

sity.

Nevertheless, throughout all this transformation the material objects remain a subject-independent reality with unchanging intrinsic properties. As subject-independent, transformational object, material reality functions as the cognitive "limit", that which the knowing subject aims to attain but which, owing to the inexhaustible richness of its transformational potential, can only ever be known in successive approximations (Piaget, 1966-7:16; 1977:5,6; 1979:10; 1983:173).

Thus in Piagetian epistemology material reality, not as a static order but as transformational, subject-independent object of empirical knowledge, constrains the constructive activity of the knowing subject.

3.4.2 The Objective World of Theories

Popper regards himself as a metaphysical realist and his epistemology as based on metaphysical realism (Popper, 1983:xxv,149). He also holds a correspondence theory of truth as "agreement with the facts of what is being asserted" together with an absolutist view of truth (Popper, 1979:44-46; 1983:xxx1,26).

While this is all important background to his epistemology, within that epistemology it is not material reality or absolute truth that functions as external constraint on the knowing subject but the objective world of theories, problem statements and other lingual entities. Popper used the term "third world" and later, following a suggestion of Sir John Eccles, "World 3", to distinguish this domain of theoretical entities from the domain of material reality (World 1) and the domain of subjective experience (World 2) (Popper, 1979:vii,73,74,106-190).

There is, as Popper acknowledges, a strong likeness between this autonomous world of theories and the Platonic Ideas (Popper, 1979:106,

122.). There are, nevertheless, at least two important differences. The entities of Popper's World 3 are not eternal Ideas but are human products; it is a man-made world. Secondly, the entities of this World 3 or, at least the most important entities, are linguistic entities including, especially, linguistically formulated theories, arguments and problems. It was "Plato's main error" that he regarded concepts as the important inmates of the third world. So far as concepts play a part in World 3 it is subsidiary to linguistic formulations of theories (Popper,1979:73,74,122-125,148,156-158). For Popper "statements and not concepts are important" (Popper,1983:108n).

Although the linguistic entities of World 3 are human products they nevertheless constitute an independent and autonomous world. A theory may contain more than the person who formulates it recognises so that, inherent in the actual world of linguistic formulations at any given time is a further world of as yet unarticulated theories, problems and arguments. Besides this it seems that, unrelated to any already formulated theories, there are pre-existent "virtual thought-objects of World 3 that may be actualised as actual thought-objects as theories, problems and the like". The linguistically formulated theories of World 3, therefore, constitute a world autonomously generating problems and theories; it is a world within which the subject makes theoretical discoveries "in a similar way to that in which we make geographical discoveries" in the material World 1. It is a world containing more than anyone has yet discovered (Popper,1979:73,74,106-150,156-161).

This World 3 is the objective world of scientific knowledge. Originating as the linguistic formulations that objectify our subjective dispositional theories, existing in actuality only as human products, once created World 3 has its own autonomous identity that transcends the thought of its creators. Science is an activity of human subjects

who function in their scientific activity as World 2 subjects in the quest for knowledge of the material World 1. But it gains its distinctive, objective character from the fact that it is an activity that takes place within the constraints of the objectivity of World 3.

The objects of scientific knowledge are not the objects of material reality (World 1), even though it is this reality that we presume to know, but the linguistically formulated theories of World 3. Empirical tests that utilise our experience of material reality are an indispensable component of science but they are comparative tests of theories, testing theory against theory, not testing theory against material reality. It is, indeed, on Popper's theory impossible to test theory directly against material reality since we have no direct experience of material reality. All our observations by which we have contact with material reality are theory-impregnated.

The unique rationality of science depends on its taking the linguistic theoretical entities of the autonomous World 3 as its objects. Any attempt to make material reality the object of our knowledge can only immerse us in the subjectivity of the human experience of that reality characteristic of World 2. Only as knowledge is objectified in World 3 linguistic formulations can it be subjected to the critical testing that constitutes our rationality (Popper, 1979:147-150).

Scientific (objective) knowledge, like all other knowledge is conjectural. It is distinguished from subjective knowledge by its consisting in critically testable, hence rational, conjectures. It is a series of guesses but by selecting those that best withstand critical testing we presume that we have guesses that are closer to the truth than other guesses.

This notion of proximity to truth, or verisimilitude, has been one of the more troublesome features of Popper's theory and, in spite of his best efforts to preserve it, remains problematic. In 1963, as part

of what he called "essential further developments of the ideas of my 'Logic of Scientific Discovery'" (Popper,1972:215n) he published a definition of verisimilitude (Popper,1972:228-237). This he now acknowledges was a mistake that he recognised within minutes of being confronted with the relevant criticism. Nevertheless he insists that the concept of verisimilitude, though not essential to his theory, retains a valid place in that theory (Popper,1983:xxxv-xxxvii).

Yet, when we examine its function within the theory more closely it seems clear that its retention, at least in the form that Popper insists on using, leads to confusion. He tells us that the use it has in his theory is confined to assertions of the form "theory A is nearer to (or further from) the truth than theory B" without attempting any formal definition of the concept involved in nearer to or further from the truth (Popper,1983:xxxv,xxxvi). Whether or not we proceed by way of a formal definition such assertions clearly involve an appraisal of the relative truth values of the two theories. Yet, on Popper's own theory of truth in which there is no possibility of our having any criterion of truth (Popper,1972:224-228; 1979:317-318; 1983:xix) any such appraisal can be no more than a guess, albeit a rational guess.

Popper acknowledges this. As a rational guess the guess that one theory is nearer to the truth than another is made for good reasons but it remains, nevertheless, a guess that may be refuted in the future (Popper,1972:234,335). Indeed on Popper's theory this appears inescapable. It would be less confusing, therefore, if instead of persisting in claims that his notion of verisimilitude authorises assertions of the form "theory A is nearer to the truth than theory B" Popper acknowledged consistently that it authorises no more than assertions of the form "our best rational guess at this moment is that theory A is nearer to the truth than theory B".

However, even this may imply too much. Popper staunchly maintains a correspondence theory of truth - truth is correspondence to the facts - which he claims that Tarski has rehabilitated within the formal logic of a semantic metalanguage. Yet, at the same time as he gave us a formal method for defining truth that gives logical legitimacy to the theory of truth as statements corresponding to the facts, Popper assures us that Tarski proved that there can be no criterion of empirical truth; that is, there can be no criterion for determining whether a statement corresponds to the facts. In short, while it is logically legitimate to talk of truth as correspondence to the facts it is impossible to determine whether any particular statement or set of statements corresponds to the facts. "Truth", and with it "verisimilitude" can be no more than a regulative idea, an unattainable goal - and unknowable if we did attain it - that nevertheless motivates us to persist in the search for it (Popper, 1972:224-226, 234-235; 1979:44-47, 310, 318, 319-327).

Consistent with this theory of truth Popper denies all possibility of testing theories directly for their truth value. Hence his vigorous opposition to all forms of verificationism. Any rational preference for a theory can only be based on rigorous critical testing that aims at refuting the theory; we then prefer the theory that performs best under this critical testing. So far his theory is consistent with its basic propositions.

It becomes problematic, however, when he takes his next step and asserts that the greater success of a theory in meeting these critical tests gives us rational grounds for regarding it as closer to the truth than its rivals. In order for these tests to provide such grounds (reasons) they would need to test, in some sense, for the truth-constitutive relationship, the relation of theoretical statements to facts. But when we examine Popper's falsifying tests we find

that in no sense are they tests of the theory/fact relation but of the theory/theory relation. Though observation is crucial to refutation of theories it is not observed facts that refute a theory but the observation statements (Popper, 1980:86-111); that is to say, a theory is refuted when it is contradicted by a theory of a specified kind.

In this respect Popper's use of the language of falsification for his critical tests tends to be misleading, suggesting as it does, a logical connection with his theory of truth. Indeed his own argument that critical refutation provides rational grounds for deciding a theory's proximity to the truth (i.e. degree of correspondence with the facts) implies such a connection.

So we find him arguing that we will prefer theories that have not been refuted on the ground that "since we are looking for a true theory, we shall prefer those whose falsity has not been established"; "we test for truth, by eliminating falsehood" (Popper, 1979:8,30). This implies that "falsehood" is a value logically correlated with "truth", as it would ordinarily be, of course. Yet, when we look more closely, we find that in the way Popper uses them they are logically quite disparate. "Falsehood" as used here in Popper's epistemology is a value of inter-theoretic correlation whereas "truth" is a value of theory/fact correlation.

Popper's theory of verisimilitude, within the context of his epistemology, requires us to accept a proposition of the form:

Ta corresponds to F more closely than does Tb
if
Ta satisfies Tr better than does Tb;

where Ta and Tb are competing theories, Tr is the set of specified theoretical test conditions for theory refutation and F is the set of relevant facts.

This, of course, in the terms of Popper's theory of truth, can be directly translated as:

Ta is closer to the truth than Tb
if
Ta satisfies Tr better than does Tb

In this form it may appear logically unproblematic but in its first formulation, which simply makes explicit Popper's notion of truth, the logical disparity between the two halves of the formula should be obvious. It could be accepted only if we could establish at least some value for Tr in relation to F but on Popper's theory this is impossible since it is not possible to have a criterion for determining whether or to what degree a theoretical entity corresponds to any fact or set of facts. It is therefore as impossible to determine a fact value for the theoretical entity Tr as it is for the theoretical entities Ta and Tb.

The only other way to validate the formula would be to show an appropriate logical connection between the theory coherence involved in the valuation of the second half of the formula and the theory/fact correlation of the first half. This Popper has not attempted and it would seem possible to achieve it only at the cost of the sacrifice of his theory of truth in favour of one in which theory coherence displaces correspondence with the facts.

In short, Popper specifies two aims of science: on the one hand, truth and, on the other hand, the developing of theories of greater explanatory power, great content and greater testability (Popper, 1983: xxxvi). He has detailed a methodology for achieving the second aim but gives us no way of assessing performance in relation to the first other than intuitive belief. After the acknowledged failure of his attempt at a formal definition of verisimilitude he falls back on examples, in respect of which the relative truth values of scientific theories would be widely accepted without argument, as being all that is needed to show that we can talk sensibly about verisimilitude (Popper, 1983: xxxvi).

But in the absence of any logical connection with his method of rational criticism this evaluation, however widely accepted, can only be based on intuitive belief. He is entitled, of course, to hold intuitive beliefs about the progress of science toward truth and to have these beliefs function as subjective motivation for scientific enquiry. He is not entitled, however, to incorporate them within his epistemology in view of his own specification of that epistemology as a logical methodology without beliefs.

In this respect Popper appears to have fallen into his own cardinal intellectual sin of lack of clarity (Popper, 1979:44). His epistemology would gain greatly in the virtues of simplicity and lucidity (virtues he himself specifies) if he were to abandon verisimilitude as an intrinsic component, relegating it to the metaphysical background, and replace talk about the falsification of theories - falsifiability in his first sense (Popper, 1983:xxii) can be retained - by use of the language of refutation.

This would leave us with the single, coherent formula:

Ta is preferable to Tb if Ta satisfies Tr better than Tb;
which would also make it clearer that the subject-independent controls he proposes are exclusively theoretical controls.

3.4.3 Knowledge within a Structure of Commitment

Within the system of beliefs that Polanyi builds around his own personal commitment he places the knowing subject under the constraint of a subject-independent reality as the external, impersonal and universal pole of commitment. The structure of commitment, with its twin poles of the personal and impersonal - the one who commits himself and that to which he is committed - demands such an external pole (Polanyi, 1962:306-316). There can be no commitment without an impersonal external pole.

Polanyi appears, then, to recognise an external constraint imposed

on the subject by the structure of commitment. But, on closer examination, that impression proves deceptive. In the first place, the structure of commitment imposes on the subject no more than a formal constraint to recognise an external pole. The content, what shall be taken as that external pole, is indeterminate, determined only by the subject as "requirements acknowledged by itself as independent of itself" (Polanyi,1962:300). The external pole is determined by the universal intent of the subject "in submission to the compelling claims of what in good conscience I conceive to be true". It respects the subject's self-set standards to which the subject "ascribes impersonal status" (Polanyi,1962:64,65,302-309).

But the constraint disappears altogether as a constraint external to the subject when we recall that the formal constraint itself depends on an analysis of the structure of commitments that rests on nothing but Polanyi's own personal commitments (Polanyi,1962:viii). The formal requirement that commitments have an external pole thus reduces to an unproven belief, albeit a passionately held belief, of the subject. There is nothing beyond this to support it. As Polanyi says himself (1962:324) "... my belief in commitment is a commitment of the very kind it authorises ...".

In the final analysis Polanyi acknowledges no constraint on the knowing subject outside the subject as believing subject. All our knowledge has its source in unproven beliefs; science is "a vast system of beliefs" (Polanyi,1962:171,266,268).

Polanyi (1962:268) concedes that this is "an invitation to dogmatism" but argues that it is but "the corollary to the greatly increased critical powers of man". The critical movement in human thought that attempted to separate knowledge from belief so as to make knowledge consist in "objectively demonstrable assertions" is now destroyed as a credible position by its own critical principles; to

cling to such an objectivist view of knowledge in the present situation is to forsake a critical attitude for the most dangerous kind of dogmatism, the blind and deceptive dogmatism of "a creed inverted into science". A "dogmatic orthodoxy" can be controlled because it is just what it claims to be. The dogmatism associated with contemporary rationalism is dangerous because it presents itself in the illusory guise of objective science (Polanyi, 1962:265-268, 294-298).

By enclosing knowledge within the structure of the subject's commitment, Polanyi contends that he is pointing to the only way to avoid both scepticism and subjectivism. Subjectivism results when the subject surrenders passively to its passions. In commitment the subject takes control, acting passionately in submission to "requirements acknowledged by itself as independent of itself". "The freedom of the subjective person to do as he pleases is overruled by the freedom of the responsible person to act as he must" (Polanyi, 1962:300, 309). Yet "to act as he must" is not to act under the constraint of anything external to the subject but is to act under the constraint of the subject's own self-set standards.

3.4.4 A Comparative Summary

One of the characteristics of contemporary epistemology is the uncertainty of the anchorage of knowledge in any secure reality beyond the subject. In that respect it contrasts sharply with the great Greek philosophers as well as with earlier forms of Western rationalism.

Plato anchored knowledge in the immutable Ideas transcending the material world; Aristotle and the Stoics anchored it in an intelligible order inherent in the material world replicated in the human; medieval scholasticism combined these two in various ways and varying proportions strengthened by the injection of belief in a Creator God as the Author and Guarantor of the rational order of nature; in the Enlightenment period, while the ties of natural and supernatural were

loosening, it remained respectable to talk of an inherent rational order of nature that is replicated in rational human thought, giving knowledge a firm anchorage.

Since then the exploration of nature cut loose from supernatural metaphysical constraints has torn to shreds successive attempts to represent knowledge as the replication of a rational order inherent in nature. One of the last great casualties was Logical Positivism and the philosophy of science founded in it.

This has led to a situation in which the attempt to talk of knowledge in terms of universal absolutes has been in large measure, abandoned. Of the three whose epistemologies we have been discussing, only Popper wants to continue talking of an absolute and then only as a regulative idea. All three have abandoned any attempt to represent knowledge as a replication of the rational order of reality.

Of the three Piaget gives the most decisive role to material reality yet he gives it only the function of a limit, always approached but never attained, because continually transformed in our cognitive approach to it yet always retaining its unchanging core that maintains its independence of the subject.

In Popper the role of material reality is ambiguous, in spite of the talk of empirical tests. The rational heart of his epistemology is the critical testing of theories in an inter-theoretic procedure to which material reality makes no direct contribution; the crucial tests are theoretical tests and the crucial subject-independent constraint is the theoretical World 3 of objective knowledge. It is a scheme with Platonic overtones but without the certainty of Plato's Ideas.

Polanyi, retreating from the uncertainties of 20th century rationalism, finds cognitive security and certainty in unproven belief; not wanting to return to a discredited natural/supernatural dualism that gave beliefs about nature a firm external anchorage in the subject-

independent supernatural world he forsakes all attempt at an external anchorage - though maintaining an appearance of it with his belief in an impersonal pole in the structure of commitment - to anchor the certainty of belief in the personal commitment of the subject. In his own words (1962:268), it is a consciously a-critical position involving an "invitation to dogmatism" as the only way of redemption for modern man.

3.5 BEYOND POPPER AND POLANYI: FEYERABEND AND DEUTSCHER

Popper's first major publication (1980) appeared in its first English edition in 1959 (though the original German version had been published in Vienna in 1935). Polanyi's major work (1962) appeared the previous year, 1958. The major trends in Anglo-Saxon epistemology signaled by the reception both these works received have continued in the more than 25 years since then. A detailed examination of these developments is beyond the scope of the present study but a very brief - and therefore in some sense inadequate - glance at two more recent contributions will serve to illustrate how these trends have been continued.

3.5.1 The Epistemological Anarchism of Paul Feyerabend

Feyerabend's position is best understood as an extension of Popper's that removes from it the last shreds of rationalism. And, of course, includes in his line of fire others such as Imre Lakatos who have tried to follow and revise Popper in an attempt to save rationalism. Popper's critical rationalism he describes as "ratiomania" and as "designed to intimidate yellow-bellied opponents" (Feyerabend, 1975: 171). At the same time, though he makes only occasional reference to Polanyi, his anarchist demolition of rationalism leaves him in a position remarkably similar to that of Polanyi but stripped of the language of universal standards that Polanyi wanted to preserve.

Popper's position is a last ditch stand in defence of a beleaguered

rationalism. He has fallen back from all forward positions that maintain universal rational criteria in the acquisition or formation of knowledge to take his stand in defence of universal rational criteria for the critical testing of knowledge claims. Demolish this position and rationalism has nowhere else to go, at least within the tradition that has dominated 20th century Anglo-Saxon epistemology; nothing appears to be left but to surrender to a frank irrationalism. This is precisely the strategy adopted by Feyerabend.

It is a strategy of compelling simplicity in its essentials, though the colourful language in which he expresses himself will hardly commend his arguments to those who remain committed to rescuing something from the ruins of rationalism. Popper argues that, since all knowledge consists of guesses (theories), knowledge advances not by common effort to develop the best possible theory but by developing a plurality of guesses; the more guesses we can make the more likelihood of hitting on one that comes somewhere near the truth (Popper, 1983: 69). So far the progress of knowledge depends on irrational factors.

Popper believes that he saves rationalism by specifying rational test criteria for selecting between competing conjectures. Further, he argues that the merit of his proposal, in contrast to the program of Logical Positivism, is that it is based not on a scientific ideal but on the actual practice of science. Going straight for the jugular vein Feyerabend argues that, on the contrary, an examination of the actual practice of science shows that science would become impossible if Popper's critical rationalism were to be embodied in it. It is impossible, he concludes, to develop universal criteria for theory evaluation except by the authoritarian imposition of arbitrary restraints that hinder the progress of knowledge.

The progress of knowledge requires a plurality of theories just as Popper claims but they will be often incommensurable in terms of any

universal rational criteria. Any attempt to prescribe such criteria can only rest on arbitrary authority that hinders the progress of knowledge. Methodological pluralism is as essential to the progress of knowledge as is theoretical pluralism. There is no correct way of choosing between theories. Everyone must choose for himself (Feyerabend, 1975:35-46, 171-214).

Whereas Polanyi wished to incorporate rationality within the structure of his commitment, Feyerabend quite frankly acts as "an undercover agent who plays the game of Reason in order to undercut the authority of Reason" (Feyerabend, 1975:33). Polanyi wanted still to talk of universal standards as the impersonal pole of his commitment. Feyerabend abolishes all talk of universal standards in favour of a thoroughgoing epistemological anarchism in which anything goes and whatever I choose to call knowledge is knowledge (Feyerabend, 1975:27, 28).

In order to avoid the damaging social consequences of such an epistemological anarchism he relies on the principle of democratic decision making. Lacking all rational criteria for deciding between competing knowledge claims we can only rely on democratic decision, the decision of the majority of subjects - presumably with some tolerance for dissenters though how much is not altogether clear. Already democratic decisions play a larger role in the acceptance and rejection of theories within the scientific community than scientists, anxious to preserve the mystique of rational authority with which science has been surrounded, are usually ready to admit. They generally prefer to maintain the myth that scientific theories are selected, in the final analysis, by intersubjective rational criteria. If human freedom and the genuine progress in knowledge that depends on it is not to be strangled in the dogmas of a scientific ideology the myth of scientific authority must be unmasked so that epistemic decisions can be made

by the vote of everyone concerned, scientist or not (Feyerabend, 1975: 301-309).

Piaget, Popper and Polanyi each, to a greater or lesser extent, while diminishing the external controls over the activity of the knowing subject wants to retain such controls in some form - though, in the case of Polanyi, it is more in appearance than reality. Feyerabend continues this diminution of external controls by abolishing them altogether, arguing that only their abolition can achieve objectivity of knowledge since any supposedly external controls are mythical controls imposed by subjective authority.

For all his self-confessed flippancy Feyerabend deserves - and no doubt wishes - to be taken seriously in his attacks on the pretentious claims of a rationalist knowledge that takes itself too seriously and an authoritarianism, whether religious or scientific, that disguises itself as rational authority. The very flippancy of his style is no doubt a strategy for unmasking these pretensions. Whether we find his anarchist alternative any more satisfactory than a pretentious rationalism is another matter.

3.5.2 Epistemology without Theories - Max Deutscher

While it lacks the iconoclastic language of Feyerabend and appears to aim at identifying what are, in some sense, universal cognitive criteria, in other respects the work of Deutscher (1983) represents an even more fundamental break with the tradition.

By concentrating his attention on the role of scientific theories, albeit with the aim of destroying their universal authority, Feyerabend remains within the tradition of Anglo-Saxon philosophy that, taking its starting point in the Kantian primacy of conceptual structures, shifted the attention from a priori structures of thought to the analysis of linguistically formulated theories with or without the claim of an underlying conceptual basis. Deutscher dismisses all this

as peripheral and potentially misleading since it suggests "that one's main and leading ways of approaching and dealing with things are already spoken, articulated, before or as we employ them" (Deutscher, 1983:42). In denying the primacy of concepts and linguistic formulations he transfers the primacy to the activity of the subject.

This shift, made by a philosopher whose philosophical thinking was nurtured in the analytical philosophy of 20th century Anglo-Saxon philosophical orthodoxy, has had two important consequences for the purpose of the present study.

Firstly, while he gives cognitive primacy to the subject freed of external controls as decisively as does Feyerabend, he is not led into Feyerabend's epistemological anarchism. Locked into the notion of the primacy of concepts and/or linguistic formulations, once he has demolished the universal criteria that form the last defences of rationalism in the positivist tradition, Feyerabend has nowhere to go but into the thoroughgoing irrationalism of epistemological anarchism. He also assumes, mistakenly, that there is nowhere else for anyone to go unless they want to cling forlornly to the debris of rationalism's last defence. By turning away from the traditional cognitive primacy of concepts/language to the primacy of the activity of the subject Deutscher has open to him a whole new and, in terms of the recent Anglo-Saxon tradition, comparatively unexplored field in which to search for intersubjective cognitive criteria.

Concerned at the moment with the theme of objectivity, Deutscher argues that objectivity is a property of the subject's activity in relation to objects; it is an attitude, a way of approaching objects, a form or style of our subjectivity (Deutscher, 1983:41, 129, 136). His detailed argument is concerned with identifying qualities of the subject's activity that provide us with criteria of objectivity that enable us to distinguish occasions of objective activity from those

when we act without, or with diminished, objectivity. By this shift of attention from the primacy of theories, which he treats as incidental to our knowledge, Deutscher escapes the logical force of Feyerabend's arguments forcing him into epistemological anarchism.

At the same time, he joins Feyerabend in denying any special authority to science or a scientific method. Objective authority is not secured by a method or set of procedures but by an attitude of the subject which may as readily be either present or absent in the subject engaged in the practice of science as in any other knowledge-seeking activity. This view is implicit in his whole discussion, particularly in the notable absence of discussion on science and its methods, supported by the occasional explicit references to science (e.g. Deutscher, 1983:42,87). In discussion that followed a paper I presented to the 1984 conference of the Australasian Association of Philosophy, Deutscher stated quite explicitly his view that science and scientific method as such give no grounds for according scientific knowledge claims a privileged status of objectivity.

In this respect he appears, as much as Feyerabend, to remain under the influence of the tradition with which, in an important respect, he has broken. Within that tradition the privileged place of science was held to be due to a rational method of universal validity. Having seen successive attempts to sustain that claim demolished, it is natural to conclude that there remains no basis for maintaining scientific privilege. However, we have seen that Piaget, coming from a quite different tradition, maintains an epistemology giving a privileged place to scientific knowledge that, because it is based on the activity of the subject, is unaffected by the collapse of methodological theories of scientific privilege in the Anglo-Saxon tradition.

In this, as in other respects, of course, Piagetian epistemology requires careful evaluation. However, its immunity to the critical

attacks that have, for many, discredited the claims to scientific privilege developed within the Anglo-Saxon tradition, means that the claim it makes for scientific privilege cannot responsibly be simply swept aside along with them. In this respect Piagetian epistemology represents a serious unacknowledged, and it seems unrecognised, challenge to Deutscher's position.

This is all the more interesting because Deutscher joins Piaget in assigning primacy to the activity of the subject. It is clear that the development of Deutscher's thought has been influenced by an openness to recent continental European philosophers that, until recently, was unusual among Anglo-Saxon philosophers (Deutscher, 1983:2,256,257). However, he does not appear to recognise how closely, in giving primacy to the subject's cognitive activity, he has aligned himself with the tradition of French philosophy in which Piaget was nurtured or to be closely aware of that tradition; a tradition that developed epistemology in such a different way to the Anglo-Saxon tradition because, whereas the latter took its point of departure in the Kantian primacy of concepts the former rejected this feature of Kantianism to take its point of departure in the primacy given of the subject's activity, finding its link with Kant in the Kantian notion of an a priori judgment given, in defiance of Kant, cognitive authority.

That a philosopher of Deutscher's standing should adopt a position breaking with the analytical philosophical tradition is an indication of how thoroughly the hitherto near-monolithic orthodoxy of 20th century Anglo-Saxon epistemology has been shattered in recent years. For those ready to consider seriously the possibility of alternatives to the analytical tradition that has dominated philosophy in the English-speaking world for so much of this century, Deutscher's work, though showing a certain "looseness" in its argumentation, offers significant possibilities for further fruitful exploration.

3.6 THE STATE OF PLAY: A SUMMARY

3.6.1 The Shadow of Kant Lengthens and Fades

The Kantian background continues to be important in understanding the present state of epistemological discussion. The Anglo-Saxon world is only just beginning to emerge from a period during which epistemological discussion was restricted by the dominant authority of a dogmatic orthodoxy that, taking its starting point in the Kantian primacy of concepts, decreed that epistemology must be restricted to the analysis of the language of knowledge. Popper, while sharply critical of its Logical Positivist version, remains locked within this orthodoxy which leads him to assign as a matter of course all questions about the cognitive activity of the subject to psychology thus placing them outside the scope of epistemology. Feyerabend, for all his iconoclasm, remains locked within the same restrictive world.

Polanyi, of course, stands outside that traditional orthodoxy. In terms of the breaking of the hold that this narrow orthodoxy has had on Anglo-Saxon philosophy Deutscher's work is even more significant since he is a professional philosopher trained in, and conducting his earlier work within, the analytical tradition. His work, then, breaking with that tradition on an issue so central to it, is symptomatic of an opening up of Anglo-Saxon epistemological discussion to the stimulus of a wider range of philosophical thought. Deutscher himself points out the dangers of sterility that follow when philosophy becomes confined within the "tried and tested" limits of a particular tradition, which he illustrates from 20th century Anglo-Saxon epistemology (Deutscher, 1983:253-259).

An important consequence of the dominance of this dogmatic orthodoxy in Anglo-Saxon epistemology is that little attempt has been made to engage in genuine interaction with an epistemology such as that of

Piaget. Fortified by the dogmatic certainty that its own approach is the only tenable one this orthodoxy has had little patience for the careful uncovering of the intricacies of the historical development of ideas that is often indispensable for a proper understanding of an alternative approach. In the absence of such an understanding effective interaction is impossible. Either there will be no interaction at all because the alternative is dismissed out of hand as irrelevant; or the alternative will be criticised using critical criteria developed within the critic's conceptual framework without recognising that it is the very validity of this framework that the alternative challenges; or, in a deceptively positive evaluation the philosopher uses his own conceptual framework to interpret the alternative and draw from it support for his own position without regard to the alternative's quite different framework. In no case is the alternative treated seriously and the value of genuine philosophical interaction is lost.

Popper exemplifies the first attitude while Hamlyn, as discussed briefly above (section 3.1.2), exemplifies the second. The third approach becomes more common with the weakening of the rationalism that has dominated the tradition. We have noted one example already in the case of Feyerabend (section 2.9). A similar approach can be found in Polanyi.

Polanyi makes several references to Piaget, usually to support his own position. Yet he never takes note of the fundamental differences between his position and Piagetian epistemology or that the features of that epistemology which he extracts to support his position, if understood in the Piagetian context, constitute not support but refutation of his position.

For example, he cites Piaget's research on stages in cognitive development as supporting his own theory of knowledge within a framework of commitment to progressively better articulated logical rules

of rightness that the subject sets for himself by himself (Polanyi, 1962:333,334). Yet, within the context of Piagetian epistemology this research refutes Polanyi's theory of self-set rules by providing experimental evidence that the subject, rather than moving toward greater objectivity by the progressive elaboration of self-set standards, achieves objectivity by moving away from the subjectivity of self-set standards to the universal, atemporal and trans-subjective standards of the logic inherent in the structuring activity of the organism.

It is, of course, open to Polanyi to dispute this interpretation of the experimental evidence and to offer an alternative interpretation. What is questionable is his ignoring of the fundamental differences while citing Piaget as though he is a natural ally for his own epistemological position. Yet Polanyi does not seem to be aware that this is what he is doing. Indeed this is the only conclusion we could draw without charging him with a fundamental lack of intellectual integrity.

While the breakdown of the monolithic rationalism that previously dominated Anglo-Saxon philosophy has made it respectable for philosophers to take note of the work of Piaget, and not just pass it by as irrelevant, without a thorough understanding of the alternative philosophical tradition from which it has emerged there is little hope of the kind of constructive and critical interaction that can occur only when Piagetian epistemology is taken seriously on its own terms.

And it does not even begin to make sense of Piagetian epistemology for the philosopher in the Anglo-Saxon tradition to label it Kantian as though this at once distinguishes it from his own philosophy, the superiority of which, among other things, is marked by escape from the Kantian illusion. We begin to make sense of it only when we recognise that it is distinguished from the Anglo-Saxon tradition not by the one

retaining Kantian characteristics while the other has superseded Kant but, in the first instance, by divergent points of departure in Kant's complex system with a retention and discarding of different features of that system.

While, in this sense, the shadow of Kant still falls over epistemological discussion, in another sense it is a fading shadow. At the heart of the Kantian enterprise was the ideal of a science that, as objective knowledge of nature resting on universal, rational principles, is isolated from the unpredictable effects of the subjective activity of metaphysics, religion and morality characteristic of the freedom of the human subject. It was an ideal that was carried on in positivism but also, in a different way, in the French tradition represented by Brunshvicg's constructivist idealism. In this respect, Piagetian epistemology does stand closer to Kant than any in the contemporary field. Even Popper has retreated significantly from this ideal by giving the subject's creative imagination the key role in the formation of knowledge retaining only a critical rational objectivity. Polanyi shows some inclination to hold onto the ideal in a modified form - he describes science as "a coherent system of superior knowledge" (Polanyi, 1962:375) - yet his irrationalism prevents his achieving it. Once we reach Feyerabend and Deutscher it is openly abandoned. At this point in time the once dominant Kantian shadow is fading rapidly into the more remote historical background.

3.6.2 The Converging and Diverging of Epistemological Discussion

On the one hand there has been a convergence in recent epistemological discussion in a shift of emphasis to the formative activity of the knowing subject. There has been a shift away from the view of the subject as a mere discoverer of a rational order of nature or as a processor of data by predetermined rules in favour of the recognition of the creative role of the subject in cognition. Whether it is Pia-

get's constructive subject or the creative guesses of the Popperian subject or Polanyi's committed subject developing knowledge by his own self-set rules or Feyerabend's anarchistic subject freed of all authoritative constraint or Deutscher's objecting subject, all assign a key epistemic role to the creative activity of the subject. In this respect there has been a triumph for the Kantian revolution.

Along with this there is a convergence in the abandoning of absolute cognitive values. Of the three main figures discussed, Piaget, Popper and Polanyi, each wants to speak of the truth value of knowledge but without assigning absolute value to any knowledge claim. Indeed, only Popper speaks of absolute truth and then only as a regulative idea. None of our actual knowledge nor the whole of it together has or can have absolute truth value. Piaget contends that scientific knowledge is truth but leaves no room for absolute truth in the never-ending spiral of cognition since the highest truth of today may be relativised in the yet higher synthesis of tomorrow's knowledge. As for Polanyi, the belief system which I hold with dogmatic certainty as truth within my personal commitments may well differ from and even contradict the belief system that another, with equal warrant and certainty, holds as truth within his commitments. Talk of absolute cognitive values is decidedly out of favour, as much for those who continue in the rationalist tradition as for those who have abandoned it for some form of irrationalism.

There is also a tendency to converge in one or another form of intellectualism. Piaget's abstractive intellectualism has been noted already. Although Popper likes to see himself as retaining "the principle of empiricism" (1983:33) I suggest that his World 3 theory as discussed above (section 3.4.2) places his epistemology in the category of a transcending intellectualism such as was discussed earlier in relation to Plato but re-cast in a modern framework in which the

transcendent intelligibles are autonomous products of the human mind. Polanyi presents us with yet another form of intellectualism perhaps best described as an irrationalist, fiduciary intellectualism in which the intelligibles are the subject's beliefs within a structure of commitment.

Yet these convergences have brought us no closer to epistemological agreement. On the contrary, they have brought with them even more profound divergences. We have noted the breaking up of the substantial unity of epistemological thought, at least as to its foundations, that once characterised Anglo-Saxon philosophy. In some respects, notably in the emphasis on the activity of the subject, this has brought a convergence with the French tradition in which Piaget operated and yet, in other respects, the gulf is as wide as ever.

It is one thing to agree that the subject has a creative role in cognition but it is quite another matter to agree about the exact nature of that role and the constraints, internal and/or external, that control the subject in his or her activity, if at all. On these questions there is the widest possible divergence and as the discussion continues the number of variants increases.

Is the subject, with Piaget, the rational constructor of knowledge guided by a universal biological logic enriched by the semiotic function? Or does the subject contribute no more than creative guesses that can never be measured against any positive standards or methods but only eliminated by rational tests, as Popper maintains? Or are we to accept Polanyi's closely reasoned arguments that we must abandon all idea of objective rational controls to recognise that all knowledge originates in unproven belief within a framework of personal commitment?

In this particular respect, we receive no help when we turn to Feyerabend and Deutscher since they simply give us two more alterna-

tives with no way to resolve the dilemma of the alternatives we already have. On the contrary, they complicate the situation further by denying any superiority to scientific knowledge. At least the first three had been agreed, broadly speaking, about this!

3.6.3 Incommensurability, Commitments and Epistemic Frameworks

The proliferation of divergent theories of knowledge, with a total absence of an agreed basis for deciding between them or even promoting rational dialogue, must rate as one of the outstanding features of contemporary epistemological discussion.

The problem is not just that there is a plurality of alternative theories. On any view but the most dogmatic authoritarian view this might be a valuable intellectual stimulus. The problem is the lack of an agreed basis for rational dialogue not to say evaluation. Feyerabend's colourful language in describing the views of those with whom he disagrees makes entertaining reading for those who sympathise with him but does little to encourage dialogue; though, as noted earlier, it does serve its own critical purpose very well. And while Popper insists dogmatically on his own restrictive view of the limits of epistemology, refusing to discuss alternatives, dialogue is impossible with those, like Piagetians, who dissent from this view.

Are we then to accept as a permanent situation that epistemological discourse is fragmented among different "schools", each with its own disciples and each talking at rather than with the others? Or can we expect that there will emerge from the present proliferation a new agreement on a common basis for mutual discourse?

Our answer to these questions will depend, in some measure, on where our sympathies lie in the present debate. On the one hand Feyerabend's anarchism depends on a continuation of the present situation. A general agreement on anything, unless either merely transitory or due to the imposition of arbitrary, coercive authority, would refute anar-

chism. Anarchism's survival depends on not winning the argument. The universal acceptance of anarchism would destroy the credibility of anarchism by demonstrating that there is a universal basis for common, intersubjective agreement on one matter at least - the principles of anarchism.

On the other hand, a rationalist must expect that it is possible, in principle, to resolve sectarian disputes by appeal to the common rationality, though in the case of Popper he seems, at times, to regard this as a forlorn hope in the present intellectual climate. Yet, if the rationalist sees general agreement as a forlorn hope it can only be for the reason that Plato had little hope of popular acclaim for the insights of the philosopher; immersed in the shadow play on the cave wall - the illusions of fideism, anarchism and other forms of irrationalism - the irrationalist blinds himself to the universal rationality that is plainly to be seen by any who look. In principle agreement is possible because the universal rational basis for it exists, whether individuals recognise it or not.

A more difficult question for the rationalist is the lack of agreement among rationalists. One tactic is to discredit the other rationalist by firing an "ism" at him. So, for example, if Popper were to take note of Piaget and recognise in him a would-be fellow rationalist, he would likely respond by pointing out that he has fallen into a psychologism or a biologism that frustrates his rationalist intention. The difficulty with this is that it works equally well both ways. Piaget could well retort by pointing out that Popper's rationalist intention is frustrated by his "methodism" that causes him to focus myopically on the methodological problem of the testing of theories while ignoring the real epistemological problem of the cognitive activity of the subject. The whole procedure simply displaces rational argument by mutual name-calling.

If rationalism is true it appears that it ought, at least, to be possible for rationalists to agree on a common rational basis of discourse. If anarchism thrives on irreconcilable theoretical differences the credibility of rationalism depends on the demonstration of their resolvability. The most pressing problem for contemporary rationalism, then, must be the disarray among rationalists themselves.

But there are medians between an all-encompassing anarchism and an all-encompassing rationalism. On Polanyi's position general agreement may be unlikely but it is not impossible. It may be possible to achieve an intersubjective coincidence of commitments and associated belief systems, though there is no way to guarantee such an outcome. A general acceptance of Polanyi's epistemology would not discredit it as it would anarchism. We may, therefore, publish, argue and defend our beliefs in the hope that others will come to share these beliefs. Indeed, given the passionate nature of commitment in Polanyian theory it seems to be imperative that we do so.

Piaget offers us another alternative when he introduces into his rationalism the notion of epistemic framework. As a rationalist he maintains that there is a universal rational basis for cognition; that the knowing subject is governed by a universal rationality. However, unlike positivism and the older forms of rationalism, he does not claim that the rational does or can function in isolation from the extra-rational. It operates always within an epistemic framework that, without affecting the internal rational mechanisms of cognition, directs and limits its operations by external constraints that determine what are and what are not legitimate epistemic problems.

Piaget's treatment of this matter is largely historical but it has potential value for greater depth and clarity in analysis of the theoretical proliferation in contemporary epistemology. If we can identify differing epistemic frameworks as the source of the theoretic-

tical differences we will be able to shift our evaluation from the apparent differences to the underlying epistemic frameworks. At the same time we may hope that, having brought into sharper focus the underlying nature of the differences, we may be able to gain a clearer view of residual common ground on which constructive dialogue can take place.

It is of interest that Piaget did not discuss the implications of his notion of the epistemic framework for his own epistemology. The development of that epistemology depends on the resolution of agreed problems by agreed experimental techniques resulting, it is claimed, in knowledge with universally recognisable truth value. The assumption is that by following this "scientific" procedure an epistemology can be developed with universally recognisable truth value.

The whole procedure, however, depends on agreement on the problems. Piaget's theory of the epistemic framework specifies that the identification of the problems is dependent on an epistemic framework that is the product not of a universal rationality but of an ideology or Weltanschauung. Universal agreement about the value of the scientific results, in this case the epistemology, therefore, will depend, to some extent, on a common ideology or Weltanschauung with a common epistemic framework giving agreement on the problems.

By treating this question exclusively in an historical way Piaget makes the problem of the epistemic framework appear to be exclusively one of successive framework universally held in the scientific community at successive periods of history. He ignores the problem of differing, concurrent epistemic frameworks in the contemporary scientific world; yet it appears to be precisely this problem that stands in the way of a universal acceptance of the results of his own epistemological research.