose any adequate account of what is involved in even the most basic forms of perceptual, cognitive, epistemic, and linguistic-communicative grasp That is to say, intentionality is indeed 'irreducible' in the sense that Bretano (and Husserl after him) maintained, rather than — as Quine would have it — just a remnant of our old psychologistic or pre-scientific modes of thought On the contrary Quine's reductionist physicalism is just what leads to such hyperinduced problems as that of 'radical translation' between different conceptual schemes or of deciding just which among the range of possible objects (rabbit? spatio-temporal rabbit-slice? undetached rabbit-part?) corresponds to some item of observed linguistic behaviour In short, this approach makes no allowance for two main sources of shared and communicable knowledge Thus (1) such knowledge presupposes the existence of a real-world object domain containing manifold distinctive items along with their characteristic attributes, property clusters, natural-kind resemblances, causal dispositions, genotypal features, molecular or subatomic structures, etc And (2) we are able to identify those objects reliably enough — at least in the majority of cases — through a process of ongoing causal interaction with them and also through the further understanding that

is typically acquired in various (everyday or specialized) contexts of enquiry [10]

With respect to (1) Quine regards such claims as acceptable on pragmatist grounds — i e , in so far as they play some role in our present-best scientific theories — but sees no reason (convenience aside) for supposing them to capture anything more in the way of reality or truth With respect to (2) he acknowledges the causal component in belief-acquisition but treats it in purely physicalist terms — as *a matter of reflex responses to incoming stimuli* — and thereby effectively blocks the appeal to those deeper knowledge-constitutive features that emerge in our ongoing epistemic commerce with the world Moreover, Quine has little choice but to adopt this approach given both his strict veto on 'intentionalist' talk (which would apply to any save a fully naturalized or hardline physicalist epistemology), and of course his doctrine of wholesale ontological relativity (which rules out the prospect of our ever getting things right except with reference to the scheme-relative criteria of thinghood and rightness that happen to obtain within our own present-day scientific culture) Thus '[o]ur talk of external things, our very notion of things, is just a conceptual apparatus that helps us to foresee and control the triggering of our sensory receptors in the light of previous triggerings of our sensory receptors' [11] However — as I have argued at length elsewhere — this offers no adequate means of addressing those well-known problems (of ontological relativity, the nature of scientific paradigm-shifts, the underdetermination of theory by evidence, or the theory-laden character of observation-statements) that arise in consequence of Quine's physicalist-behaviorist approach [12] That is to say, he pushes so far with the case for a naturalized epistemology that it leaves no room for any treatment of issues that must surely be central to philosophy of sci-

ence and — no less — to related work in philosophy of mind and language These include the basic question as to just how far — and on what rational grounds — we can claim to understand other people's meanings and intentions, or can make sense of scientific worldviews (paradigms, theories, conceptual schemes etc) other than our own

On Quine's account we have no choice in the matter since a behaviorist approach is the only viable option once we have taken his point about the perils in store for anyone who rashly has recourse to intentional or other such 'mentalist' idioms and predicates Thus '[w]e depend strictly on overt behavior As long as our command of language fits all external checkpoints, where our utterance or our reaction to someone's utterance can be appraised in the light of some shared situation, so long all is well' [13] But if this were the case then we could never make a start in construing other people's utterances, in understanding what led them to adopt (or to reject) some particular item of belief, or again — as concerns philosophy and history of science — in reconstructing the various interrelated thought-processes (theoretical, observational, hypothetico-deductive, etc) which produced some particular paradigm-change For, in Quine's view, these are just the sorts of issue that we should have left behind with the passage to a naturalized epistemology, one that is 'continuous with science' in the sense of rejecting all normative constraints on the conduct of enquiry other than those with a direct grounding in the methods of behavioral (stimulus-response) psychology

In philosophy of logic also Quine puts the case that we need nothing more than the quantified first-order predicate calculus joined to a strictly extensionalist semantics In short '[t]o be is to be the value of a variable There are no

ultimate philosophical problems concerning terms and their reference, but only concerning variables and their values, and there are no ultimate philosophical problems concernng existence except insofar as existence is expressed by the quantifier (∃x) [14] For we shall otherwise run into all sorts of trouble with the axiom of substitutability *salva veritate* for referentially synonymous terms in 'opaque' or belief-related contexts, that is to say, with the fact that there is no necessary truth-functional equivalence between pairs of sentences such as 'Mary believes that Cicero denounced Catiline' and 'Mary believes that Tully denounced Catiline' ('Cicero' and 'Tully' being different designations for the selfsame historical person) [15] This problem crops up if she should happen to not know that both names have an identical referent, so that one sentence is a true description of what Mary believes while the other is either false or lacking in any determinate truth-value In which case, he advises, we had much better avoid these intentionalist/ intensionalist quagmires and stick to the austere Quinean regimen as described above

There is a similar objection — Quine maintains — to the idea of quantifying into modal contexts, or supposing (in company with philosophers like Kripke) that truth-values range over various alternative possible 'worlds', some of them logically compossible with ours and varying only in respect of contingent details, while others involve a more radical departure with regard to matters of necessary truth in the world we actually inhabit [16] I have no room here for a detailed discussion of the far-reaching consequences that Kripke derives from this modalized theory of naming and necessity Sufficient to say that Quine views them as a source of yet further 'metaphysical' bewilderment which can best be got over by returning to the firm ground of first-order quantified predicate logic, extensionalist seman-

tics, and a straightforward physicalist ontology [17] For it can always transpire on Kripke's account, despite his talk of 'rigid' reference-fixing, that what ought to be synonymous (extensionally equivalent) terms acquire different criteria of valid application when translated from one such 'world' to another They thus become opaque or resistant to logical analysis in much the same way as those other problem cases that involve various mind-states, beliefs, meanings, ascriptions of utterer's intent, and so forth Moreover this applies to any programme of epistemological enquiry that forsakes the narrow Quinean path and raises questions about knowledge or truth beyond the strict extensionalist remit

Nevertheless Quine's physicalism goes along with a doctrine of ontological relativity which appears to undercut any support it might offer for realist arguments in philosophy of science On this view — as enounced in 'Two Dogmas of Empiricism' — there exist as many objects (putative realia) as there exist variant ontologies or conceptual schemes for picking them out in accordance with prevalent notions of reality and truth Thus, ultimately speaking, there is no difference — in point of ontological status — between brick houses on Elm Street, numbers, mathematical classes, centaurs, and Homer's gods [18] This is not to say that we should go the whole hog with cultural relativists and consider them all equally entitled to endorsement from a present-day informed scientific viewpoint For it is Quine's opinion — speaking 'qua lay physicist' — that the houses and numbers have a strong claim to rationally warranted belief, as compared with the gods, centaurs, and suchlike (in his view) mythic or nonexistent entities Still this preference can only be a matter of what counts *for us* as 'rational' and 'warranted', that is say, whatever has a role in our currently most favoured ontological scheme

Thus

> [p]hysical objects are conceptually imported into the situation as convenient intermediaries — not by definition in terms of experience, but simply as irreducible posits comparable, epistemologically, to the gods of Homer Moreover, the abstract entities which are the substance of mathematics — ultimately classes and classes of classes and so on up — are another posit in the same spirit Epistemologically these are myths on the same footing with physical objects and gods, neither better nor worse except in the degree to which they expedite our dealings with sense experiences [19]

So the end-result of Quine's intransigent physicalism and his vigorous stropping of Occam's Razor is to leave us ultimately bereft of any means for distinguishing real from (say) fictive, imaginary, hypothetical, or non-existent objects Rather, we can and do make such distinctions readily enough, but only from within a given ontology or conceptual scheme which itself sets the terms for whatever counts as 'real' by our present best cultural, commonsense, or scientific lights

This is — to say the least — an ironic upshot if set alongside Quine's vigorous rejection of Brentano's thesis concerning the indispensability of intentional idioms For one of his chief objections to that thesis, like Russell's before him, is that it leads to a massively inflated ontology replete with all manner of 'intentional objects' which should have no place in a physicalist (science-led) worldview Yet it is just this narrowly physicalist conception which leads him to place the whole range of above-mentioned items — brick houses, numbers, classes, centaurs, the gods of Homer — on the same epistemological footing, that is to say, as 'myths', 'posits' or 'convenient intermediaries' imported in order to 'expedite our dealings

with sense experiences' Of course it might be said that the gods and centaurs — unlike the numbers and classes — are scarcely the sorts of thing that can be thought to render any such service in helping us to make better (scientifically respectable) sense of our commerce with physical reality But this is just as surely to miss Quine's point namely that 'reality' is always in the end what we make of it according to some given ontological scheme or some existing 'canonical notation' for assigning values to variables

At times Quine describes this programme in a way that makes it sound perfectly compatible with the sturdiest form of epistemological realism Thus '[t]he quest of a simplest, clearest overall pattern of canonical notation is not to be distinguished from a quest for ultimate categories, a limning of the most general traits of reality' [20] And again '[e]ntification begins begins at arm's length, the points of condensation in the primordial conceptual scheme are things glimpsed, not glimpses' [21] However these passages and others like them must be taken in conjunction with his statements elsewhere concerning the scheme-relative or pragmatically negotiable character of all such claims For it is a curious feature of Quine's physicalism that it exerts so little constraint upon the range of items that he is willing to admit — in principle at least — as candidates for 'entification'

The main reason, I would suggest, is that Quine is himself still in the grip of at least one dogma that characterized old-style logical empiricism This is the belief — going back to Locke and Hume — that there exist certain ultimate problems confronting any realist or causal-explanatory approach to issues in epistemology and philosophy of science Hence his well-nigh heroic attempt to maintain a hardline physicalist or 'scientific' outlook while making such large concessions to the case for ontological relativity, meaning-

variance, underdetermination of theories by evidence, the theory-laden character of observation-statements, and so forth On Quine's argument there is simply no route — other than the pragmatist line of least resistance — from the basic observation-data or physical 'stimuli' to the theory that best accounts for those data or which provides the most adequate causal-explanatory framework Rather, theories and observation-statements are always subject to revision under pressure from conflicts or anomalies at this or that point in the total 'fabric' of currently accredited beliefs Thus it follows from Quine's combination of reductive physicalism and meaning-holism that there cannot be anything in *the nature of things* — or in the grounds of our knowledge concerning them — that could warrant our asserting some particular claim with respect to some particular (non-scheme-relative) item of physical reality

This is where the doctrine of ontological relativity strikes against any kind of realist theory concerning — say — the constituents of matter, their subatomic structures, molecular compositions, chemical valencies, causal dispositions, emergent biological properties, etc It is physicalist just in so far as it takes sense-data (or unmediated 'stimuli') as our sole means of access to the physical world Otherwise it finds no room for any further epistemological grounds of appeal save — in holistic terms — to the notional 'entirety' of science as a ultimate framework wherein those data are accommodated through a process of ongoing revision or pragmatic adjustment What drops out completely on this Quinean account is the concept of epistemology as a discipline aimed toward providing a *normative and justificatory* treatment of scientific knowledge or of the various procedures of thought — evidential reasoning, theory-construction, and inference to the best explanation — that characterize scientific enquiry For of course it is pre-

cisely Quine's ambition to naturalize epistemology by purging it of all such intentional or 'mentalist' residues Thus '[o]ur acceptance of an ontology is, I think, similar in principle to our acceptance of a scientific theory , we adopt, at least insofar as we are reasonable, the simplest conceptual scheme into which the disordered fragments of raw experience can be fitted and arranged' [22] But in that case — it might be asked — what should count as a 'reasonable' way of assessing the results given that this whole process is somehow thought to transpire in the epistemologically vacuous space between sensory inputs (physical stimuli) and overall, pragmatically adjusted 'conceptual scheme'? Then again how is it — lacking such epistemological resources — that the 'disordered fragments of raw experience' can be somehow transformed into a 'scientific theory' (along with its attendant ontology) capable of meeting the basic criteria of scope, specificity, empirical 'fit', conceptual-explanatory grasp, and so forth?

Quine's theory provides no answer to these questions, premised as it is on a reductive physicalist account of knowledge-acquisition that excludes them from the remit of a properly scientific (i e , naturalized) approach 'Epistemology is best looked upon', Quine suggests, 'as an enterprise within natural science Cartesian doubt is not the way to begin Retaining our present beliefs about nature, we can still ask how we have arrived at them '[23] However this passage also raises more problems than it can possibly resolve For one thing it sets up the debate in a thoroughly skewed and unrepresentative way, as if the method of 'Cartesian doubt' — and its supposed issue in certain indubitable truths of reason — were the sole alternative to Quine's programme for a thoroughly naturalized epistemology But this is to ignore the entire history of post-Cartesian arguments — from Kant to Husserl and beyond

— against such narrowly foundationalist ideas of the solitary *cogito* (or first-person knowing subject) as ultimate source and guarantee of knowledge At very least it may be held, *contra* Quine's argument, that epistemology in the other (broadly speaking 'continental') line of descent has produced some far more sophisticated analyses of the relation between sensory-perceptual experience and the various forms and modalities of conceptual understanding [24] Also it signally fails to explain what is involved in that naturalistic account whereby, as Quine says, 'retaining our present beliefs about nature, we can still ask how we have arrived at them' For on the physicalist acount such a story would lack any kind of normative dimension, amounting to a kind of natural history of the various beliefs (or dispositional states) brought about by direct exposure to incoming physical stimuli This is a causal-explanatory theory only in the crudest, most reductionist sense that it 'explains' what we know (or think we know) by reference to our history of behavioral interactions with objects in the physical world whose nature, structure, defining attributes, causal capacities, etc , are quite beyond reach of any deeper explanation in the causal-realist mode

In short, Quine's behaviorism goes along with his attitude of deep-grained Humean scepticism regarding causal explanations, his aversion to 'intentionalist' talk in whatever (semantic or epistemological) guise, and his twin theses of meaning-holism and ontological relativity For these doctrinal commitments all have their source — as I have argued above — in Quine's hardline physicalist approach to matters of meaning, knowledge, and truth 'Meaning' becomes just an otiose term, one that can be happily dispensed with once we take the behaviorist point 'Knowledge' becomes just a matter of pragmatic adjustment to the incoming 'barrage' of sensory stimuli plus whatever

is needed in the way of theories and (so-called) logical 'laws of thought', themselves always open to revision under pressure from recalcitrant 'evidence' And 'truth' becomes a concept entirely devoid of normative or justificatory force since, on this view, it is merely the name that attaches to whatever fits in with the rest of our beliefs or current (pragmatically adjusted) ontological commitments Thus, despite Quine's avowals of sturdy commonsense realism with regard to the physical sciences, his outlook is thoroughly anti-realist in the sense that it denies the very possibility of verification-transcendent truths Moreover, unlike Dummett and others who have propounded anti-realism as a technical doctrine in philosophy of language and logic, Quine links this argument up with a pragmatist conception of enquiry according to which — in principle at least — there is nothing (right down to the so-called logical 'laws of thought') that might not conceivably have to be revised in response to some recalcitrant 'experience' or other [25] In short, Quine's programme is one that would effectively spell an end to the entire enterprise of normative epistemology and philosophy of science

2. Davidson and Rorty

Similar problems can be seen to arise with philosphers who have taken a lead from Quine's thinking but have sought to avoid its more awkward implications Thus, for instance, Donald Davidson professes the same kind of bluff, no-nonsense physicalism with regard to beliefs and the real-world objects or events that purportedly cause those beliefs, while also rejecting the idea that knowledge might involve *anything more* — epistemologically speaking — than the right kind of causal relation between them 'In giving up the dualism of scheme and world', he writes, 'we

do not give up the world, but reestablish unmediated touch with the familiar objects whose antics make our sentences and opinions true or false "[26] The dualism in question is of course Quine's idea of the various frameworks (or conceptual schemes) which are somehow imposed upon the raw data of our sensory promptings, an idea which — according to Davidson — constitutes the third and perhaps last 'dogma' of empiricism If Quine had only pushed the argument one stage further and given up this idea also then he wouldn't have created all the well-known problems about framework-relativism and radical meaning-variance

Still it is hard to see how those problems could ever be resolved by adopting Davidson's direct realist approach, that is to say, his breezy assurance that there exists an 'unmediated' causal link between objects or events in the world and the content (as well as the truth-value) of our various 'sentences and opinions' For this approach rules out a whole range of salient epistemological distinctions, among them the difference between perceptual knowledge-by-acquaintance and knowledge arrived at by other, more complex or elaborate inferential means It is also ill-equipped to cope with the sorts of difficulty that were first pointed out by Plato in the *Theaetetus* and which have lately been developed to a high point of subtlety by Edmund Gettier and others [27] These have to do with the question whether 'knowledge' is synymous with 'justified true belief', or whether there are cases — ingenious counter-examples of the type devized by Gettier — where this identity fails Thus one may hold a belief that is both true (as it happens) and justified (according to one's best current knowledge) but where the grounds one adduces for maintaining that belief are in fact unrelated to its truth-conditions as revealed through a more adequate grasp of the relevant facts This problem is most often raised in the

context of descriptivist theories of meaning and reference, such that the most promising solution seems to involve something more in the way of a direct causal linkage On this alternative ('reliabilist') account, knowledge can indeed be equated with justified true belief just so long as the justifying grounds include some reference to the objects, events, circumstances, etc , which caused that state of mind in the believer and which allowed them to draw the appropriate conclusion [28]

Nevertheless, there are serious problems with the causal theory if it is thought of as providing a full-fledged *alternative* to the descriptivist model, rather than a means of refining that model and closing gaps in the standard account For if beliefs are justified solely in terms of their having been caused in an appropiate way — as with Davidson's idea of those 'familiar objects' whose 'antics make our sentences and opinions true or false' — then truth is just a matter of displaying or eliciting the right response to the right kind of stimulus in the right physical environment However this approach is plainly inadequate to account for other, more complex processes of knowledge-acquisition such as those that occur whenever it is a matter of deciding between alternative truth-claims, adjusting theories or predictions in the light of new evidence, or reinterpreting that evidence so as to conserve some particularly powerful or otherwise well-supported theory In this respect Davidson is no better placed than Quine to explain what distinguishes genuine knowledge from true beliefs accidentally arrived at through a reflex process of causal triggering devoid of rational warrant or adequate justification Of course Davidson differs with Quine on certain points, among them the latter's great mistake — in Davidson's view — of retaining a version of the scheme/content dualism, thus opening the way to all sorts of unnecessary problem [29] But Davidson is

himself just as prone to veer across from the basic physicalist doctrine — that true beliefs are caused by direct stimulation of our nerve-ends, sensory receptors, optical cortex, or whatever — to a holistic doctrine of meaning and truth where equilibrium can always be achieved by making suitable adjustments here and there in the overall fabric of beliefs

This is why, as Davidson nonchalantly puts it, 'truth of sentences remains relative to language, but that is as objective as can be' [30] 'Objective', that is, in so far as language is thought of as comprising a collection of (actual or possible) 'sentences' whose truth-conditions are given directly by the role they occupy in the stimulus-response repertoire of this or that speaker in this or that physically specified context of utterance However, there is not much left of this purported 'objectivity' if it is always construed as 'relative to language', and if by 'language' is meant the entire range of those sentences (or belief-dispositions) that characterize a speaker — or community of speakers — at any given time For in that case the way is wide open for a relativist (or a Rorty-type pragmatist) to argue that any 'objectivity' thereby secured is 'relative to language' in the full-blown sense of being wholly a product of the various meanings, construals, or interpretations that they happen to place upon it

Indeed this is just Rorty's point in his essay 'Pragmatism, Davidson and Truth' where he tries to coax Davidson back into the pragmatist fold by drawing out these tensions in his argument [31] Thus Rorty quotes a passage from Davidson's essay 'A Coherence Theory of Truth and Knowledge' which appears to take the strongest possible line on objectivity and truth as causal products of our direct encounter with objects and events in the physical world 'What stands in the way of global scepticism of the senses', Davidson

writes,

> is the fact that we must, in the plainest and methodologically most basic cases, take the objects of a belief to be the causes of that belief And what we, as interpreters, must take them to be is what in fact they are Communication begins where causes converge your utterance means what mine does if belief in its truth is systematically caused by the same events and objects [32]

But Rorty can then make the relativist case (at least to his own satisfaction) that this argument places no limits — other than pragmatic, communal, or localized culture-relative constraints — on the range of possible interpretations to which all utterances are subject provided only that the sceptic is rebutted by the fact of such causal 'convergence' After all,

> this is just what the pragmatist has been telling the sceptic all the time Both the pragmatist and Davidson are saying that if 'correspondence' denotes a relation between beliefs and the world which can vary though nothing else varies — even if the causal relations remain the same — then 'corresponds' cannot be an explanatory term [33]

Thus Davidson really has no need to worry about issues of truth, objectivity, and right interpretation, despite his continuing to fret about these issues, not least in response to Rorty's claim that he (Davidson) is a pragmatist at heart and shouldn't be prey to such needless anxieties For if the causal theory is enough to secure basic communicative uptake — or (in philosophy-of-science terms) the basic possibility of trans-paradigm understanding — then no more is required in order to keep the cultural conversation going On the other hand this theory is *so* very basic that it im-

poses few (if any) ultimate constraints upon the various ways the conversation may go while still keeping all parties sufficiently in touch with each other That is to say, it gives us pretty much *carte blanche* to reinterpret meanings, replace old beliefs, revise scientific theories, reconfigure those various 'metaphors we live by', and constantly re-weave the fabric of belief according to present needs and purposes [34] For the causal (reductive-physicalist) theory of meaning, knowledge, and belief-fixation is itself specified in just such terms as to guarantee only the barest necessities of shared cognitive grasp, and hence to afford the widest possible scope for creative 'redescription' in Rorty's favoured style

The same trick can just as easily be pulled, as Rorty shows, with Quine's version of naturalized epistemology, or his claim that philosophy of science is ultimately 'all the philosophy we need' On this view the language of the physical sciences 'limns the true and ultimate structure of reality' to the best of our current understanding It thus leaves no room for epistemology as traditionally conceived, that is to say, for conceptions of knowledge and truth that involve some reference to minds, meanings, concepts, beliefs, or other such 'opaque' entities, and which therefore cannot be cashed out in purely extensional or physicalist terms Rorty takes issue with Quine about this — as might be expected — and also with regard to his further claim that 'the unit of empirical inquiry is the whole of science', rather than particular statements, predictions or theories tested against particular (well-defined) items of empirical evidence [35] But the reason for Rorty's disagreement with Quine is *not* that this approach would undermine the very project of scientific enquiry by allowing truth-values to be redistributed in whichever way caused least upset to existing habits of thought Rather, he objects that Quine has stopped short in talking about 'the whole of *science*',

whereas he should have pushed right through with the argument and relativized truth to 'the whole of *culture*', or the entire going range of communal beliefs, with no special privilege attaching to the physical sciences Thus 'Quine, and many other holists, persisted in the belief that the science-nonscience distinction somehow cuts nature at a philosophically significant joint' [36] Much better had they simply let that distinction go, along with the two (or however many) last dogmas of empiricism For they could still hang onto the basic physicalist assurance that our beliefs are reliably in touch with the world, or with the various objects whose 'familiar antics' (in Davidson's phrase) render those beliefs true or false But they would also have the freedom to 'redescribe' that world in a great variety of ways since the physical data — or sensory promptings — are themselves under no particular description and hence incapable of fixing the terms or deciding the language that best (most accurately) represents them

Thus one might think the language of present-day particle physics self-evidently best equipped for picking out just the sorts of entity — subatomic particles — that physicists spend so much of their time trying to detect or describe But this is a purely circular argument, Rorty maintains, since the only way of picking out the entities in question is by using some language (or descriptive scheme) that gives them a place in its range of putative realia 'Normal' science is what goes on when scientists stick to conventional habits of talk and take it that their various descriptive schemes are *not* just preferential ways of interpreting the data but can actually 'cut nature at the joints', or offer some truthful (epistemically privileged) account of how things stand in reality 'Revolutionary' science, on the other hand, is what occurs when people cease to abide by the standard rules of the game and decide that there is probably more to be

gained by crossing disciplines, mixing metaphors, or refusing to accept conventional ideas as to which sorts of language best 'correspond' to which sorts of notional entity [37] Thus there is no reason 'in the nature of things' why particle physicists shouldn't make a breakthrough — or at any rate move the conversation along — by picking up ideas from literary critics, or literary critics from particle physicists, or either party from any other discipline (so far as that term still applies) where there happen to be novel or intriguing developments afoot

Such a notion will only seem absurd to those other, 'metaphysical' realist types who want something more than the basic Quinean assurance that our beliefs are causally in touch with the world simply in virtue of our physical constitution as creatures hard-wired to respond in certain ways to incoming sensory stimuli Most often this involves an appeal to the nature (or 'essence') of the objects that science investigates — subatomic configurations, molecular structures, chemical attributes, DNA proteins, etc — along with a kindred division of labour among the different sciences concerned Thus the realist's idea that the world comes prepackaged (so to speak) into natural kinds finds its counterpart belief in the idea of knowledge as organised into various fields of special expertise corresponding to their various distinctive objects of enquiry In other words it harks back to that old Platonic metaphor of knowledge as somehow 'cutting nature at the joints', or delving beneath surface appearances so as to get at the true, underlying structure of reality However, Rorty argues, we can easily dispense with such outworn realist notions if we just follow Quine's and Davidson's lead toward a naturalized (physicalist) epistemology, and accept that there is nothing more to be had in the way of 'correspondence', deep further facts, justificatory grounds, and so forth We can then start getting used to

the idea that there is no limit in principle — as opposed to short-term pragmatic or cultural constraints — on the range of new descriptions which might be applied to this or that physical datum For if there is one thing that recent (post-Kuhnian) philosophy of science has taught us it is the fact that scientific revolutions come about through just such a strong-revisionist break with normalized habits of descriptive or classificatory thought

Still the realist might come back with an argument that appears to concede both main points of Rorty's case — the physicalism and the strong revisionism — but which strengthens the former by giving it a greater degree of causal-explanatory force, and thus cuts down the range of descriptions that can claim genuine scientific warrant As Rorty preemptively puts it

> [w]hen Galileo saw the moons of Jupiter through his telescope, it might be said, the impact on his retina was 'hard' in the relevant sense, even though its consequences were, to be sure, different for different communities The astronomers of Padua took it as merely one more anomaly which had somehow to be worked into a more or less Aristotelian cosmology, whereas Galileo's admirers took it as shattering the crystalline spheres once and for all But the datum *itself*, it might be argued, is utterly real quite apart from the interpretation it receives [38]

Now there is no obvious reason for Rorty to reject this line of approach, given that it seems to square quite well with his own (Quine- and Davidson-derived) outlook of baseline physicalism plus a wide latitude of choice in interpretive matters However he does take issue with it in so far as it involves a sharp dichotomy between 'data' and 'interpretation', whereas — to Rorty's way of thinking — any data adduced by Galileo or the Padua astronomers were *already* products of their differing worldviews, theories, or

conceptual schemes, and could therefore provide no neutral ground for deciding the issue between them What the Rorty-style pragmatist should therefore do when confronted with such arguments is stick to the basic physicalist line but also make it clear that nothing follows as regards the more substantive issue Thus

> he agrees that there is such a thing as brute physical resistance — the pressure of light waves on Galileo's eyeball, or of the stone on Dr Johnson's boot But he sees no way of transferring this nonlinguistic brutality to *facts*, to the truth of sentences As Donald Davidson says, causation is not under a description, but explanation is Facts are hybrid entities, that is, the causes of the assertibility of sentences include both physical stimuli and our antecedent choice of response to such stimuli To say that we must have respect for facts is just to say that we must, if we are to play a certain language game, play by the rules To say that we must have respect for unmediated causal forces is pointless It is like saying that the blank must have respect for the impressed die The blank has no choice, nor do we [39]

I have quoted this passage at length because it shows very clearly how the Quine-Davidson project of a 'naturalized' epistemology can be taken on board by a strong-descriptivist like Rorty and then turned around to undermine the very programme that led to its adoption in the first place This is partly a result of the inherent ambiguity of phenomenalist terms — such as 'data' — which on one interpretation refer to what is given as a matter of 'hard' self-evidence, and on another lie open to relativist construals of the sort described above I have written elsewhere about the problems created by the use of such strategically double-edged terms by various 'post-empiricist' thinkers, among them Quine and Thomas Kuhn [40] But the main

point here is Rorty's distinction — with reference to Davidson — between matters of real-world (*de re*) causality and matters of *de dicto* causal explanation which necessarily pertain to some particular 'language-game' (e g , those of particle physics or molecular biology) and which therefore involve some particular choice among the many such games available For it is only by decreeing a radical split between bare, unaccommodated sense-data and whatever interpretation is placed upon them that Rorty can bring off his standard trick of relativizing truth to what counts as such among the members of this or that ('normal' or 'revolutionary') scientific community

Hence Rorty's curious claim (in the above-cited passage) that 'the causes of the assertibility of sentences include both physical stimuli and our antecedent choice of response to such stimuli' It is hard to make sense of this claim if one takes it (*pace* Nietzsche) that causes by very definition precede effects, and hence that any 'choice' in the matter of interpreting — or responding to — causal stimuli will necessarily *not* be 'antecedent' in the sense that Rorty apparently requires Where the confusion comes in, as so often, is with the use of a phenomenalist (or sense-datum) terminology which tends to be ambiguous as between (1) the notion of raw sensory inputs prior to any perceptual or cognitive processing, and (2) data that have already been through such processing, and can thus be thought of as 'theory-laden' at least at some basic level This confusion was rife in the language of the logical positivists and their logical-empiricist successors It is what allows Quine to maintain his hardline physicalist approach in epistemological matters while espousing a doctrine of ontological relativity with regard to even the most basic 'posits' of the physical sciences With Kuhn, it takes the form of a constant equivocating play on the sense of vari-

ous kindred terms ('stimuli', 'data', 'sensations', 'perceptions', 'observations', etc) whose effect is once again to ease the passage from a highly reductive behaviorist epistemology to the notion that scientists on either side of a major paradigm-change quite literally 'live in different worlds' [41] In Davidson's case, as we have seen, the argument works out rather differently since he wants to undermine such relativist talk by showing it to rest on a dubious appeal to the 'third dogma' of logical empiricism, i e , the scheme/content distinction in its various residual forms But here again there is a striking failure to explain how beliefs acquired in the way that Davidson describes — through causal interaction with the world on the part of sentient creatures — can yield any means of assessing such beliefs in terms of their truth, their evidential warrant, the extent of their agreement (or disagreement) with currently prevailing scientific ideas, etc For on this account knowledge (or veridical belief) *just is* the product of that causal interaction construed in a suitably holistic manner, that is to say, as involving not a one-for-one match between particular 'stimuli' and particular items of belief but rather as an ongoing process of adjustment at various points in the total fabric In which case, as Rorty is quick to remark, one can be as 'realist' as one likes about objects, data, physical stimuli, and so forth, while still denying that one's beliefs are fixed — or one's range of creative 'redescriptions' in any way limited — by the requirement that they should somehow 'correspond to reality'

Thus, for Davidson, '[b]eliefs are true or false, but they represent nothing It is good to be rid of representations, and with them the correspondence theory of truth, for it is thinking that there are representations that engenders thoughts of relativism' [42] All that is needed in order to shrug off the relativist challenge is a simple recognition that

the problem it raised was a false problem all along, one that took rise from the Cartesian idea — the bugbear of epistemology ever since — that the only kind of knowledge secure from doubt was the kind arrived at by somehow attaining accurate mental 'representations' of an objective, mind-independent world The best way out of this false dilemma, so Davidson believes, is to drop that whole theory of knowledge and truth in favour of a thoroughly naturalized theory which requires nothing more of veridical beliefs than that (1) they are assigned some appropriate causal genesis, and (2) they fit in well enough with the totality of our likewise physically prompted (but always revisable since underdetermined) beliefs about the world at any given time This will in turn have the double advantage of bringing epistemology more into line with the methods of the physical sciences and calling a halt to all those pointless 'metaphysical' disputes about truth, knowledge, representation, relativism, realism, anti-realism, and the rest In short, it will teach us to stop worrying about whether our own (or other people's) beliefs are reliably 'in touch with the world' since there is just no way — on the physicalist/holistic account — that we or they could be so massively in error as to lose touch either with the world or with each other [43] This should put an end not only to sceptical and relativist arguments but also to Kuhnian talk of paradigm-incommensurability and Quinean talk about the problems of 'radical translation' across disparate ontologies or conceptual schemes What takes their place is the simple point — to paraphrase Madonna — that we are all in the end physical creatures who live in a material world And this argument is supposedly an adequate cure for hyperinduced Cartesian doubts concerning the very possibility of knowing whether or not our ideas 'correspond' to this or that item of reality

However, as I have said, there is not much support for any version of commonsense or scientific realism in an argument that takes so reductive a view of our epistemological condition, or our capacity for acquiring veridical beliefs through mere exposure to the range of physical stimuli that bombard us from one moment to the next Indeed, if there is a candidate for the fourth — and hopefully the last — dogma of empiricism, it is Davidson's idea that one can avoid all those old sceptical-relativist problems simply by dumping the third dogma (i e , the scheme/content dualism) and adopting a causal theory of belief-acquisition which entails nothing more than the believer's habit of responding in certain predictable ways to certain kinds of physical stimulus This is why Rorty can treat Davidson as a more than half-way convert to his own strong-descriptivist viewpoint, despite Davidson's occasional lapses into retrograde talk of truth-as-correspondence, reality as that which decides the issue between true and false beliefs, or other such otiose 'metaphysical' ideas For if you just put together the two main Quinean components in Davidson's thought — his physicalist account of belief-acquisition and his holistic theory of truth, meaning and interpretation — then what comes out is a persuasive argument against that whole line of epistemological or representationalist thought

The following passage is a good example of the way that Rorty talks Davidson around to dropping those regressive (= realist) beliefs and adopting a sensible (= pragmatist) view of the various issues — or non-issues — concerned 'Davidson', he writes,

> has no *parti pris* in favor of physics, and does not think that it, or any natural science, can provide a skyhook — something which might lift us out of our beliefs to a standpoint from which we glimpse the relations of those

> beliefs to reality Rather, he takes us to be in touch with reality in all areas of culture — ethics as well as physics, literary criticism as well as biology — in a sense of 'in touch with' which does not mean 'representing reasonably and accurately' but simply 'caused by and causing' [44]

This passage can best be read alongside the other lengthy extract (from Rorty's essay 'Texts and Lumps') which I cited several pages above His main point there was to exploit the full resonance of Davidson's argument that 'causation is not under a description, but explanation is' [45] This he took to mean — by permissible extension — that although 'there is such a thing as brute physical resistance' [e g , the light-waves impinging on Galileo's eyeball], nevertheless there is absolutely no way — on Davidson's account — of 'transferring this nonlinguistic brutality to *facts*, to the truth of sentences' [46] For facts, after all, are not objects or entities existing out there in the world, and available for inspection in order to ensure that our various statements or beliefs somehow 'correspond' to them Rather, they are *themselves* items of belief that may take the form of statements, propositions, attitudes, propensities, assenting or dissenting dispositions, etc They can all lay claim to factual warrant but cannot — on pain of manifest circularity — be compared with or held up against 'the facts' as if these latter somehow belonged to a separate realm of (objective, real-world, mind-independent) truth

Hence Rorty's claim that the realist injunction 'we must have respect for facts' amounts to no more than the Wittgensteinian thesis that 'we must, if we are to play a certain language game, play by the rules' [47] Hence also his kindred (Davidson-derived) argument that 'to say that we must have respect for unmediated causal forces is pointless' For the causal forces, no less than the facts, are always already under a description by the time that they come to figure in

our various language-games, hypotheses, theories, conceptual schemes, or whatever Moreover, this argument can be pushed right back to the level of our 'basic' perceptual data, just so long as there remains the yet more basic (Quine-Davidson) appeal to a stage of purely physical stimulus-response where we must be in touch with those 'familiar objects' whose antics — to repeat — are what 'render our sentences and opinions true or false'

3. Figleaf Realism

Now there is — I submit — something very odd about a theory (Davidson's) which can make such a point of claiming to restore 'unmediated touch' between beliefs and world while also giving warrant for the claim that, since everything is under some description or other as soon as it enters our ken, therefore we should have no truck with talk about 'unmediated causal forces' This oddity is all the more striking in view of Davidson's causal acount of knowledge and belief-attribution, an account whose chief virtue — as he sees it — is to cut out the idea of conceptual schemes or anything else that is thought of as 'mediating' between word and world, or beliefs and objects-of-belief Indeed, Davidson will later go so far as to suggest that there is 'no such thing as a language', at least if by 'language' is meant the sort of thing that philosophers often have in mind when they raise problems about meaning, representation, or the problem of translating or interpreting across different cultural-linguistic contexts [48] The causal account is supposed to put an end to such worries by simply pointing out that all language-users are denizens of the same physical world, disposed to respond to certain stimuli in certain (mostly appropriate) ways, and hence not prone to be 'massively in error' concerning that world or con-

cerning each others' world-related meanings and beliefs However there is there an obvious difficulty here if we also recall Davidson's point that everything is under some description or interpretation as soon as we encounter it, 'causal forces' included For it is this that gives Rorty his handle for arguing — with due warrant from Davidson — that 'facts are hybrid entities', and hence that 'the causes of the assertibility of sentences include both physical stimuli and our antecedent choice of response to such stimuli' [49] But it is still hard to see how any such 'choice' could possibly enter the picture, given that the physicalist theory requires a direct ('unmediated') causal link between objects or events in the ambient world and the various, more or less predictable reactions displayed by sentient creatures with the right sort of hardwired stimulus-response repertoire

This is why Rorty can claim to be a 'realist' in the only sense that matters, i e , in acknowledging 'the pressure of light waves on Galileo's eyeball' or of 'the stone on Dr Johnson's boot' But it is also why he can turn that acknowledgement around and make it the merest of token concessions (in order to head off the charge of out-and-out idealism) while none the less maintaining a strong anti-realist line with regard to everything bar the existence of a noumenal 'reality' which is under no particular description, and which therefore scarcely affects the issue either way Here again Rorty's strategy is one that exploits the ambivalence of sense-data language This language can be bent, according to context, in either of two directions, both of which are needed if the strategy is to look at all plausible, but each of which undermines the other if its implications are examined more closely Thus in order for epistemology to be 'naturalized' — or treated (on Quine's prescription) as fully continuous with the methods of the physical sciences — one must construe such talk in a strong

causal-determinist sense which leaves no room for variant 'responses' to the same physical 'stimulus' In which case a *datum* is indeed just that — like the die irresistibly hitting the blank, in Rorty's apt metaphor — and it can make no sense to think of human knowers as having any leeway for interpretative (or indeed rational) choice in the matter On this account causality is preserved, along with a certain (albeit highly reductionist) form of epistemic realism But more often, especially in Kuhn's case, what is assumed to be 'given' at the sense-data level is a mixture of incoming physical stimuli and dispositions to interpret those stimuli according to various perceptual frames, ontological commitments, preexistent theoretical beliefs, etc

So it is that Kuhn — following Quine — can manage to hold this exceptionally tricky balance, on the one hand (when challenged) professing an outlook of sturdy commonsense realism, while on the other espousing a doctrine of full-fledged epistemic relativism [50] For that doctrine *must* be construed in such holistic terms if we are to take Kuhn and Quine at their word when they push right through with the relativist argument to the point where it extends all the way from the logical 'core' to the empirical 'periphery' of beliefs held true at any given time But in that case clearly something has to go *either* the causal theory of belief-acquisition *or* the relativist idea that any 'stimuli' or 'data' encountered in the process of acquiring beliefs are always subject to prior 'choice' as regards their veridical content or their impact on the range of currently accredited truth-claims, theories, observational protocols, and so forth In so far as philosophers try to have it both ways they can only be trading — consciously or not — on the kind of ambiguity that typically attaches to sense-data language For otherwise there is just no way that the physicalist theory can be joined to the opposite extreme of a

relativist doctrine that must reach right down to the level of casual 'stimuli' and 'data' if it is going to support such extravagant claims for the ground-up revisability of all our most basic items of belief But the case falls apart under closer scrutiny since those claims require that the stimuli themselves are always already under some description or open to various (context-dependent or belief-related) construals Thus the Quine-Kuhn argument for ontological relativity completely undermines the Quine-Kuhn argument for treating our beliefs as reliably produced (and hence as reliably knowledge-conducive) so long as they result from the right kind of causal interaction with the world

Nor is there much help to be had from Davidson's hopeful way of avoiding relativism, that is, by rejecting the scheme/content dichtotomy and hence regaining 'unmediated' touch with those objects and events whose impact on our nerve-ends (and the rest of our cognitive apparatus) is sufficient to render our beliefs true or false For this idea very easily converts — as we have seen — from a robust-sounding theory of causal realism to a variant on the old empiricist theme according to which sense-data are the sole means of access to 'external' reality And so the way is reopened for relativists (or Rorty-type pragmatists) to claim that it makes no difference what we happen to think concerning the realist *versus* antirealist issue All we need do is take Davidson's lead and give up not only conceptual-scheme talk but that whole 'epistemological' way of thinking that has plagued philosophy from Descartes down From this point of view, 'it is no truer that "atoms are what they are because we use 'atom' as we do" than that "we use 'atom' as we do because atoms are as they are" Both of these claims, the antirepresentationalist says, are entirely empty Both are pseudo-explanations' [51] In other words we

can opt right out of the realist/antirealist debate simply by refusing to play that particular verbal game Thus it is no more the case that reality depends on the language we use to describe it than that our language depends for its meaning or truth-content on the fact of its somehow 'corresponding' with a pristine, as-yet undescribed reality The pragmatist will wisely avoid both options since the one leads on to a linguistified version of old-style Berkeleian idealism while the other ends up in the circular predicament of all such correspondence-theories That is to say, it leaves us with the problem of finding something factual but non-linguistic to which our statements may be said to correspond, or again, of explaining what could possibly count as an 'adequate' or 'accurate' match between words and world Much better — Rorty thinks — that we should give up this hopeless endeavour and adopt the sensible pragmatist position that nothing depends on our getting things right in the representationalist sense

However this position has problems of its own, as becomes evident in the following passage where Rorty elaborates on the non-issue (as he sees it) between realism and anti-realism

> The reason why physicists have come to use the word 'atom' as we do is that there really are atoms out there which have caused themselves to be represented more or less acccurately — caused us to have words which refer to them and to engage in the social practice called microstructural physical explanation The reason why such explanation meets with more success than, say, astrological explanation, is just that there are no planetary influences out there, whereas there really *are* atoms out there [52]

The first thing one notes about this passage is Rorty's curious relapse into just the kind of 'representationalist'

thinking that he had earlier — a couple of sentences back — advised us to abjure altogether Thus the causal theory of belief-acquisition (as concerns the existence of real-world entities like atoms) is here linked up with a further requirement that the objects in question be 'represented more or less accurately' For otherwise — so the argument seems to imply — our beliefs might pass the physicalist test of being triggered by this or that sensory input, and yet turn out to be largely or wholly mistaken with regard to what kinds of object we suppose to have triggered that response Hence Rorty's distinction between atomic physics and astrology, since the fact of observing some particular planetary conjunction is presumably enough to elicit a response (a physically-induced or causally explicable response) in one who is disposed to credit such things, though we wouldn't want say that this was enough to establish astrology as a reputable science In the case of atoms and subatomic particles, conversely, their existence has been borne out by a whole range of causal stimuli — from observations of Brownian motion or tracks in a cloud chamber to the latest high-resolution electron microscopes — and also by their playing a central (indeed an indispensable) role in our current best theories of subatomic physics, molecular biology, and so forth [53] So one can have no quarrel with Rorty's ontological-realist claim that there 'really are atoms out there', and that this what distinguishes talk about atoms from talk about planetary influences

However it is questionable whether Rorty is entitled to assert that claim, given his belief — so vigorously canvassed elsewhere — that there is just no point to the endless dispute between realists and anti-realists, since everthing (atoms presumably included) is already under some description or other, and we are thus never in a position to check

the truth of our various observation-statements, scientific theories, ontological commitments, etc This belief shows through in the above-cited passage when Rorty moves across — within a single sentence — from the idea of atoms as having 'caused us to have the words which refer to them' to the idea of atoms as causing us to engage 'in the social practice called microstructural physical explanation' Out of context the sentence might be taken to endorse a strong causal-realist argument of the type promoted on the one hand by logicians and philosophers of language such as Kripke, Donnellan, and the early Putnam[54], and on the other by philosophers of science including David Armstrong, Richard Boyd, and Wesley Salmon [55] That is to say, it would treat a term like 'atom' as picking out just that kind of entity which was first referred to (albeit in purely speculative fashion) by the ancient atomists, and then — much later — made an object of increasingly precise theoretical and observational knowledge by scientists from Dalton to Rutherford and Bohr [56] On this account, moreover, it is the case not only that atoms 'cause us to have words which refer to them', but also that their existence explains and justifies the 'the social practice called microstructural physical explanation' However, when the passage from Rorty is put back into context then it turns out not to bear anything like such a causal-realist construal For he makes it very clear that this whole line of thought — whether in philosophy of language (Kripke) or philosophy of science (Boyd) — is in his view just a throwback to old 'metaphysical' ideas such those of natural kinds, truth-as-correspondence, or scientific knowledge as that which enables us to 'cut nature at the joints'

Thus it is very much '*the social practice called* microstructural physical explanation' that Rorty wishes to emphasise, rather than any realist notion that such a 'practice' is prop-

erly or uniquely suited to pick out the particular (i e , microstructural) features, properties, or attributes which make it the right sort of science for that sort of job Rather, as he urges in 'Texts and Lumps', there is absolutely no reason why we shouldn't mix disciplines to our hearts' content and look (say) to literary theory for new descriptions in subatomic physics, or to subatomic physics for a new range of metaphors to enliven the discourse of cultural anthropology, or to the language of molecular biology as just what is needed to revolutionize thinking in other — supposedly unrelated — fields of study For those fields are marked out not so much by their appropriate objects or methods of enquiry but rather by the currently-prevailing division of intellectual labour Moreover, since conservatism tends to rule in such matters, the best hope of moving things along is to switch descriptions or metaphors as often as possible and reject any putative object-language that makes some claim to descriptive accuracy or causal-explanatory truth Nothing could more clearly illustrate the fact that one can be a 'realist' about objects and beliefs in the sense recommended by Rorty while none the less denying that objects are in way characterized — or beliefs in any way constrained — by real-world properties (such as the microstructural attributes of atoms) that make some descriptions scientifically valid and others scientifically false

One further passage from Rorty on the same topic may help to bring out both the strains in his argument and the extent to which that argument exploits ambiguities or regions of fuzzy definition in the texts of those (chiefly Quine and Davidson) whom he cites in this connection 'The antirepresentationalist', he writes,

> is quite willing to grant that our language, like our bodies,

> or she insists on this point — the point that our minds or our language could not (as the representationalist sceptic fears) be 'out of touch with reality' any more than our bodies could What he or she denies is that it is explanatorily useful to pick and choose among the contents of our minds or our language and say that this or that item 'corresponds to' or 'represents' the environment in a way that some other item does not On an antirepresentationalist view, it is one thing to say that a prehensile thumb, or an ability to use the word 'atom' as physicists do, is useful for coping with the environment It is another thing to attempt to *explain* this utility by reference to representationalist notions, such as the notion that the reality referred to by 'quark' was 'determinate' before the word 'quark' came along (whereas that referred to by, for example, 'foundation grant' only jelled once the relevant social practices emerged) [57]

I have suggested already why the kind of causal realism (more precisely the kind of stimulus-response physicalism) laid out in the first two sentences here is in fact no defence against relativist arguments, nor indeed against the 'representationalist sceptic', hung up on some version of the correspondence-theory For it is perfectly possible — as Rorty shows — to accept the Quine-Davidson case for a naturalized epistemology, i e , one based on a physicalist account of belief-acquisition, while holding that any beliefs thus acquired can always be construed in various ways according to the various language-games or 'social practices' that happen to prevail within this or that culture, interest-group, or research-community This is why Rorty can move straight across from what sounds like a thoroughly realist position *vis-a-vis* atoms and suchlike to a position that entails ontological parity as between 'quarks' and 'foundation grants', both (so he argues) coming into existence only as and when 'the relevant social practices emerged'

At this point the typecast representationalist will surely deliver a typecast response, namely that 'the reality referred to by "quark" was "determinate" before the word "quark" came along', whereas there could not have been foundation-grants before foundations existed with the means and authority to award them However this argument is hopelessly circular, Rorty thinks, since it depends on our possessing a 'determinate' knowledge both of objects in the world (their kinds, properties, causal powers etc) and of the various criteria that decide what shall count as a 'determinate' (adequate or accurate) description of them No such problems arise, of course, for anyone who takes the antirepresentationalist view and who thus makes a clean pragmatist break with that whole tradition of epistemological thought which has come down from Descartes and Kant to their present-day analytic progeny Quite simply, '[t]hey see no way to explain what "determinate" means in such a context except by chanting one of a number of equally baffling words' [58] In this respect they are following Quine's lead (from 'Two Dogmas of Empiricism') but pushing that argument one stage further so as to reduce every version of the representationalist case — his own residual version included — to the level of stuttering tautology Thus

> Just as Quine suggests that we throw out the whole cluster of concepts (e g , 'synonymous', 'conceptual') which are invoked to make us think we understand what 'analytic' means, so antirepresentationalists suggest that we throw out the whole cluster of concepts (e g , 'fact of the matter', 'bivalence') which are used to make us think we understand what 'the determinacy of reality' means [59]

And, according to Rorty, we can get this desirable result at absolutely no cost to any realist convictions that we might

otherwise hold as a matter of working (scientific or everyday) belief On the pragmatist view such convictions are *completely unaffected* by any position one takes with regard to the realism *versus* antirealism issue That is say, the world will continue to exist (contain the same objects, exert the same causal powers) no matter what description we bring it under o what theories we develop to explain it Meanwhile we shall carry on applying those descriptions and developing those theories even though — as Rorty would have it — there is no possible way of comparing or assessing them in point of 'correspondence' or 'truth'

This is not to say that the objects and the powers exist in a realm entirely unrelated to the descriptions and theories On the contrary the former determine the latter in so far as our 'minds and our language' (like our bodies) are always responding to physical stimuli and hence fall under the same range of causal-explanatory descriptions But, again, there is no means of getting from this basic level of stimulus-response physiology to a plausible account of just why some descriptions might constitute a real improvement over others in respect of their precision, accuracy, explanatory power, empirical warrant, or whatever Representationalists are hopelessly stuck at this stage since (Rorty urges) they offer no way of deciding

> whether a certain linguistic item is usefully deployed because it stands in these relations, or whether its utility is due to some factors which have nothing to do with them — as the utility of a fulcrum or a thumb has nothing to do with its 'representing' or 'corresponding' to the weights lifted, or to the objects manipulated, with its aid [60]

So we can cut out all that otiose talk about 'representation' or 'correspondence' and still hang onto the basic (Quine-Davidson) idea that what makes our sentences true or false

is the incoming barrage of sensory stimuli plus whatever is needed in the way of adhoc pragmatic adjustment to the wider context of beliefs-held-true at this or that time Objects may exert causal powers, and events be caused by other (preceding) events, and beliefs in their turn have causal explanations that render them determinately true or false But, as Rorty sees it, there is no legitimate passage — no transitive relation — between this kind of purely physicalist causal account and the kind that looks for reasons (as well as causes) to explain how we progress from the stage of naive sense-certainty to the stage of more adequate scientific knowledge Such an argument can only work if there is something in the nature of physical objects (whether fulcrums, atoms, or quarks) that accounts for their actually behaving in this or that way, and which justifies the claim that science makes progress by offering more adequate descriptions or causal-explanatory theories But it is just this belief that Rorty rules out as a relic of old, 'metaphysical' habits of thought Thus, according to the antirepresentationalist, to say "'we use 'atom' as we do, and atomic physics works, because atoms are as they are" is no more enlightening than to say "opium puts people to sleep because of its dormitive power"' [61]

4. Physics, Philosophy and the 'Linguistic Turn'

At this stage, I think, we are entitled to call Rorty's bluff and conclude that his version of causal 'realism' as applied to beliefs and objects-of-belief is in fact the merest of figleaf devices adopted in order to disguise what amounts to a full-fledged antirealist and cultural-relativist position The difference between the claim about atoms and the claim about opium's 'dormitive power' is precisely the difference between science and pseudo-science That is to say, we can

write a history of atomic physics which would trace the various stages of advance that led from the purely speculative theories of the ancient atomists, *via* Dalton's calculations of atomic weight as a means of distinguishing the chemical elements, to the various (increasingly refined and detailed) models of atomic structure proposed by physicists like Rutherford and Bohr

Of course it may be argued that the sheer variety of candidate descriptions — all purportedly referring to the same kind of object — is itself good reason to adopt an anti-realist or at any rate an instrumentalist approach, one that witholds ontological commitment as regards the ultimate 'reality' of atoms Ernst Mach famously maintained this position against the dominant consensus of his time, and it has lately received an eloquent restatement (under the title 'constructive empiricism') in the writings of Bas van Fraassen [62] The claim, in brief, is that we should count as 'real' only those entities that can actually be observed, while remaining agnostic with respect to those others whose existence is required by our best current theories, but cannot as yet be confirmed or disconfirmed by the best observational means to hand This sounds like sensible advice, especially when it comes to problem areas — such as quantum mechanics — where ontological issues are at present so far from being resolved that agnosticism might seem the best, most rational attitude to hold

Now one might construe Rorty's comments about atoms and quarks as meant in the same way, i e , as counselling a moderate (van-Fraassen-style) reluctance to quantify over indeterminate object-domains However, this construal is ruled out by the fact that he draws no distinction in principle between quarks, atoms, and middle-sized objects (such as fulcrums) whose existence and effects can be plainly observed, and which would therefore possess an indisputable

claim to reality by van Fraassen's constructive-empiricist criteria. Certainly there is no place for such distinctions if one assumes, like Rorty, that *everything* is under some description or other as soon as we take cognizance of it, and hence that any line we care to draw between 'real' and 'theoretical' entities will always be a product of this or that language-game or socialized scientific practice. At which point the realist will respond that atoms can indeed be distinguished from quarks since (1) we possess an immense range of observational as well as theoretical evidence for the existence of atoms, whereas (2) the term 'quark' is at present used to pick out an entity presumed to exist in virtue of its role within the best (most 'complete') available theory of subatomic particle physics. In other words we have rational warrant for assigning a high degree of probability to the existence of quarks while also — with equally good reason — maintaining a margin of doubt as regards their precise ontological status. Thus the current situation with respect to quarks and other, yet more elusive particles is very like the situation with respect to atoms at a time when their existence was strongly borne out on theoretical grounds and also indirectly observable by various means, but still subject to doubt if one adopted a rigorously Machian (empiricist) approach. Moreover, as I have said, there are arguments from quantum mechanics — such as the well-known paradoxes of measurement and the issue of wave *versus* particle interpretations — which cannot be ignored at these more advanced (microstructural) levels of subatomic research, and which thus strengthen the case for an outlook of principled agnosticism.[63]

All the same there is no reason — antirealist prejudice aside — to suppose that these problems of interpretation in the quantum domain necessarily extend all the way up through electrons and atoms to objects and events in the

macrophysical world Indeed it was precisely Schrodinger's aim, with his gruesome thought-experiment concerning the cat in the box, to show that the classical (Copenhagen) theory of quantum mechanics *must* be in some sense 'incomplete' since it failed to establish a cut-off point at which quantum phenomena (such as wave/particle duality and the observer-induced 'collapse of the wave-packet') *did not and could not* carry over into matters of macrophysical reality [64] However that aim has been lost on many commentators who continue to extrapolate, more or less wildly, from the one to the other domain There is a parallel here with Rorty's belief that any difference in point of 'ontological' standing between (say) quarks, atoms, and fulcrums is really just a difference in the role they play as descriptive items in the various vocabularies that scientists adopt from one period to the next On this view, atoms and molecules are no more 'real' for the fact of Perrin's having conducted some ingenious and (as might be thought) conclusive experiments to establish the existence of atoms, or for Alvogadro's having established a law to determine the precise number of molecules in a mole of any given substance [65] Nor is the case for electrons in any way strengthened by citing the negative change that exists on every such particle, by tracing their passage in cathode-ray tubes, or by pointing to the manifold effects they produce — and the numerous technologies reliant upon them — by way of realist counterargument For at this point Rorty will again respond that all the above-mentioned items (from charges to electrons to cathode-ray tubes and the whole modern range of electronically-based technologies) are themselves inescapably 'under a description' — just the kind of description that the realist requires in order to make his point — and can thus provide nothing more than another piece of purely circular self-justifying talk

What is more, it may be said, the realist has once again failed to reckon with the problems introduced by quantum mechanics since 'electrons' exhibit all the curious sorts of behaviour (such as nonlocality and wave/particle dualism) which make it impossible to grant them admission to the range of well-defined objects possessing a determinate space-time location [66] But if this is the case with quarks and electrons then it is also the case with atoms and molecules and thence on up — so Rorty would argue — to every variety of physical object that figures in our various (scientific and everyday) descriptions of the world For the idea that we can somehow draw lines on this scale at ontologically salient points — as between (say) subatomic, atomic, and molecular orders of 'reality' or micro- and macrophysical orders of event — is just another version of the old 'representationalist' idea of truth-as-correspondence, or of scientific language as that which somehow (impossibly) 'cuts nature at the joints' On the contrary, Rorty argues although beliefs are susceptible of causal explanation in the physicalist (Quine/Davidson) mode there is no way of getting from that basic level to the stage where *particular contents* of belief — object-terms, descriptions, theories, hypotheses, causal explanations, statements of physical law, etc — could be thought of as confirmed or disconfirmed by objects and events in the physical domain For this would require something more to the process of arriving at rationally or scientifically warranted beliefs That process cannot be simply a matter of having one's sensory responses triggered by this or that incoming physical stimulus which then leads on — through a kind of diffuse chain reaction — to certain conflict-minimizing changes or adjustments elsewhere in the fabric of preexisting beliefs Or rather, if it *is* just that, then such 'thinking' belongs by very definition to the least advanced, most conservative,

since wholly uncritical and habit-bound phases of scientific thought

Rorty can see no force to this objection since on his account all that is required to make a break with such routine interludes in the 'cultural conversation' is a switch of language-games, metaphors, or Kuhnian paradigms, one that comes about for no better reason (but what better reason could there be?) than boredom with the old style of talk But this will only strike his realist opponent as yet further evidence — if such were required — of Rorty's impossibly reductive theory of belief-causation, his failure to offer any adequate account of scientific paradigm-change, and hence his adoption of the strong-descriptivist idea that there is nothing 'in the nature' of physical reality or our various descriptions of it that could count decisively for or against any candidate item of belief That is to say, it will appear an unfortunate result of his adopting so drastically restrictive a view of our 'knowledge of the physical world' that only by swinging all the way across to a wholesale 'hermeneutic' or linguistic-constructivist view can Rorty allow any scope for change in the history of scientific thought

In this essay I have viewed the linguistic turn (or the turn from *de re* to *de dicto* conceptions of necessity and truth) as one that has characterized many, otherwise diverse or conflicting movements of thought within recent analytic philosophy Moreover, I have suggested that it marks the retreat from alternative conceptions of epistemological enquiry that were firmly ruled out by the advocates of logical empiricism — as well as by mildly dissident followers such as Quine and Davidson — but which might yet point a constructive way forward from the various ensuing problems and dilemmas This is why Davidson can offer no viable alternative to Quinean framework-

relativism, despite his perceiving very acutely how Quine's argument itself falls prey to just the kind scheme/content dichotomy that he (Quine) rejects as a legacy of old-style logical empiricism In both cases the upshot of adopting a narrowly physicalist (sense-data-based) epistemology is to undermine those normative standards and values of critical-reflective enquiry that have marked the emergence of scientific knowledge from a background of taken-for-granted commonsense wisdom In both cases, likewise, this theory goes along with a doctrine of full-fledged meaning-holism which denies that any statement can possess a determinate sense or truth-value apart from its role within the overall structure of presently existing beliefs And from here — as I have argued — it is but a short step to Rorty's idea that one can be as 'realist' as one likes about stimuli, sense-data, the impact of photons on Galileo's retina, etc , and yet maintain that this exerts absolutely no constraint upon the range of descriptions or scientific theories 'compatible with the evidence'

It seems to me that what is needed is an opening-up of this somewhat parochial and self-absorbed debate to sources outside the mainstream analytic tradition They include not only causal-explanatory approaches to epistemology and philosophy of science but also a range of highly developed arguments for critical realism in various fields of the natural and social sciences [67] Among these latter must be counted the large body of work inspired by Husserlian phenomenology and — perhaps most relevant for present purposes — the distinctive strain of critical or 'applied' rationalism developed by thinkers such as Gaston Bachelard and Georges Canguilhem [68] I have argued this case in a number of recent books which offer a wider perspective on issues confronting analytic philosophy of language and science in the wake of logical empiricism [69] What

I have sought to do here, in diagnostic mode, is trace some prominent influences — chiefly that of Quine — whose effect has been to divert attention from these promising alternative lines of enquiry At any rate there seems little prospect of significant advance while the strictures of a logical-empiricist approach continue to set the main terms for debate despite reiterated claims to have shucked off its various residual dogmas

Keywords

Quine, W V O , Davidson, D , Rorty, R

Christopher Norris
School of English, Communication & Philosophy
University of Wales, Cardiff
United Kingdom

Notes

[1] See for instance W V Quine, *Word and Object* (Cambridge, Mass M I T Press, 1960), *From a Logical Point of View*, 2nd ed (Cambridge, Mass Harvard University Press, 1961), *Ontological Relativity and Other Essays* (New York Columbia University Press, 1969), *Theories and Things* (Harvard U P , 1981), also — for some later rethinking of these issues — *Pursuit of Truth*, revised ed (Harvard U P , 1990)

[2] Quine, *Ontological Relativity* (op cit), p 126

[3] Quine, 'Two Dogmas of Empiricism', in *From a Logical Point of View* (op cit), pp 20-46

[4] See Quine, *Word and Object* (op cit) and 'Indeterminacy of Translation Again', *Journal of Philosophy*, Vol LXXXIV (1987), pp 5-10, also — for some interesting commentary from various standpoints — Robert Kirk, *Translation Determined* (Oxford Clarendon Press, 1986), Colin McGinn, 'Radical Interpretation

and Epistemology', in Ernest LePore (ed), *Truth and Interpretation perspectives on the philosophy of Donald Davidson* (Oxford Blackwell, 1986), 356-68, Talbot J Taylor, *Mutual Misunderstanding scepticism and the theorizing of language and interpretation* (London Routledge, 1992)

[5] Quine, *Word and Object* (op cit), p 221

[6] Gottlob Frege, review of Edmund Husserl's *Philosophie der Arithmetik*, translated by E -H W Kluge, Mind, Vol LXXXI (1972), pp 321-37

[7] See especially Edmund Husserl, *Cartesian Meditations an introduction to phenomenology*, trans Dorion Cairns (The Hague Martinus Nijhoff, 1973), *Experience and Judgement investigations in a genealogy of logic*, trans James S Churchill and Karl Ameriks (Evanston, Ill Northwestern U P , 1973), *Formal and Transcendental Logic*, trans Dorion Cairns (Nijhoff, 1969), *Logical Investigations*, 2 vols , trans J N Findlay (New York Humanities Press, 1970)

[8] For some representative commentary from the 'analytic' side, see Gilbert Ryle, 'Phenomenology', 'Review of Martin Farber, The Foundations of Phenomenology', and 'Phenomenology versus The Concept of Mind', in Ryle, *Collected Papers*, Vol 1 (London Hutchinson, 1971), pp 167-78, 215-24 & 179-96

[9] Michael Dummett, *The Origins of Analytic Philosophy* (London Duckworth, 1993) See also Dagfinn Follesdal, 'Husserl and Frege a contribution to elucidating the origins of phenomenological philosophy', in Leila Haaparanta (ed), *Mind, Meaning and Mathematics essays on the philosophical views of Husserl and Frege* (Dordrecht & Boston Kluwer, 1994), pp 3-47, R Cobb-Stevens, *Husserl and Analytic Philosophy* (Dordrecht Kluwer, 1990), and Johanna Maria Tito, *Logic in the Husserlian Context* (Evanston, Ill Northwestern University Press, 1990)

[10] See especially Hilary Kornblith, *Inductive Inference and its Natural Ground an essay in naturalistic epistemology* (Cambridge, Mass M I T Press, 1993) and Kornblith (ed), *Naturalizing Epistemology* (M I T Press, 1985)

[11] Quine, *Theories and Things* (op cit), p 1

[12] See Christopher Norris, *Resources of Realism prospects for 'post*

analytic' philosophy (London Macmillan, 1997)
[13] Quine, *Pursuit of Truth* (op cit), p 37
[14] Quine, *Methods of Logic* (Cambridge, Mass Harvard University Press, 1982), p 224
[15] See for instance Quine, 'Reference and Modality' and 'Quantifiers and Propositional Attitudes', in Leonard Linsky (ed), *Reference and Modality* (Oxford Oxford University Press, 1971), pp 17-34 and 101-11
[16] Saul Kripke, *Naming and Necessity* (Oxford Blackwell, 1980), see also David Wiggins, *Sameness and Substance* (Blackwell, 1989) and Stephen P Schwartz (ed), *Naming, Necessity and Natural Kinds* (Ithaca, N Y Cornell University Press, 1977)
[17] See Note 15, above
[18] See Quine, 'Two Dogmas of Empiricism' (op cit)
[19] Ibid, p 45
[20] Quine, *Word and Object* (op cit), 161
[21] Ibid, p 1
[22] Quine, *From a Logical Point of View* (op cit), p 16
[23] Quine, 'The Nature of Natural Knowledge', in Samuel Guttenplan (ed), *Mind and Language* (Oxford Clarendon Press, 1975), p 68
[24] See Note 8, above, also Jonathan Dancy, *An Introduction to Contemporary Epistemology* (Oxford Blackwell, 1985), Jim and Mary Tiles, *Epistemology a critical history* (Blackwell, 1993) and *An Introduction to Historical Epistemology* (Blackwell, 1993) On the 'continental' background more specifically, see Donald Gillies, *Philosophy of Science in the Twentieth Century four central themes* (Oxford Blackwell, 1993), Gary Gutting, *Michel Foucault's Archaeology of Scientific Knowledge* (Cambridge Cambridge University Press, 1989), Christopher Norris, *Against Relativism philosophy of science, deconstruction and critical theory* (op cit), Mary Tiles, *Bachelard science and objectivity* (Cambridge U P , 1984)
[25] See Michael Dummett, *Truth and Other Enigmas* (London Duckworth, 1978), also Michael Luntley, *Language, Logic and Experience the case for anti-realism* (Duckworth, 1988), N Tennant, *Anti Realism and Logic* (Oxford Clarendon Press, 1987), Crispin Wright, *Realism, Meaning and Truth* (Oxford Blackwell,

1987)

[26] Donald Davidson, 'On the Very Idea of a Conceptual Scheme', in *Inquiries into Truth and Interpretation* (Oxford Oxford University Press, 1984), pp 183-98, p 198

[27] Edmund Gettier, 'Is Justified True Belief Knowledge?', *Analysis*, Vol XXIII (1963), pp 121-3, also R M Chisholm, *Theory of Knowledge*, 2nd ed (Englewood Cliffs, N J Prentice-Hall, 1977) and R Shope, *The Analysis of Knowing* (Princeton, N J Princeton University Press, 1983)

[28] See especially Alvin Goldman, *Epistemology and Cognition* (Cambridge, Mass Harvard University Press, 1986)

[29] Davidson, 'On the Very Idea of a Conceptual Scheme' (op cit)

[30] Ibid, p 198

[31] Richard Rorty, 'Pragmatism, Davidson and Truth', in *Objectivity, Relativism, and Truth* (Cambridge Cambridge University Press, 1981), pp 126-50

[32] Davidson, 'A Coherence Theory of Meaning and Truth', in LePore (ed), *Truth and Interpretation* (op cit), pp 307-19, p 317-8

[33] Rorty, 'Pragmatism, Davidson and Truth' (op cit), p 135

[34] See especially Rorty, 'Inquiry as Recontextualization an anti-dualist account of interpretation', in *Objectivity, Relativism, and Truth* (op cit), pp 93-110

[35] See Quine, 'Two Dogmas of Empiricism' (op cit)

[36] Rorty, 'Is Natural Science a Natural Kind?', in *Objectivity, Relativism, and Truth* (op cit), pp 46-62, p 47

[37] See especially Rorty, 'Texts and Lumps', in *Objectivity, Relativism, and Truth*, pp 78-92

[38] Rorty, 'Texts and Lumps', p 81

[39] Ibid, p 81

[40] See Thomas S Kuhn, The Structure of Scientific Revolutions, 2nd ed (Chicago University of Chicago Press, 1970)

[41] Ibid

[42] Rorty, 'Introduction', Objectivity, Relativism, and Truth (op cit), p 7

[43] See Davidson, 'On the Very Idea of a Conceptual Scheme' (op

cit), also 'The Method of Truth in Metaphysics', 'Reality Without Reference', and 'Communication and Convention', in *Inquiries into Truth and Interpretation* (op cit), pp 199-214, 215-25 and 266-80

[44] Rorty, 'Introduction', in Objectivity, Relativism, and Truth (op cit), p 9

[45] Cited in Rorty, 'Texts and Lumps', p 81

[46] Ibid, p 81

[47] Ibid, p 81

[48] Davidson, 'A Nice Derangement of Epitaphs', in R Grandy and R Warner (eds), *Philosophical Grounds of Rationality intentions, categories, ends* (Oxford Oxford University Press, 1986), pp 157-74

[49] Rorty, 'Texts and Lumps', p 81

[50] Kuhn, *The Structure of Scientific Revolutions* (op cit)

[51] Rorty, 'Introduction' (op cit), p 5

[52] Ibid, p 5

[53] See for instance J Perrin, *Atoms*, trans D L Hammick (New York Van Nostrand, 1923), Mary Jo Nye, *Molecular Reality* (London Macdonald, 1972), Michael Gardner, 'Realism and Instrumentalism in Nineteenth-Century Atomism', *Philosophy of Science*, Vol XLVI, No 1 (1979), pp 1-34

[54] Keith S Donnellan, 'Reference and Definite Descriptions', in Schwartz, *Naming, Necessity and Natural Kinds* (op cit), pp 42-65, Kripke, *Naming and Necessity* (op cit), Hilary Putnam, 'Is Semantics Possible?' and 'Meaning and Reference', in Schwartz (op cit), pp 102-18 and 119-32, also Gareth Evans, *The Varieties of Reference*, ed John McDowell (Oxford Clarendon Press, 1982), Wiggins, *Sameness and Substance* (op cit)

[55] D M Armstrong, Belief, *Truth and Knowledge* (Cambridge Cambridge University Press, 1973) and *Universals and Scientific Realism*, 2 vols (Cambridge U P , 1978), Richard Boyd, 'The Current Status of Scientific Realism', *Erkenntnis*, Vol XIX (1983), pp 45-90, Wesley C Salmon, *Scientific Realism and the Causal Structure of the World* (Princeton, N J Princeton University Press, 1984) See also John W Carroll, *Laws of Nature* (Cambridge Cambridge University Press, 1994), Michael Devitt,

Realism and Truth, 2nd ed (Oxford Blackwell, 1986), Rom Harre and E H Madden, *Causal Powers* (Blackwell, 1975), Jarrett Leplin (ed), *Scientific Realism* (Berkeley & Los Angeles University of California Press, 1984), M Tooley, *Causation a realist approach* (Blackwell, 1988), Brian Skyrms, *Causal Necessity* (New Haven Yale University Press, 1980)

[56] See Note 55, above

[57] Rorty, 'Introduction' (op cit), p 5

[58] Ibid, p 6

[59] Ibid, p 6

[60] Ibid, p 6

[61] Ibid, p 6

[62] See Bas van Fraassen, *The Scientific Image* (Oxford Clarendon Press, 1980) and *Laws and Symmetry* (Clarendon Press, 1989), also my critique of his position in Norris, 'Anti-Realism and Constructive Empiricism is there a (real) difference?' and 'Ontology According to Van Fraassen some problems with constructive empiricism', *Against Relativism* (op cit), pp 167-195 and 196-217

[63] See for instance Peter Gibbins, *Particles and Paradoxes the limits of quantum logic* (Cambridge Cambridge University Press, 1987), Tim Maudlin, *Non Locality and Relativity metaphysical intimations of modern science* (Oxford Blackwell, 1993), Alastair I M Rae, *Quantum Physics illusion or reality?* (Cambridge U P , 1986), Michael Redhead, *Incompleteness, Nonlocality and Realism a prolegomenon to the philosophy of quantum mechanics* (Oxford Clarendon Press, 1987)

[64] Erwin Schrodinger, *Letters on Wave Mechanics* (New York Philosophical Library, 1967), also John Gribbin, *In Search of Schrodinger's Cat quantum physics and reality* (New York Bantam Books, 1984)

[65] See Note 55, above

[66] See Note 65, above

[67] See Note 55, above, also Mario Bunge (ed), *The Critical Ap poach to Science and Philosophy* (New York Free Press, 1964), Roy Bhaskar, *Scientific Realism and Human Emancipation* (London Verso, 1986) and *Reclaiming Reality a critical introduction to con*

temporary philosophy (Verso, 1989), Rom Harre, *Varieties of Realism a rationale for the social sciences* (Oxford Blackwell, 1986), William Outhwaite, *New Philosophies of Social Science realism, hermeneutics and critical theory* (London Macmillan, 1987), Sean Sayers, *Reality and Reason dialectic and the theory of knowledge* (Blackwell, 1985)

[68] See Notes 7, 9 and 24, above, also J N Mohanty, *The Possibility of Transcendental Philosophy* (The Hague Martinus Nijhoff, 1985), H Spiegelberg, *The Phenomenological Movement*, 2 vols (Nijhoff, 1984), Gaston Bachelard, *Le rationalisme applique* (Paris Presses Universitaires de France, 1949), *The Philosophy of No a philosophy of the new scientific mind* (New York Orion Press, 1968), *The New Scientific Spirit* (Boston Beacon Press, 1984), Georges Canguilhem, *La connaissance de la vie* (Paris Vrin, 1969), *Ideology and Rationality in the History of the Life Sciences*, trans A Goldhammer (Cambridge, Mass M I T Press, 1988)

[69] Norris, *Against Relativism and Resources of Realism* (op cit), also *New Idols of the Cave on the limits of anti realism* (Manchester Manchester University Press, 1997)