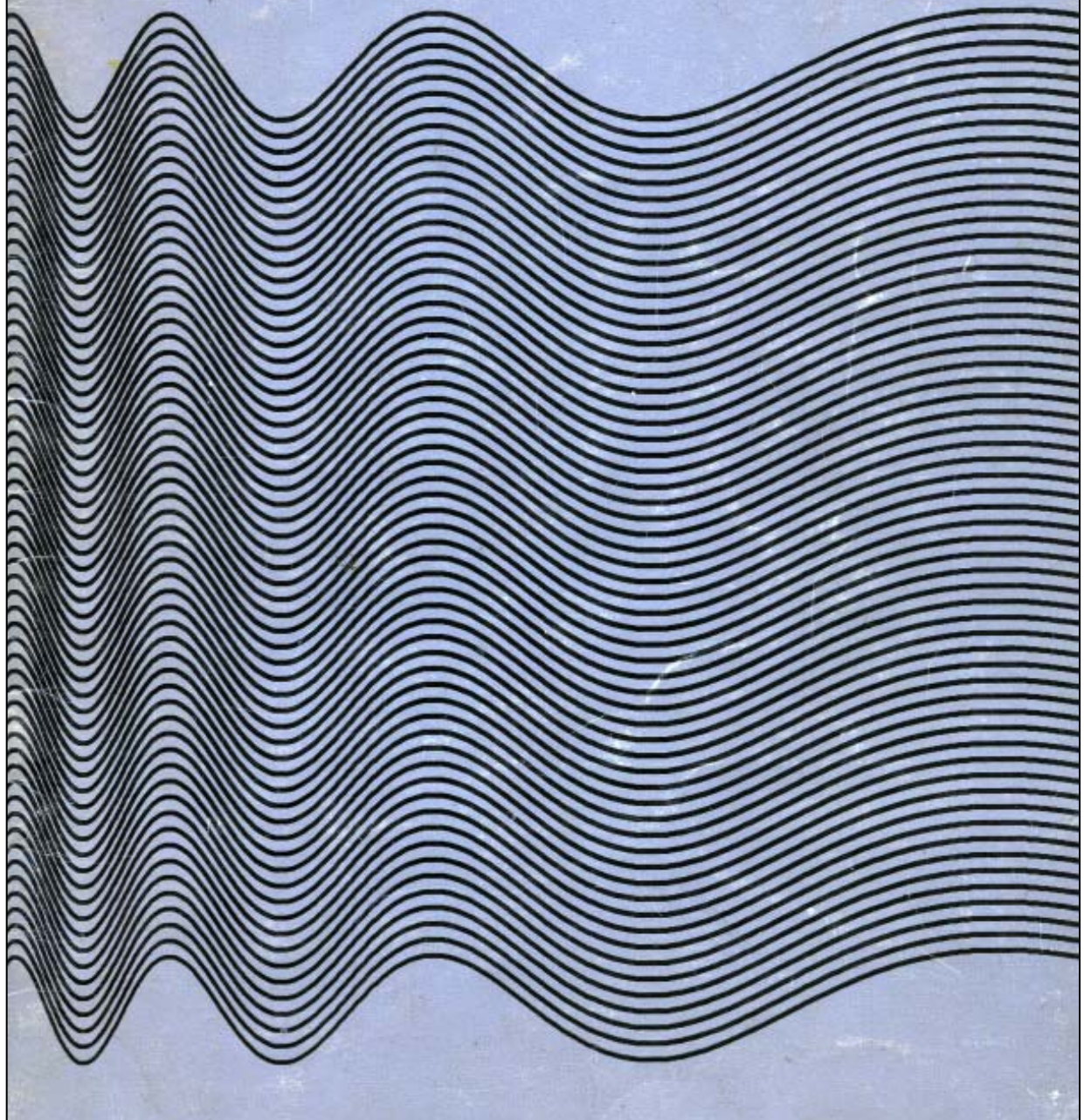


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The Scientific Role and The Paradise of Faith

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MY INTENTION in this paper¹ is to show how one aspect of a crucial philosophical problem for natural science, one that has come to have profound implication for human society of the twentieth century, can be studied sociologically. Philosophically, the problem of the freedom of the will, standing in opposition to the general mechanism of nature, derives from what Kant has described as 'the subtle but impotent distinction of subjective and objective practical necessity'. Yet this distinction, 'impotent' for Kant, can by no means be moribund for any serious student of the philosophy of the natural or social sciences. Until the middle of the eighteenth century, the rationale underlying the historical development of thought, as metaphysics, was a dissociation from an objective world of nature and natural cause. Lindsay comments in his Introduction to Kant's *Critique of Pure Reason* that 'metaphysics as Kant knew it had concerned itself principally with reality of the self, freedom of the will and the existence of God'. For Kant, however, the autonomy of the will was to become the supreme principle of morality. In metaphysics, his notion of moral conduct (a notion taken from Rousseau) became associated with ethical questions concerning the reality of freedom . . . and for the sphere of social conduct, associated with questions of personal judgement and value.

In his book *The Scientific Revolution* Hall comments that scientific 'theories of the past were to be criticised as being inconsistent, speculative and involving spiritual qualities rather than matter'.² The progress of natural science from the end of the fifteenth century was characterised by a reaction to an unbridled Aristotelian rationalism by which the avenue to truth was predominantly through a metaphysical analysis of the nature of things, which would thereby determine

how things acted and functioned'.³ It was against this Classical profanity, reinforced by the Thomist orthodoxy of the Middle Ages as the vestment of the sacred that 'men of science' appealed to experiment and the inductive method of reasoning. This 'progress through reaction' forms the primum mobile for scientific advance in which a completely mechanical account of reality based upon efficient cause became antithetical to an explanatory dependency based upon final cause. At first, the Italian Divines required that the new earthly mechanism be accompanied by a God of prime cause; while the sacred wore the mask of Zeus, heaven smiled with the Janus face of a Leonardo Madonna, for upon English and Italian society of the sixteenth and seventeenth centuries descended a Promethean spirit of Copernican materialism and individuality. The preoccupation with fact and experiment that marks the concern of Leonardo and Galileo in Italy and Francis Bacon in England was not based upon any antecedent rationalism of Thomist dogma, rather, the growing concern with questions of causation... how things worked rather than why . . . was contingent upon a reaction to that antecedent metaphysics, provoking the rationale of inductive method and rationality in the conduct of scientific activity. The time was thus right for God the Divine Watchmaker to keep a worldly order... the Divines could but assent. 'At the beginning of the modern period' Whitehead has written 'Da Vinci and Bacon stand together as illustrating the various strands which have combined to form the modern world, namely, legal mentality and the patient observational habits of the naturalistic artists'.

At the end of the eighteenth century, metaphysics, out of which natural science had grown, reacted to its offspring, Esau. In redefining the role of metaphysics as having an ethical obligation to questions of morality, Kant caused the character of science to take on a duality; while its method and conduct lay in evaluating factual evidence, its ethic bound the investigator to his knowledge on a general level of value. A fundamental point I

therefore make in this article is that that aspect of Kant's metaphysics concerned with ethical notions of duty and morality became incorporated within the developing framework of what is now the modern scientific mentality. All that remains within this mentality today of an ethical concern for the truth value of scientific fact, I contend, is the latent personal conscience of the scientist. It is simply unfortunate, but unfortunately indicative if that last point reverberates as heresy in the ears of the 'honest man of science'.

Thus scientific progress came to contain an endemic tension, science as a system of rationally derived fact had, in its inception, to stand counter to science as a system of ethical presupposition. We can now say that it is the conflict between rationally derived knowledge on the one hand and human relationship to knowledge on the other that has, in this century, become a fact of life for the 'man of science' with any kind of a social consciousness. It is the genesis of this social fact of life that I am concerned to analyse here.

Rationality as idealism

I have suggested that what remains as personal conscience in the current scientific mentality was initially part of Kant's concern with the relationship of ethics to scientific conduct. I have also suggested that this particular aspect of Kant's thinking has become attached to the developing mode of science. While the first point was one that seriously occupied the mind of Max Weber, the second has become part of a source of confusion for those natural scientists concerned with the philosophical study of the history of their disciplines. Thus Whitehead has said that 'It should be the task of the philosophical schools of this century to bring together the two streams (of Cartesian and Leibnizian thought) into an expression of the world picture derived from science, and thereby end the divorce of science from the affirmation of our aesthetic and ethical

experiences'.⁴ It is this conception of inherent divorce that I wish to challenge; such a challenge, it seems, must now derive from a philosophical perspective of social science and will stand in radical opposition to the argument of Whitehead and so many of the philosophers of natural science he speaks for.

The relationship of the mechanistic mode of science to its Aristotelian antecedents of the medieval period is complex. On the one hand, the Newtonian thesis that the relationship between moving bodies was divinely ordained has a distinct parallel with the inherited tradition of the Roman Church, namely that the legitimacy of a specific mode of social organism rested upon a conception of a divinely articulated system. On the other hand, this 'divine legitimation' could never be entirely monolithic. Answers to questions that asked—why are things as they are—could only receive the kind of answers that were slowly to come to stand against the factual evidence of visible natural phenomena. But if the question—how then do things happen—was to be asked, a radical shift in mode of thought had to occur: 'a belief that every detailed occurrence can be correlated with its antecedents in a perfectly definitive manner, exemplifying general principles'.⁵ In other words, a paradigm shift in scientific mentality had to precede a concrete phase of scientific activity. The key aspects of classical mechanics then, were inherent in a medieval philosophy which separated the rigorously deterministic character of natural process from a process of mind, stopping short of concrete involvement with objective phenomena at a halfway house of Aristotelian classification.

'Classical mechanics' Nagel has said 'is the most generally acknowledged paradigm of a deterministic theory'.⁶ The most 'visible' of all natural phenomena (apart from social structure) to which philosophers had associated an element of determinism has been those of the heavens. It was upon the study of apparent paradox in the hierarchy of the heavens that students of astronomy

provided a framework for further scientific development. In his *De Revolutionibus Orbium* published in 1543, Copernicus showed how the elliptic reality of planetary orbit stood in serious contradiction to the Ptolemaic system in which the circular orbit ascribed to planets and stars clearly suggested that a divine earth lay at the centre of the Universe, that the nature of social order itself had been ordained by God rather than a rascally clergy. The concern of Fra Copernicus though, as later on with Kepler, was to provide a neater geometry of the heavens . . . but what could be the position of the Holy Father in a heaven full of contradiction? Continuing the investigations in astronomy begun by Copernicus and Tycho Brahe, Kepler hypothesised that the distances between planets and the sun were based upon a universal gravitation dependent on magnetic attraction. In demonstrating proportionate relationships between heavenly bodies, Kepler was able to express a clockwork mechanism of the universe in mathematical terms; glorifying God in the highest possible manner by uttering the holy orders in pious equation.

The system of mechanical explanation in astronomy was supported by the experiments of Galileo with falling bodies, giving astronomical observation a crucial locus in material science. Galileo traversed the whole range of argument against the Aristotelian world view in his *The Two Principal World-Systems*. He was able to show, by using the telescope how the five moons of Jupiter orbited that planet rather than the divine earth, and that such behaviour, devilish to the Inquisition, could be explained by the nature of mechanical relationships between moving bodies. Undoubtedly, this Galilean synthesis severely cracked the scientific edifice of Scholastic rationalism. However, as Brecht has said for Galileo ‘The movements of the stars have become clearer; but to the mass of the people, the movements of their masters are still incalculable’⁷ . . . the social bases of ignorance therefore still remained intact.

While Galileo’s experiments gave the emerging paradigm of mechanicism specific content in material science, they lacked, as Kuhn has shown in his book *The Structure of Scientific Revolutions* the new methods of scientific enquiry which were to provide the new outlook with its distinctive form. Although ‘lack of a standard interpretation or of an agreed reduction to rules will not prevent a paradigm from guiding research’⁸ it was necessary for those engaged in research to realise that their experiments had to acquire a basis in mathematical proof before they could develop adequate theories which construed highly complex processes in terms of those more elementary through inductive procedure. Thus the validity of Newtonian mechanics, which formulated an integrated structure of generalisations characterising bodies at all points of their motion, was dependent on the analytical geometry of Descartes and the calculus of Leibnitz. The phrase ‘Newtonian mechanics’ is one often used by natural scientists who mature with age into students of philosophy. Its use suggests that Newton’s contribution to mechanics gave that field a content sufficient to accord it with a quality of exposition identifiable by their own criteria with an expression of scientific modality. The criteria germane to mathematicians Whitehead and Russell, for example, was one expressing the importance of physical constancy on a plane of universal generalisation, i.e. the application of the notion of atomic periodicity to chemical elements.

Kuhn, commenting on the problems raised by scientists who give significance to ‘personal’ criteria when evaluating scientific expression has said that ‘they can agree on their identification of a paradigm without agreeing on, or even attempting to produce a full interpretation or rationalisation of it’⁹ . . . adding that this ‘lack of agreement’ derives from a lack of agreed reduction to rules. Kuhn’s latter suggestion opens a door for those students who can only tackle scientific questions through a juvenile reduction of necessary philosophical preconsiderations to matters of ‘language’ and questions of

'communication'. For these students, the very name 'Wittgenstein' is a cause for rapturous flight to ethereal zones. Kuhn, however, misses the point; it is the consideration that the locus of disagreement may lie within the structure of scientific conduct that is the more important one (the tendency of philosopher-scientists to adopt a 'historicist' mentality has been overlooked by none other than the 'discoverer' of historicism, Karl Popper). This problem arises from the fact that when scientists consider science from a historical perspective, inexperienced in philosophical enquiry, they tend to give prior significance to those criteria valid in a concrete sense to the way they conduct research within their original scientific fields. Thus Max Born, for example, analyses Newton's contribution to the paradigm of classical mechanics by asking whether the generalisations of mathematical science can ever be validly applied to states of physical relationships.¹⁰ Although we are not specifically concerned with problems raised by philosophers of science to do with the structuring of scientific thought in the cause of academic exercise, it cannot be overlooked that many of these students, overconcerned with matters of 'logic' 'validity' and 'method' have tended to contribute to the creation of a radical separation in the study of the philosophy of nature between themselves, the philosophical formalists of social science, the modern men of method, and those students, who, with a wider appreciation of some of the empirical dilemmas facing modern research, do not reduce scientific questions to 'language games', losing sight of the basic issues they began with.

It is noteworthy that despite the controversies raging amongst our eminent philosophers of science today as to what mechanicism really was, is, or how Newton's ideas stood in relation to the thought of his day, Immanuel Kant had no difficulty in this matter. He considered that Newton was the first man to formulate in a thorough manner, the laws and principles of the natural sciences. To understand the meaning of

Newton's work for Kant is also to understand the implication of a deterministic philosophy of natural science for a metaphysics which, up till that time, had concerned itself primarily with theological questions. To Kant, Newton's physics hypothesised a reality of infinite space and time within which Isaac had discovered an objective validity in principles that determined the relationship of natural events to one another. So rigorous had these connections appeared to Newton, that he was able to abstract them from concrete events and generalise them in terms of 'universal' Laws of Motion. One can almost hear Kant wailing 'God, why hast thou forsaken thy son, metaphysics' for now, no room was left in the Inn for reality of moral purpose in the world or of free will. Kant, deeply concerned with a conception of moral conduct in which for him, the autonomy of the will was the supreme principle of morality, faced a dilemma well expressed by Lindsay 'if to abandon metaphysics meant to agree that science and not metaphysics revealed to us the nature of reality, what would then happen to the assumptions of moral conduct?'¹¹ To save moral conduct, Kant had to write a 'Critique of Pure Reason' in the hope of demonstrating that the epistemological premises upon which Newton's classical mechanics were based were unsound in revealing the fundamental nature of reality. Only through a demonstration of this kind, Kant felt, could metaphysics regain its status as a science equivalent to the place it held in medieval Scholasticism. A restored metaphysics would not contradict natural science, both would merely represent different approaches to reality.

Kant's immediate task in the Critique was to consider an important problem of epistemology; how seriously had those students engaged in scientific enquiry considered the difference between pure and empirical knowledge in enabling their enquiries to reach what he called 'the sure path of science'? Mathematical generalisation, Kant saw, expressed in abstract terms, an objective validity of

natural principles; but was not the certainty of this same mathematics based on the mind's own constructions? For Kant, this problem of epistemology therefore took the form of a consideration of the process of cognition underlying scientific thinking. 'Reason' said Kant, 'only perceives that which it produces after its own design. It must proceed in advance with principles of judgement according to universal laws, it is only the principles of reason which can give to concordant phenomena the validity of laws.'

But in conceiving science as a free activity of the human spirit, Kant confuses scientific creativity with method in the conduct of scientific investigation. Thus when asking how scientific creativity produces universal generalisation valid for things over which the mind does not produce, he forgets that the principal method of scientific investigation is one of reasoning through inductive inference. Instead, Kant asks how the free activity of the mind in scientific thinking can produce generalisations, scientific in terms of objective laws, in his question 'on what principle is based the relation between that in us what is called representation and the object?'¹² In other words, Kant questions the epistemological status of objective truths, doing so on the grounds that scientists do not make an adequate division of all objects into Phenomena and Noumena. Kant considered that a dichotomy of this kind has to be made in metaphysics on a plane of cognition.

It has hitherto been assumed that our cognition must conform to the objects; but all attempts to ascertain anything about these objects a priori, by means of conception, and thus to extend the range of our knowledge, have been rendered abortive by this assumption.

Let us then make the experiment whether we may not be more successful in metaphysics [i.e. than mathematics] if we assume that objects must conform to our cognition. This appears at all events, to accord better with the possibility of our

gaining the end we have in view, that is to say of arriving at the cognition of objects a priori, of determining something with respect to these objects, before they are given to us.

Further,

If the intuition must conform to the nature of the objects, I do not see how we can know anything of them a priori. If, on the other hand, the object conforms to the nature of our faculty of intuition, I can then easily conceive the possibility of such an a priori knowledge.¹³

Once the object conforms to the nature of our faculty of intuition, then it becomes for Kant a Phenomenon. But the crucial question that Kant now asks is how can we be sure that an object conforms to the nature of our intuition... what causes it to do so? His answer is dependent on the thought of Hume, who pointed out that all our judgements about the external world assumed principles of causation. Kant generalised Hume's problem and asked how genuinely a priori principles of causation could be discovered 'which could be taken for granted in scientific investigation when considering how they can be valid of all the objects we are going to experience'.

I cannot rest in mere intuitions, Kant declared, if they are to become cognitions ... must refer them as representations, to something, as object, and must determine the latter by means of the former.

I may assume that the conceptions by which I affect this determination conform to the object.

I may assume that the objects *or which is the same thing* that experience, in which alone as given objects they are cognised conform to my conceptions—and then I am at no loss how to proceed. For experience itself is a mode of cognition.¹⁴

Kant's solution of the subjective problem of how we can be sure that an object conforms to the nature of our intuition ... through experience ... is of great importance for

scientific thinking. For what is experience to the active scientist but a certainty acquired through experiment? It is through experiment that the scientist is able to ascertain whether intuitive hypothesis is verifiable.

When he comes to consider the objectivity of a priori principles such as causation, and whether causation has any objective validity in nature, Kant comes to the conclusion ‘that our faculty of cognition is unable to transcend the limits of possible experience. The estimate of our rational cognition a priori at which we arrive is that it only has to do with phenomena, and that things in themselves, while possessing a real existence, lie beyond its sphere’.¹⁵

In order to give a place to causation in science, Kant therefore says that it is necessary to transcend the limits of experience and all phenomena. Here, suspiciously, he seems to be approaching the abstractions of Newtonian science, the reason for the polemic of his *Critique*. However, what impels us to embark on an act of transcendence, Kant says, is the ‘unconditioned, which reason absolutely requires in things as they are in themselves in order to complete the series of contradictions.’

The unconditioned does not lie in things as we know them, or as they are given to us, but in things as they are in themselves, beyond the range of our cognition.¹⁶

The judgement that every event has a cause, in Kant’s view, does not depend on experience, but rather in prescribing to experience. In other words, causation and propensity for causation can only be *evaluated* in the light of past experience . . . evaluation rather than experience . . . evaluation rather than experiment! For how is it possible to experiment with abstract principles in any direct sense!

‘We cannot anticipate what events we shall experience, but know they will be subject to the principle of causation. Such a judgement is “synthetic” because the notion of causation is not derived by analysis from

the notion of an event, but is affirmed in the judgement’ says Lindsay in the above cited Introduction to Kant’s *‘Critique’*. It is gratifying to know that our thesis is supported by so eminent a scholar of Kant. Such judgement, then, is based upon personal evaluation!

We can now see how Kant has attempted to consider the problem of metaphysics in relation to what he considered to be spurious in scientific generalisation, in terms of the ‘objectivity’ of Newtonian Laws. An object, he held, could be seen to conform to the nature of our intuition through experience. But for an object to become objective in a process of causation, it had to transcend our experience. Its objective role, then, could only be determined by the synthetic judgement of personal valuation.

The answer that Kant gave to Classical Mechanics was therefore to inform the scientist that he could never be sure of causal relationships in the world of nature, they transcend his experience and in the end, rest on his personal judgement. Kant therefore told the scientist that he was able to enquire into the nature of the physical objects of his world—these he could factualise through the experience of experiment. But at the same time, his relationship to ‘objective’ universal law could never be on a scientific plane ... but could only be on the personal level of valuation, where conscience dictated decision. Thus science, after Kant, put one foot on the path of idealism that eventually leads to a paradise of faith.

Idealism as rationality

In his *Critique of Pure Reason* Kant attacked the certainty of universal law. In his *Fundamental Principles of the Metaphysics of Ethics* however, Kant showed how certain human actions became morally permissible, if they were made on the basis of corresponding policy directives relative to circumstances. In Kant’s view, if we can decide which policy directives can be held as maxims, and which of these are

universalisable, we are able to determine what actions are morally permissible and what our duty is ... and likewise the scientist.

The scientist, arriving at universal generalisation, finds himself knocking at the door of ethics. The reason for this is because this level of generalisation in scientific conduct—where synthetic judgement cannot be avoided *is the same level of generalisation at which maxims of conduct become universalisable, enabling the scientist to do what he feels is his duty... to act on his conscience when evaluating the practice of his science* but only, Kant adds, if it is possible for everyone to act on it. Thus he preaches to the scientist ‘Since the validity of the will as a universal law for possible actions is analogous to the universal connection of the existence of things by general laws . . . the categorical imperative can be expressed thus: Act on maxims which can at the same time have for their object themselves as universal laws of nature. Such then is the formula of an absolutely good will’.¹⁷

Kant, we now see, has reduced science at its highest stage to an ethical problem; for once the scientist arrives at axiomatic level, he sees its mirror image as value judgement¹⁸—and why not, for ‘axios’ meant ‘value’ to the Greeks. Thus Kant merely follows the Greats who equated science with philosophy. These ideas came to Kant via Thermidor . . . science with philosophy, science with metaphysics, science with ethics; in the twentieth century, science with conscience. One hopes that readers will recognise this point from the empirical standpoint of scientific experience over the last two centuries. If not, one can only say with Mayakovsky ‘Professor, take off your bicycle glasses’. Whitehead’s thesis that science is divorced from the affirmation of aesthetical and ethical experience is simply not on at all for those engaged in any kind of scientific activity.

I shall now consider how a social scientist examined this question in relation to his own great task ... to establish sociology as the

science of social action on a level of subjective meaning. But the philosophical aspirations of Max’s work preceded the development of Weber’s scientific aims. Max Weber’s philosophical concern, to make a logical distinction between science and ‘politics’ based upon a radical separation of judgement of fact and judgement of value, was a concern given to metaphysics by Kant one hundred years earlier.

Weber came to sociology through the philosophy of Kant. His preoccupation with the problem of social action for sociology was always to be refracted through the problem of philosophy that Kant had set for science. Weber endeavoured to expound his philosophical aspiration through his scientific aim ... for such a gigantic task, his grave should lie at Highgate. For this task, however, he had first to complete his scientific aim for social science, particularly sociology. This aim too, became an aspiration, and involved a synthesis of two methods of ‘explanation’ in social thought, the ‘historical’ and the ‘sociological’. A consideration of the character of this synthesis is necessary because the crucial problem that confronted Weber in this undertaking, whether value judgement for a scientific sociology could be made on a scientific basis, is essential to our understanding of how the great social scientist saw Kant’s work and re-interpreted it, in my opinion, for all science. Max Weber deals with this question for social science, but in asking it for the philosophy of natural science, he reveals his deep and essential concern for problems in knowledge to do with the relationship between science and morals in a world of men who gave meaning to their social actions; and for worlds of science where men could consider the social consequences of their scientific knowledge and of their social behaviour.

It was an interpretive sociology, Weber felt, that ‘enables us to become aware of our own strivings. By the interpretation of values, we are able to discover the reasons for our self contradictions and consequently,

to deduce logically from the supreme values the attitude to adopt in a particular case'.¹⁹ But for social science, Weber came to reject a sociology of scientific value judgement; he wished to exclude value judgement from scientific research 'in which the individual tries to be entirely rational in order to acquire exact knowledge'.²⁰ For social action in which men were held to be free from constraint on an ability to make value judgement, Weber had necessarily to determine where the locus of this judgement lay. He could only resolve this question by presenting it as a problem—a choice for the scientist between two moralities, one of inspiration and the other of responsibility. Later, Alfred Schutz was to question Weber's analysis of the character of social action in relation to personal meaning and judgement in his book *The Phenomenology of the Social World*.

The social problem Kant had posed for the scientist that prompted Max Weber's sociological endeavour was essentially one of a seeming contradiction between personal commitment to knowledge as scientific truth on the one hand ... and that of personal meaning in relation to knowledge as a prerequisite for personal judgement in social action on the other. I have shown how Kant had created a reconciliation within science between practice and conduct. . . demonstrating how the factor of personal conscience had been 'given' to science by Kant as a mechanism that would both create and resolve ambivalency in the social status of knowledge for the scientist.

Max Weber's considerations of these questions are well expressed in an article written by Raymond Aron and printed in a collection of essays presented to the scientist and philosopher Michael Polanyi on his seventieth birthday.²¹ Weber begins from the premise that the phenomena of the cultural sciences require a different explanatory mode from those of natural science. This mode, Weber suggested, should be causally adequate on a level of meaning, a 'pictorial construction of historical intuition which

could be plausible because the facts contained within it were logically related and hence complied with the accepted code of the natural sciences that required conformity with the laws of causality' (Aron). A resolute conceptualisation of historiography as an empirical-causal science, however, entailed two serious difficulties, one being the problem of value judgement and the other, the problem of value freedom. Realising that because Windelband and Rickert had sought to exclude all value judgement from science, Weber came to a conclusion that the methodology of these 'Neo-Kantians' still contained a strong element of positivism. The problem posed by the Neo-Kantians was based on the apparent dualism of reality and value. Weber, however, considered that 'this dualism did not correspond exactly to the distinction between theory and practice, but rather to that of existential judgement and value judgement. Value, however much it may be a living and active force, still was not "being", the unique possible object of knowledge'.²² This was the essence of Dilthey's criticism of the Neo-Kantians of the 'Marburg' school. 'Poised between Bacon and Vico, Dilthey had nonetheless observed that in historical knowledge, there was something more than what was contained in naturalistic knowledge, this, for Dilthey was "understanding through reliving"'.²³ To intuit the intentionality of the historical actor in order to discover the meaning he gave to his social action, Weber therefore utilised the Dilthian notion of 'verstehen'.

In fusing a 'sociological' concern for the construction of an ideal and rational activity with description of real and concrete historical activity in the 'ideal type', Max Weber was able to give sociology a propensity for abstract and rational operation. Polanyi, himself a philosopher of science, found no fault in this procedure, only adding that the trans-empirical commitment of the social scientist symbolised by the choice of historical data, for example, did not produce an antithesis 'between the arbitrary choice of values or interpretive systems and the scientific establishment of facts or

relations'.²⁴ Weber on the other hand, and in the emotive laden tones of Aron, had to live with the 'unscientific' nature of his scientific endeavour with a 'covert sorrow'... one 'of being excluded by the progress of science from the paradise of faith'. The scene set is reminiscent of that involving the Mock Turtle, the Griffon and Alice; Raymond Aron's adventures in the Wonderland of Social Science emphasise Weber as the Mock Turtle and Polanyi as the Griffon. Alice Aron, however, as we shall soon see, underestimates Weber, who is surely the White Rabbit of Social Science, historically speaking, arriving too late because, sociologically speaking, he arrived too early, but with a covert sorrow camouflaging a crocodile's grin.

Unlike Weber, Michael Polanyi sought to re-establish a continuity between positive, demonstrated knowledge and moral, aesthetic or religious judgement which, Aron feels, 'have become differentiated in kind by critical or empirical thought. Polanyi is concerned to re-establish the continuity between them by discovering once more the presence of the person'.²⁵ For us, what is important about Aron's characterisation of the intellectual relationship between the work of these two men is the unusual contrasting of Weber's problem with scientific method to Polanyi's vision of the necessity for a certain type of scientific role in relation to his consideration of science as an activity divorced from ethical stance. The implication of Polanyi's thesis of 'personal knowledge' for Weber's problem in method, Aron suggests, is that while in an interpretive sociology, the social scientist has one foot on the path leading to the faith of value judgement, this is not a serious matter. Because of the personal meaning of knowledge, the role of the scientist enables him to re-establish a continuity between fact and value. The reconciliation of Polanyi, however, is very different from that of Kant. Polanyi, in asking for a personal commitment from the scientist, brings about an *ex post facto* reconciliation. Kant on the other hand,

builds this reconciliation deep within the structure of scientific conduct.

In Weber's aim of providing sociology with a scientific method lay a hope. That social science would be able to meaningfully interpret social action by contrasting it with objective, universal and ideal states of social behaviour; and that in deducing these ideal states, and contrasting with them the behaviour of the social actor, the social scientist could avoid making a priori, 'synthetic' judgements of value when dealing with situations beyond immediate experience. In other words, that the social scientist should avoid valuation in formulating his scientific method and avoid valuation when contrasting a social act with its ideal type. We can now see the reason for Max's sorrow . . . evaluation could not be avoided and Weber's scientific sociology could not produce its basic theoretical postulates without becoming 'unscientific'. The role of such a science that would interpret the meaning of social action then, could but be relegated to the level of descriptive function. Weber wanted something more than a descriptive role for the social scientist. He certainly did not desire a prescriptive social science, yet between the abstract world of description and the sensual world of prescription lay the sensuous persona of the social scientist, and further, without any code of ethics to guide his personal involvement in a discipline whose social role was to be merely a reflection of the intellectual dilettantism of middle class humanism. The natural scientist after Kant was at least allowed a conscience as a member of society in his ethical relationship to his knowledge. The social scientist, however, with a supposedly greater social consciousness became proscribed by the fundamental value of his science from having any kind of a conscience; he had become *homo sociologicus* himself, essentially the hollow character of Musil's *Man Without Qualities*. With this state of affairs, the social scientist is rarely heard to make serious complaint, he is content with his easy income.

Max Weber's sorrow was that he was able to prescribe a limited social role for a discipline for which he had social and scientific aspiration. Yet his philosophical aspiration intended to give a respect to the role of the social scientist in the intellectual universe of society. This universe, however, merely lay in the world of an academic intelligentsia, not in the social world in any real sense. How then could Weber, interested in the political problems of his day, and in the real world, find any justification for such a concern in a discipline whose primary concern, he had said, was to proscribe evaluation from personal conduct? The theory and reality of social life could not be reconciled.

The answer is to be found in Max Weber's crocodile grin. Faced with Marx's great contention of the synthesis of thought and action in 'praxis' . . . acting with conscious intention in a world lived in, perceived and understood . . . Weber synthesised two explanatory aspects of idealist German thought to produce a method which, purporting to be rational and logical, was pure idealism itself. For apart from lifting the consciousness out of the reality of human events, such a method stripped two essential human qualities from the student of the science of society. Firstly, the ability to think prescriptively about any matter having serious consequence for social change without being disdainfully considered 'unscientific' in the somewhat desiccated world of academic sociology. Secondly, as a 'professional' the social scientist was denied the practical freedom to have a social conscience in the practice of his work.

References and Notes

1. This paper is taken from the first two chapters of my thesis 'The Scientific Role and The Paradise of Faith'. In the later chapters of this thesis, I operationalise the philosophical kernel presented here and supply firm proof for my contentions in an analysis of the interrelationship of the life of Albert Einstein to his theoretical work in mathematics and physics. It is hoped that these later chapters will be published soon so that the

integral character of my work will be demonstrated and its contentions shown to be proven.

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14. I. Kant, op. cit, p. 12.
15. I. Kant, op. cit, p. 13.
16. I. Kant, op. cit, p. 14.
17. I. Kant, *Fundamental Principles of the Metaphysics of Ethics*, Longmans, 1962, p. 67.
18. The proof of this important contention forms the major concern of the later chapters of my thesis.
19. R. Aron, *German Sociology*, Free Press, 1964, p. 83.
20. R. Aron, op. cit, p. 85.
21. *The Logic of Personal Knowledge*, Routledge and Kegan Paul, 1961.
22. C. Antoni, *From History to Sociology: The Transition in German Historical Thinking*, Merlin Press, 1962, p. 143.
23. C. Antoni, op. cit., p. 170.
24. R. Aron, 'Max Weber and Michael Polanyi' from *The Logic of Personal Knowledge*, Routledge and Kegan Paul, 1961, p. 114.
25. R. Aron, 'Max Weber and Michael Polanyi', op. cit., p. 110.