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'EPISTEMOLOGICAL BREAK' AND 'PHILOSOPHICAL REVOLUTION' - A CRITIQUE OF ALTHUSSER'S DISTINCTION BETWEEN SCIENTIFIC AND PHILOSOPHIC KNOWLEDGE

V. D. B. Inoka
Department of Philosophy,
University of Port Harcourt

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ABSTRACT
This article is an attempt to offer a critique on Louis Althusser's distinction between Scientific and Philosophic knowledge. In executing this critique the work seeks to uncover the immanent inconsistencies and contradictions that may be said to embody Althusser's claim that the link between previous modes of knowledge and the rise of science involves what he calls an "epistemological break"; while that of philosophy involves what he describes as "philosophical revolution". Implied in this taxonomisation of Althusser is the claim that objective and factual factors alone characterize science whereas philosophy is the theoretical field for class struggle and subjective factors. However, this article takes the position that if science rises from and is in one way or another connected with other modes of knowledge,then the relationship between it and these other modes may not be that neatly delineated as is attempted by Althusser. The article subscribes to the contention that "objective validity preserves the moment of its emergence and this moment permanently affects it".

INTRODUCTION
It is usually considered that the special sciences branched off from philosophy. By branching off one means separation and development into specialized branches, each of which becomes an independent discipline. This view - which is often referred to as the standard view - is believed to be generally accepted among philosophers of various schools (See Ayer, 1966: p.66).The view is also widespread among Marxist philosophers and is shared by many historians of science. For example, Cohen and Drabkin have described it as "a basic dogma" (See Cohen & Drabkin,1948).

The standard view is maintained by many representatives of logical positivism. They associate it with the idea of the gradual disappearance of philosophy. Indeed, this seems to be the view of Auguste Comte. He traced the progress of human thought in a tripartite movement. According to the "law of three stages" that was expounded by Comte in the *Cours de Philosophie Positive,* every single branch of human knowledge was to pass through three different theoretical (or methodological) stages before it reaches maturity: the theological or fictitious; the metaphysical or abstract; and the scientific or positive stage (Sills, 1968: p202). The function of the second stage was to act as an intermediary, since the first and the last stages are clearly so different in their general outlook that it is impossible to pass directly from the first to the third. In the third stage all phenomena are regarded as subject to

invariable natural laws that can be investigated by observation and experimentation.

According to this standard view, knowledge is seen as a continuum in which there is an upward evolution, step by step, from one stage to the next. However, Louis Althusser, a Marxist scholar, thought differently. For him the arrival at the positive stage of scientific knowledge from the philosophic stage is different from the transition from the theological to the philosophical stage. While previous modes of cognition(presumably from the theological to the philosophic stage) involve a gradual transition, without a jump or leap - or what he calls "philosophical revolution" - the rise of scientific knowledge involves a discontinuity, a de-link or disconnect, from the previous philosophic stage - or what he calls an "epistemological break".

Now, what does Althusser mean by "philosophical revolution" and "epistemological break". Are there some inconsistencies and internal contradictions in his schematic taxonomization? The purpose of this essay is to assess whether Althusser's characterization of scientific knowledge as epistemological break is devoid of inconsistencies and internal contradictions; whether objective factors alone characterize scientific knowledge whereas philosophy is rife in subjective factors?

THE ISSUES IN RETROSPECT

As we have said before, the standard view is maintained by many strands of positivism of which Althusser's is one. It may, however, be difficult to define this broad current of thought, as the variety of authors commonly associated with it do not all agree on essential points. Perhaps the best general and comprehensive description of positivism by Kolakowski is appropriate here: "a collection of prohibitions concerning human knowledge, intended to confine the name 'knowledge' or 'science' to the results of those operations that are observable in the evolution of the modern science of nature"(Kolakowski,1972:p.18). The way in which the operation of natural sciences is understood determines the features ascribed to its privileged knowledge and the criteria of its demarcation from other kinds of knowledge. The most commonly mentioned are three. First, that which is not based upon experience as directly manifested is not real scientific knowledge (there is no difference between 'essence' and 'phenomenon'). Second, judgements of value and normative statements are not science, as there is no empirical basis for testing their validity. Third, there is a fundamental unity of the scientific method, so the methods employed in natural sciences must be applied in social sciences.

From the outset, positivism understands science as the antithesis of a mythical world, of distorted knowledge. The process of rationalization introduced by the new scientific attitude of the modern times has achieved the disenchantment of nature. The metaphysical world of objective and hierarchical essences corresponded to a period in which man's inability to appreciate nature was the outstanding feature of society; now it is superseded by the scientific approach which enables man to break that immovable world and appropriate it as a means for his own ends. Reason is no longer orientated towards an immutable world of essences but is now based on the operation of natural sciences.

Scientific reason is concerned with means and ends, with the technical procedures to achieve an end, but not primarily with the rationality of the end itself. It is an instrumental reason (Horkheimer,1974).This instrumental reason, without itself denying the existence of an objective rationality of ends in

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reality, tends to overlook it as delusive and, at any rate, considers it beyond scientific assessment. What is not scientifically verifiable constitutes an altogether different world which is not governed by instrumental rationality. That world which is not accessible to scientific reason appears as irrational, mythical or distorted and in this sense is equated with ideology.

Bacon's search for a new methodology capable of overcoming the deficiencies of medieval thought offers one of the first examples of this opposition. The Baconian tradition accentuates the observational character of science, and therefore its inductive methodology as against the meaninglessness of metaphysical pre-notions or speculations. Bacon recognized that there existed in human thought more than objects and reason: there was also a certain amount of irrationality or a subjective contribution which implied distortions and deformations, against which some precautions were necessary. The sources of these distortions were what Bacon called 'idols', 'false notions which are now in possession of the human understanding', that 'beset men's mind that truth can hardly find entrance', and that 'in the very instauration of the sciences meet and trouble us'(Bacon,1960:p.47,pp.19-22). In a sense, the elements of a conception of ideology are already present in these idols, which as pre-notions perturb the production of real science.

This problematic was developed under different forms by several authors. Comte, in his turn, wanted to base science on observation and saw imagination as the main obstacle for its development. Hence he opposed metaphysics to the rigorous science of fact. The evolution from the metaphysical stage to positive science was still to be carried out for sociology, and this was precisely the task he set himself to accomplish (Ibid, pp.28-31). Durkheim analysed the problems which sociology faced in constituting itself as a science, thus abandoning the situation of 'ideology'. Durkheim too wanted a science of facts as opposed to ideology, but he was critical of Comte's failure to eliminate the pre-notion of progress (Ibid, pp.91-99).

More or less in the same spirit, as is widely known, the Vienna Circle fought against metaphysics, which was supposed to contaminate the purity of science with nonsensical propositions. The key factor in this combat was the logical analysis of language and the attempt to create an artificial language of science. Like Baconian idols or Durkheimian pre-notions, metaphysics appears as the opposite of science. Yet now it may be purged by means of logical analysis. This analysis proves that philosophies of value, normative theory and metaphysics in general are entirely meaningless.

The difference between this position and the latter two is that logical positivists do not regard metaphysics as mere speculation or fairy tales (which are false but meaningful), but as nonsense. In effect, they think that significant propositions can be exhaustively divided into two classes: formal or tautological propositions, and factual propositions. The latter require that they should be empirically verifiable (Ayer,1959: p.88). As metaphysics is not tautological nor does it express something which could be empirically tested, it is nonsensical.

What explanation do they give for the existence and widespread use of nonsensical pseudo-propositions? Carnap proposes the hypothesis that metaphysics originated from mythology. It arises, as does poetry, from the 'need to give expression to a man's attitude in life, his emotional and volitional reaction to the environment'. Its negative character for science arises not so much from its being a natural expression of man, as from the fact that 'it pretends to be something that it is not'

(Ibid, p 79) – it pretends to be cognitive and true when it s meaningless. As opposed to ideology or metaphysics, science appears as knowledge which is verifiable through the objective observation of facts.

As Habermas has pointed out, (Habermas,1972: p 68) the big difference between the positivist philosophy of science and the traditional epistemology which goes from Kant to Marx is that to the former the knowing subject is no longer the system of reference. Objective science as a system of propositions and procedures is now the main reference: subjective aspects of the knowing person must be avoided or can logically be avoided if the subject proceeds according to objective rules and procedures. Personal values, attitudes or goals do not matter any more; method does. The scientific method guarantees in a precise manner that knowledge comprehends reality, a reality made of objective facts. All that is beyond this world of facts is ideological. The difference between ideology and science is in the criterion of verifiability which in general terms is identified with two requirements. The first is empirical observation or experimentation. The second is the application of a method which guarantees certainty, that is, a commonly accepted procedure which secures the accuracy of the gathering of empirical evidence.

Popper represents a different and more critical tradition within positivism. He does not accept a naively inductive approach which supports science on a simple observational basis. He shows how modern science is deductive and highly speculative and proposes refutability as the criterion of demarcation. This means, in his own words, that 'a system is to be considered as scientific only if it makes assertions which may clash with observations; and a system is, in fact, tested by attempts to produce such clashes, that is to say, by attempts to refute it'(Popper,1965: p 256).

According to Popper, there are 'degrees of Testability', metaphysics being an example of 'non-testable' theories which are of no interest to empirical scientist. But he refuses to conclude that non-testability is the same as meaninglessness. Arguing against Carnap, he insists that falsifiability is a criterion not of meaning but of demarcation (Schilpp, 1963: pp 878-881). Popper refuses to be called a positivist and, indeed, rejects many common assumptions of positivism. However, though he overcomes a crude empiricism and replaces verifiability by falsifiability, he is still concerned with only one particular mode of knowledge and experience. Refutation is still based upon sense experience organized by experimental or analogous procedures. Popper maintains that the common language in natural sciences is achieved 'by recognizing experience as the impartial arbiter' which means 'experience of a public character, like observations and experiments, as opposed to experience in the sense of more private aesthetic or religious experience; and an experience is public if everybody who takes the trouble can repeat it' (Popper,1973:p.218).

However, as Popper himself argues, all this does not make him a positivist (see Adorno,1972: p71). So far we can agree with Popper. The problem appears, nevertheless, when he deals with social science. For Popper social science cannot avoid the same approach since "methods are fundamentally the same in all sciences", that is "methods of trial and error, of inventing hypotheses which can be practically tested, and of submitting them to practical test". As a consequence, "a social technology is needed whose results can be tested by piecemeal social engineering" (Popper, 1973:p.222).

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Here Popper simply transposes the method of natural sciences into the social sciences without making allowance for the historical and contradictory character of society. Under the guise of a fight against sociological relativism and the defence of objective truth (Adorno,op.cit,p.95), a presupposition creeps in which tends completely to assimilate society to nature, overlooking the historical and thereby transitory character of these objective social truths. Popper may be right in asserting that it is a mistake to assume that the objectivity of science depends upon the objectivity of the scientist. But he disregards the particular character of social objectivity. When he attempts to rehabilitate an 'absolute' concept of truth as the correspondence between a proposition and the facts, he simply equates social facts with natural facts in the Durkhkeimian fashion. Positivism is, therefore, still present in Popper.

As far as ideology is concerned the positivist tradition has a choice. It can pass a judgement of the sort 'what is non-testable is ideology, but this does not tell us anything about its meaningfulness'. The second choice might be that the judgement it passes can imply that 'only what is verifiable is meaningful; therefore ideology is meaningless'. This second position is nearer to logical positivism whereas the first is nearer to Popper. An obvious weakness of the second choice is that its identification of meaningfulness with verifiability is in turn unverifiable and constitutes an a priori which is by means self-evident.

However, both versions share a more important weakness: in equating social facts with natural facts they tend to absolutize the existent structure of society as though it was a natural law. In other words, they disregard the historical character of social reality and thus can easily become an apology of the status quo. As Haberrmas has pointed out, "the critique of ideology, which for the sake of resolving dogmatism and asserting technologically rational behaviour insistently separates reason from decisions of commitment, in the end automates the decisions according to the law of the rationality thus made dominant"(Habermas,1974:p.275).

The decisive feature of the positivist treatment of the relationship between ideology and science is the fact that ideology appears as pure 'otherness', the antithesis of the latter. Even when the validity of ideology is not judged, science appears to confront it with an absolute character or, at least, with an entirely different nature which permits it to supersede ideology. Science appears a special sphere of knowledge exempt from ideological distortions as long as it complies with its method. It is roughly along these lines that Althusser interprets Marx's distinction between ideology and science.

LOUIS ALTHUSSER ON SCIENTIFIC KNOWLEDGE Marxist science has two main features in Althusser's version: the reduction of the phenomena to the essence; and the consideration of that essence as a totality in which the 'internal connection' of all phenomena are linked (Althusser,1975:pp.84-85). However, this reduction of the phenomena to the essence should not be understood as though the essence was abstracted from real objects. Althusser calls this an 'empiricist' deviation, quite apart from Marx's intention. Marx would have rejected the 'Hegelian confusion, which identifies the real object with the object of knowledge'; on the contrary, he would have maintained that the object of knowledge is produced entirely in knowledge (Ibid,pp.42-42).

In this conception Althusser is following Bachelard rather than Marx. For Bachelard science has no object outside its own activity. The object of science has no 'direct realistic value in ordinary experience', it has to be designated as a 'secondary object' (Lecourt,1975: p.53). Knowledge working on its 'object', then, does not work on the real object, but on a peculiar raw material which could be called 'ideology', 'intuition' or 'representation', as against the 'scientific concept' which is the outcome of the process.

The acquisition of science appears, therefore, as a process of labour based upon three steps. Step I is the ideological material, knowledge already produced, not the real object, but distorted knowledge about it. To this basis, a 'work', 'theoretical practice', or Step II is applied in order to arrive at the scientific concept, Step III. The path thus traversed is from the abstractions of ideology to the concreteness of science. The result is radically different from the original material (Althusser,1977:pp.183-193). Following Bachelard's concept of break; Althusser describes the gap between them as an 'epistemological break'. In Lecourt's words, this is the moment when 'the tissue of pre-existing ideology is torn and scientificity is installed'(Lecourt,op.cit,p.86).

However, the idea that science conceives its object as a 'result' (secondary object) and not as a 'thing' leads to the idealist foundation of scientific knowledge upon itself. For Marx the object was a 'result', not a mere external thing, because it was mediated by human practice. But it was the only real object of knowledge. For Bachelard and Althusser, on the contrary, the object is a 'result' because it is different from the real object. So the object is a 'result' not because it is mediated by practice but because as an object of knowledge it is produced by knowledge itself. Knowledge is conceived as constituting its own object as in the idealist tradition (see Ajdukiewicz,1973:p.64).

In a self-critical work, Althusser recognizes some of the problems which stem from this position; in particular, he identifies a 'theoreticist deviation' in his conception of the relationships between ideology and science (Althusser,1976:p.119). He finds the source of problem in the identification of the pair science-ideology with the pair truth-error, as if the break from ideology to science was just the immanent result of the scientific procedure of replacing the error by the truth. He recognizes that he did not pay attention to class influence at the break, nor explain the class basis of that break. As a consequence, he accepts that he theorized a difference between science and ideology in general which led him to a one-sided insistence on theory and to the overlooking of practice. In sum, he recognizes a rationalist deviation (Ibid,p.119).

These elements of self-criticism seem quite appropriate. Yet Althusser reverts to the same error in the very process of self-critique. In arguing against John Lewis, Althusser describes the 'break' as "this irruption of a new science in a still 'ideological' or pre-scientific, universe"(Ibid,p.66). In equating ideological with pre-scientific, he actually upholds his past theory; that is, he denies the status of science to the universe previous to the irruption of science and he confuses ideology with all kind of errors. In fact, science for Althusser continues to be the antithesis of ideology. Science is elevated to a special sphere from which there is no return. Like Bachelard, Althusser conceives of science as an irreversible process which discovers and acquires the truth and definitively breaks with errors.

So, Althusser reaffirms a rather rationalist concept of science which puts it beyond any contradiction. How does he solve then the problem of class intervention which

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he had recognized as lacking in his earlier formulations? By transposing the problem to a different sphere, that of philosophy. Philosophy is the theoretical field of class struggle. While science has an irreversible history and is exempt form any ideological dispute, philosophy has no history and nothing is radically new for her. Old theses take up a new form and return to the philosophical debate. The epistemological break is then restricted to science; in philosophy there are only 'philosophical revolutions'. From the epistemological break there is no way back. Nothing in philosophy is ever settled definitively; there is always the struggle of antagonistic tendencies. Thus, the class intervention, which may be said to inaugurate Marx's scientific break is due to a previous philosophical revolution and not to the fact that class may interfere with science. As Althusser puts it, "Marx's philosophical revolution preceded Marx's 'epistemological break'. It made the break possible"(Ibid,p.68).

Althusser's solution, therefore, tries to safeguard the epistemological break by restricting it to the field of science. Simultaneously he juxtaposes the problem of class struggle but in the separate sphere of philosophy. Althusser takes this scholastic distinction so far as to contend that one may only speak of 'errors' in science because it is there that the truth can be achieved. In philosophy there are no errors or truths. There are 'deviations' which are a function of class theoretical positions. Equally, there are not 'true propositions' but only 'theses', which are 'correct'. Truth can be predicated of science; correctness can be predicated of philosophy (Ibid,pp.142-143).

The price Althusser pays for this arbitrary solution is the elevation of science to an even more mythical status above all contingencies. Consequently, the class problematic can only be juxtaposed to science through a different theoretical sphere. The sharp demarcation, which results between science and philosophy is even more puzzling when one realizes that they are supposed to co-exist in a single thought. Althusser necessarily has to make both spheres co-exist in Marx (historical materialism the science, dialectical materialism the philosophy), in order to keep both class struggle and science. But in doing that he drives a wedge between them as if it was possible to distinguish Marx as a philosopher engaged in class struggle from Marx as a scientist, detached and concerned with the objective truth. Ultimately, Althusser introduces a dualism which continues to oppose the reign of scientific truth to that of class ideologies, as in the best rationalist tradition.

A CRITIQUE OF ALTHUSSER'S CONCEPTION OF SCIENTIFIC KNOWLEDGE

As I have attempted to demonstrate above, Althusser tried to construct the processes of scientific knowledge as in the best rationalist foundations. However, Kuhn and Feyerabend have contributed substantially to dispelling these rationalist conceptions and have shown how ideology can operate within the common self-understanding of science. This rationalist self-understanding contends that observation and experience are the only factors which determine scientific knowledge (Lakatos & Musgrave,1970: p.57). Kuhn shows, on the contrary, that historical accidents and arbitrary elements always form part of science. Feyerabend goes so far along this line that he finally seems to dissolve all boundaries between science and other forms of knowledge such as religion and mysticism (Feyerabend:1975). Despite this evident exaggeration, many of Feyerabend's historical examples show that Kuhn's assertions are correct.

Most interesting is Kuhn's account of how scientific evidence is structurally affected by what he calls 'normal science'. The criterion of validity is not the adequacy of theory to an objective reality, but rather, its adequacy to an approved way of doing things which is fixed by a paradigm (Lakatos & Musgrave,op.cit,pp.54-55). Kuhn propounds a conception of the history of science similar, in the most general sense, to the way Marx understands the evolution of economic modes of production with its sequence of revolutions and normal periods. However, neither Kuhn nor Feyerabend attempt to link structurally the evolution of the economic mode of production to that of the scientific mode of production.

This line is explored by people like Hilary and Steven Rose, J.M. Levy-Leblond, G. Liccotti, M. Cini and M. de Maria (Hilary Rose & Stephen Rose:1976). They emphasize the ideological penetration of science which arises from its being closely tied up with the development of capitalist industry. They talk of an 'industrialization of science' and scientific institutions. Typical of the contemporary way of doing science is its integration into the productive process: science becomes another commodity. All these authors try to show that scientific activity bears the marks of the dominant ideology in many ways – the military orientation of science, the encouraging of an image of pure objectivity which hides exploitation behind rational and technical necessities, the emphasis on specialization and elitism which restricts everyone to a small sector while a seemingly objective general plan is not discussed, and so forth.

A shortcoming which affects large sections of the positivist tradition is the inability to relate the phenomena of knowledge to social relations in society. Ultimately it is possible to find an underlying epistemological assumption that knowledge is autonomous, with its own rules and rationality, disconnected from historical social reality as far as its validity is concerned. Indeed, the positivist struggle against relativism justifies to a certain extent the stress laid upon the difference between truth and the social genesis of knowledge. However, the danger arises of absolutizing this difference so as to make of validity and rationality a separate sphere. As Adorno has pointed out, genesis and validity cannot be separated without contradiction; "objective validity preserves the moment of its emergence and this moment permanently affects it"(Adorno,op.cit,p.21).

It is true that scientific instrumental reason displaced a mythical belief in the reasonability of a hierarchical system of essences in reality (religion and metaphysics); yet its pervasive influence has brought about a progressive inability to determine the desirability of any goal in itself. Self-interest has become dominant. Reason is no longer autonomous but has become an instrument which is measured only by its role in the domination of nature and, consequently, of men. Subjective reason conforms to anything; "the more the concept of reason becomes emasculated, the more easily it lends itself to ideological manipulation and propagation of even the most blatant lies"(Horkheimer, op.cit,p.24). In deed, with Adorno and Horkeimer, the irrationality of science becomes of paramount importance and is not related to any particular class thinking. Enlightenment appears as a vast process which subsumes all of Western thought, including Marx. Scientific rationality appears as an alienating ideology disconnected from class analysis. In fact, as Jay has noticed, after the mid-forties, Adorno and Horkeimer no longer seek answers to cultural questions in the material substructure of society (Jay,1973:p.259).

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Ultimately, therefore, science is ideological not as bourgeois science but as science itself. The problem is no longer the framing of the relationship between men and nature in class relations, but rather the very attitude of man as master, in his effort to dominate nature. The subjugation of nature acquires a repressive character, which is prior to, and the origin of, the repression of man. But this repression of man appears quite unmediated by social relations. The basic contradiction of society is not in the social relations within which men face nature, but in the human condition itself:

> "On the one hand, the social need of controlling nature has always conditioned the structure and forms of man's thinking and thus given primacy to subjective reason, on the other hand, society could not completely repress the idea of something transcending the subjectivity of self-interest" (Horkheimer,op.cit,p.175).

One can notice that this contradiction has no history in so far as it 'has always conditioned' mankind. Marcuse appears as the culmination in this process of demoting science. For him, "the very concept of technical reason is perhaps ideological. Not only the application of technology but technology itself is domination (of nature and men) – methodical, scientific, calculated, calculating control" (Marcuse, 1972a: pp. 223-224).

According to Marcuse, technological rationality appears as a progressive stage of alienation in which the products indoctrinate and manipulate. The special characteristic which the domination of products brings about, is the fact that "they promote a false consciousness which is immune against its falsehood"(Marcuse,1972b:p.24). This happens because the vehicle of ideology is rationality itself, which successfully conceals the irrationality of the whole. Taking Lukacs's intuition to its extreme, Marcuse claims that technology is the great vehicle of reification, reification "in its most mature and effective form". "The web of domination has become the web of Reason itself, and this society is fatally entangled in it"(Ibid,p.138).

It is only natural, therefore, that Marcuse should think that the alternative to this society should transcend reason itself. Although he is very careful in pointing out that dialectical theory cannot be positive and offer remedy, he hints at a different context where "science would arrive at essentially different concepts of nature and establish essentially different facts"(Ibid,p.136). The very structure of science would be changed in a rational society, the very idea of reason would be subverted and replaced by the notions of another rationality. Science and the productive forces have lost the progressive character which Marx used to assert so strongly. Instead of leading society to a more rational organization, they constitute themselves into vehicles of alienation. A more rational society, therefore, should do without technological rationality as we know it. In other words, the social revolution should be necessarily accompanied by a revolutionary transformation of science itself.

As Habermas has pointed out, an alternative new science would also require a new technology and it is difficult to envisage how, as long as men have to survive through labour and with the aid of material means, present technology could be renounced in favour of a qualitatively different one (Habermas,1971:p.87). Even if this was possible, one must wonder what the force would be that could move society towards a more rational future. For if relations of production and productive forces are both in themselves intrinsically tied up with

domination, the conditions for a change in society seem rather dubious. In effect, despite the irrationality of the system as a whole, contradictions seem to disappear from the surface of society in Marcuse's analysis. As ideology has become absorbed into reality, domination is effectively legitimated. Where is the impulse for a change to come from? The working class, in Marx's analysis the force for revolution, is no longer revolutionary since it identifies itself with the consumer society and finds there its satisfaction. Marcuse's concept of ideology appears the concept of the necessary domination of ideology. It is difficult to see not only how science could be changed, but also what would impel scientists to change it.

Habermas locates himself in the tradition represented by Marcuse, but is critical of some of its results and seeks to change the basis of the argument. His main objection is that Marcuse oscillates between the corruption of scientific rationality and the political innocence of the forces of production without being able to reconcile both aspects. Hebarmas wants to show that "neither the model of the original sin of scientific technical process nor that of its innocence do it justice"(Ibid, p 89). The peculiarity of scientific rationality lies in its simultaneous double function, as a progressive force of production and as ideology.

Conclusion

The relationships between science and distorted knowledge or ideology cannot be simplified to make them relations of pure opposition or relations of identity. Against the relations of pure opposition one should remember that science is not a special sphere of knowledge which may escape from the contradictions of society and the determinations of the economic base; also that ideology is not a simple error of knowledge which can be corrected by true knowledge or criticism. The social determination of scientific knowledge does not make it an ideology, but opens the possibility for ideological penetration.

Against the relations of identify one should remember that science is not the opposite of ideology, but that it is different from ideology. While science penetrates the appearances of reality to reach the inner connections, ideology remains trapped in the former and conceals the latter. The difference is not even in the claim that ideology is class-oriented knowledge whereas science is neutral knowledge; nor in the pretension that ideology is bourgeois knowledge while science is proletarian knowledge. All knowledge is socially determined: the mere class character of knowledge does not discriminate between ideology and science.

The difference between objective knowledge (science) and distorted knowledge (ideology) does not preclude the fact, already recognized by Marx, that ideology may dress itself up as science. Marx came across this phenomenon when he criticized vulgar political economy. Yet the occurrence of this phenomenon may not be disconnected from the very essence of bourgeois ideology. As Poulantzas has shown, it is a feature of bourgeois ideology to try and hide its presence by explicitly presenting itself as science (Poulantzas,1973: p 217).

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