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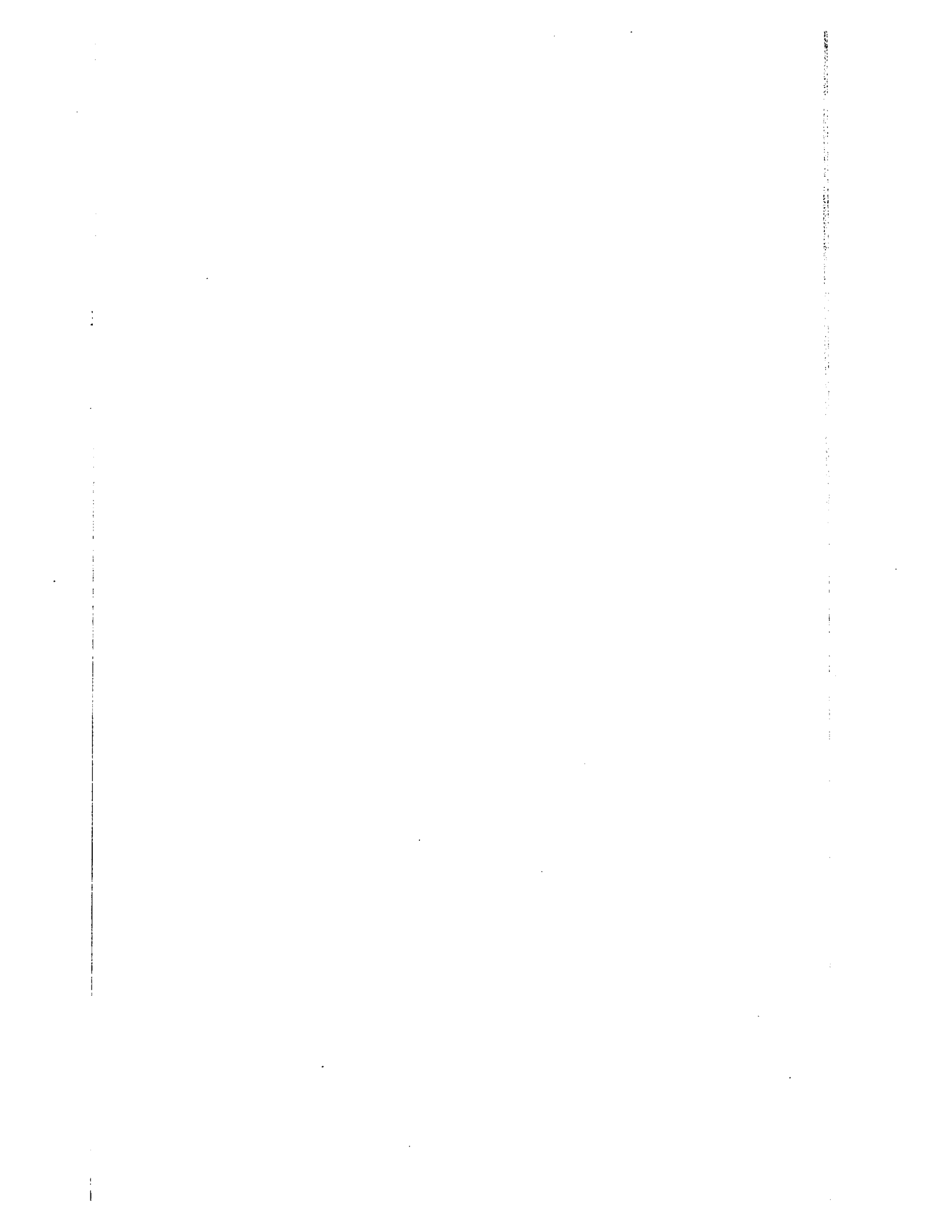
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MARXISM, REVISIONISM
AND
TECHNOLOGICAL DETERMINISM

By

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SUMMARY

A technological determinist interpretation of Marx has been gaining adherents in the developed capitalist countries. This version is regarded as the prevalent interpretation of historical materialism, making a detailed assesment of it particularly important.

According to the technological interpretation of historical materialism, the productive forces, which determine the general character of social production, can be reduced to technology, taken to include the "physical" or "material" (but not social) capacities of and relations between human beings in the productive process, as well as the means of production, i.e. non-human instruments of production.

This Thesis demonstrates that technological determinism does not correspond with Marx's views. Rather, this version of historical materialism needs to be described as closely related to the classical revisionistic interpretation of Marx developed in the 1890s, in particular to Bernstein's interpretation.

Chapter One analyses Bernstein's version of historical materialism, and the characteristics of technological determinist interpretations, extracted from Bernstein's views, are also presented and discussed.

It is usually assumed that proponents of historical materialism who emphasize the role of superstructures for socio-historical development cannot also be technological determinists. In Chapter Two I show that this is not the case, and that important "superstructuralists" do in fact hold a particular version of technological determinism. The views of Lukàcs, Lefebvre, Axelos, and Marcuse, are here examined.

Chapter Three studies the technological interpretations presented by advocates of the "theories of industrial and post-industrial societies". These non-Marxist interpretations are important because they attempt to integrate Marx's analysis in their explanations, and because they have greatly influenced superstructuralists. Attention is paid to the views of R. Dahrendorf, R. Aron, and Z. Brzezinski.

Chapter Four examines the "developed" and "infrastructural" (as contrasted with "superstructural") recent versions of W.H. Shaw and G.A. Cohen. These are the most sophisticated versions of historical materialism as technological determinism. I criticize some of the major claims of Shaw and Cohen, and argue that their views ultimately rest on the revisionistic notion of materialism as something non-social.

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"...political economy is not technology"

K. Marx

Karl Marx's theories of history and social development have widely influenced both the world's socio-political development and the social sciences, including social and political philosophy. As a result, there has been an intense and wide-ranging theoretical and ideological discussion about the character and foundation of Marx's views. In particular, the reach, form and content of historical materialism have been strongly disputed. In the capitalist system, people struggling for proletarian revolutions demand that social sciences, including philosophy, contribute to the struggle for socialism and communism; and revolutionary intellectuals, in addition to their political practice have attempted to explain and defend the Marxist analysis of capitalism and of world's historical progress. Recently, with the general aggravation of economic, social and political conditions, this intellectual task has become more urgent and decisive. As a consequence, a new and more gifted generation of revolutionary intellectuals has arisen. This is noticeable even in the developed capitalist English-speaking countries, particularly the U.S.A., England and Canada.

Along with these developments, a technological determinist interpretation of Marx has been gaining adherents in the developed capitalist countries. This tendency contrasts with what has happened

in both the socialist countries and the dependent capitalist nations, where the theoretical and ideological struggles have centered mainly around other issues and other interpretations of historical materialism (1). This technological determinist interpretation of Marx is more and more being regarded as the prevalent and quasi-official version of historical materialism, making a detailed assesment of it particularly important.

According to the technological interpretation of historical materialism, the productive forces, which determine the general character of social production, can be reduced to technology, taken to include the "physical" or "material" (but not social) capacities of and relations between human beings in the productive process, as well as means of production, i.e. non-human instruments of production. In this version of historical materialism one speaks of the "productive forces of the society" instead of the "social productive forces".

I intend to demonstrate that technological determinism corresponds neither with Marx's views on socio-historical development nor, more importantly, with his analysis of the political economy of capitalism, as presented in Capital. The implausibility of the technological determinist interpretations of Marx leads me to attempt to describe how these versions of historical ma-

terialism are closely related to the classical revisionistic interpretation of Marx presented by E. Bernstein. I shall show how revisionism requires a technological determinist interpretation of historical materialism and vice versa.

For this reason I begin in Chapter One by tracing back technological determinism to the emergence of revisionism in the 1890s, in particular to the version of E. Bernstein. In this Chapter the notion of classical revisionism is discussed, along with the main characteristics of technological determinist interpretations of Marx. These characteristics are extracted from an analysis of Bernstein's views.

In subsequent chapters I demonstrate how other interpretations of historical materialism as a type of technological determinism share some or at least the most important characteristics which I isolate in the classical revisionist's version of historical materialism.

Besides the version of classical revisionists, this work considers three other types of technological determinist interpretation, namely (a) "superstructural" Marxism, (b) "infrastructural" Marxism, and (c) non-Marxist theories of post-industrial society. "Superstructural" Marxism, as I understand it, emphasizes the role of social superstructures and rejects

the "economicist" interpretation of Marx. These interpreters focus the analysis of Marx in his 1844 Manuscripts. Conversely, "infrastructural" Marxism emphasizes the role of the techno-economic basis of society. It takes Marx's 1859 'Preface' to A Contribution to the Critique of Political Economy as the central text.

I refer to the versions of technological determinism presented by superstructuralists and by non-Marxist interpreters as "primitive", since these fail to take into account the analysis of the labour process as this is presented, for instance, in Capital. These should be contrasted with the "infrastructural" technological determinism recently presented by W.H. Shaw and G.A. Cohen. I refer to these infrastructural versions as "developed" interpretations, on the grounds that they are based on the attempt to relate Marx's analysis of the labour process, as presented in Capital, with earlier formulations of historical materialism, in particular the formulation of the 1859 'Preface'. I do not consider earlier versions of the infrastructural technological determinist interpretation, such as those of Plekhanov and Bukharin, since their views are contained and expressed in a more sophisticated form in Shaw's and Cohen's versions.

I devote a great deal of attention in what follows to the positions of superstructuralists, since it is usually assumed

that proponents of historical materialism who emphasize the role of superstructures cannot also be technological determinists. In Chapter Two I show that this is not the case, and that important superstructuralists do in fact hold a particular version of technological determinism. In this second Chapter I pay special attention to the interpretations of G. Lukàcs, H. Lefebvre, K. Axelos and H. Marcuse, and refer in passing to the views of M. Horkheimer, T. Adorno, M. Rubel and J-P. Sartre.

The third Chapter is devoted to the analysis of some recent non-Marxist interpretations of social and historical development which presuppose technological determinism. These "theories of industrial (or post-industrial) society" have arisen recently in the developed capitalist countries, and aim to explain, in non-Marxist terms, the new socio-historical conditions brought about by what some Marxist authors call the "scientific and technological revolution". Advocates of theories of industrial and post-industrial societies, although holding a non-Marxist (often even an anti-Marxist) view, attempt to incorporate parts of Marx's thought in their explanations. This is one reason why it is important to consider them. Another is that theories of industrial and post-industrial society have greatly influenced superstructuralists. In this Chapter I pay particular attention to the views of R. Dahrendorf, R. Aron and Z. Brzezinski, whom I take to present representative non-Marxist interpretations.

In the last Chapter I deal with the developed, infrastructural versions of W.H. Shaw and G.A. Cohen. I argue that their versions of technological determinism, although recognizing Marx's explanations in Capital, nonetheless assume the rather unsophisticated version of historical materialism presented by Marx in earlier works. Thus, even though the accounts that Shaw and Cohen present are superior to the interpretations offered by both superstructuralists and non-Marxist interpreters, these are developed within a general theory or philosophy of history rather than being based on an analysis of the political economy as this is developed in Capital. Then, I criticize some of the major claims of Shaw and Cohen, and argue that their views ultimately rest on the revisionistic notion of materialism as something non-social.

The reductionistic character of the technological determinist interpretation of historical materialism prevents our appreciating that, for Marx, the social is basically material. Such interpretations fail to recognize that the "physical" aspects of the productive process of society are historical and social processes. The conceptual basis for the scientific study of society is the analysis of the "material-historical" aspects of it, i.e. the study of the social processes of production and reproduction. Marx developed such a scientific analysis of society by studying the political economy of capitalism, without needing to support

that study on a general theory or philosophy of history. This is what we find in his most developed work, Capital. But for the technological interpreters of Marx such an approach is ruled out. For them, as for those whom Marx regarded as deluded by the "mystique" of commodities in capitalism, "a definite relation between men assumes in their eyes the fantastic form of a relation between things"(2). Once "things", or "technology", are conceived as socio-historical determinants, one cannot avoid introducing other revisionistic notions to obtain a consistent interpretation of Marx's theory of socio-historical development.

Notes

- 1) Interpreters of historical materialism in the socialist countries, while giving great importance to the study of the scientific and technological revolution, forcefully reject a technological determinist interpretation. See below, Chapter Three, in particular notes # 4, 6, and 8 (pp.148, 149, and 149-150, respectively). Concerning theoretical Marxist developments in the dependent capitalist countries, in the case of Latin America see, among others, J.R. NUNEZ-TENORIO (1976) and (1977); M. HARNECKER (1971); A. SANCHEZ-VAZQUEZ (1967); F. RIU (1968); C. ASTRADA (1958) and (1965).

- 2) K. MARX, Capital, Vol. I, p.77.

CLASSICAL REVISIONISM AND TECHNOLOGICAL DETERMINISM

Marx's account and critique of bourgeois political economy explicitly assumes various political and ideological positions (1). In particular, Marx considered his work to be the revolutionary programme and the theoretical tool for the workers under capitalism to attain their freedom. One of the main difficulties in studying Marx is that the use of a notion of objectivity that disregards or eliminates political and ideological considerations is misleading. Marx's own notion of objectivity implies taking political and ideological sides, since historical-materialist science presupposes a given society as the essential condition for the elaboration of the analytical categories:

Just as in general when examining any historical or social science, so also in the case of the development of economic categories it is always necessary to remember that the subject, in this context contemporary bourgeois society, is presupposed both in reality and in the mind, and that therefore categories express forms of existence and conditions of existence... of this particular society... (2).

Marx's theory is "critical" and "self-reflective": the analyses it provides are intended to uncover the limits of bourgeois scientists from the perspective of the world-view and the political commitments of revolutionary workers (3). Therefore, when considering interpretations of Marx, one must deal not

only with Marx's political and ideological views but also with those that his interpreters, consciously or not, profess.

The technological interpretation of Marx's historical materialism seems plausible because Marx stressed the importance of technology in the process of social development, especially in the development of capitalism. This approach, however, overlooks at least two important facts: firstly, Marx explicitly denied that political economy could be reduced to technology (4); and secondly, the technological interpretation of historical materialism was developed only after Marx's death. More basically, Marx's conception of historical and social development does not permit an "objectivistic", technological interpretation, since it is grounded on the category of social production. Indeed, the technological interpretation of historical materialism emerged not as a result of attempts to clarify Marx's ideas for theoretical and revolutionary purposes, but because certain theoreticians had an interest in using Marx's ideas to support non-Marxist political and ideological positions.

Few recent proponents of the technological interpretation of Marx discuss, or even mention, the historical origins of the interpretation. Neither McMurtry and Shaw, nor Cohen, pay attention to this issue. Their silence is significant. By avoiding the study of the historical development of the technological

interpretation these interpreters, consciously or not, in good or in bad faith, conceal certain rather distasteful facts about it.

Here I argue that the technological interpretation of Marx originated directly from immediate political and ideological circumstances and practices, and that it involves a series of political and ideological assumptions and consequences that misrepresent Marx's views. I show that the technological interpretation of Marx was developed by E. Bernstein as a part of the classical revisionist political and ideological strategy (5). Further, I show that the technological interpretation of Marx developed by Bernstein is the theoretical complement of the political and ideological positions of revisionism, and vice versa. And, finally, I insist that the technological interpretation of Marx developed by the classical revisionists involves characteristics to be found in subsequent technological interpretations of Marx. If we can say, as R. Luxemburg does, that "Bernstein's theory was the first, but also, at the same time, the last attempt to give theoretical base to opportunism", and that "not only can Marxist doctrine refute opportunism theoretically; it alone is able to explain opportunism as an historical phenomenon..."(6); then we can also say that, if technological determinism is the first and basic form of revisionist theory, Marxist doctrine alone is able to explain

technological determinism as an historical phenomenon, and that it can do this by means of showing its necessary link with revisionism. For, finally, the aim of this Chapter is to show that the elucidation of the historical, political and ideological origins of the technological interpretation of Marx is not "external" or irrelevant to its understanding and critique but, on the contrary, fundamental to both.

Thus, here I argue that examining the political and ideological issues that occupied the German Social Democratic Party (SDP) during the 1890s, and Bernstein's interpretation of historical materialism, it is possible to show:

- (a) that the technological interpretation of Marx was developed by classical revisionists;
- (b) that such technological interpretation of Marx is based on revisionism and vice versa;
- (c) that the technological interpretation of Marx developed by classical revisionists involves characteristics to be found in subsequent technological interpretations of Marx.

(A) Antecedents

Historical background. The revisionist version of Marx only fully emerged after 1895. Between 1891 and 1895 the SDP was occupied with practical questions concerning the eventual in-

tegration of peasant interests in the official policies of the party and the possibility of establishing alliances with non-socialist parties, both in the Reichstag and for electoral purposes. These issues were not unrelated, because the SDP local branches in the less industrialized states of Germany were calling both for alliances with non-socialist parties and for the adoption of a position favourable to small landowners and agricultural wage-labourers (7).

Around these two issues emerged the first form of revisionism, the so-called "reformism" or "deviationism" of von Vollmar and Auer. Reformists had ample support in the SDP Reichstag Fraktion, but not among the party leaders. Although lacking an appropriate theoretical goal and vision, they were the first to proclaim that socialism must be established not by revolutionary means, but through a prolonged process of social evolution (8). And they strongly urged the adoption of the practical aspects of the Erfurt Programme. Thus, while not openly rejecting Marxism, they were in fact urging the elimination of the Marxist theoretical foundation of the SDP as expressed at Erfurt (9) (See APPENDIX : The Erfurt Congress).

Bernstein's political position. In 1893 Bernstein began to support political views akin to those of the deviationists. In his opinion, the SDP should "enter into a pact with bourgeois

Progressives in the Prussian elections"(10). In that same year the Cologne Congress of the SDP rejected Bernstein's proposal, and in 1895, at the Breslau Congress, the reformist line was again repudiated. The outcome of this last meeting represented a victory for Kautsky and the orthodox Marxists (11). But as at Erfurt, Kautsky's triumph was Pyrrhic. The so-called "agrarian question" as well as the question of the relations with non-socialist parties cropped up again in the SDP during the following years, and the compromises that followed, although embraced by both sides, only increased the gulf between the theory and the practice of the party. Moreover, after Bernstein had put forward his views, the reformists not only maintained their positions in the SDP, they increased their support among the ranks of the party in important local branches (12).

The political situation in the SDP in 1895 was becoming tense. As Steenson has observed,

Kautsky said before Breslau that a split at that time was necessary if the party were to avoid becoming an indistinguishable mass of discontents. But having won his point in theory, he was content to let practice take care of itself (13).

Besides, both during and after the Erfurt Congress, Engels' influence on the German socialists was declining. In 1892 Kautsky published his expanded version of the Erfurt Programme, for

the first time without asking or receiving advise from Engels (14). And when Engels died in 1895, Bernstein thought it necessary to develop a new theoretical framework for the SDP in order to adapt theory to the actual practices of the party (15). As J. Rovin says:

Le révisionnisme bersteinien constitue la première grande tentative systématique d'échapper aux contradictions entre la pratique réformiste et la théorie révolutionnaire qui se soit produit au sein du parti social-démocrate depuis sa fondation (16).

Bernstein's theoretical position. In his famous book, Die Voraussetzungen des Sozialismus und die Aufgaben der Sozialdemokratie (translated into English as Evolutionary Socialism) (17), Bernstein attempted to correct what were in his opinion mistakes in Marx's economic, historical and political theories. However, in so doing he ended up by mounting an attack against the most fundamental aspects of Marxism (18).

Like Kautsky, Bernstein had no significant knowledge of philosophy (19). When we examine his works what we find is not a coherent general philosophical position, but a sort of eclecticism made up of pieces of neo-Kantism, mechanistic materialism, positivism and pre-Hegelian idealism (20). Besides, Bernstein was strongly influenced by the British Fabians, by his former tutor Lasalle and by the then new marginalist bourgeois

economists, in particular Böhm-Bawerk (21). He tried to combine all these theoretical elements with what he had learned from Marx and Engels in order to "revise" and up-date Marxism.

Bernstein's revision of Marx tried to save the kernel of truth in historical materialism, while eliminating the determinist, the Hegelian a-prioristic and the "empirically disproved" aspects of Marx's thought. Thus, apart from a brief discussion of Marx's "materialistic determinism", Bernstein's critique centered on economic and political issues, among them the "breakdown" theory (Zusammenbruchstheorie), the concentration and centralization of capital, the impoverishment of workers under capitalism, the role of peasants in capitalism, Marx's notion of the dictatorship of the proletariat, the theory of the class struggle and the need for a violent, revolutionary conquest of political power by the workers. Bernstein insisted that capitalism was becoming less prone to develop economic crises, and thus that its final disappearance was not to be produced by an economic collapse. On the contrary, he said, the very increased capacity of capitalism to direct the economic process determined that, slowly but surely, socialist measures would arise in the midst of capitalism itself. The overthrow of capitalism should thus be viewed as a prolonged process of social, political and economic reforms, in which the anarchy of early capitalism would be replaced, step by

step, by practical socialist policies: the ethical imperative of a consciously-directed socio-economic process, inherent in developed capitalism would ensure this, without any need of a revolutionary upsurge by the workers.

(B) Bernstein's interpretation of historical materialism.

By studying Bernstein's views in a more detailed manner, we can see how he came to interpret Marx as a technological determinist. The following characteristics of Bernstein's interpretation of Marx not only constitute the basis of subsequent technological interpretations of Marx, they reveal its essentially revisionist foundation.

1. The rejection of the dialectical method. Bernstein argues that Marx relies on Hegel's dialectics in his analysis of historical processes in a way that presupposes mechanistic determinism and an a-prioristic "philosophy of history"(22). According to Bernstein, the notion of dialectics is the same in both Hegel and Marx, which shows how little he understood Marx (23). Moreover, in Bernstein's view the use of the dialectical method necessarily leads to the development of certain a-prioristic views about historical and social processes. His reason is that the dialectical method is essentially an idealist method:

No matter how things may look in reality, as soon as we leave the soil of empirically ascertainable facts and think beyond them, we move into the world of derived concepts. If we then follow the laws of the dialectic as established by Hegel, we find ourselves, before we know it, again in the snare of the 'self-development of the idea' (24).

In this way, as Peter Gay points out, "Bernstein here charged Marx with Hegel's sin" (25).

2. Historical determinism as historical fatalism. According to Bernstein, the dialectical method requires a deterministic interpretation of history, where material, economic forces and political violence reign undisputed, and where the wills and actions of human beings play but a contingent role (26). For Bernstein, what Marx did was to change the basic element which determined the course of history: he simply replaced Hegel's Spirit by "matter". But basically, both theories were the same. In Hegel's idealistic version there is a fatal teleology making all things move towards the Absolute Spirit. In Marx's materialistic version there is a movement towards socialism in both the natural and the social world. In fact, in Bernstein's interpretation of Marx, this process leading inexorably to socialism was the "necessary movement of matter". Therefore,

The application of materialism to the interpretation of history means... first of all, belief in the inevitable-

ness of all historical events and developments. The question is only, in what manner the inevitable is accomplished in human history...(27).

Since for Bernstein materialism has to be both mechanistic and fatalistic, he ascribes to Marx a kind of Laplaceanism, according to which the knowledge of the composition and dynamics of "historical matter" permits us to predict all future developments and events:

To be a materialist means first of all to trace back all phenomena to the necessary movements of matter. These movements of matter are accomplished according to the materialist doctrine from beginning to end as a mechanical process, each individual process being the necessary result of preceding mechanical facts. Mechanical facts determine ... all occurrences... It is... always the movement of matter which determines the form of ideas and the directions of the will; and thus these also (and with them everything that happens in the world of humanity) are inevitable. The materialist is thus a Calvinist without God. If he does not believe in a predestination ordained by a divinity, yet he believes and must believe that starting from any chosen point of time all further events are, through the whole of existing matter and the directions of force in its parts, determined beforehand (28).

Bernstein strongly opposes materialism. Since Marx had wrongly attempted to build a strict materialist interpretation of history, Bernstein aimed to save Marx from himself, by eliminating the unwanted materialism from Marxism. As Kautsky correctly said, Bernstein considered Marx to be a fatalist (29). This "strong determinism", however, is certainly absent from

Marx (30).

3. "Reductionistic", "non-social" notion of materialism. The gulf between what Marx thought and what Bernstein maintained he thought becomes still more apparent when we consider the following questions: What does Bernstein understand by "matter" and "materialism"? Is his notion that of Marx? Does he attribute to Marx a notion of materialism that Marx actually held?

From the texts already quoted it is obvious that Bernstein did not understand Marx's and Engels' criticism of Feuerbach. For Marx and Engels, "materialism" was not a mechanistic theory, even less a theory only about "objects", "things" and "matter" in the sense of the classical physics. As Marx put it in his first thesis on Feuerbach:

The chief defect of all hitherto existing materialism (that of Feuerbach included) is that the thing, reality, sensuousness, is conceived only in the form of the object (Objekt) or of contemplation (Anschauung), but not as sensuous (sinnlich) human activity, practice, not subjectively... Feuerbach wants sensuous objects, really distinct from the thought objects, but he does not conceive human activity itself as objective activity (gegenständliche Tätigkeit) (31).

Since Bernstein's understanding of materialism is pre-Marxist, i.e. "objectivistic", he is unable to conceive historical

reality, social practices and social production, as "real", "objective", "material". For Marx, materialism is a notion having a historical content: it refers not to perceived things but to social practice; it explain the social processes of (existing) human beings. Marx's version of historical materialism is not fatalistic; it does not eliminate historical and social determinants in favour of natural or transcendental ones. If social practices do not have a specific "material" content as objective realities, then there would be no intrinsic need for societies to change themselves. If Marx's materialism were naturalistic and fatalistic, his well-known eleventh thesis on Feuerbach would make no sense at all (32).

For Marx, materialism is a theory about history by means of which we can understand how society develops through its own productive practices. Bernstein, for his part, both misunderstood the meaning of Marx's materialism as a philosophical doctrine and misrepresented the basis of that doctrine, i.e. Marx's social and economic sense of materialism.

4. Centrality of Marx's 1859 'Preface'. Bernstein based his account of historical materialism on a particular reading of Marx's 1859 'Preface' to A Contribution to the Critique of Political Economy. He commented on this text in extenso because

he considered it to be Marx's most fully elaborated version of historical materialism. As Bernstein interpreted it, Marx espouses strong determinism: the text, says Bernstein, has a "dogmatic wording" and articulates a type of historical "pre-destination"(33). Marx "...designates as the determining factor, the material productive forces and the conditions of production among men at the time", so that "(o)n the whole the consciousness and will of men appear to be very subordinate factor of the material movement"(34). What Marx understands by "material productive forces" and "the conditions of production" is for Bernstein simply the "technics of production". As he puts the matter,

More harm than good is done to historical materialism if at the outset one rejects as eclecticism an accentuation of the influences other than those of a purely economic kind, and a consideration of other economic factors than the technics of production and their foreseen development (35).

The influence of this interpretation of the 'Preface' appears again in the following remark:

We have defined the first aspect of the Marxist doctrine in the following way: The technical organization of production and its modification, in upsetting the economic relations, dominate and determine the social organization and its changes (36).

In short, in Bernstein's opinion the entire capitalist productive process was considered by Marx as determined by technological factors, and can thus be reduced to technological terms.

5. Technological determinism eliminates social aspects of the economic analysis. Bernstein's non-social notion of materialism finds expression in his technological, non-social interpretation of Marx's economic categories and analyses. Consider the problem of the role played by "fixed capital" (i.e. machinery, installations) in the outcome of crises in capitalism. Marx thought that, given the anarchic character of both the productive and the distributive systems of the capitalist economy, the different sectors of the economy would develop unevenly. This uneven development was due to the corresponding uneven distribution of investment in the different sectors of the economy, and this, in turn, to the different rates of profit that each economic sector yielded to the capitalist in a given moment. The fundamental force in the capitalist economy, the increment of profits, creates "sectorial" distortions. In other words, since at a given time only industries, n, produce a profit above the given normal rate for all the industries, the capitalists tend to invest in these industries in preference to other industries, m. This trend in investments results in a

concentration of capital (and thus of the most advanced technology) in industries n, rather than in industries m. Then, due to the new productive capacities added to the n industries, they soon begin to produce more goods than the market can absorb. Thus, since the n industries also tend to be the leading industries in the economy as a result of the concentration of investment and technology, their failure to sell their production results in the need to reduce production, and in this way drag with them the entire economic system into a crisis. Such crises would reestablish a momentary equilibrium in the distribution of both investment and new fixed capital, only to give way to a new crisis when, say, industries m provoke a new imbalance as a result of the investment and technology concentrated in them. At the same time, each cyclical crisis would occur at a higher level of productive capacity of the economy as a whole, thus making each subsequent crisis more devastating, profound and widespread. Thus, capitalist crises arise because of the anarchic force of the "profit motive", which generates distortions in the economic organization and development, distortions which can be regarded as generating and being generated from disequilibriums in the process of distribution as a result of certain goods being overproduced or underconsumed.

When Bernstein studies this problem, he does so by approach-

ing it through the notion of under-consumption, and argues that, for Marx, capitalist crises are caused by under-consumption. More importantly, he does not trace back the market disequilibrium to the inherent capitalist tendency to try to obtain bigger profits, but to one of the intermediate causes, namely, to the renewal of fixed capital. In other words, although Bernstein realizes that capitalist "crises of under-consumption" originate in the productive process of capitalism rather than in the distributive process, he fails to see beyond the process of renewal of technology to the sociological and economic causes of the distortions and the anarchy created by the unilateral and uneven character of this renewal. For instance, he says that,

Marx... believed he could establish on the need of an accelerated renewal of fixed capital (implements of production, etc) a material foundation for periodical crises...

And in a note to this he comments that:

The use of the word 'material' in the passage mentioned ... is not without interest in judging how Marx understood this word. According to the present usual definition of the word the explanation of crises from under-consumption would be quite as materialistic as founding it on changes in the process of production, or in implements (37).

What Bernstein means here is that Marxists should not say (as they are supposed to say), that the phenomenon of under-con-

sumption is a "material" phenomenon, but that it is a psychological or social one, since it has to do with a lack of demand for goods and services. Moreover, the phenomenon of under-consumption is not "material" because Marx would have reserved the notion of "material" to refer to "the implements of production", i.e. to "fixed capital", i.e. to machinery and technology.

From a Marxist point of view, certainly, one cannot say that the phenomenon of under-consumption is the ultimate cause of capitalist crises. Bernstein agrees with this but, at the same time, he diverts the discussion from the establishment of the real causes of capitalist crises to the "material" character of one of the intermediate causes of such crises, the phenomenon of under-consumption. For Bernstein, the phenomenon of under-consumption is not a material one because he disregards the fundamentally social origin of capitalist crises (the economic process being chained to the need of extracting the highest levels of profit), and because he assumes that the capitalist renewal of fixed capital is the ultimate cause of such crises. By choosing fixed capital as the cause of capitalist crises and by assuming that "material" does not include social dimensions, Bernstein found grounds to sustain his own interpretation of Marx as a "materialist", according to which Marx held

that the material basis of the economy is reduced to technology.

6. Technological determinism eliminates the theory of value.

In his urge to eliminate the social aspects of the Marxist analysis of capitalism, Bernstein was forced to reject Marx's theory of value. According to Marx, the value of goods considered as commodities is twofold: use-value and exchange value. Exchange values are the basis of the capitalist society. They are created by labour. Labour power, as source of production, and as a commodity itself, is the basis of the exchange values. In exchange values the amount of labour (or the amount of labour-time "socially necessary") for the production of commodities is "materialized", i.e. it finds its objective source and expression (38). For Marx, "things", whatever they might be, do not create value: value is a social relation that expresses the fundamental characteristic of capitalist production as a social process of production. Using these ideas, Marx argued that it is possible to establish that workers create more value than what they are paid for, and that this is the source of the surplus-value that capitalists keep for themselves. Thus, the theory of value provided Marx with a social foundation to explain the fundamental law of capitalism. Bernstein emphasized the view that the theory of value was poorly grounded, and could not be regarded as an appropriate abstract tool to measure

the workers' exploitation. He thought it would be more "scientific" to adopt the theory of the marginal utility, according to which it was not enough to consider the "costs of production" (including "costs of labour") to determine the value of a commodity (i.e. "price"). In the marginal-utility theory, it is crucial to consider the "value" added to the commodity by the demand, since a commodity for which there is no demand, obviously cannot have any exchange value. Bernstein, following Böhm-Bawerk, said that in Marx's explanation it was impossible to give account of the determination imposed by the market on the value of commodities, since for Marx the value was determined not in the distributive process but in the productive one. In this way, Bernstein thought, one can refute Marx's theory of value by pointing out the superfluosness of trying to measure value in the productive process of a given commodity, if there is no demand for it in the market. But, of course, Bernstein was not aware that in the abstract formulation of the productive process of capitalism, as presented in Vol. I of Capital, Marx was assuming all the time that there existed demand for the products produced, i.e. he assumed that, unless there was demand for a given commodity, it would not be produced in the capitalist economy. When Marx says that value expresses the amount of time (labour-time) "socially necessary" to produce a given commodity, the notion "socially necessary" in-

cludes, as one basic assumption, the existence of demand for such commodity.

But what needs to be remarked here is that, by adopting the marginal-utility theory instead of Marx's theory of value, Bernstein conceived the capitalist productive process to be a purely technical process, involving no sociological dimensions: relations of production in capitalism are not the source of workers' exploitation, since what occurs in the productive process of capitalism has nothing to do with the creation of value and thus it is impossible to show that any surplus-value is grabbed by capitalists. This means that the capitalist exploitation of the workers has no economic (in the Marxist sense of the concept) foundation: one must either deny that it takes place at all, or else one^e must provide an explanation in ethical terms, perhaps relying on psychological and even social considerations but only as being quite distinct from economic ones.

7. Technological determinism is based on a dualism between "material" and "social". Bernstein understood Marx's historical materialism as involving a strict, linear determinism, in which the economic sphere as well as the superstructure were determined by technological factors. Believing that this interpretation is too restrictive, Bernstein called for the inclusion of ethical and political elements in the analysis of social and

historical processes: he thought that if these aspects were not considered, Marx's contribution to social science would remain "dogmatic" and unscientific. But he misrepresented Marx's view of the capitalist economy and of the material basis of social life when he alleged that Marx held that non-economic dimensions were dependent of technological and economic realities. This is to obliterate the social and historical foundation of Marxism in favour of an analysis of society based on a dualistic approach which separates the "material", "physical" and "objective" side of technology and the economy from the "ethical", "social" and "subjective" social relations and institutions. A technological interpretation of Marx is incompatible with an integrated, "dialectical" view of socio-physical and materialist-socio-historical processes.

8. Technological determinism reifies economic categories. Since economic categories were no longer considered by Bernstein to be based on social aspects, and since the "material" foundation of the economy was non-social but physical and technological, the economic categories thus become reified, i.e. "external" to social reality. Not surprisingly, as already noted, Bernstein ended up by understanding the economic categories in much the same way that the bourgeois political economists did—in a reductionistic fashion, as being composed on the one hand by things as relations between things, and on the other

hand by psychological reactions to those things. But Bernstein not only reified the economic categories of Marx, he did it in a special way: because he discarded Marx's theory of value and hence Marx's attempt to provide a social foundation for the economic analysis, he was forced to maintain that the social relations of production and the social conditions of production are determined by the technological aspects of the productive process. This resulted in Bernstein's viewing the means of production and the technological dimensions of human labour as the determining factors of the productive process of society and, ultimately, of all social and historical processes.

9. Technological determinism is revisionism. The elimination of the social dimensions of the Marxist analysis of the capitalist political economy, and the reduction of that analysis to technological determinism, permitted the development of a revisionist political position, and of a revisionist theory of social and historical processes. If, as Bernstein thought, the fundamental economic process (production) is determined by technological processes and conditions, the outcome of socialism is dependent on whether or not technological determinants bring about the elimination of capitalism. The technological conditions determine when and how the economic aspects of capitalism must change; and this change in the economy produces

the required social and political adaptations. Therefore, socialism will be achieved not by political and social struggles, i.e. by a revolutionary process, but simply through a process of economic, social and political reforms within the capitalist system itself, which is determined in all its fundamentals by technological advances.

This revisionist vision of historical development is based on the essential dualism that characterizes technological determinism, and leads, as L. Colletti says, to a "technological conception of history":

The so-called 'economic sphere'... was now seen as one isolated factor, separated from the other 'moments' and therefore emptied of any effective socio-historical content, representing, on the contrary, an antecedent sphere, prior to any human mediation. Social production is thus transformed into 'production techniques'; the object of political economy becomes the object of technology. Since this 'technique'... is separated from that other simultaneous production achieved by men, the production of their relations (without which, for Marx, the former would not exist), the materialist conception of history tends to become a technological conception of history (39).

Rosa Luxemburg defined revisionism as emphasizing, in political matters, reform rather than revolution and, in economic matters, the point of view of the individual capitalist, for whom the capitalist system is the natural form of the human economy(40).

Besides this, we must recognize that revisionists hold the technological determinist interpretation of historical and social change. For only a technological determinist interpretation permits revisionists to eliminate the sociological content of Marx's analysis of political economy and, in so doing, the class character of the socio-economic struggles that take place in capitalism. Only this interpretation of history and of social processes permits them to argue that the disappearance of capitalism will occur inevitably, "mechanically", by the force of the fate embodied in the process of technological development. Only this interpretation allows them to insist that socialism can be achieved by piecemeal reform and without proletarian revolutions.

On the other hand, only the revisionist position regarding the political and social dimensions of capitalism can sustain the technological determinist interpretation of history and of social processes. For one must adopt either the idealist view that transcendental or mechanical entities and dynamics rule, or Marx's historical-materialist conception, according to which the social character of the production and reproduction of social life itself determined the course of history. In short, only revisionism can sustain technological determinism, because only a non-revolutionary starting point can gene-

rate an "objectivistic", "physicalist" and reductionistic interpretation of Marx's historical materialism.

Conclusion. On these grounds, we are entitled to suspect that the technological determinist interpretations of Marx are revisionistic. We have seen that this interpretation, in its classical origins, involves a number of characteristics:

1. Rejection of the dialectical method;
2. The view that historical determinism is historical fatalism;
3. The notion that materialism is reductionistic, non-social;
4. The interpretation is based on the centrality assigned to Marx's 1859 'Preface', and on a particular, technological rendering of this text;
5. Social aspects of the economic analysis are then eliminated;
6. Marx's theory of value is also rejected;
7. The interpretation is based on a dualism between "material" and "social";
8. Marx's economic categories are reified; and
9. The interpretation leads to revisionism.

These characteristics can be re-grouped and synthesized. On the one hand, there is a group of characteristics which all technological interpretations have; and on the other hand there is a group that technological interpretations may or may not have. Certain specifications on the presentation of the secondary characteristics will enable us to distinguish "primitive" from "developed" forms of the doctrine (Chapters II-IV).

Primary characteristics:

1. Technological interpretations of Marx are based on a dualistic understanding of Marx's theories, one that separates the world of "objects" (nature, technology, things, "matter", "the material") from society. Further, in such interpretations it is argued that only the "material" aspect yields a scientific analysis, where "material" is understood in a pre-Marxist fashion involving the "movements of matter" as opposed to social productive practices.
2. In these interpretations it is proclaimed that "material" productive forces determine the economic sphere which, in turn, is seen as conditioning the rest of social life. However, even when technological determinists distinguish the technological and the economic spheres, they nonetheless view Marx's economic categories in such a manner that these

tend to become either relations between things, or else relations between human beings, relations which have "social" but not "material" content.

3. Finally, technological interpretations tend to be "pessimistic", "fatalist" or "reformist", since they rule that neither the political aspects of society nor the class struggles themselves play any significant role in the development of society. The claim is that the capitalist system will be overcome only if technical realities demand it.

Secondary characteristics.

1. These interpretations are based on a particular understanding of Marx's 1859 'Preface' to A Contribution to the Critique of Political Economy. This text is regarded as the central text of Marx.
2. As a consequence of the need to eliminate the social character of Marx's economic categories, the fundamental Marxist socio-economic notion, the theory of value, is discarded as false and useless.
3. As a consequence of the strict deterministic view of causation adopted in such analyses and the elimination of the

social character from them, the dialectical approach is played down or eliminated.

4. Finally, attempts to prove or to disprove the alleged technological determinism of Marx are not centered in elucidating how Marx explains the capitalist productive process, but instead on the contraposition of techno-economic "base" with the institutional-ideological, and "social", superstructure. As in Bernstein, the problem is not one of studying whether Marx, in his analysis of the capitalist productive process, managed to eliminate all non-technological determinants, but rather one of showing that the techno-economic sphere determines the superstructural dimensions of society.

Taken together, these primary and secondary characteristics show the revisionist character of technological versions of historical materialism.

NOTES

- 1) These assumptions occur in many places in Marx's work, including the following: (a) "In so far as Political Economy remains within that horizon, in so far, i.e., as the capitalist régime is looked upon as the absolutely final form of social production, instead of as a passing historical phase of its evolution, Political Economy can remain a science only so long as the class-struggle is latent or manifest itself only in isolated and sporadic phenomena. Let us take England. Its Political Economy belongs to the period in which the class-struggle was as yet undeveloped. Its last great representative, Ricardo, in the end, consciously makes the antagonism of class-interest, of wages and profits, of profits and rent, the starting-point of his investigations, naively taking this antagonism for a social law of Nature. But by this start the science of bourgeois economy had reached the limits beyond which it could not pass. Already in the lifetime of Ricardo, and in opposition to him, it was met by criticism, in the person of Sismondi... (After 1830) (i)n France and in England the bourgeoisie had conquered political power. Henceforth, the class-struggle, practically as well as theoretically, took on more outspoken and threatening forms. It sounded the knell of scientific bourgeois economy. It was thenceforth no longer a question, whether this theorem or that was true, but whether it was useful to capital or harmful, expedient or inexpedient, politically dangerous or not. In place of disinterested inquiries, there were hired prize-fighters; in place of genuine scientific research, the bad conscience and the evil intent of apologetic" (Capital, I, pp.24-25). (b) "Political economy has indeed analysed, however incompletely, value and its magnitude, and has discovered what lies beneath these forms. But it has never once asked the question why labour is represented by the value of its product and labour-time by the magnitude of that value. These formulae, which bear it stamped upon them in unmistakable letters that they belong to a state of society, in which the process of production has the mastery over man, instead of being controlled by him, such formulae appear to the bourgeois intellect to be as much self-evident necessity imposed by Nature as productive labour itself. Hence forms of social production that preceded the bourgeois form, are treated by the bourgeoisie in much the same way as the Fathers of the Church treated pre-Christian religions" (Idem., pp.84-85). (c) "The same interest, which compels the sycophant of capital, the political economist, in the mother country, to proclaim the theoretical identity of the capitalist mode of

production with its contrary, that same interest compels him in the colonies to make a clean breast of it, and to proclaim aloud the antagonism of the two modes of production. To this end he proves how the development of the social productive power of labour, co-operation, division of labour, use of machinery on a large scale, &c., are impossible without the expropriation of the labourers, and the corresponding transformation of their means of production into capital. In the interest of the so-called national wealth, he seeks for artificial means to ensure the poverty of the people. Here his apologetic armour crumbles off, bit by bit, like rotten touchwood" (Idem., pp.716-717). See also K. MARX, A Contribution to the Critique of Political Economy, "Appendices", I, 'Production', pp.188-193.

- 2) K. MARX, A Contribution to the Critique of Political Economy, p.212. See also the commentaries by W. SUCHTING (1979) to Marx's Theses on Feuerbach, especially on Theses I, IX and X (pp.7-11 and 22-24).
- 3) As J.R. NUÑEZ-TENORIO (1976) correctly comments, "En primer lugar, toda posición es una toma de partido. Todavía más: si se examina el asunto dialécticamente, la falta de posición... ante un determinado problema concreto es, también, una toma de partido. Si, con Spinoza, toda determinación es una negación, también a la inversa, toda negación es una afirmación... No es posible el individuo o el grupo por encima de la lucha de clases... No es factible el más leve acto... pretendidamente independiente de las clases sociales en lucha y de las fuerzas económicas, políticas, militares, culturales e ideológicas que esta lucha desencadena... el espíritu de partido crítico y revolucionario considera esa toma de posición como un análisis objetivo (científico, verdadero) del proceso o problema asumido como sujeto. Exactamente, contra esta exigencia han surgido elaboradas teorías burguesas que se presentan como "objetivas" y "sin partido", catalogando a las posiciones marxistas como "partidistas", "subjetivistas", donde domina lo ético-político en lugar de privar exclusivamente lo científico-objetivo, etc... Con ese contenido, tales posiciones representan en la práctica una toma de partido muy evidente: la de la ideología burguesa, especulativa e idealista" (pp.198-199). See also K. MARX, Capital, I, pp.26-28; A Contribution to the Critique of Political Economy, pp.202-203 and 205-214.

- 4) See K. MARX, A Contribution to the Critique of Political Economy, pp.51 and 191.
- 5) By "revisionism" I shall denote the interpretation of Marxism developed by members of the Second International, in particular by E. Bernstein. Subsequent Marxists may be called revisionists when their interpretations of Marxism express ideas similar to those of the classical, XIXth century revisionists. As for the more precise definition of revisionism, I follow Luxemburg, whose approach is well summarized by D. Howard in his "Introduction" to R. LUXEMBURG (1971), as follows: "Opportunism and revisionism are characterized economically by their 'vulgar economic standpoint' —by the fact that their analysis is made from the point of view of the individual capitalist for whom there is a harmony of interests between capital and labor for the simple reason that the capitalist system is seen by the individual capitalist as eternal and immutable. Politically they are characterized by their willingness to sacrifice the final goal (socialism) to the practical needs of the moment" (p.36)(Parenthesis added). R. LUXEMBURG (1971) observes that: "... at the Stuttgart Party Congress... the opportunist elements in our Party immediately grouped themselves about Bernstein's banner. If, on the one hand, opportunist currents in practical activity are an entirely natural phenomenon which can be explained in the light of the conditions of our activity and its growth, Bernstein's theory, on the other hand, is a no less natural attempt to group these currents into a general theoretical expression to discover their proper theoretical presuppositions, and to break with scientific socialism. Bernstein's theory is thus the theoretical ordeal by fire for opportunism" (pp.129-130). Finally, to characterize the general view about historical development of revisionists, the following remarks by S. BERACHA (1937) are to the point: "Bernstein était d'avis que la transformation de la société devait se faire par la participation constante et progressive des socialistes au pouvoir bourgeois, jusqu'au moment où ce dernier, condamné par l'évolution de la production, se dissoudrait complètement... Les partisans de cette conception, toujours traités avec méfiance par les marxistes orthodoxes, s'appellent, dans le langage de la politique courante, des opportunistes" (pp.95 and 96). See also R. LUXEMBURG (1971), "1, The Opportunist Method", pp.55-60; and "5, Opportunism in Theory and Practice", pp.128-134; V.I. LENIN, The Proletarian Revolution and the Renegade Kautsky, Section I; and G.P. STEENSON (1978), pp.83-85.

- 6) R. LUXEMBURG (1971), p.131.
- 7) G.D.H. COLE (1967) says that "The leaders of the party... were in no doubt concerning the right policy for the immediate future. This was to use its new freedom to win over a majority of the electorate and to confront the young Emperor and his advisers with a popular movement so strong that they would not dare to appeal to force again. This seemed good sense; but what was the best way of winning the required electoral support?... Should the Social Democrats maintain the policy of complete independence of, and non-co-operation with, all other parties; or should they be prepared to enter into arrangements either in Parliament, or for the purposes of electoral give-and-take? Secondly, should the party continue to regard itself as the class-representative of the industrial workers; or should it make an effort to enlist the support of the peasants, who formed a large fraction of the electorate in many parts of Germany?" (p.256). See also G.P. STEENSON (1978), pp.101-111; C. LANDAUER (1959), pp.298-303; W.O. HENDERSON (1976), p.664; J. ROVAN (1978), pp.91-96.
- 8) G.D.H. COLE (1967) says "The reformist movement within the German Social Democratic Party after 1890 began well before Bernstein played any part in it. The first shot was fired in a speech delivered by the Munich deputy, Georg von Vollmar, in 1891. 'There have' said Vollmar, 'no doubt been on occasions great crises in which history has made, or appeared to make, a leap. But what occurs in general is a slow organic evolution... all political and social situations are of a relative character, are forms of transition. To make use of the form which exists in order to exert an influence on that of tomorrow —therein lies our proper role'" (p.173). See also J. ROVAN (1978), pp.92-93 and 105-106; P. GAY (1962), pp. 62, 69 and 258.
- 9) See G.P. STEENSON (1978), pp.104-105; L. KOLAKOWSKI (1978), II, pp.98-99.
- 10) Quoted in G.D.H. COLE (1967), p.257.
- 11) Kautsky attacked the reformists' proposals on the peasant question in a series of articles that later would form his famous book, The Agrarian Question, published in 1899. In those articles Kautsky also put forward some proposals that

would gain the sympathy of the peasants for the SDP, without compromising the class-stand of the party. Bernstein agreed with Kautsky in general terms, but also criticized him. As G.D.H. COLE (1967) says, Kautsky "appeared as the advocate of a number of measures which would in his view help to relieve peasant poverty and to secure peasant backing for the Social Democratic Party, without being open to the danger of entrenching the peasant more firmly in his small farm... Bernstein, criticising these proposals by Kautsky, pertinently remarked that in practice they would be of much more help to the wealthier peasants than to the poorer, and of little or none to the hired agricultural labourer. He favoured, as against Kautsky, a policy of direct help to the peasants... Social democracy, Bernstein contended, should commit itself to measures which offered immediate improvement in the condition of the small peasants, without troubling itself about their consequences in strengthening the peasant sector of the economy" (pp.264-265). On the other hand, the peasant question involved a discussion about the character of the capitalist state. Kautsky rejected any action by the SDP which would strengthen the capitalist state, and in so doing he rejected Bernstein's opportunism. Kautsky's position was presented in his "Der Parteitag und der Staatssozialismus", Neue Zeit, 11:1 (1892-1893), pp.210-221. Kautsky's position about these issues won the day at the Breslau Congress. As STEENSON (1978) puts it: "...Kautsky's resolution passed by a vote of 158 to 63... The proportion of Reichstag member who voted against Kautsky's resolution was four times higher than those who voted for it, but only two of the twelve members of the party leadership opposed it. Most party members who had been or were to be associated with the right voted against the resolution" (p.110). See also G.D.H. COLE (1967), pp.265-266; P. GAY (1962), pp.198-204; V.I. LENIN, Marxism and Revisionism, p.426.

- 12) See G.D.H. COLE (1967), pp.264-266; and references given on note 7 above.
- 13) G.P. STEENSON (1978), p.111.
- 14) See G.P. STEENSON (1978), p.100; and W.O. HENDERSON (1976), pp.730-731.
- 15) About the relations between Engels on the one hand and Kautsky and Bernstein on the other, W.O. HENDERSON (1976) notes

that "in 1895 Engels was displeased with both Bernstein and Kautsky when he learned that they were planning to write a history of socialism without seeking his advice or collaboration. In his final letter to Kautsky, written during his last illness, he sharply rebuked him for his conduct" (p.731). P. GAY (1962) comments about the relations between Engels and Bernstein during the last days of Marx's friend: "To be a German Socialist in the London of that time was to be in Engels' shadow. Bernstein was no exception. His historical studies, his theoretical articles, his edition of the complete works of Lassalle for the party—all these were carried forward under Engels' eye. While such things are impossible to prove, it appears likely that Bernstein's close friendship with the older man postponed his lapse into the revisionist heresy. It can hardly be an accident that the first articles which revealed Bernstein's break with orthodox Marxism appeared in 1896, about a year after Engels' death" (pp.67-68). See also Gay's note #12 on page 68 of his book. Finally, W.O. HENDERSON (1976), discussing Engels' role in the socialist movement notes that "Engels had... filled admirably the rôle of an elder statesman who had placed his long experience of revolutionary politics at the disposal of the various socialist parties in Europe. His detailed knowledge of the history and politics of different countries enabled him to give sound advice not only to the powerful German Social Democrat Party but also to smaller parties in France and Italy and Austria which were still in a relatively early stage of development. After Engels' death no one could assume the mantle of a veteran revolutionary campaigner whose long experience gave him the right to offer advice to a new generation of socialist leaders" (p.730).

- 16) J. ROVAN (1978), p.100. The Social Democratic Party acquired this name at the Erfurt Congress. Formerly it was called the Sozialistische Arbeiterpartei Deutschlands, the Workers' Socialist Party of Germany.
- 17) This book was made up of several articles that Bernstein published after 1896 in the Neue Zeit. Here I use the translation by Edith C. Harvey, 1963. Unfortunately, for reasons that are unclear to me, the chapter dealing with Hegel's influence on Marx has been eliminated from all the English translations. Thus, when referring to that part of the book, I will quote from secondary sources. (See D. McLELLAND (1979), p.35, note 51).

- 18) G.D.H. COLE (1967) says that "Bernstein, indeed, professed to be attacking, not Marxism itself, but only some parts of the master's doctrine that were in no way essential to its main significance. He attempted to draw a distinction between the central core of Marxism, which he accepted as true —and indeed took for granted— and certain excrescences upon it which had arisen out of a mistaken reading, by Marx himself, of the movement of contemporary historic forces... Bernstein did believe in Marxism, as a general system of thought —or believed that he believed in it. Nevertheless, the 'revisions' which he proposed went a very long way towards undermining the particular interpretation of Marxism that had been embodied in the Erfurt Programme..." (pp.271-272). See also S. BERACHA (1937), pp.77-78. For his part, P. GAY (1962), affirms that "Revisionism was far more than a patchwork of 'corrections' or 'improvements' on orthodox Marxism. In the hands of its chief proponent it evolved into a full-scale attack on Marx's system" (p.141). See E. BERNSTEIN (1963), pp.24-27.
- 19) As P. GAY (1962) put it: "Bernstein came to technical philosophy late and without expert guidance... his lack of really thorough philosophical education drove him to rely on common sense and to give free play to his already powerful skeptical and empiricist sympathies" (pp.143-144).
- 20) As Bernstein himself says, "Eclecticism —the selecting from different explanations and ways of dealing with phenomena— is often only the natural reaction from the doctrinaire desire to deduce everything from one thing and to treat everything according to one and the same method. As soon as such desire is excessive the eclectic spirit works its way again with the power of a natural force. It is the rebellion of sober reason against the tendency inherent in every doctrine to fetter thought" (1963, p.14). Needless to say, the 'monistic' doctrine that is being alluded to is Marxism, and the rebuke is directed against both Marx and his 'orthodox' followers. For the various philosophical influences on Bernstein, see P. GAY (1962), Chapter VI, pp.141-165; V.I. LENIN, Marxism and Revisionism, pp.424-425; Idem., "Review of K. Kautsky's Bernstein und das sozialdemokratische Programm. Eine Antikritik", p.381; D. McLELLAND (1979), pp. 33-37.
- 21) See P. GAY (1962), Chapter IV, pp.85-109; L. COLLETTI (1971),

pp.76-82; V.I. LENIN, Marxism and Revisionism, pp.425-430; R. LUXEMBURG (1971), pp.60-79 and 93-128.

- 22) In a letter to Kautsky, written many years after the 'revisionist controversy', Bernstein states that "I had sought to explain hasty conclusions of Marx and Engels as the consequence of their being seduced by the Hegelian dialectic, which after all is not integrally connected with the theory". Bernstein to Kautsky, december 16, 1927. Quoted in P. GAY (1962), p.146.
- 23) See K. MARX, Capital, I, p.29; V.I. LENIN, "Review of K. Kautsky's Bernstein und das sozialdemokratische Programm. Eine Antikritik", p.381.
- 24) E. BERNSTEIN, Die Voraussetzungen des Sozialismus und die Aufgaben der Sozialdemokratie, p.53. Quoted in P. GAY (1962), p.145. See note 17 above.
- 25) P. GAY (1962), p.145. Also worth noting here is that Bernstein thought that Hegel's influence on Marx lead him to adopt a dualistic methodology, one that showed Marx's intellectual elusiveness and scientific unreliability: "To me (there is) a dualism which runs through the whole monumental work of Marx... a dualism which consists in this, that the work aims at being a scientific inquiry and also at providing a theory laid down long before its drafting ... For the general sympathy with the strivings for emancipation of the working classes does not in itself stand in the way of the scientific method. But, as Marx approaches a point when that final aim enters seriously into the question, he becomes uncertain and unreliable... It thus appears that this great scientific spirit was, in the end, a slave to a doctrine. To express it figuratively, he has raised a mighty building within the framework of a scaffolding he found existing, and in its erection he kept strictly to the laws of scientific architecture as long as they did not collide with the conditions which the construction of the scaffolding prescribed, but he neglected or evaded them when the scaffolding did not allow of their observance. Where the scaffolding put limits in the way of the building, instead of destroying the scaffolding, he changed the building itself at the cost of its right proportions and so made it more dependent on the scaffolding". E. BERNSTEIN (1963), pp.209-211.

- 26) As L. KOLAKOWSKI (1978) puts it: "In Bernstein's opinion it was the misfortune of Marxist theory that it derived from Hegelianism. Marx, he thought, had never quite shaken off the Hegelian tendency to make deductions about social conditions from abstract, a priori dialectical schemata, with insufficient regard for actual facts. This had led him to believe in historical determinism and in a single factor governing the course of history, in relation to which human beings were merely instruments or organs... Hegel was also responsible for the Blanquist element in Marxism, the belief in total revolution and the creative role of political violence"(II, pp.102-103). See note 17 above.
- 27) E. BERNSTEIN (1963), p.7.
- 28) Idem., pp.6-7.
- 29) When Kautsky responded to Bernstein, he denounced the latter's interpretation of historical materialism as being mechanistic, as a kind of historical fatalism. Kautsky showed how Bernstein, while rejecting Marx's "determinism", was not able to advance an alternative explanation based on "ethical" factors. Moreover, Kautsky rejected the critique that Bernstein had presented against the dialectical method, pointing out that Marx had not only changed his analyses in the course of his own theoretical deliberations, he had also paid enormous attention to "empirical" matters. Finally, Kautsky criticized at length Bernstein's analyses of particular economic and political issues. See V.I. LENIN, "Review of K. Kautsky's Bernstein und das sozialdemokratische Programm. Eine Antikritik", *passim*. However, Kautsky did not challenge the point of view from which Bernstein's critique was developed, in particular the meaning of Marx's "determinism". Kautsky rejected Bernstein's fatalistic view of historical materialism but nonetheless thought it to be deterministic. Although he did not say clearly what he meant by determinism, it is probable that Kautsky considered it to be a sort of biological-ecological-economic determination. Kautsky's opposition to Bernstein's interpretation of historical materialism probably emerged from his own Darwinian conception of history, in which chance played an important role (See APPENDIX I). But, be this as it may, Kautsky tended to agree with Bernstein's account of the notion of productive forces and of the technological determination of the economic sphere. Moreover, Kautsky rejected historical materialism as fatalistic

by invoking a particular brand of "naturalism". As L. COLLETTI (1971) puts it: "Kautsky wanted to guarantee the distinction between freedom and necessity, while at the same time avoiding dualism... Nonetheless, Kautsky could not avoid the conclusion of compressing the historical-social world into the framework of cosmic-natural evolution, to such an extent that they were no longer distinguishable" (p.72). In this way, as in Bernstein's interpretation, the social and economic categories of Marx were reduced to "objectivistic" notions, since the ultimate determining elements in society and in history were natural and technological entities. Kautsky, like Bernstein, espoused an implicit dualism between the "objective" world, i.e., nature and technology, and the "subjective" spheres, i.e., the political, ideological and ethical dimensions of social life. If Bernstein was a revisionist, Kautsky the "orthodox" Marxist was, as Lenin would say later, a "kryptorevisionist".

- 30) The 'Preface' contains the most abbreviated and "strong" version of Marx's theory of historical change. But, as we shall see later, this text poses particular problems to interpreters of Marx. Nonetheless, even a quick reading of the 'Preface' should disabuse one of the "fatalistic" interpretation, to say nothing of "technological fatalism": as Marx says there, his entire theoretical enterprise is to study political economy, "the anatomy of civil society", in order to explain how "social existence... determines... consciousness"(pp.20 and 21). When, in the 'Preface', Marx talks of "productive forces", "material conditions", and such like, he is referring to elements of a social reality, not merely to its "physical" or "natural" aspects. See below, point 4: "Centrality of Marx's 1859 'Preface'".
- 31) K. MARX, Theses on Feuerbach, #1.
- 32) As R. MONDOLFO (1968) comments, for Marx "materialism" means "... il risveglio della praxis storica, cioè dell'attività operosa e inesausta dell'umanità, non più collegata, come prevalentemente in Feuerbach, con la natura statica, sì bene col dinamismo della storia, in una variazione progressiva, nella quale ogni momento é legato alle condizioni reali esistenti. Cosicché il passato condiziona il presente e questo l'avvenire; ma al tempo stesso é anche stimolo e impulso all'azione ulteriore modificatrice... Questo é il rovesciamento della praxis, di cui parla Marx..."(p.61).

- 33) E. BERNSTEIN (1963), p.9.
- 34) Idem., pp. 7 and 9.
- 35) Idem., pp.13-14.
- 36) E. BERNSTEIN, Die Voraussetzungen des Sozialismus und die Aufgaben der Sozialdemokratie. Quoted in S. BERACHA (1937), p.160. See note 17 above.
- 37) E. BERNSTEIN (1963), p.91.
- 38) See K. MARX, Capital, I, pp.46-47, 56-58, 68-70, 84-85, 87, 104-105, 183-184; III, 248-249, 265, 482-483, 487, 491, 492-493; et al. For a detailed discussion on Bernstein's notion of Marx's theory of value, see L. COLLETTI (1971), pp.76-97. An excellent, up-dated and comprehensive analysis of Marx's notions of value and surplus-value appears in K. KÜHNE (1979), I, Chapter III. See also ACADEMIA DE CIENCIAS URSS (1975), Chapter IV; and P. WALTON & A. GAMBLE (1972), pp.167-196 and 200-206.
- 39) L. COLLETTI (1971), p.65.
- 40) See note 5 above.

SUPERSTRUCTURAL MARXISM AND TECHNOLOGICAL DETERMINISM

This Chapter traces Marxist theoretical developments from the end of the classical revisionist debate up to the present and provides the historical background needed to examine recent versions of technological determinism. Naturally, the emphasis will be on following the main lines of development of the technological interpretation of Marx, the fundamental aspects of which I have just presented.

The main claim I make is that technological determinism and what I call superstructural Marxism correspond one to the other, as two sides of a single coin. I argue that this correspondence became explicit after the Second World War. In the period from the early 1920s to the middle 1940s, Marxists who held that superstructures were more relevant and determinant than economic basis were struggling against the "vulgar", "positivistic" and "economicist" Marxism of the Second International and of Stalinism. During this phase, the tendency among such Marxists was to stress the philosophical character of historical materialism, and to reduce all non-social and non-subjective aspects of society to social and subjective ones. The correspondence between technological determinism and such superstructural Marxism did not appear explicitly initially, but only emerged later. In the period from the late 1940s to the

present, the superstructuralists, while still rejecting vulgar Marxism argued that contemporary capitalism had overcome important traits described by Marx. This new characterization resulted in a new version of technological determinism, one which seems to be more compatible with the superstructuralists' original emphasis on the non-economic aspects of society. Moreover, superstructuralists took Marx's and Engels' earlier works, when they were finally published, to be a defense of a kind of humanist philosophy and to justify their refraining from socio-economic analyses. In particular, by generalizing Marx's earlier notion of alienation, superstructuralists were able to see Marx as a philosopher rather than as a political-economical scientist. The notion of alienation thus became a metaphysical idea which explained the ontological basis of la condition humaine. Finally, when technology was regarded as the cause and fundamental form of alienation, a metaphysical technological determinist interpretation of Marx was made possible.

(A) Superstructural Marxism defined.

I begin by defining superstructural Marxism in a general and provisional manner. A better understanding of this doctrine will be possible only after we have studied its forms and process of development and have related it to technological determinism.

Superstructural Marxism provides an interpretation of society and history emphasizing the role of its institutional and ideological aspects as opposed to its economic ones. This is presented as an interpretation of Marx's historical materialism.

In its interpretation of history and society, superstructural Marxism emphasizes the importance of the study of non-economic relations and processes. Non-economic aspects of society and history comprise ideological elements —in particular political, legal, philosophical religious, aesthetical and cultural ideas— and institutional elements —in particular legal systems, property systems, psycho-social relations between human beings, and political and "non-productive" institutions such as the state, the family, churches and the army, the educational and information systems.

Superstructural Marxism is based on the claim that the ideological and institutional parts of society play no less a determinant role than the economic parts in the development of social and historical processes. From this claim it follows that anti-capitalist revolutions can take place even when the economic conditions are not yet sufficiently mature, provided that institutional and ideological conditions are propitious.

And from this it follows that revolutionary consciousness and praxis do not belong only to the industrial working class and that revolutionary processes require that institutional and ideological elements be revolutionized. Indeed, some superstructural Marxists go so far as to say that ideological and institutional elements of society must be regarded as the fundamental determinants in change in the advanced stages of capitalism.

As an interpretation of Marx, superstructural Marxism emphasizes the philosophical and humanistic foundations of Marx's analysis, in contrast to positivistic and scientific interpretations, which are based on the assertion that Marx's analysis rest on the study of politico-economic issues. Superstructural Marxism attempts to understand the mature work of Marx, in particular Capital, in the light of Marx's earlier works, such as The German Ideology, the 1844 Manuscripts and even the Grundrisse. Besides, in developing their philosophical interpretation of Marx, superstructuralists pay much attention to the problems of method in the study of historical materialism.

As a result of Marx's explicit declarations about the fundamental role played in socio-historical processes by the material production of social life, superstructuralists have paid partic-

ular attention to the relations between the economic base and the ideologico-institutional superstructure. They have argued in support of,

- (a) interactionism, according to which the base and the superstructure relate to one another in terms of reciprocal determination;
- (b) historical totalism, according to which the separation between base and superstructure is overcome through an analysis guided by revolutionary praxis conceived of as: 1. class consciousness; and 2. an awareness of history as a totality;
- (c) philosophical totalism, according to which class consciousness to become all-encompassing must be based on a proper philosophical analysis, since only philosophy can integrate the economic and the institutional-ideological analyses.

In brief, then, superstructural Marxism is an interpretation of Marx and of contemporary socio-historical developments, which emphasizes the role of institutional and ideological aspects, over the economic ones. It has tended to prevail, notably after World War II, among non-communist interpreters of Marx, especially those in capitalist countries (1).

Superstructural Marxism emerged in the early 1920s. In the course of its development the Second World War and the publication of Marx's and Engels' earlier works had a strong impact. The new historical realities of the post-war period prompted superstructuralists to attempt a characterization of capitalism

which went beyond Marx's prescriptive analyses. This was encouraged by the publication of Marx's and Engels' earlier works, in which superstructuralist interpretations of socio-historical processes allegedly appeared (2).

For these reasons it is necessary to separate the development of superstructural Marxism into two periods:

- (a) from the early 1920s to World War II; and
- (b) from the end of World War II to the present.

Antecedents. The social and historical conditions that prompted the emergence of superstructural Marxism were heralded by the Russian Revolution of 1905, which inaugurated a new convulsive and revolutionary period in capitalism, while the outbreak of the First World War in 1914 was to change radically the outlook of Marxists, especially since one of the casualties of the war was the Second International itself. With the disappearance of the Second International, the theoretical framework that had served Marxists of all tendencies disappeared, to be replaced by a more militant attitude on the part of Marxists to revolutionary action and the restoration of the revolutionary character of Marx's theory (3).

Representatives of the new revolutionary position opposed to the line of thought of the Second International developed

new theoretical approaches commensurate with their revolutionary zeal. They were particularly active in Germany, where Luxemburg was the most important figure and in Russia, where Lenin made his most important contributions (4). For its part, the Soviet Revolution became a point of reference for Marxists, and super-structural Marxism appeared in large part as a consequence of and as a reaction to it (5).

(B) The first period: Lukàcs.

In the aftermath of the revolutionary developments of the late 1910s many Marxists reappraised it in terms of its practical, theoretical, political, ideological and explanatory aspects. Unlike the Marxists of the Second International, a new generation of European Marxists attempted to rebuild Marxism so that it would become once more a revolutionary programme and so that theory and practice would be united. Moreover, these new Marxists emphasized the "dialectical", "critical" and "subjective" character of historical materialism, as opposed to the "positivist" and "reductionistic" view of it espoused by revisionists and orthodox Marxists. Like Lenin, they emphasized the role of political organization, the importance of practical tasks, the new conditions of contemporary capitalism and the need to work on the philosophical bases of historical material-

ism. Unlike Lenin, they stressed the role of the consciousness in human activity, and attacked Lenin's "objectivism".

Marxists like Lukàcs, Korsch and Gramsci, and "neo-Marxists" like Adorno and Horkheimer are the most important exponents of the kind of superstructural Marxism prevalent during this period. Two themes characterize their work: (a) the rejection of "naturalism", "scientificism", "positivism" and "economicism" as a foundation for historical materialism; and (b) the insistence on the revolutionary character of historical materialism as its true basis. Two important consequences follow from the priority assigned by these first superstructuralists to revolutionary praxis: on the one hand, historical materialism was seen in philosophical terms, rather than in terms of the social sciences (politics and economics); on the other hand, political orientations recognizing compromises in terms of "Realpolitik" were rejected.

For our purposes it is not necessary to consider all these authors' positions. We need only consider the work of Georg Lukàcs, who is undoubtedly the most influential of all superstructuralists (6). Moreover, we need only study those parts of History and Class Consciousness in which Lukàcs implicitly relates superstructuralist ideas and technological determinism.

Lukàcs inaugurated superstructural Marxism by modifying certain crucial ideas beyond the point where Marx had left them. Of these the most important are his extension of the specific economic meaning of reification to cover all aspects of human life under capitalism (universal reification), and his replacement of the economic analysis of capitalism by a philosophical one, in which the notion of totality occupies the central place. Universal reification is characterized by the fact that all aspects of social life are increasingly being shaped by technological instrumentality: capitalism is but the process of universalization of "rational calculation". Historical materialism cannot be conceived in terms of a scientific (economic) analysis but needs to be understood as a philosophy. The scientific ("economicist") approach to socio-historical reality necessarily fragments the required unified comprehension of that reality and, besides, it leads to non-revolutionary positions —as was the case with the "positivistic" and "scientist" positions of the Marxists of the Second International.

Because of its particular social and historical characteristics, only the proletarian class consciousness is capable of understanding socio-historical reality as a unity, i.e. as a totality. Proletarian class consciousness has to conceive socio-historical reality as a totality because it is a revolutionary consciousness. Only a revolutionary consciousness can succes-

fully use the dialectical method and the historical-materialist approach, because only a revolutionary consciousness conceives socio-historical reality as a totality. Thus, historical materialism is the ideology and the philosophy of the proletariat, the expression of the revolutionary proletarian class consciousness. However, if Lukàcs' analysis is emptied of the particular political commitments expressed in it, it consists in an implicit technological determinist interpretation of historical materialism.

As already noted, two concepts are fundamental to understand Lukàcs' position: his notions of totality (Totalität) and of reification (Verdinglichung) or objectification (Vergegenständlichung). By analysing these we discover the main lines of Lukàcs' superstructural Marxism, as well as the manner in which he laid the basis for the technological superstructuralist interpretation of historical materialism.

For Lukàcs the mistake of the Marxists of the Second International was that they fragmented Marx's approach. On the one hand they spoke of a "scientific" theory of history which was governed by "laws" similar to those of natural sciences (?). On the other hand they argued for political and ideological commitment based on the dream of justice and freedom. Theory

was scientific and referred to what is; practice was ethical and referred to what ought to be. Unlike Marx, Marxists of the Second International disengaged practice from theory. They abandoned the standpoint of the proletarian class consciousness, which was the only standpoint capable of unifying theory and practice. By adopting the bourgeois division of theory and practice they would see historical materialism alternatively as a science and as an ethics, and by abandoning the standpoint of the proletarian class consciousness, they were able to obliterate Marx's idea that history and society constituted a totality. In sum, by adopting "science" as the analytical paradigm of historical materialism, they became committed to a bourgeois, reifying theoretical approach.

Following Marx's analysis of the fetishism of commodities, Lukàcs asks if "...commodity exchange together with its structural consequences (is) able to influence the total outer and inner life of society?"(8). And he answers that certainly it can. With capitalism, commodity exchange affects first the "outer" life of society, i.e. its economic life, and then its "inner" life, i.e. its social consciousness. In capitalism commodity exchange becomes "the universal category of society as a whole":

(T)he reification produced by commodity relations assumes decisive importance both for the objective evolution of society and for the stance adopted by men towards it (9).

When the reification produced by commodity relations becomes the universal category of society as a whole, the consciousness of human beings are also reified, i.e. all social relations and all mental processes are reduced to rational calculation, i.e. to a process of objectification, i.e. to technological instrumentality. Human beings, moreover, do not attempt to eliminate reification:

On the contrary, it is concerned to make it permanent by 'scientifically deepening' the laws at work. Just as the capitalist system continuously produces and reproduces itself economically on higher and higher levels, the structure of reification progressively sinks more deeply, more fatefully and more definitively into the consciousness of man (10).

Following Max Weber, Lukàcs argues that capitalism consists in the process by means of which all social instances become subject to "rational calculation", so that reality as a whole is rationalized, i.e. subject to scientific understanding and technological manipulation. For Lukàcs, as against Weber, rational calculation is inherent to reification as such. Whereas for Weber the process of rationalization of reality meant that capitalism would finally free human beings from misery and bondage, for Lukàcs this process of rationalization

means that human beings become totally alienated.

Lukàcs says that the process of reification springs from the economic realm but that it tends to embrace all social phenomena. Once reification has become universal, it influences the economic system through science and technology. Rationality, science and technology become the agents and the causes of reification. According to Lukàcs, when total reification occurs it is impossible to grasp critically the alienating character of bourgeois rational calculation or of science and technology as such:

It must be emphasized that this inability to penetrate to the real material substratum of science is not the fault of individuals. It is rather something that becomes all the more apparent the more science has advanced and the more consistently it functions —from the point of view of its own premises (11).

For Lukàcs we can only escape the logic of reification by non rational means. In order to overcome capitalist alienation, the working class must criticise it by developing and exercising in a revolutionary way its own class consciousness. Nothing but proletarian class consciousness can consider capitalist reification from the point of view of a totality, i.e. as a historical whole:

Reification is, then, the necessary, immediate reality of every person living in capitalist society. It can be overcome only by constant and constantly renewed efforts to disrupt the reified structure of existence by concretely relating to the concretely manifested contradictions of the total development, by becoming conscious of the immanent meanings of these contradictions for the total development... Only when the consciousness of the proletariat is able to point out the road along which the dialectics of history is objectively impelled... will the consciousness of the proletariat awaken to a consciousness of the process ... It is in this that the objective necessity of history consist... What is crucial is that there should be an aspiration towards totality, that action should serve the purpose... in the totality of the process (12).

On this view, the aspiration towards totality means regarding history and society from the standpoint of the dialectical method. For only by means of this method can we reject existing conditions in principle, and unite the disparate demands of theory and practice. As Lukàcs puts the point, "for the dialectical method the central problem is to change reality"(13). On the other hand, only the proletariat can successfully use the dialectical method, because it is the only social group that social and historical conditions have endowed with a revolutionary consciousness. For Lukàcs, revolutionary consciousness is what characterizes the proletariat as an historically exceptional class. The proletarian class consciousness is the only kind of consciousness capable of transcending and becoming the motor of history (14).

In brief, then, Lukàcs attempts to describe socio-historical processes in terms of a growing reification which hampers the unity of human existence and of human consciousness. For him, reification means rational calculation, involving scientific comprehension and technological manipulation. Nevertheless, the process of increased reification can be reversed and overcome. This task can be fulfilled by the "total" character of the proletarian class consciousness, which impels workers to wage revolutions.

The superstructural emphasis in Lukàcs' analysis is apparent in its philosophical character, and in the fact that for him the true meaning of historical materialism lies in its method. Moreover, he attends most closely to superstructural dimensions such as consciousness, and to universal reification as a principle of the capitalist social institutions and ideology. There is in Lukàcs' work a tendency to reduce Marx's problematic to two themes: (a) the methodological and philosophical ways to approach in a correct form this historical-materialist interpretation of socio-historical development; and (b) the idea that capitalism is characterized by increasing technological and scientific determination.

These tendencies in Lukàcs' thought were counterbalanced by his political commitment to the Communist Party, which he

saw as the foundation of the correct outcome and exercise of proletarian class consciousness (15). But what if one does not think that the party embodies proletarian class consciousness? Where do Lukàcs' analyses lead when, as it was the case, superstructural Marxists both rejected the leading role and meaning of communist parties and discovered that the proletariat might not be particularly revolutionary? The result is that philosophy and technology as autonomous themes and explanations become the theoretical basis for a superstructural version of historical materialism according to which technological determinism characterize contemporary society.

(C) The Frankfurt School.

After the first generation of superstructuralist interpreters of Marx (Lukàcs, Korsch, Gramsci), and before the more recent interpretations, an important contribution was made during the 1930s and early 1940s in the Frankfurt Institute for Social Research. Here I discuss the interpretations of M. Horkheimer and Th. Adorno, and in the last section of this Chapter that of H. Marcuse.

Horkheimer and Adorno can be regarded as continuing Lukàcs' analysis. As D. McLelland observes:

Much of the work of the Frankfurt School centered on the idea of reification which was central to History and Class Consciousness, and Lukàcs's emphasis on the notion of totality helped the Frankfurt School to correct the comparative neglect of superstructural elements (16).

Following Lukàcs, Horkheimer and Adorno launched an attack on positivism in general and on science as the basic source of reification in particular. In their Dialectic of Enlightenment, critical and instrumental reason are opposed (17). Critical reason aims at, and is part of, the liberation of human beings from oppression and external (objective) constraints. Instrumental reason, on the other hand, involves the technical control of nature and of society, and it leads to totalitarianism when institutionalized and developed by capitalism. Instrumental reason basically has to do with the external control of human beings and as such is oppressive and repressive. Following Max Weber and to a certain respect Lukàcs too, Adorno and Horkheimer characterize capitalist as a result of the spread of instrumental reason (rational calculation) from the economic sphere to the totality of social institutions.

The development of instrumental reason as the essence of capitalism leads to despotism, as exemplified by the Nazi rule in Germany. Put otherwise, "Enlightenment" as the bourgeois zeitgeist leads to the total technologization and technocratization of reality as a whole, and hence to totalitarianism. For Adorno

and Horkheimer, enlightenment is inherently scientific and technological. Enlightenment manifest^s itself in (and as) growing industrialization and control of nature, while science, technology, industrialization and the control of nature are at the root of all reification. Moreover, the process of reification is not confined to capitalism, but covers all societies that aim to develop scientifically. On this view, the USSR's attempt to rapidly industrialize in a manner guided by the "vulgar"(Engelsian) version of "scientific socialism" resulted in reification and a society that was ruled by a despotic totalitarian bureaucracy no less than many capitalist societies.

According to Adorno and Horkheimer, the defect of vulgar Marxism consisted in its economicism. This leads to a positivist understanding of history and society, as well as to a mechanistic conception of socio-historical processes. Although unfaithful to Marx, economicism and vulgar Marxism had their roots in Marx himself because Marx restricted the cause of alienation to the economic sphere (18). In the opinion of Adorno and Horkheimer, Marx failed to grasp the total meaning of alienation as universal reification: Marx had swallowed whole the insidious and subtle forces of "science" and had mistakenly ended up attempting to construct a scientific understanding of capitalism which limited alienation to economic alienation.

(D) French superstructuralism.

At the end of the War, as France became the proving ground for European bourgeois philosophies and social theories, so it became the center of superstructural Marxism. In reaction to fascism and nazism a great effort was made to restore old humanistic traditions. Following the Cartesian tradition, the new humanism not only stressed the importance of subjectivity and the individual human being, it also focused on the opposition between subjectivity and objectivity, between the internal and the external world. The aim of these humanistes was to explain the condition humaine, i.e. to explain the opposing forces bearing down on contemporary human beings. On the one hand they attempted to grasp and, if possible, to reach, the subjective liberation that should correspond to the victory over nazi oppression. On the other hand, recognizing that there were insurmountable barriers to the expression of subjectivity imposed by nature and by "externality as such", nevertheless they dreamt of setting free subjectivity. In sum, the post-war French humanism was a type of philosophical anthropology with idealistic overtones.

To develop this new humanism, all sorts of philosophies, social explanations and doctrines were resuscitated and re-

interpreted. There was a catholic humanism, ranging from neo-Thomism to Mounier's personalism; there were numerous forms of existentialist humanism; and there were various humanistic interpretations of Marx, including an existentialist-Marxist interpretation, the most important version of which was developed by J-P. Sartre (19).

In contrast to the interpretation of Marx of the French Communist Party, superstructuralists presented him as a humanist, as a philosopher (20). Superstructuralists saw Marx through his earlier writings, in which they detected a philosophical anthropology built around the notion of alienation.

To interpret Marx as a humanist philosopher, and to think of historical materialism in superstructural terms, alienation had to be regarded as more than the economic alienation described and analyzed in Capital. For example, consider the opinions of M. Rubel, who holds that,

Marx n'a pas créé et n'a pas eu l'intention de créer un nouveau système d'économie politique... Aujourd'hui que nous connaissons les travaux restés inédits de son vivant, nous ne pouvons plus nous tromper sur la véritable nature de l'oeuvre marxienne (21).

For Rubel, Marx should not be considered an economic reductionist. Rather, he should be understood in terms of a sociological

and an ethical analysis. In Rubel's view, Marx studied social processes with a view to describe the historical movement towards human liberation. Revolutionary praxis is based on a sociological analysis of capitalism, and the aim towards human liberation is ethically based. Indeed ethics is held to be the encompassing and "higher" level of analysis which supports Marx's thought:

...l'éthique est justement ce qui, dans la pensée d'un homme, se dérobe d'instinct à toute particularisation amoindrissante, s'en délivre pour porter sur les activités diversifiées un coup d'oeil à chaque instant plus élevé, et les rapporter incessamment à la vérité pratique: ainsi Marx entendait-il ne pas quitter des yeux la vie sociale de son temps (22).

(E) H. Lefebvre.

Another example of post-war French superstructuralism is the ex-communist H. Lefebvre. He interpreted Marx in much the same way that Rubel did, as being above all a philosopher and a humanist, and he saw the economic categories of Marx in sociological, anthropological and ethical terms. Influenced by bourgeois sociologists and economists like Aron and Galbraith, Lefebvre claimed that contemporary capitalism was in some fundamental ways different to that Marx had studied. Contemporary capitalism is determined by the processes of technological development: it has become a technocratic society.

In Lefebvre's interpretation, what is important in the early writings of Marx is that there emerges the fundamental notion of "total man", which reconciles the economic and the other aspects of human life:

Qu'est donc l'homme total? Ni physique, ni physiologique, ni psychologique, ni historique, économique ou sociale exclusivement et unilatéralement; il est tout cela, et plus encore que la somme de ces éléments ou aspects: il est leur unité, leur totalité, leur devenir... le matérialisme dialectique place au centre des préoccupations l'homme...(23).

According to Lefebvre, only the notion of "total man" can permit the theoretical and practical overcoming of reification and fragmentation of human life; it alone is capable of surpassing alienation:

L'homme total est le sujet et l'objet du devenir. Il est le sujet vivant qui s'oppose à l'objet et surmonte cette opposition... L'homme total est le sujet-objet vivant d'abord déchiré, et dissocié et enchaîné à la nécessité et à l'abstraction. A travers ce déchirement il va vers la liberté, il devient nature, mais en la dominant. L'homme total est l'homme "desaliéné"(24).

Lefebvre accepts Rubel's ethical and sociological version of Marx (25), and rejects the "naturalism" inherent in the Stalinist economicist interpretation (26). According to Lefebvre, economic alienation does not determine the other possible forms of alienation, but all these forms, including the economic one,

interact. On this basis, as I shall now show, Lefebvre moves towards a technological determinist interpretation of contemporary society, an interpretation that claims to be partially based on historical materialism.

Lefebvre's technological determinism can be seen first in his view that Marx detected alienation in the reificative process, which is inherent in capitalism. This process is prompted and guided by technological development and it results in the disintegration of the "total man". With the elimination of reification alienation too is eliminated, and with the end of alienation pre-history will come to an end. Thus, says Lefebvre, it is not surprising that Marx gave so much attention to technology and believed that technological development would finally eliminate reification (by becoming the basis of a totally automated productive process).

Lefebvre also holds that Marx's notion of alienation is too restrictive. To cope with contemporary forms of reification and alienation, such as the revival of astrology or the new religion of the cosmonauts, a re-elaboration of both alienation and reification is needed, one based on the study of its contemporary forms (27). In order to achieve this it is necessary to revise Marx's notion of praxis, which is also excessively restrictive.

For Marx, praxis embraces only economic and political phenomena, and leaves aside other fundamental aspects of human life such as love, lifestyles, the family, etc. Therefore, says Lefebvre, poiesis ("creativity") should replace the notion of praxis. Poiesis accounts for all the creative and transformative impulses and actions of human beings, including praxis. But, if poiesis supplants praxis, mimesis ("imitation") should replace the restricted notion of alienation. For, while alienation could only explain the de-humanizing aspects of political, economic and class phenomena, mimesis is able to explain all the routinary dimensions of la vie quotidienne.

La vie quotidienne as Lefebvre sees^s the matter, covers what Marx called alienation and what former superstructuralists referred to as reification. Moreover, it embraces what impels human beings to struggle to become themselves. In this sense, Lefebvre thinks that human beings will become fully human only when everyday life turns to be a "festival" where all repressions are eliminated and tout est permis.

Marx's analysis and description of socio-historical trends is regarded by Lefebvre as valuable to a certain point, i.e. to the point where it ceases to be relevant to explain contemporary society. Some traits detected by Marx are still operating in modernité (contemporary society), for example the

tendency towards socialization, the tendency towards universal unification, and the tendency towards concentration of wealth. However, other aspects of modernité cannot be explained solely on the basis of Marx's analysis. Following bourgeois sociologists and economists, Lefebvre argues that contemporary capitalism is fundamentally different from the capitalism studied by Marx. Among the new traits of capitalism (and contemporary society in general), Lefebvre mentions the following:

- (a) the tendency of monopolic capitalism to replace competitive capitalism;
- (b) the tendency of base and superstructure to interpenetrate each other, so that they are no longer distinguishable;
- (c) the tendency of both capitalism and socialism to develop the alienation due to technology;
- (d) the tendency of industrial workers (proletariat) to abandon their revolutionary stands as capitalism progressively "integrates" them (28).

Given these traits of contemporary society, Lefebvre claims that today social and historical processes are determined by technological development. As a consequence, contemporary society is a technocratic society. Lefebvre thus presents a technological determinist interpretation of contemporary society, in which historical materialism seems to constitute one of the analytical bases of the theory. This technological determinism emphasizes superstructural aspects of society.

Lefebvre's position later became more explicit but also increasingly implausible. He says that in contemporary society technology dominates everyday life and, at the same time, technocrats control technology. The "superior form of technocrats" are the cybernanthropes, whose task is to take technocratic society to its last consequences:

Les cybernanthropes ont une mission historique. Ils achèvent d'extirper les légitimations de l'existant, bourgeois et non bourgeois: la spiritualité et le matérialisme, l'art, la philosophie, la morale. Ils les livreront, ils les livrent déjà à la consommation dévorante... tout sera consommé... l'univers s'immergera dans la redondance (ce qui ne saurait tarder)...(29).

The process of technologization that determines modernité means the definitive elimination of all formerly cherished ways of securing and explaining existence. Technocracy is pushing humanity towards "total consumerism". However, for Lefebvre this process is not something bad. On the contrary, following his old view that technological development would free humanity, he thinks that technocracy would finally come to an end. We should not oppose technocratization:

Les cybernanthropes se veulent, se disent, se font planétaires et mondiaux. Comment les empêcher? Il conviendrait plutôt de les aider dans leur tâche... c'est en investissant dans la réalité quotidienne toute la technique, avec l'art et la connaissance, qu'on franchira le pas et que nous sortirons du dilemme (30).

As in science-fiction, when the cybernanthropes reach the limits of technological development and of global consumerism, there will emerge the (true) new hero, the total man, the liberated man, "l'indestructible".

(F) K. Axelos.

A more systematic attempt to interpret Marx as a technological determinist from the superstructuralist point of view was undertaken by Heidegger's disciple, Kostas Axelos (31). His version of historical materialism is important because it is explicitly presented as both superstructuralist and technological determinist.

Axelos thought he had finally found Prometheus' secret: "Technique", he tells us, is "the riddle element of universal history" (32). For him, historical development can be explained in terms of the role played in it by technique. History is evolving towards a "planetary condition" that would mean the fulfilment of all human aspirations. In the course of this evolution, which is prompted by technique, history is becoming "World", or "universal unity". Influenced by Heidegger's later works (33), Axelos attempts (a) to explicitate Heidegger's assertion that Marx is the only contemporary thinker that "recognizes the his-

torical character of Being"(34) and (b) to show how technique figures in Marx's analysis of history and of society as the cause of human perdition and human salvation. Alienation, he insists, is caused by technique, but technique, in becoming "technology" is also bringing about the end of alienation (35).

According to Axelos, Marx's fundamental idea is that besides being producers, human beings "produce themselves" by transforming the world (36). Since the transformation of reality, both social and natural, is achieved by technique, "Man" is above all an homo technicus. In Axelos' view, Marx's thought can be explained in terms of technique:

Marx's thinking concerns the "sensuous" totality of being as it lends himself to being taken hold of as fashioned by technique. The reduction of the world to the production of technique implies the position of technique at the ground of being and the motor of becoming (37).

For Axelos, human productivity, understood as technique, leads directly to happiness and liberation. In his view, Marx "firmly believed that an exploitation of nature by men, based on a technique freed from private ownership, would entail no exploitation of men by men"(38). This interpretation of Marx rests on the assumption that technique functions as the "motor" of social productive forces:

There is a lot of talk, following Marx, about productive forces and about their development as determining all the rest. One would nevertheless have to understand these forces in depth and see technique as the motor of their development. Even more than the development of productive forces, it is, let us call it, technological development that counts first (39).

Axelos does not explain what he understands by productive forces, nor why he regards them as something different from technology, nor how he sees technology conditioning them. Again, immediately after having stated the primacy of technology in the development of productive forces, he states that the organization of labour and the division of labour are determined by technology, but does not explain what he (let alone Marx) understands by these notions (40).

Axelos also argues that technique is the determining factor not only of production but also of distribution (probably of capitalist production and distribution, although Axelos does not clarify this). So, as the motor of history technique also determines the (capitalist) market:

If the secret of the motor forces of history lies in technological development, one would have to be able not to think of productive technique as something derivative. It is technique that determines exchange, trade and consumption (41).

Axelos does not show, in economic terms, how this determination

takes place. He simply asserts that technique, as the motor of social and historical development is also the motor of revolutionary processes:

The natural historical becoming of mankind has created the real, material conditions for the reconciliation of man within himself, his labor, the products of his labor, and the world. The progressive, progressing evolution of technique makes both possible and necessary the revolution that will dealienate workers and labor (42).

The way Axelos approaches the study of Marx show^s his super-structuralist position. First, Axelos holds that technique is simply a form of technology, i.e. that technique becomes technology as it evolves. Axelos mostly thinks of technique as having to do with economic and material production (43), but he also thinks of technology in much the same way that Heidegger thinks of it, i.e. as the "lògos" of the "téchne", as a kind of thinking that corresponds to and that springs from technique (44). Moreover, he holds that "Technique" with a capital "T" mediates between technique and technology. For technique to become technology it has first to become Technique.

Since the dawn of history there has been technique; it is the source of the alienation that has been developing through history. Only contemporary technique, because it is "planetary technique", is Technique. Today technique covers all aspects of

human life in a universal and unique form, and as Technique it now must be conceived in terms of "technology". For, as a form of technology, Technique is something more than mere material or economic production. It is, according to Axelos, who here comes close to Lefebvre's position, "poiesis"(creativity): it is something belonging to the spheres of "Being" and "Logos". Therefore, understood as technology, Technique is the "pure" creative capacity of human beings, and it comprises many forms of activity that cannot be regarded as pertaining to the economic basis of society (45). This shift from "technique" to "Technique" to "technology", although mostly semantic and scholastic, nonetheless indicates how Axelos attempts to characterize this central notion of his thought in philosophical and metaphysical terms.

Axelos' superstructuralism also appears in the manner he studies Marx. It should be obvious that Axelos' analysis is neither a political nor a historical nor an economic one. He does not study Marx's politico-economic analyses, but rather attempts to impose a philosophical interpretation on them. Axelos himself recognizes this at the beginning of his work, when he notes that the aim of his study is "to bring before us the philosophical thinking of Karl Marx"(46). His primary aim is to place Marx in a philosophical tradition in such a way that

technology figures centrally:

Marx's thought... comes after the discovery of the ego cogito, that is, of the res cogitans, which, operating upon the res extensa, prepares the limitless unfolding of man's will-to-power, ratio, and consciousness, all of which transmutes into science, technique, and productive action... Marx's thought is above all an extension of this third era of Western thought, the institution of Subject. The absolutely productive subject, in the form of the subjects who devote themselves to total social praxis, makes up the (metaphysical) foundation of Marxism and of the planetary technique (47).

Axelos certainly recognizes that Marx rejected all philosophical and metaphysical approaches, but nonetheless he insists that there is an "implicit ontology" in Marx (48). He explains this as follows:

The objective and, above all, productive subject, transcending in his activity both (individualistic) subjectivity and (reified) objectivity, is the "metaphysical" and "ontological" ground for technique... (Marx's) reduction of the world to the production of technique implies the position of technique at the ground of being and the motor of becoming (49).

Axelos does not justify the preeminent role he assigns to technology by citing Marx's economic analyses. In fact he does not study the labour process at all, and on only two occasions does he make reference to the notion of labour-power. As already noted, productive forces are not analyzed, nor are such important notions as co-operation in the productive pro-

cess, the direction of the productive process, and the organization and division of labour. Instead of analyzing the labour process and the productive process of capitalism to determine if Marx holds a technological theory of social, economic and historical development, Axelos offers philosophical explanations. And, in these explanations, technology figures as a metaphysical notion.

Finally Axelos' superstructuralist position can be discerned in his focusing on the 1844 Manuscripts and The German Ideology. A quantitative analysis of Axelos' quotations of Marx in his Marx, penseur de la technique gives the following figures: the 1844 Manuscripts are quoted 148 times, and The German Ideology 121 times. In contrast, Capital is quoted only 23 times. Moreover, the Manuscripts and The German Ideology receive a great deal of attention only as long as they embody non-economic analyses (50). (See also notes 35 and 40).

In brief, then, Axelos' interpretation of Marx is explicitly presented as a technological determinist interpretation. This version of Marx is, at the same time, superstructuralist because it is based on a metaphysical approach. Needless to say, Axelos' understanding of Marx is not the most accurate one that can be developed.

(G) H. Marcuse.

The interpretation of Marx offered by Marcuse is important not only because it is more subtle than Lefebvre's and Axelos', and not only because Marcuse was one of the two most influential superstructuralists of the post-war period —the other being Sartre. It is also of particular importance because it culminates in a version of technological determinism, even though Marcuse began by interpreting Marx in exactly the opposite way (51).

In his pre-war writings Marcuse approached Marx by studying the notions of labour and of the labour process. As he says in Reason and Revolution,

Marx rests his theories on the assumption that the labor process determines the totality of human existence and thus gives to society its basic pattern (52).

From the standpoint of the present essay this view of Marcuse is quite appealing. It is by analysing Marx's views about the labour process that recent interpreters have produced developed technological determinist interpretations (see Chapter IV). Thus, it is important for us to examine how Marcuse treats the labour process in superstructuralist terms and avoids seeing Marx as a technological determinist.

Marcuse's analyses of the labour process appear in three works written between 1932 and 1941 (53). The labour process was first understood in ontological terms, then in sociological terms, and finally in philosophical (or critical) and sociological terms. Whereas the studies of 1932 and 1936 are centered on the 1844 Manuscripts, the examination presented in Reason and Revolution attempts to consider what Marx says in Capital.

The "ontological interpretation" of labour was developed by Marcuse in reaction to the publication of Marx's 1844 Manuscripts, at a time when he was still under the influence of Heidegger. Marcuse related the notion of labour to that of alienation. Attempting to grasp the "essential", rather than the concrete, historical and economic bases of alienated labour, he observes that

If the concept of alienated labour includes the relation of man to the object... then the concept of labour as such must also cover a human activity (and not an economic condition). And if the alienation of labour signifies the total loss of realization and the estrangement of the human essence then labour itself must be grasped as the real expression and realization of the human essence. But that means once again that it is used as a philosophical category (54).

Thus Marcuse holds that Marx's analyses were not based on political economy but on philosophy.

To abandon the concrete, "factual" realm of history and political economy, Marcuse recurred to Heidegger. Heidegger had developed an ontological interpretation of history, in terms of "historicity", holding that the world of "facts" (and thus the world of political economy), is the world of empirical history (Historie), whereas the world of alienated labour (and labour itself) as an expression of the human essence is the world of the essential history, i.e. ontological history or "historicity" (Geschichte, Geschichlichkeit) (55). Developing this theme, Marcuse observes that

The discovery of the historical character of the human essence does not mean that the history of man's essence can be identified with his factual history (56).

This sounds idealist, but Marcuse argues, we should not understand philosophy as a theoretical enterprise but as a practical theory (57).

In "On Authority" (1936) there is a section dedicated to Marx where Marcuse studies the notion of labour process and abandons the Heideggerian viewpoint to adopt the sociological perspective of Horkheimer. For Marcuse, the material basis of authority in capitalism consists of the social aspects of the productive process. The material aspect of the capitalist productive process, in particular the labour process, has to be

considered in sociological, not in technological terms. Marx is not a technological determinist; historical materialism is a sociological-materialist conception of history and society, not a technological one.

Marcuse rejects the "bourgeois" contention that authority in capitalism corresponds to a growing positive process of rationalization of social life as a whole, and he argues that what characterizes capitalism is its irrationality. In capitalism, Marcuse remarks

The sector of nature controlled by man through rational method is infinitely larger than in the Middle Ages; society's material process of production has in many instances been rationalized down to the last detail —but as a whole it remains "irrational" (58).

For Marcuse, only Marx's approach can explain why and how capitalism is basically irrational. Capitalist authority expresses this irrationality. For Marx, says Marcuse, the capitalist authority is rooted in the peculiar capitalist productive process:

Marx... deals with the social bearing of the problem of authority. He confronts authority as a relationship of dependence in the capitalist process of production (59).

In his analysis, Marcuse does not pay attention to the technological, physical and mental aspects of labour and the labour process, since these elements do not generate any sort

of capitalist authority. For him authority originates in the social relations required for the production of surplus-value, i.e. in the capitalist productive process as such:

The material root of the authority relationship... (is) the specific form of the capitalist production process (60) (Emphasis and parenthesis added).

The analysis of the labour process presented in Reason and Revolution differs from that of "On Authority" because Marcuse tries to relate the process once again to a philosophical view, and because he takes up the question of the labour theory of value which plays so large a role in the thinking of Marx in Capital. The new philosophical basis of the analysis is understood in "critical" rather than in ontological terms, Marx being said to continue Hegel's analysis of labour.

Hegel had discovered labour as the ground of human alienation and had pointed out its historical (Historischen) process of development. What allowed Hegel (and Marx) to conceive labour as alienating was not a scientific analysis but revolutionary reason, a "critical reason". Marx's (and Hegel's) revolutionary reason was not based on the political-economic analysis of society but on the ideal and subjective need of "rationality" to reject the socio-historical conditions that alienated human beings (61). "Critical philosophy", on this view, is the prac-

tical theory that underpins Marx's analysis.

For Marcuse, one of Marx's most important contentions is that in capitalism human beings are, so to speak, lost to themselves as individuals; they are unlike free individuals who are critical of their own social environment as a result of their being able to transform it. The notion of the free individual is a philosophical concept with respect to which the value of existing socio-historical conditions can be measured. It provides an ideal which justifies criticism and moves human beings to resist and to change existing conditions. Capitalist alienation is not merely economic alienation, although it arises from economic conditions, since it assumes the form of universal reification, once the fetishism of commodities becomes the universal form of social relation (Lukàcs). For Marcuse, it is necessary to eliminate all forms of objectification, since objectification is nothing other than the capitalist form of universal reification. Accordingly, since science and technology give rise to objectification, Marcuse rejects them. And he insists that objectification will be eliminated with the advent of communism, since communism, in his view, will bring about the total subjectivization of reality and the reign of completely free individuals.

Attending to the economic aspects of the labour process, Marcuse first studies it in its abstract form as a process involving relations between human beings and nature, independently of their particular social forms. In his analysis he finds reasons for reasserting the fundamental importance of individual freedom. The social forms of the labour process always represent alienated labour, when compared with the abstract relations of labour between human beings and nature. Whereas the abstract analysis of the labour process posits the ideal, non-alienated form of labour, the analysis of the social form of the labour process manifests the actual situation of alienation. Certainly, when Marcuse takes the relations between humans with nature as ideal he assumes there is a social content in these relations, but their social content is not a social form. In other words, according to Marcuse, Marx conceives the abstract form of the labour process as one that involves a natura naturata, not simply a natura naturans: the relations between humans and nature, independently of their social forms, have both a historical and a social character.

Marcuse makes two mistakes in his analysis. First, not all non-social aspects of the relations between humans and nature can be reduced to social ones, even if these relations are thought to have a social content. A hammer used to shape

a horseshoe is a physical and a technical entity regardless of its social origins and the role it plays in social life. Second, Marcuse is wrong to assume that individual freedom requires the elimination of all vestiges of social forms in the labour process. When he says that in the communist society the labour process as such will disappear, since in that society individuals will act freely (the labour process being an automated one), he forgets the social form required to maintain and develop the high levels of scientific expertise needed to "feed" and direct the automated productive process. For Marcuse, any social form in the labour process leads to a renewed process of reification and to the consequent alienation of human beings. Because Marcuse rejects all forms of "physicalism", "scientificism", "technologism" and "objectification" in principle, he ends up in total subjectivism, and his interpretation of history becomes idealist and utopian.

Marcuse also attempts to comprehend Marx's mature analysis of the labour process in terms of the analysis of the capitalist form of that process, i.e. as a process that permits the extraction of surplus-value. He follows Marx in regarding labour-power as "labour stripped of all qualitative distinctions". Labour-power is to be considered labour apart from its specific forms, so that it can be quantified (by units of time). As Marcuse notes, in a discussion of such "abstract labour", "(i)f

all specificity of labor is abstracted, one act of labor is distinguished from another only by its duration". Nevertheless, even abstract labour must be thought of as retaining some element of human individuality:

(E)ven the time-measurement of labor still leaves an individual factor. The amount of labor time spent by different workers in the production of one and the same kind of commodity varies according to their physical and mental condition and their technical equipment (62).

Technological interpreters of Marx think that the physical-mental-technological aspects of abstract labour constitute the technological basis of the labour process. For Marcuse, on the contrary, these aspects only count as repository of human individuality, i.e. as a repository of social content.

Marcuse also follows Marx in studying abstract labour not from the point of view of the individual labour process, but from the point of view of the collective or social labour process. At this level of analysis Marx wants to determine the way to measure "(t)he labour time socially necessary... required to produce an article under the normal conditions of production, and with the average degree of skill and intensity prevalent at the time"(63). At this level of the analysis it seems that any form of human individuality finally disappears, for we are concerned only with averages, be they those related to the skill

of the labourers or those related to the technologies employed.

Technological interpreters of Marx would regard this analysis as implying technological determinism, because labour-power is considered as being nothing but labour time "computed for the average technical standard prevailing in production"(64). But for Marcuse, the technical standards depend on a social necessity, for the analysis of labour-power in terms of its technical standardization leads to the consideration of the value of labour-power itself, and thus to the social conditions that ultimately determine the minimum amount of goods and services required to maintain and reproduce the labour-power itself.

Marcuse's earlier interpretations of Marx, therefore, centered as they are on the analysis of the labour process, stress the sociological and philosophical dimensions of Marx's thought and run counter to interpretations of Marx as a technological determinist. In the later writing, however, Marcuse modifies his pre-war interpretation of Marx and advances views similar to those of the classical revisionists.

In Soviet Marxism (1958), Marcuse, like Bernstein, argues that the working class becomes revolutionary only if capitalism provokes its "absolute immiseration"(65). Moreover, following

Bernstein, Marcuse affirms that Marx sustained the (deterministic and fatalistic) doctrine of the "final breakdown" of capitalism (Zusammensbruchtheorie)(66). On the other hand, following Kautsky and Hilferding, Marcuse argues that the capitalist system has changed in such a way as to be no longer anarchic and contradictory in the way described by Marx, and to have in the process become a stable "ultraimperialism" dominated by a "global cartel". According to Marcuse, Kautsky and Hilferding outlined the political conditions

under which the capitalist world could be stabilized and hierarchically integrated —conditions which in Marxian theory appeared as utopian unless the actual forces which would supersede the contradictions and conflicts among the imperialist powers developed. Once they materialized, an economic basis for integration could indeed emerge. It did emerge... under the impact of two World Wars, atomic productivity, and the growth of communist power. These events altered the structure of capitalism as defined by Marx and created the basis of a new economic and political organization of the Western world. This basis came to be utilized effectively only after the Second World War... (A)n intercontinental political economy took shape... susceptible to a planned regulation of that blind "anarchy" in which Marxism saw the root of capitalist contradictions (67).

This idea, that post-war capitalism, especially in the USA, is no longer anarchic, is the point of departure for Marcuse's subsequent analyses.

In his most famous book, One-Dimensional Man, as well as in other studies (68), Marcuse argues that human beings in con-

temporary society have lost their capacity to resist the alienation it produces and that they have been integrated into a society which only possesses a single "face", a kind of technological totalitarianism. Uncritical human beings are one-dimensional persons in a social and historical context determined by technology, since in "advanced industrial society", "(t)echnological rationality has become political rationality"(69). The type of technology employed in this "late industrial society" is totalitarian in the sense that it alone determines social processes, producing a uniform view of reality. The new technology not only controls all social and individual needs and aspirations,

(t)he totalitarian tendency of these controls seems to assert itself... by spreading to the less developed and even to the pre-industrial areas of the world, and by creating similarities in the development of capitalism and communism (70).

Traditional political means are not effective to oppose contemporary technological totalitarianism, since they now function as part of the established control itself (71). The working class in late industrial society has lost its revolutionary capacity and is now an integral element of it (72). As Marcuse puts it,

The economic and technical capabilities of the established societies are sufficiently vast to allow for adjustments and concessions to the underdog, and their armed forces sufficiently trained and equipped to take care of emergency

situations... (T)he second period of barbarism may well be the continued empire of civilization itself (73).

The technological totalitarianism of late industrial society, moreover, has its political basis in its capacity to stabilize and maintain the existing dynamics of technological domination. Late industrial society is no longer plagued by the former contradictions of capitalism. Thus, the crucial question is whether

this stabilization (is)"temporary" in the sense that it does not affect the roots of the conflicts which Marx found in the capitalist mode of production... (or) a transformation of the antagonistic structure itself, which resolves the contradictions by making them tolerable?... (T)he second alternative is true...(74).

According to Marcuse, Marx envisaged that once capitalism was replaced by communism technology would eventually become the determinant factor of social and political processes. However, Marx was unable to extract the correct consequences that follow from the role he assigned to technology because he "did not foresee technologically advanced society... nor all the things which capitalism could accomplish... simply by exploiting its technical breakthroughs"(75).

Marcuse explains the logic of the process by means of which technology has become the determinant factor of social and his-

torical development employing a typical idealist argument. Following Heidegger he states that there is a "technological a priori" in the minds of modern and contemporary human beings, that "the apprehension of nature as (hypothetical) instrumentality precedes the development of all particular technical organization"(76). Therefore, says Marcuse, since "the transformation of nature involves that of man", the technological a priori becomes a political a priori. However, Marcuse observes, technology may be taken to be neutral, and the technological a priori and technology itself can be used for different political projects. Marcuse develops the point as follows:

This neutrality is contested in Marx's controversial statement that the "handmill gives you society with feudal lord; the steammill society with the industrialist capitalist". And this statement is further modified in the Marxian theory itself: the social mode of production, not technics is the basic historical factor. However, when technics becomes the universal form of material production, it circumscribes an entire culture; it projects a historical totality —a "world" (77).

Here Marcuse is arguing that Marx (at a certain moment) held a technological determinism, since he held that different sorts of technology "produced" different types of societies. This view, however, is contested in subsequent "Marxian theory" —Marcuse leaves it unclear whether this refers to Marx's later views or those of his followers—. For in this theory technological determinism is rejected, the neutrality of technology

reinstated and the mode of production is held to determine technological development. Be that as it may be, what Marcuse wants to affirm is that when technology becomes "the universal form of material production", it establishes itself as the determining factor of social, historical and "cultural" organizations and processes. In short, either Marx is a technological determinist or contemporary technology has shown that he should have been (78).

Marcuse thinks that the "fact" that contemporary capitalism can eliminate its contradictions through technological development proves Marx's views on technology, and refutes his social and historical predictions. However, these conclusions, unlike his earlier ones, were not based on a study of Marx's analysis of the labour process. Marcuse does not relate his earlier sociological and philosophical understanding of the labour process with his later technological conception of Marx. He simply extracts an assertion by Marx on technology from its context, in order to give weight to the bourgeois theory of "late industrial society" to which he subscribed (79).

Marx said that capitalism would be overthrown by proletarian revolutions. For Marcuse the proletarian revolutions have not destroyed capitalism but have brought about advanced industrial society. Proletarian revolutions never occurred nor

are likely to take place in the capitalist countries, because these societies have reached the post-industrial stage. As P. Mattick has observed, for Marcuse as for other superstructuralists that urge a technological determinism,

history seems to validate "Marxian" revisionism rather than revolutionary Marxism (80).

Conclusion

With this brief analysis of Marcuse's position we now have a clearer idea about the development of superstructural Marxism and about its meaning. We have shown how this interpretation of Marx tends to evolve into a form of technological determinism. If at the beginnings of superstructural Marxism, in Lukàcs' work, the possibility of understanding Marx as a technological determinist only appeared implicitly, in subsequent interpretations, in particular those of Lefebvre, Axelos and Marcuse, the technological determinism becomes explicit. In order to sustain a technological interpretation of Marx and of contemporary society that is compatible with their superstructural emphasis in the analysis, these authors appeal to non-Marxist theories in two ways: first, by arguing with contemporary metaphysicians (in particular Heidegger) that technology is, before anything, an ontologically and mentally inherent disposition that characterizes modern and contemporary human beings as such; and second,

by accepting uncritically bourgeois sociological and economical analyses that claim that post-war capitalism has finally eliminated its propensity to anarchic development, since the new technologies permit it to evolve smoothly. Both views, when integrated in the superstructuralists' views, become forms of neo-revisionism.

Notes.

- 1) I use the term "superstructural Marxism" instead of "Western Marxism". When one analyses what is meant by Western Marxism, one finds that it includes parts of the conceptual characterization presented here, plus connotations of political character that loosen the precision of the conceptual perspective (See P. ANDERSON (1976), pp.52-53 and 75, for an example of how Western Marxism includes parts of the conceptual characterization offered here). Substantive doctrine aside, Western Marxism is best seen as being (a) the theoretical stand of those interpreters of Marx that do not have sympathies for the communist parties, in particular those unfriendly to the USSR; and (b) the theoretical stand of those interpreters of Marx that live in the "Western World" or who are advocates of "The West". It is easy to show that superstructural Marxism does not exclude communist interpreters of Marx, some of which would be regarded as alien to "Western Marxism". And today it should be obvious that notions such as "The West", "The Western World" are part of the ideological baggage of capitalism. "West", "Western World" are, at best, euphemisms for "capitalism" or, in the context of the so-called "Cold War", for "anti-Sovietism". In this sense I refuse to talk in terms of "West" and "East", as E.V. Il'enkov (1967) does (p.392).
- 2) In particular the 1844 Manuscripts have been regarded by superstructuralists as the foundational core of Marx's thought, and most superstructural Marxism in the post-war period centers the analysis on this text. See below, section on Axelos.
- 3) K. KORSCH (1972), one of the founders of superstructural Marxism, explains this as follows: "For some decades there had been an apparent crisis in the camp of Social Democrat parties and trade unions of the Second International; this took the shape of a conflict between orthodox Marxism and revisionism... At the beginning of the twentieth century, the long period of purely evolutionary development of capitalism came to an end, and a new epoch of revolutionary struggle began... there were increasing signs that Marxist theory had entered a critical phase... the theoretical representatives of a new revolutionary proletarian party unleashed a struggle against both the old reformism of the revisionists and the new reformism of the 'Centre', under the battle-cry of restoring pure or revolutionary Marxism. This crisis erupted with-

in the Marxist camp at the outbreak of the World War" (pp. 48-49). According to Korsch, what characterized the thought prevalent in the Second International was that interpreters of Marx associated with it, "...despite all their theoretical and methodological avowals of historical materialism, in fact divided the theory of social revolution into fragments. The correct materialist conception of history, understood theoretically in a dialectical way and practically in a revolutionary way, is incompatible with separate branches of knowledge that are isolated and autonomous, and with purely theoretical investigations that are scientifically objective in dissociation from revolutionary practice" (p.54).

- 4) Lenin's State and Revolution is an attack on the political thought of the Second International as well as a theoretical analysis of superstructural aspects such as the state itself. For an assesment of the importance of Lenin's approach in subsequent Marxist theory to the problem of the capitalist state, see E.O. WRIGHT (1979), especially pp.194-219. In Imperialism, the Highest Stage of Capitalism, Lenin offered a new synthesis of the political and the economic approaches. This disclosed the fundamental characteristics of contemporary capitalism as a universal system. In general terms, Lenin's contributions were fundamental, because they served as a basic point of reference for superstructuralists. Lenin's contribution represent a renovation and a continuation of Marx's work, one that breaks with the analytical framework prevalent in the Second International.
- 5) Among other things, the Soviet Revolution brought about the isolation of interpreters of Marx living outside the USSR from the decisive practical developments taking place in the new socialist country and from the important interpretations of Soviet Marxists, which were of special relevance for the study and application of Marx's economic and political themes (See W. BRUS (1972), first two chapters). Secondly, the separation between the Soviet and the other Marxists became especially significant when the revolutionary outbreaks in Germany and in Hungary were repressed (1919-1921). The surviving German and Hungarian Marxists attempted to explain the Soviet triumph and their own temporary setback. Finally, the Soviet Revolution brought to the fore the discussion of revolutionary praxis.
- 6) See M. LOWY (1976), pp.14 and 168-171; L. KOLAKOWSKI (1978), III, p.253; and G. LUKACS (1971), pp.xvi, xxii and xxvii. Not only has Lukàcs' thought directly influenced the works of Adorno, Horkheimer and Marcuse, most other superstructuralists

have adopted his notions of reification and totality. The importance of Lukàcs can be seen in a simple example: when M. MERLEAU-PONTY (1973) attempts a characterization of "Western Marxism", i.e. superstructural Marxism, he does so by presenting a study on Lukàcs (Chapter II).

- 7) See G. LUKACS (1971), pp.2-10; and L. KOLAKOWSKI (1978), III, p.273.
- 8) G. LUKACS (1971), p.84.
- 9) Idem., p.86.
- 10) Idem., p.93.
- 11) Idem., p.107.
- 12) Idem., pp.197-198.
- 13) Idem., p.3.
- 14) "The unique function of consciousness in the class struggle of the proletariat has consistently been overlooked by the vulgar Marxists who have substituted a petty 'Realpolitik' for the great battle of principle which reaches back to the ultimate problems of the objective economic process. Naturally we do not wish to deny that the proletariat must proceed from the facts of a given situation. But it is to be distinguished from other classes by the fact that it goes beyond the contingences of history; far from being driven forward by them, it is itself their driving force and impinges centrally upon the process of social change". Idem., p.68.
- 15) Lukàcs' communist militancy made possible and demanded his self-critique. Thus, in a preface to History and Class Consciousness written in 1967 Lukàcs says: "It is undoubtedly one of the great achievements of History and Class Consciousness to have reinstated the category of totality in the central position it had occupied throughout Marx's works and from which it had been ousted by the 'scientism' of the social-democratic opportunists. I did not know at the time that Lenin was moving in a similar direction... But whereas Lenin brought about a renewal of the Marxian method my efforts resulted in a —Hegelian— distortion, in which I put the totality in the centre

of the system, overriding the priority of economics"(p.xx). Lukàcs adds that since "according to Hegel, the object, the thing exists only as an alienation from self-consciousness, to take it back into the subject would mean the end of objective reality and thus of any reality at all. History and Class Consciousness follows Hegel in that it too equates alienation (Entfremdung) with objectification (Vergegenständlichung)... when I identified alienation with objectification I meant this as a societal category —socialism would after all abolish alienation— but its irreducible presence in class society and above all its basis in philosophy brought it into the vicinity of the 'condition humaine'"(pp.xxiii-xxiv).

- 16) D. McLELLAND (1979), p.259.
- 17) Although published only in 1947, this book summarizes the views that Adorno and Horkheimer had been developing since the mid 1920s. See M. JAY (1973), pp.156-157.
- 18) Even though Adorno and Horkheimer were among the first to read Ryazanov's edition of Marx's 1844 Manuscripts, they did not pay much attention to it. Only Marcuse was able to see, already in the early 1930s, that the Manuscripts could be read as a philosophy of alienation. See below, section on Marcuse.
- 19) During his first, exclusively existentialist period, Sartre had presented the concept of freedom as the core of human existence, according to which "there is no difference between the being of man and his being-free"(J-P SARTRE (1966), p.30). Human freedom was not based on anything but human beings themselves, i.e. on subjectivity as such. However, for Sartre as for Plato, what characterizes human beings is that they always long for that they do not have. Freedom is a desire for something which always lies beyond our actual grasp. Freedom is nothingness: it is the eternal pursuit of plenitude, a Sisyphean effort to reach something that runs away when we get near it. Freedom is thus always limited: it is always restricted by something, it is always a limited relation between human beings. Although aiming at subjective plenitude, freedom nonetheless only appears in the elusive limits between subjectivity and externality. For Sartre freedom is not the attainment of autonomy, nor simply a historical or political conquest of human beings; rather it is our ontological-natural foundation. In Sartre's view freedom is inevitable; it is la condition humaine. When Sartre moves towards a position closer to Marxism he never abandons existentialism, and he never renounces his views about the ultimate ontological foundation of subjectivity. According to him, Marxism lacks an adequate theory of rev-

olutionary subjectivity. At the same time, he argues that existentialism should be historicized, i.e. it should take into account Marx's fixing of the ontological basis of human existence in concrete historical circumstances. These tasks required, on the one hand rejection of the "vulgar and metaphysical" Marxism of Engels and the French Communist Party, which ended in an economic unilateral determinism; and on the other, the development of an existentialist view of Marxism based on Marx's early works, which could be linked with existentialism and psychoanalysis. In order to relate historical materialism to existentialism, to reconcile the demands of social groups, classes and nations with the demands of individual subjectivity and creativity, Sartre explained historical processes by the notion of scarcity (rareté): "Whatever men and events are, they certainly appear within the compass of scarcity; that is, in a society still incapable of emancipating itself from its needs —hence from nature—, a society which is thereby defined according to its techniques and tools... The abstract relations of things with each other, of merchandise and money, etc., mask and condition the direct relations of men with one another. Thus machinery, the circulation of merchandise, etc., determine economic and social developments. Without these principles there is no historical rationality. But without living men, there is no history. The object of existentialism —due to the default of Marxists— is the particular man in the social field, in his class... the individual, alienated, reified, mystified..."(J-P SARTRE (1963), pp.132-133). Society dominated by scarcity is society dominated by alienation and reification; it is society in which everything and everybody is defined in terms of "instrumental reason", "technology and tools". Capitalism, as a society where scarcity prevails, is characterized by a technological determinism. At the same time Sartre seems to believe that scarcity would disappear because of our technological mastery over nature. However, he never explored the implications of this suggestion. He did not ask what would happen with technology in a post-scarcity society, or whether this would any longer define society. What he says is only that when rareté disappears will existentialism cease to have reason to be, since then human beings will practice their individual subjectivity as free creative individuals. At the same time, however, he insists that the overcoming of scarcity cannot be reduced to the mere technological elimination of material needs. For even given the elimination of economic needs and economic alienation unintended effects (for example, an ecological disaster or a bureaucratized society) can still arise, which obliterate the progress accomplished. Only the creative union of individuals for a continuous revolutionary struggle can guarantee the

attainment of freedom from scarcity. According to Sartre, existentialism provides the main way of awakening the consciousness needed to achieve such a creative union. At the end, thus, Sartre remained faithful to his earlier idealist belief in the primacy of individual consciousness over social and historical 'external' conditionings.

- 20) See M. POSTER (1975), p.69; D. McLELLAND (1979), pp.4 and 281-282.
- 21) M. RUBEL (1957), pp.443-444.
- 22) Idem., p.445.
- 23) H. LEFEBVRE (1968), p.112.
- 24) H. LEFEBVRE (1962), p.147.
- 25) H. LEFEBVRE (1968), pp.20 and 53.
- 26) Idem., p.63.
- 27) H. LEFEBVRE (1967), p.11.
- 28) See M. POSTER (1975), pp.244-245.
- 29) H. LEFEBVRE (1967), p.228.
- 30) Idem.
- 31) Axelos was the director of the review Arguments, which expressed the views of the so-called "French neo-revisionists". H. Lefebvre played a leading role among them, as did another disciple of Heidegger, P. Fougereyrollas. See M. POSTER (1975), esp. pp.210-233, 260-268; L. KOLAKOWSKI (1978), III, pp.481-482; D. McLELLAND (1979), pp.291-292.
- 32) K. AXELOS (1976), p.3. Heidegger and his disciples developed their philosophical observations by assuming that the so-called mental objects possess real (sensus, material, objective) existence (hypostasis). Thus, it is not surprising that they reversed ancient forms of thinking, and claimed that "Being" was to be approached through pre-rational thinking. For Heideggerians,

concepts such as "Being" are quasi-personalized and vice versa, mythological figures like Athena or Prometheus are assigned conceptual meaning and "ontological significance" in the analysis. I have dealt with this characteristic of the Heideggerian thought in my Poética en Bachelard (1974), Chapter III.

- 33) Especially Heidegger's works on technology and on the history of philosophy, such as "Die Frage nach der Technik", Platons Lehre von der Wahrheit; and Brief über den Humanismus.
- 34) See K. AXELOS (1976), p.33, note 4.
- 35) This idea is expressed by Axelos in Vers la pensée planétaire (1970) as follows: "En plein époque de la mise à mort d'un monde par la technique conquérante et planétaire, n'aurions-nous pas besoin d'une technologie qui commencerait à penser tout ce dont la technique se saisit, et la technique elle-même?" (Theses sur Marx, #5, p.175). For Axelos, as for most superstructuralists, the notion of alienation plays a very significant role in Marx's thought: "The Marxian view of alienation, as something soon to be transcended according to the optimistic prospect that Marx is opening up... forms the horizon of all his philosophical and historical, anthropological and sociological thinking" (K. AXELOS, (1976), pp. 41-42). It is important to notice that in this text Axelos does not even mention economic thinking or economic alienation.
- 36) K. AXELOS (1976), p.120.
- 37) Idem., pp.330-331.
- 38) Idem., p.305.
- 39) Idem., p.293.
- 40) Idem. In order to prove this point Axelos discusses at length Marx's ideas in Poverty of Philosophy but, of course, he does not study Marx's analyses in Capital, where Marx dedicates twelve chapters to these issues (Vol. I, pp.173-500).
- 41) K. AXELOS (1976), p.294.

- 42) Idem., p.221.
- 43) However, Axelos never makes this explicit. Technique, like other concepts used by him, is never clearly defined nor consistently used. Nonetheless, see K. AXELOS (1976), pp. 152-155, 291 and 333. See also following note.
- 44) Axelos, as well as Heidegger, use this term, "lògos", with all its meanings: "word", "discourse", "reason", "rationality", "thinking", "understanding", "mental principle", "ontological principle". This linguistic usage makes it harder to understand what Axelos is trying to say but, again, that is precisely what he seems to strive for. See above, note 32.
- 45) Axelos (1976) says that for Marx, "In the same way that *Θεωρία* ("theory") is subordinated to *πράξις* ("practice, praxis") without the basis of the distinction between the two being sufficiently explored, so *ποιήσις*, as the essence of *τέχνη*, is subordinated to *πράξις*, and *τέχνη* takes the sense of (productive) Technique. *Τέχνη* is thus severed from *φύσις*, and *ἀλήθεια* is dissolved in the *ἔργον*, which is but the product of the productive practical energy of men..."(p.192). Here, it seems that Axelos is trying to say that Marx mistakenly reduced theory to a form of practice. Therefore, the creativeness of human beings, as the basic form of their technological productivity, is also but a form of practice. In this way, technique takes the form of productive Technique, technique is separated from nature, and truth becomes but a form of practice, where practice is to be understood as the pure creative capacity of human beings. Beyond all the linguistic difficulties, what seems clear is that for Axelos technique, when considered as being Technique, refers to the pure creative capacity of human beings.
- 46) Idem., p.3.
- 47) Idem., pp.274-275.
- 48) "There is no ontology in Marx, no first philosophy, either spiritualist or materialistic. Marx rejects precisely all ontology and all metaphysics, though he is unable to divest

himself of a kind of implicit 'ontology' and succeeds only in rejecting metaphysics in realizing it — 'metaphysically?' — in technique". Idem., p.289.

- 49) Idem., pp.330-331.
- 50) Says Axelos: "The Paris Manuscripts of 1844 contain the central point of Marx's thought, his philosophical core and the seed of a further scientific and technical elaboration; and it is this center with its blazing ramifications that becomes thereafter consolidated doctrine". Idem., p.46. See also p.45. Of course, Axelos does not bother himself with the study of Marx's "scientific and technical elaboration" in Capital. This is probably because he thinks that "consolidated doctrine" does not permit direct access to the realm of "being" and "lògos". Moreover, according to Axelos the economic and political expectations of Marx have not been fulfilled, since workers now partake of "the benefits of their exploiters". See idem., pp.60-61.
- 51) The interpretation of Marcuse as a technological determinist appears in the analyses of L. COLLETTI (1971), pp.111-140; and P. MATTICK (1972). A. MACINTYRE (1970) hints at it but does not discuss it (pp.62-63 and 66-67). Academic studies like that of H. BLEICH (1977) do not pay attention to this point, and in his famous book M. JAY (1973) does not consider the issue, probably because he thought that the analysis of Marcuse's later work was beyond the reach of his study (p.256). However, Jay does not hesitate to analyse Marcuse's interpretation of Freud as presented in Eros and Civilization (pp.106-112), a work which, like One-Dimensional Man, escapes the limits of his study. The books of MacIntyre and Mattick are critiques of Marcuse, Mattick's from a Marxist point of view, whereas the work by Jay is very important as a "resource book". A general and creative interpretation of Marcuse has been developed by R. FERNANDEZ-VAZQUEZ (1974) and (1979).
- 52) H. MARCUSE (1966), p.295.
- 53) "The Foundations of Historical Materialism" (1932), and "On Authority" (1936), in H. MARCUSE (1972), pp.1-48 and 49-155, respectively; and Reason and Revolution (1941) (H. MARCUSE 1966)).
- 54) H. MARCUSE (1972), p.13. Marcuse says that the 1844 Manuscripts put "the discussion about the origins and original meaning of historical materialism, and the entire theory of 'scientific socialism', on a new footing... For... we

are dealing with a philosophical critique of political economy and its philosophical foundations as a theory of revolution... (I)n the Economic and Philosophical Manuscripts the original meaning of the basic categories is clearer than ever before, and it could become necessary to revise the current interpretation of the later and more elaborate critique in the light of its origins... (T)his review of the Manuscripts will suffice to show the inadequacy of the familiar thesis that Marx developed from providing a philosophical to providing an economic basis for his theory". Idem., p.3. See also A. MACINTYRE (1970), pp.22 and 40; L. COLLETTI (1971), p.129; H. BLEICH (1977), p.22.

- 55) For Heidegger's influence on Marcuse, in particular concerning historicity, see M. JAY (1973), pp.71-73.
- 56) H. MARCUSE (1972), p.29.
- 57) H. MARCUSE (1972): "From every point of approach and in all directions this theory, arising out of the philosophical critique and foundation of political economy, proves itself to be a practical theory, a theory whose immanent meaning... is particular praxis... (As Marx says:) 'We see how the resolution of the theoretical antitheses is only possible in a practical way, by virtue of the practical energy of man. Their resolution is therefore by no means merely a problem of understanding, but a real problem of life, which philosophy could not resolve precisely because it conceived this problem as merely a theoretical one...' We would add to this sentence: which philosophy can solve, however, if it grasps it as a practical problem, i.e. if it transcends itself as 'only theoretical' philosophy, which in turn means, if it really 'realizes' itself as a philosophy for the first time"(p.40).
- 58) Idem., p.55.
- 59) Idem., p.131.
- 60) Idem., p.137.
- 61) For the interpretation of Hegel by Marcuse, see J.L. VEGACARBALLO (1970); A. MACINTYRE (1970), Chapter III; L. COLLETTI (1971), esp. pp.128-135.
- 62) H. MARCUSE (1966), p.297.
- 63) Idem.

- 64) Idem.
- 65) H. MARCUSE (1969), pp.22-23 and 24-25. According to Marcuse, for Marx, "there seemed to be a demonstrable link between the real and the immediate interest of the proletariat in spite of the obvious discrepancy, namely, the dehumanization and impoverishment of the labourer, which appeared as an objective barrier against the 'sway of capitalist ideas', against the dissolution of the revolutionary class"(p.25).
- 66) Idem., p.22.
- 67) Idem., pp.33-34.
- 68) See, for example, H. MARCUSE (1967).
- 69) H. MARCUSE (1964), p.xvi.
- 70) Idem., pp.xv-xvi.
- 71) Idem., p.256.
- 72) Idem., pp.29-34.
- 73) Idem., p.257.
- 74) Idem., p.21.
- 75) H. MARCUSE, "Socialism in the Developed Countries". International Socialist Journal, April 1965, Rome. Quoted in P. MATTICK (1972), p.26.
- 76) H. MARCUSE (1964), p.153. Marcuse bases his view on Heidegger's interpretation of "modern man" as a mundane being, as this appears in Holzwege.
- 77) Idem., p.154.
- 78) See Idem.
- 79) At the end of the Preface to One-Dimensional Man, Marcuse mentions the authors whose interpretations he follows (p.xvii).
- 80) P. MATTICK (1972), p.10.

RECENT NON-MARXIST TECHNOLOGICAL INTERPRETATIONS

Many non-Marxist authors hold that Marx subscribed to a technological determinist interpretation of history and society, and they attempt to discredit historical materialism on the grounds that it is "mechanistic", "inhuman" and "monistic". These approaches, however, rest on a vulgar analysis of Marx's work and a crude oversimplification of historical materialism.

More important are certain non-Marxist explanations of social and historical processes that have appeared during the post-war period, even though these have their roots in earlier work such as Max Weber's sociological and economic analyses. These recent interpretations can be divided into "theories of industrial society" and "theories of post-industrial society", the second being a development of the first. These interpretations are important first because they form the basis upon which superstructural Marxists like Lefebvre and Marcuse built their theories. Second, they are important because they are based, to a large degree, on an attempt to confute the Marxist explanation of socio-historical processes. What is of particular relevance in such attempted refutations of historical materialism is that theories of industrial and post-industrial societies explicitly make reference to the Marx-

ist analysis itself, although, of course, corrected in certain ways. In the third place, these non-Marxist technological interpretations of socio-historical processes are important because they are a part of bourgeois ideology in the post-war period and as such provide the ideological setting into which all technological interpretations of history, including the Marxist variants, are developed, at least in capitalist countries. Indeed, many recent Marxist technological interpretations of history can be seen as footnotes to the prevalent non-Marxist technological interpretation of social and historical processes.

(A) The theory of post-industrial society.

The main claim of the theory of post-industrial society is that technology determines the social, political and economic organization of society, and thus history itself. Technology, considered as the physical organization of the productive, distributive and reproductive systems of society is seen as the determinant aspect of economic growth and, by extension, all other social dimensions. It is said to mediate both between human beings and nature and between human beings with one another. While pre-industrial ("traditional") and industrial ("modern") technologies were the product of spontaneous and discontinuous innovative processes, post-industrial technology

is systematically organized. Post-industrial technology constantly renovates itself, and once technological development has reached a certain stage of development (a stage based on cybernetics and electronics), the rhythms of technological innovation and technological change tend to grow exponentially. Whereas in earlier societies technology only formed the material basis of social and politico-economic life, in the post-industrial era technology becomes the dominant aspect of all social life. Whereas in earlier societies the systems of legitimation and social cohesion were political and ideological, in post-industrial society, political and ideological systems become obsolete as the society becomes truly rationalized and scientifically organized.

This main claim is supplemented with claims to the effect that all social institutions are intended to fulfil human needs, wants and aspirations. There are two fundamental social institutions, namely the economic system and the political system. Society is fundamentally economic, although it rests on politics which is the conscious articulation of human aspirations. The economic processes of production and distribution refer to relations between human beings and the world of "things" (nature and goods and objects), and they are intended to eliminate "scarcity". Technology, which is the re-

sult of the relations between human beings and nature, depends on human capacity to innovate, but it also depends on the conditions imposed by nature, both in physical terms (for example, the materials available), as well as in the particular inventions each natural setting (for example, the geographical area) demands for its successful exploitation by society. Once started, technology acquires a dynamic of its own, and human beings must adapt to it both with respect to how they relate to nature and with respect to how they adapt to the rhythms and tendencies of technological development. Only with the technologies available in post-industrial societies can scarcity be finally eliminated.

According to the theory, it is also true that the possibility of producing more than what is required for mere subsistence depends on whether or not the available instruments of production and distribution can multiply human capacity to extract the needed resources from nature. So technology determines whether or not human needs, wants and aspirations are met. If a society depends on a technology based on tools, that society will suffer a higher degree of scarcity than a society which depends on a technology based on a mechanized production. And a society depending on automated technology will eliminate scarcity sooner or later. Moreover, the different types and levels of development of technology not only determine the

degree of satisfaction of needs, wants and desires, they also determine the existing social organization. If a society is dependent on tool technologies, it will have the household as its fundamental economic unit. If it is dependent on mechanical technologies, it will have factories as its basic economic units. And if it is dependent on automated technologies, it will require an "integrated nationwide and worldwide economic planning" process (see TABLE I). In other words, technology not only directly determines the type of economy prevailing in a society, but also the social, institutional and political systems that correspond to it. If a society's technology changes, the economic, political and institutional systems of that society will also change. In fact, history may be thought of as the process by means of which different technologies have produced corresponding different economic and socio-political systems (see TABLE II).

The theory of post-industrial society is thus a technological interpretation of history. The economic system of a society is understood as having to do with the type of relations established between human beings and "objects". Technology determines these relations, and each techno-economic system determines a form of society. Therefore, historical periods are to be distinguished by the types and degree of technological development achieved. Since technological dev-

TABLE I
DIFFERENCES AMONG AGRARIAN, INDUSTRIAL, AND POST-INDUSTRIAL TECHNOLOGIES

Aspect of technology affected	agrarian	industrial	post-industrial
Level of productivity	Supports less than \$300 in per capita income	Supports up to \$4,000 in per capita income; grows at approximately 2% yearly	Supports up to \$17,000 in per capita income; grows at 3/4% yearly
Primary product	Food	Manufactured goods	Services
Primary factor of production	Land	Capital	Human expertise
Organization of production	Household	Factory	Integrated nationwide and worldwide economic planning; development of organizational and behavioral technologies
Role of the worker	Crafts production; worker as skilled artisan	Mechanized production; worker as machine operator	Automated production; worker as machine monitor
Instruments and machinery	Tool-oriented technology; instrument as extensions of, or replacements for, human limbs	Power technology; machines as replacements for human or animal muscle power	Informational technology; machines as replacements for human brains or sensory receptors

SOURCE: B. GENDRON (1977), Table 3.1 (p.37).

TABLE II
STAGES OF HISTORICAL DEVELOPMENT
ACCORDING TO THE THEORY OF POST-INDUSTRIAL SOCIETY
 (H. KAHN)

(A) <u>Economic history</u>	
3000 B.C.	Hunting and food gathering (Pre-agricultural and usually primitive)
A.D. 1800	Basically agricultural (Pre-industrial and usually civilized)
A.D. 2000	Various stages of industrialization (Or Modern and/or Technological)
A.D. 2200	Various stages of post-industrial emerge (But initially 3/4 of world still lives in poor, transitional, or industrial economies) Transition largely completed to a Worldwide high level affluent Post-Industrial economy

"Modernization"
 or
 The Great
 Transition

TABLE II
(Continued)

(B) Social evolution

Emergence of first humans 2,000,000 years of hunting bands, food gatherers, and tribal societies				Transition due to Agricultural Revolution
8000 B.C.				
10,000 years of traditional and civilized societies				The Great Transition ("Modernization")
A.D. 2000	Post-Industrial	Post-Human	Post-Promethean	
	Post-Civilized	Faustian	Godlike	
	Post-Economic	Post-Faustian	Truly Religious	
	Truly Human	Promethean	Neo-Mystic	

SOURCE: H. KAHN (1979), Tables I,1 and I,2 (pp.19-20). (1).

elopment is cumulative and progressive, history is also cumulative and progressive. Societies with more complex and developed forms of technology are superior to, and tend to prevail over, societies that have simpler and less developed technologies. Capitalism should thus be thought of not as a social system but as a way of developing technology, one that has permitted technology to accelerate rapidly and to improve constantly. Capitalism is but one form of "industrial society", probably its basic form; it is a society that for the first time in history depends on a mechanized system of production; and it forms the basis of the post-industrial society, since it alone provides the social organization capable of coping with the demands of the new technologies. Earlier societies are all classified as tool societies (pre-agrarian and agrarian)(see TABLES I and II).

It is possible to classify versions of the theory of post-industrial society into two main groups, depending on whether or not the outcome of the post-industrial society is perceived to be an immediate and direct consequence of the technological, economic, social and political developments taking place in the USA. One group of authors argues that the outcome of the post-industrial society is imminent and that the process of its development follows a straight, unchecked ascending line. B. Gendron calls these versions "Utopian" and I call them "lineal-direct versions". In this group we can put the early works of

H. Kahn and A.J. Wiener as well as those of D. Bell (2). The views that are expressed by these authors reflect the confidence that prevailed in the USA during most of the 1960s. The other group, which Gendron calls the "Dystopians"(3), reflects the more critical perception about the goodness of the USA system that emerged during the 1970s, when a number of "unexpected" developments assailed its economic, technological, social, political and military position. Such "lineal-indirect versions" of the theory, which take into consideration problems that may arise in the development of the post-industrial USA-centered society, are to be found in the works of T.Roszak and J. Ellul and in the later works of H. Kahn (4). These authors insist on the fact that mere technological development does not yield an immediate solution to all social problems and that, moreover, the new technologies may create new and unforeseen difficulties. Therefore, they put more weight on the role played by social and political and cultural agents, yet still maintaining the basic claim that, ultimately, social institutions and relations depend on adequate technological progress. For example, instead of saying that the "transition" to post-industrial society will be completed by the year 1980, or at the latest by the year 2000, H. Kahn now says that such a transition will not be completed for at least another 200 years (see TABLE II-B).

The theory of post-industrial society also addresses the question of the social consequences of the adoption of the new technologies. Among these, we might note first that most advocates of the theory hold that both socialist and developing nations will eventually yield to the demands of the post-industrial centers (the USA in the first place) and will join the global system now in the process of being formed. This integration of "dissident" societies is a consequence of two characteristics of the post-industrial revolution: their unprecedented rate of techno-economic growth and the withering away of the need for ideology to give societies their cohesion. Once socialist countries realize the irrelevance of their ideological position and the developing countries reap the benefits of the techno-economic growth prompted by the new technologies, these two groups of nations will be integrated into "affluent high level post-industrial society".

It is also argued that capitalism itself will change, but without losing its basic characteristics (individual freedom, economic motivations, social status, popular participation, etc). With the advent of the new technologies capitalism completes the revolution that began at the end of the XIXth century, when the capitalist enterprise, instead of being directed to satisfy the individual desires and wants of the entrepreneur, was orientated to have as its basic goal the satisfaction of the needs

and wants of the society as a whole. This transformation, the "capitalist revolution of the XXth century" (A. Berle), was achieved by a particular technological development, namely the replacement of capitalists as directors of the capitalist enterprise by managers. This "managerial revolution" (J. Burnham) puts capitalism at the service of the community, since managers do not make profit for themselves and shareholders do not possess the technical knowledge needed to determine the economic policies of the corporation. Since the managers want to make their corporations as profitable as possible within the limits imposed by their social survival and development, managers must fix the goals of the corporations in accordance with the needs and wants of "his majesty the consumer" (J.K. Galbraith) and with the policies established by popularly elected and popularly controlled governments. The new technologies that characterize post-industrial society thus complete the revolution in capitalism by making the capitalist corporation a transnational corporation committed to "global welfare" and "universal well-being".

Finally, the post-industrial revolution will bring about the rationalization and "functionalization" of society, with the consequence that the need to work on "low" jobs will disappear. On the one hand, a "technostructure" possessing its own will and rational dynamics assumes the control of the society (5). On the other hand, automated technologies set human beings

free from hard, repetitive and alienating labour, since human beings only need fulfil the role of monitors or operators of the automated productive system. This means that the overwhelming majority of the population will become artists, that is creators (see TABLE III)(6).

This technological interpretation of history and of society combines certain phenomena of the technological and socio-economic developments in contemporary society (in particular those of the USA), with an undisguised aim to justify capitalism. In this sense the theory of post-industrial society is part of the current form of capitalist ideology, and its fundamental traits are well described by E. Mandel and by a group of Soviet and Czechoslovakian authors, as follows:

L'idéologie qui chante la foi dans la toute-puissance de la technologie est la forme de l'idéologie bourgeoise spécifique au troisième âge du capitalisme. Elle proclame l'aptitude de l'ordre social existant à surmonter peu à peu sa propension aux crises, à résoudre "techniquement" ses contradictions, à intégrer les classes sociales en rébellion, et à éviter toutes les explosions. La théorie de la "société post-industrielle", dont la structure sociale serait dominée par les normes de la "rationalité fonctionnelle", correspond au même concept idéologique" (7).

Moreover, the theory of post-industrial society expresses

some of the external features of the scientific and technological revolution in the vulgarized and distorted form in which they are realized particularly under state-monopolistic capitalism. Their compilation becomes an

TABLE IIICLASSIFICATION OF TECHNICAL PROGRESS FROM THE
POINT OF VIEW OF WORK(A) Degrees of technical development

1. Hand tool.
2. Tool driven by other than human energy.
3. Universal tool.
4. Semi-automatic machine (or apparatus).
5. Mechanized production line (semi-automatic machine or apparatus with mechanized feed of material and removal of finished products).
6. Automatic machine (or automatic production line or apparatus).
7. Automatic equipment (machine, transfer line or apparatus) equipped with automatic measurement of progress, conditions and results of the process (among these also belong the automatic signalization of breakdowns, automatic protection devices, switching off the machine in case of a threat of imminent breakdown, etc.).
8. Automatic machinery equipped with automatic regulation (this includes of course the automatic changing or re-adjustment of machine-tool tools).
9. Automatic machinery equipped with automatic evidence of the characteristic indicators of the production process (for example devices which automatically record the consumption of material and energy, the quantity produced, idle time, etc.).
10. Automatic machinery, which automatically adapts itself to the changing conditions of its operation, automatically searches and selects the optimum means for fulfilling its assigned task (so-called automatic optimizing systems; automatic adaptive systems; automatically self-adapting systems; automatic machines capable of "learning", etc.; the applications known today include certain controlling automatic centers).
11. Automatic equipment which on the basis of the results of an evaluation of its own activity and of information about the development of the demand, about the requirements of the costumers, etc., automatically according to the obtained complex data determines the optimum quantity, assortment and quality of production, chooses a technology of production and selects the material, i.e. performs not only technical but also economic tasks; equipment of this kind is for the time being almost non-existent in the actual production process.

TABLE III
(Continued)

(B) Classification of the function of human beings in the production process.

1. The active phase.
 - a) sources of power;
 - b) handling of the tool, or other forms of acting on the working tool;
 - c) supplying material and semi-finished products, removal of the finished products and waste material.
2. The controlling phase.
 - a) maintenance of the necessary sequences of the operations;
 - b) measuring the progress, the conditions and the results of the production process;
 - c) control, i.e., maintenance of the production process within the limits set by the results of measurement;
 - d) optimalization and adjustment of the production process to changing conditions.
3. The preparatory phase.
 - a) inspection of the machine, its setting up, repair, maintenance;
 - b) selection of material, tools, determination of the working methods and of the production technology and the organization of production;
 - c) stipulation of the goals of production (the quantity, quality and assortment of the products, the economic criteria of production);
 - d) improvement of production, i.e., research and development (of the product, the production machinery, the technology and organization of production).
4. The inspection phase.
 - a) the evidence of the overall characteristic indicators of

TABLE III-B

(Continued)

the production process, i.e., comparison of the actual results with the set targets, analysis of the causes of the deviations, etc.;

- b) conclusions for determining the goals for production (3c), for the selection of the material, tools, the technology and organization of production (3b), for research and development (3d).

TABLE III
(Continued)

(C) Correlation between the function of human beings and the level of technological progress.

Function of human beings in the production process	Degree of technological progress										
	1	2	3	4	5	6	7	8	9	10	11
1. Active phase											
a)	+	=	=	=	=	=	=	=	=	=	=
b)	+	+	=	=	=	=	=	=	=	=	=
c)	+	+	+	+	-	=	=	=	=	=	=
2. Controlling phase											
a)	+	+	+	-	-	=	=	=	=	=	=
b)	+	+	+	+	+	+	=	=	=	=	=
c)	+	+	+	+	+	+	+	=	=	=	=
d)	+	+	+	+	+	+	+	+	+	=	=
3. Preparatory phase											
a)	+	+	+	+	+	+	+	+	+	-	-
b)	+	+	+	+	+	+	+	+	+	+	=
c)	+	+	+	+	+	+	+	+	+	+	=
d)	+	+	+	+	+	+	+	+	+	+	+
4. Inspection phase											
a)	+	+	+	+	+	+	+	+	=	=	=
b)	+	+	+	+	+	+	+	+	+	+	=

+: function performed by human beings
=: function performed by machine
-: function performed partly by machine

Note: The level #11 is listed here as a theoretical case, which represents the logical climax of the present-day tendencies in the development of automation. No doubt a number of intermediate levels which are omitted here will appear in the future between this level and level #10.

SOURCE: J. AUERHAN, Technika, kvalifikace, vzdělání, Prague, 1965.
Quoted in R. RICHTA (1968), Table 2.2, pp.318-320.

ideology that is intended to be a counterweight to Marxism-Leninism...(8).

These ideological traits of the theory of post-industrial society can be explained in the following way. First, the theory holds that a given element of the world, namely technology, is becoming (or already is) the guiding and determining principle of social and historical processes. Technology is placed outside history as such, i.e. it is not human or social, but a "physical" process. Technology is conceived by the advocates of this theory in a pseudo-personalized form: it acquires characteristics that only human beings possess. In particular, it is said to "set goals" for itself and for society, and it is said to be capable of discerning and enforcing a determined historical course inherent in the established goals (rationality and effective power). Technology fulfils the function of universal ^a deus ex machina and becomes the "subject", the active agent of socio-historical development. The theory of post-industrial society is based on a "fetishism of the machines", in which social and human relations are thought to be technical relations between machines. The particular technologies recently developed (cybernetics and electronics above all) are regarded with the same religious and mystified awe that the arquebus was regarded at first sight by our pre-Columbian ancestors back in the XVIth century. Only in those days the Chorotegas and the Iroquois were soon "disenchanted"

and learned only too well that arquebuses were but instruments. Contemporary advocates of post-industrial society, by contrast, aim to become the high priests of the new religion of computers and circuits. The theory of post-industrial society, as Mandel goes on to say,

(c)omme toute idéologie... n'est certes pas une simple "duperie", mais une perception conditionnée de la réalité sociale mystifiant cette réalité (9).

In the second place, the theory of post-industrial society is based on the assumption that the existing social order is the best possible social system, since it can adapt itself to the demands of the new technologies. As a result, capitalism is assumed to be the "natural" and best form of human intercourse. Capitalism is thought to be leading humanity to happiness, abundance and freedom, since it not only allows post-industrial technologies to flourish, it is even identified with them. As a consequence of this, capitalism is regarded as being both all-powerful and capable of existing ad aeternam. Theories of post-industrial society, in presenting the view that capitalism and technology are the same thing, and that capitalism will exist for ever, put forward the view that opposition to the prevailing social system must be unsuccessful, that nothing anyone can do will alter the triumphant march of post-industrial society (capitalism).

Notice also that the theory of post-industrial society is based on a simplistic extrapolation of certain real phenomena occurring in society. In particular, the positive aspects of the economic, cultural, scientific and technological developments in the USA during the late 1950s and early 1960s are extrapolated to the whole world and to all future history. Needless to say, there are negative aspects in the development of the USA that should be considered in order to form a better picture of that society during this time. Moreover, subsequent historical developments have already disproved most contentions of the advocates of the post-industrial society.

Thirdly and lastly, the theory is proposed as an adequate explanation of the historical and social processes. In particular, it is presented as being quite independent of considerations pertaining to particular social classes. Since technology is not easily related to the domination of humans by humans because it can be regarded as "objective", the interpretation of history based on technological determinism is also thought of as being more "scientific" and "objective" than other interpretations which rest on the analysis of social and human determinants. However, even if technology could be regarded as socio-historically determinant, this does not mean the end of social domination unless, of course, as it is the case with the theories of post-industrial society, human and social history is reduced to be

but a part of natural history, and technology is hypostasized to become the ultimate and transcendental "Fate".

Advocates of the theory of post-industrial society, as all other technological determinists, ultimately base their views on the perception that things, not human beings, make history. The simplest way to refute these views is by constantly emphasizing that things are but human instruments. For example, by saying, again with Mandel, that

Auschwitz et Hiroshima ne sont pas des produits de la technologie, mais en dernier ressort les résultats du développement des rapports de force sociaux (10).

(B) Theories of industrial and post-industrial societies and Marxism.

The interpretation of history and social processes in terms of their technological determination constitutes an attempt to present an alternative explanation to historical materialism. In this regard it is important to note that theories of industrial and post-industrial societies both attempt to refute Marx's views and to "integrate" them, once their "errors" have been corrected. Some proponents of this theory have attempted to base their views on a revised and "updated" interpretation of Marx (Dahrendorf and Aron), illustrating Lenin's remark that

the enemies of Marxism disguise themselves as Marxists. Others, like Kahn and Brzezinski, have adopted a strong anti-Marxist stand, but they too have felt called upon to discuss Marx's ideas. They reject Marxism by arguing that it corresponds to a pre-post-industrial era, when ideologies and political doctrines were more determinant and that today such approaches are not only "unscientific" but reactionary. Post-industrial society is determined by technological change, not by class struggle, and any attempt to explain socio-historical processes in terms of class struggle only hinders the transition to post-industrial society. For his part, Brzezinski attempts to refute Marx and Marxism "empirically", by contrasting the actual political, economic, scientific and technological achievements of the USSR and the USA. According to Brzezinski these nations embody the ideas of Marx and of "free people", respectively, and the "fact" that the USA is and will remain technologically superior to the USSR demonstrates that Marxism is but a historical mishap.

However, the interpretation of Marx that advocates of the theory of post-industrial society develop is quite implausible. It is based on a gross oversimplification of Marx's ideas to make them fit into a version of technological determinism that eliminates any vestige of social determination. Whereas Marxist technological interpretations of Marx still attempted to find a place —though a subsidiary place— for social and politico-

ideological aspects of society, advocates of the theories of industrial and post-industrial societies attempt to eliminate all social and politico-ideological determinations. This has the result of making their re-interpretation of Marx totally implausible.

Nonetheless, these bourgeois interpretations of both Marx and contemporary society need to be considered in the present essay because they complement the argument that technological interpretations of history and of society based on Marx's work are implausible, by showing the implausibility of devising interpretations of history on a non-Marxist basis. Theories of industrial and post-industrial society could be said to be the ultimate deformation of Marx's ideas in the interest of defending technological determinism.

Antecedents. The attempt to reinterpret and to reject Marx on the basis of a technological view is not new. The most important antecedent of recent theories of industrial and post-industrial societies is Max Weber's interpretation of economic and social processes. According to Weber, human beings strive to overcome scarcity through goal-oriented, economic actions. Such economic activity involves technique, i.e. human activity considered exclusively from the point of view of the means employed in it. Thus, economic actions are related to "ends", while technique

is related to "means". Both aspects complement each other, for economic actions require technique to be developed, and technique only acquires sense as part of an economic action (11). For Weber, economic action is essentially political, since it is directed and shaped by the way society is politically organized. The most advanced form of political organization is bureaucracy, according to Weber, who argues that

(t)he primary source of the superiority of bureaucratic administration lies in the role of technical knowledge which, through the development of modern technology and business methods in the production of goods, has become completely indispensable. In this respect, it makes no difference whether the economic system is organized on a capitalistic or a socialistic basis (12).

The capitalist state is not an instrument of class domination, as Marx and Lenin thought; it is rather the embodiment of advanced bureaucracy and modern efficiency. Both capitalism and socialism are characterized by the fact that they must possess the bureaucratic organization that all politico-economic systems require:

(For)... those subject to bureaucratic control (that) seek to escape the influence of existing bureaucratic apparatus, this is normally possible only by creating an organization of their own which is equally subject to bureaucratization (13).

What characterizes modern societies is their technical and

hence their developed bureaucratic organization. Bureaucracy expresses, according to Weber, rationalized, scientific authority. For him, only capitalism has been able to develop a bureaucratic system based on scientific methods of organization, since only capitalist production and distribution incorporates the "rational calculation" that modern technology and organization requires. Once bureaucracy has been organized according to scientific criteria, authority in the social system is disengaged from charismatic and ideological forms, as well as from property and class determinations. Therefore, says Weber,

capitalism is the most rational economic basis for bureaucratic administration and enables it to develop in the most rational form (14).

With this theory of rational organization of society through bureaucratic administration, Weber thought that Marx's contentions were refuted: authority only expresses itself as class rule and as economic domination in the pre-bureaucratized stages of history.

Attempting to give an empirical foundation to Weber's views in the early 1930s, A. Berle and G.C. Means studied the capitalist enterprise to show how authority had become detached from the greed of the entrepreneur and had become a technical aspect of the productive process. According to these authors, the owners

of the capitalist enterprises no longer control the corporations' decisions and policies. This control is now in the hands of the managers, who are essentially "socially responsible":

It is conceivable —indeed it seems almost essential if the corporate system is to survive— that the "control" of the great corporations should develop into a purely neutral technocracy, balancing a variety of claims by various groups in the community and assigning to each a portion of the income stream on the basis of public policy rather than private cupidity (15).

R. Dahrendorf. Following Weber and Berle and Means, Dahrendorf argues that Marx misunderstood the process of control in the capitalist enterprise. In his earlier works, Marx had developed a philosophical theory which stressed the dependence of technical control on class domination. This philosophical assumption was maintained by Marx in his later works, even though in these mature analyses Marx presents sociological views that disprove the earlier philosophical assumptions. Since Marx maintained his philosophical view, he was never able to grasp the consequences of his own sociological discoveries. But by eliminating the philosophical a priori from Marxism, it is possible to develop a technological, "functionalist" interpretation of the notion of authority in capitalism.

According to Dahrendorf, Marx held that the capitalist control of the capitalist productive and distributive processes

was based on the reciprocal interdependence of

- (a) the class conflict generated by work and market relations (class struggle);
- (b) the property system which supports the class conflict (private property); and
- (c) the "presence of relations of domination and subjection" generated by class conflict and by private property (16).

Marx's mistake consisted in his regarding these three issues as being inseparable: for Marx, if private property disappears, then class struggle will be practically eliminated, and relations of domination and subjection will tend to wither away. Dahrendorf thinks that this assumption of Marx is disproved by sociological analysis, according to which it is necessary to regard these three aspects of capitalist production as separated.

Marx himself, says Dahrendorf, moved closer to the truth when, in Capital, he recognized that the modern capitalist company, the joint-stock company, involved a separation of the functions of ownership and control, while still retaining the overall character of the enterprise as a private one (17). For Dahrendorf, the separation of functions in the capitalist enterprise amounts to a radical change in the nature of the enterprise itself, and thus to a radical change in capitalism. Since managers do not own property, the conflict between workers and capitalists disappears once managers assume effective control of the enter-

prise. Marx, however, by adhering to the philosophical perspective was not conscious that he was undertaking a major sociological achievement. Says Dahrendorf:

(F)or Marx, the joint-stock company involves a complete alienation of capital "from the real producers, and its opposition as alien property to all individuals really participating in production, from the manager to the last day-laborer"... In other words, by separating ownership and control, the joint-stock company reduces the distance between manager and worker while at the same time removing the owners altogether from the sphere of production and thereby isolating their function as exploiters of others. It is merely a step from this kind of analysis to the thesis that... the "capitalists without function" yield to the "functionaries without capital", and that this new ruling group of industry bears little resemblance to the old "full capitalists"(18).

On this basis, Dahrendorf concludes that the contemporary productive systems prevailing in, say, the USA or England, are no longer capitalists, but a particular form of "industrial society". As Nichols observes, for Dahrendorf

capitalism is only one kind of industrial society and... the term "capitalist" is only applicable where the legal owner of the factory is at the same time the practical manager of production and the supreme commander of his workers (19).

Dahrendorf thus thinks that Marx opened the way for a "functionalist", technological and technocratic interpretation of social, economic and historical processes. He was only blinded by a philosophical faith based on his emotional attachment

to the fate of the workers. Of course, Dahrendorf dismisses as irrelevant what Marx says in Chapter XXIII of Vol. III of Capital, about the "managerial ideology":

The work of management and supervision... this function arising out of the servitude of the direct producers has all too often been quoted to justify this relationship (20) (Emphasis added).

For Marx, as against Dahrendorf, the idea of "neutral" managerial control of the capitalist enterprise is used to justify the plight of the workers in the capitalist productive and distributive processes. The managerial control of the enterprise is not technically neutral, regarding the relations of servitude that characterize the activity of the workers in the capitalist factory, be it directed by a manager or by the owner or by a computer. Marx, contrary to Dahrendorf, indeed always regards the capitalist economy from the point of view of the consequences it has for the life of the workers.

Finally, as we shall see in the next Chapter, G.A. Cohen, following a somewhat different approach, nonetheless reaches conclusions similar to those of Dahrendorf. For him, as for Dahrendorf, Marx's analysis should be freed from "metaphysical" and "dialectical" fetters, in order to understand it as a functionalist theory of history and society based on a technological determinism.

R. Aron. In his 18 Lectures on Industrial Society, Aron develops a version of the theory of industrial society based on an interpretation of Marx. For Aron, social and historical developments can be understood in technological terms, since technology is the basis of socio-economic growth, and Marx's notion of capitalist accumulation should be understood as meaning techno-economic growth.

The central notion of Aron's interpretation is that of "economic growth". Aron bases his analysis on Rostow's (21), for whom the notion of economic growth is understood as follows:

What is basic about economic growth? (G)rowth is the consequence of the progressive efficient absorption into the economy of new technologies... What is universal about the process of growth?... Technologies are, essentially, uniform at particular times in modern history (22).

Aron develops this idea of Rostow in a particular way. He tries to show that history is progressive by relating technology to science, which he takes to be essentially progressive and cumulative (23):

It is not difficult to extend the notion of progress from science to technology, although in the technological field the idea of accumulation is by no means simpl(e)... But it is still possible to speak of progress because there is a simple measure of the development of technology: the

degree to which men can use natural forces for their own benefit, or the quantity of energy which each individual in a society can utilise. In this sense the progress of contemporary societies as compared with societies in the past is most striking. Thus there are two domains in which progress is a fact of experience, because it results from the nature of the activity considered: science and technology (24).

The progress of no social and historical activity other than science and technology can be established as a "fact of experience" since only these can be "measured". Therefore, progress in history must be understood in terms of scientific and technological progress. This argument of Aron is poor, but it represents an advance on Rostow's argument which assumes that progress can be measured simply in terms of the increase in the per capita GNP of a country in conjunction with various technical indicators such as the per capita number of automobiles and per capita number of telephones available. It is difficult to appreciate why so much credit was given to theories like these of Rostow and Aron, considering their conceptual bareness.

In order to put some flesh to his rather simplistic view, Aron makes two moves, both intended to enhance the importance of his central notion of economic growth. On the one hand he appeals to bourgeois theorists, who since the days of Saint-Simon at least have argued that capitalism is an "industrial

and progressive" society. And on the other hand he adapts Marx's notion of capitalist accumulation to provide an economic foundation for the notion of economic growth.

First Aron characterizes the industrial society.

In such a society, he says,

the enterprise is separated from the family and this results in a new type of production, a technical division of labour, an accumulation of capital and a progressive economy; the economic calculus becomes inevitable and a concentration of workers takes place (25).

And he argues that all these traits appear in contemporary societies, so that they must be regarded as industrial societies. This approach requires abandoning other theories where contemporary societies are regarded either as "capitalistic" or "socialistic", since this characterization conceals the basic industrial traits that define modern societies, by making them subsidiary to a prejudiced "political" view. Terms such as capitalism and socialism can be retained, but only to indicate different forms of industrial society. For Aron, the above mentioned industrial traits, in particular the adoption of the economic calculus are

common to all industrialized economies, whether Western or Soviet. (This) and the general theory of long-term economic growth... have led quite naturally to a return of the old concept of industrial society (26).

During the period when capitalism was "threatened by Marxism" the concept of an industrial society was "temporarily abandoned". But today this notion is not alien to Marxism, provided Aron's own reinterpretation of Marxism is accepted. According to Aron, when historical materialism is stripped of all unnecessary political commitments, it is quite compatible with the theory of industrial society:

Marxists, when they are not subject to political direction, have no difficulty in adopting it; for they need only retain the idea of the forces of production as a determining factor, while sacrificing the relations of production (27).

It follows from Aron's views that when Marx is regarded as a technological determinist, his views about class struggle need no longer be taken seriously. To put Marx on a proper footing we may retain his view that the forces of production, understood as technological forces, are the determinant factor in social and historical change. But to do this we must interpret history in terms of the theory of industrial society.

Aron does not restrict his attempt to relate the notion of industrial society to Marx's views about productive forces. He also wants to show that Marx's analysis in Capital, in particular the theory of value, the theory of circulation of capital, and the laws of transformation of the capitalist system, is

compatible with the theory of industrial society. For Aron, industrial society is characterized by its inherent propensity to grow, and for its part growth is understood in scientific and technological terms. In a similar fashion, he thinks, all the concepts developed by Marx in Capital finally boil down to the notion of the accumulation of capital. Moreover, for Aron Marx's theory of the accumulation of capital is the basis of his own views:

The sociological problem which has provided the main theme of this book is that posed by Marx and Marxism —especially as the later is expounded in Capital. Marx analyzed... (different aspects of) capitalism... But... the central phenomenon in Marx's view was that of accumulation. He believed that the essence of capitalism was to be found in the accumulation of capital. By choosing economic growth as the central subject of this investigation, I have taken up the Marxist theme of accumulation in the terminology and using the concepts of modern economics (28).

However, Aron does not understand the notion of accumulation of capital as Marx did. For Aron, as well as for Marx, the process of capital accumulation manifests itself in increasing the (mass of) surplus-value, a phenomenon which involves, among other things, an increase in the productivity of workers, an increase in the organic composition of capital and a rapid expansion of both the means of production and the use-values produced. If the notion of capital accumulation is restricted to its manifestation, if it is analyzed solely in terms of the

increment in the (mass of) surplus-value, capital accumulation can be thought of as a technical process. But Aron seems unaware that Marx thought that the increment in (the mass of) surplus-value was a necessary consequence, and then also a cause of, the increase in the rate of surplus-value, a phenomenon which involves the increased exploitation of the labour force (29). For Marx the accumulation of capital is basically an economic process in which it is possible to determine the social relations which characterize capitalism. For Aron, on the contrary, the accumulation of capital merely refers to technological efficiency and technological progress. For him, "capital" is not a social relation, but "things", "goods", "money", "machines", "technology" (30). This explains why Aron is able to substitute "growth" for "capital accumulation", as well as how he can see "capitalism" as being nothing other than "industrial society". This last notion makes no reference to social relations and to human exploitation, whereas the notion of capitalism as used by Marx most certainly does.

Aron's attempt to recruit Marx to the ranks of technological determinism thus fails. Only a gross misrepresentation of Marx's views on capitalism can justify Aron's idea that capital accumulation can be reduced to technological and scientific accumulation.

Aron's idea, moreover, is merely a somewhat different expression of the same interpretation of both contemporary capitalism and Marx's theories that we found in Axelos and in Marcuse. All three of them believe that when we understand the role of science in society correctly we shall come to the view that technology is the determining factor of socio-historical development. Axelos and Marcuse took this idea from the metaphysical approach of Heidegger, while Aron received it from Rostow.

For Axelos, as we saw, the history of modern and contemporary philosophy revealed that "ratio", "subjectivity" and the "will-to-power" were the most salient characteristics of modern and contemporary human beings. These characteristics were expressed in science, and hence in "productive subjects" and "productive technique". For his part, Marcuse thought that the hypothetical conceptualization of nature embodied in science, which precedes any real activity of transforming nature, generates a technological a priori in the minds of modern and contemporary human beings. This technological a priori then became a political one, and from this Marcuse deduced that, once technology reached a certain level of development, it transformed itself into the determining principle of socio-historical processes. Aron, in a similar fashion, by characterizing science as cumulative and progressive, and by then extending these characteristics to account for technology, thinks it possible to understand socio-historical pro-

cesses as being progressive because of being technologically determined. All three approaches, however, are alien to Marx's view, for they are based on the assumption that mental processes precede and determine social, historical and material changes. Axelos, Marcuse and Aron are only able to blur their idealist stand by projecting the mental determining principle to a particular set of things (machines, technology) and by arguing that these determine historical reality.

Z. Brzezinski. In his book, Between Two Ages. America's Role in the Technetronic Era, Brzezinski attempts to defend a technological determinist interpretation of contemporary society which at the same time proves that Marx's ideas are implausible. He does not develop an analysis of Marx's views in terms of a study of their theoretical soundness and congruence, but rather, he attempts to refute Marxism by showing that the practical consequences of Marx's ideas are totally unsatisfactory. In order to do this, Brzezinski assumes that Marx's views have been put into practice in a historical experiment, namely the USSR. He also assumes that anti-Marxist views have been put into practice in the historical development of the USA. Thus, by contrasting the socio-historical realities of the USSR and the USA, and by showing the superiority of the latter ones, he thinks it possible to demonstrate that Marxism is a failure. However, Brzezinski's

dictum against the USSR and Marxism is but an apologia pro America sua, based on the unilateral vision of history and society prompted by the particular form of technological determinism he embraces.

Brzezinski first characterizes the historical and social developments in the USA. For him this country is in the early stages of a "technetronic revolution" which is a phase of post-industrial society. Post-industrial society, for its part, is seen as follows:

Today, the most industrially advanced countries (in the first instance, the United States) are beginning to emerge from the industrial stage of their development. They are entering an age in which technology and especially electronics —hence my neologism "technetronic"— are increasingly becoming the principal determinants of social change, altering the mores, the social structure, the values, and the global outlook of society (31).

Given that social and historical development is technologically determined, Brzezinski wants to know where and how is the technetronic revolution taking place. Here Brzezinski's model relies on an assesment of technological, economic, social, cultural and political conditions in the USA. Brzezinski is generally optimistic about achieving well-being and happiness under the guidance of the USA (32), because

(t)he economic base that determines the average American's material lot has expanded in recent years at a pace that makes the American per-capita GNP increase at a rate greater than that enjoyed by other advanced societies or by those that are becoming so... Despite the indisputable persistence of poverty in the United States, American society is achieving an unprecedented affluence that touches all classes... Moreover, according to the Council of Economic Advisors' Report of early 1969, if 1961-1968 rates in reducing the number of poor persons are continued, "poverty" will be entirely eliminated in ten years; if the 1968 rates are continued, it will disappear in a little over five years ... (33).

Thus, Brzezinski views the USA as the "principal global disseminator of the technetronic revolution" (34).

The impact of the USA on other countries is both in terms of ideology and material, the USA leading the way with respect to both "freedom" and "economic opportunity" (35). However, the most important influence of the USA on the world arises from its scientific, technological and educational developments, including "youth mores and life-styles" (36). Since the USA is the center of the emerging global electronic communications network, it is also "the world's social laboratory" (37).

The existing social system of the USA is regarded as the best social organization to deal with the consequences of the technetronic revolution. Other societies cannot stimulate the technological developments required for advancing into the post-industrial society or, if able to stimulate them, they

cannot cope with the multiple effects of the technetronic revolution. In fact, the USA is showing that it alone is able to provoke the stimulation required for this revolution, and that it alone can adapt its social institutions to the technological imperatives of the new order. The exceptional socio-historical position of the USA is revealed in its development of a "rational humanism", which puts flesh to the ideals of freedom and equality, at the same time avoiding the de-humanizing effects of technology (38).

Brzezinski dedicates a great deal of attention to discussing the relations between the USA and the rest of the world. He also regards the prospects in this sphere very optimistically. The USA is extending the benefits of the technetronic revolution to the rest of humankind and will continue to do so, since

America's relationship with the rest of the world must reflect American domestic values and preoccupations...
(A) nation concerned with social justice and technological adaptation cannot help but become similarly committed on an international level (39).

Marxists argue that the relations of the USA to the rest of the world are imperialistic. But, in Brzezinski's opinion, this is untrue since the "imperial overtones" of USA foreign relations were but a temporary effect of the Second World War, and since today the USA has developed an "intimate and complex"

open relation with the world (40).

In the second place, Brzezinski contrasts the historical and social developments taking place in the USA with those occurring in the USSR. He takes the USSR as the main actual representative of the Marxist world-view and as a touchstone for evaluating its achievements. I shall only enumerate a few of the specific arguments that Brzezinski offers to disqualify the USSR as bearer of the technetronic revolution, since these arguments are only too well known.

Techno-economic arguments. The Soviet Union

- (a) has a low income level per capita;
- (b) is unable to develop its agricultural sector;
- (c) is unable to develop its industrial-consumer sector;
- (d) dedicates an enormous economic effort to bolster its military apparatus;
- (e) possesses a sharp class division due to the economic privileges Party members enjoy;
- (f) only develops the electronic technology for military purposes;
- (g) lags in techno-scientific development;
- (h) is dependent on the "West" for sustaining its techno-scientific development;
- (i) has a static educational system due to the ideological and political repression of freedom of thought.

Politico-ideological arguments. The Soviet Union

- (a) possesses a bureaucratized, rigid and inefficient political system;
- (b) is politically repressive and socially "traditionalist";
- (c) is governed by an aged and closed élite;
- (d) does not possess instruments for social mobilization and for individual motivation;
- (e) is isolated in the international context;
- (f) does not represent a significant ideal for other nations;
- (g) is at the brink of collapsing (41).

In sum, as the historical embodiment and expression of the Marxist ideas, the Soviet Union shows just how weak they are.

On the other hand, the technetronic revolution in the USA is forcing the USSR to adapt itself to the new world and to change its ways. Brzezinski foresaw that the USSR was doomed to suffer the same political processes that other societies recently experienced, like students' unrest, sexual revolution, etc. These developments, Brzezinski hoped, would generate "more visible social and political tensions" in the USSR (42).

Moreover, Brzezinski thinks that, sooner or later, as a result of the rational and humanistic world-view being urged in the USA, the USSR will be forced to abandon its dogmatic, Leninist version of Marxism and adopt a more compatible, "Western", "humanistic" Marxism. Western and humanistic Marxism is pluralistic

and can easily adapt the ideas of Marx to the revolutionary demands of the technetronic era.

Once the social and the ideological views of the USA penetrate the USSR, political, economic and techno-scientific considerations will force the USSR to "integrate" itself to the global system headed by the USA. For the USA is in the process of forging a "Community of Developed Nations", now composed of the USA, capitalist Europe and Japan, and later to be augmented by the inclusion of quasi-developed nations such as Australia, Israel and Mexico. After this, socialist European countries will be added to the community, and this will force the USSR to enter also (43).

According to Brzezinski, in the technetronic era all threats to the primacy of the USA in the world will be finally removed, since its arrival will ensure the obliterations of the USSR and of "militant" Marxism.

Brzezinski's views are open to many criticisms. Here I shall only mention that neither the USA nor the world as a whole have developed according to his predictions. During the 1970s the USA suffered economic crises that no "technetronic" devices were able to explain or to stop. During the last five years the productivity of the USA's workers has consistently decreased,

while unemployment and poverty have continued to spread. The USA today lags in scientific and technological development in many important fields, not only in relation to the Federal Republic of Germany and Japan but also in relation to the USSR. The social system of the USA has been strained lately to such a degree that it is impossible to regard it as a model of "social justice". For example, as H. Kahn recognizes, the chance for an adult male to be assassinated in a street in New York is of the order of 3 in a hundred, while the chance for an USA soldier to be killed in World War II was only 1.8 in a hundred (44).

According to Brzezinski, Marxist historical and social analysis cannot deal with the real meaning of the historical transformation the USA is supposed to be bringing about:

The concept of an international revolution inspired by a common ideology had some meaning when the industrial revolution seemed to indicate that certain forms of social organization and of social crisis had a general application. That view combined a universal intellectual perspective with a geographically historical parochialism (45).

However, it is obvious that Brzezinski's own views rest on a "geographically historical parochialism". For him, the historically privileged "manifest destiny" of the USA is the criterion upon which to judge the rest of the world and history itself.

And, in contrast to the Marxist view, his opinions are not based on an "universal intellectual perspective": there is nothing less universal than the attempt to explain world's history on the basis of an unilateral view of a nation's development in a decade (1950s-1960s), and in the assumption that technology determines history. Brzezinski's interpretation of history and society is but an apology for capitalism. As has been justly observed, Brzezinski's analysis

strives to find justification for the "special world mission" of American imperialism in the needs of social development appealing to the logic of the scientific and technological revolution (46).

Conclusion.

We have examined the characteristics of some non-Marxist interpretations of history couched in terms of technological determinism. These interpretations, which constitute the specific ideology of capitalism in the post-war period, attempt to coopt historical materialism. While it is important for Marxists to understand the current scientific and technological developments, it would be a mistake for them to attempt to understand historical materialism in terms of technological determinism. Were they to do so, Marxists would risk being trapped in the ideological nets of their enemies. By adopting these

theories of industrial and post-industrial society, superstructural Marxists like Marcuse and Lefebvre have shown how little they understand Marx's theories and contemporary socio-historical development. When put side by side, superstructuralists' technological interpretations and non-Marxist theories of industrial and post-industrial societies show that they share a basic assumption about technology being the ultimate determining element of contemporary socio-historical development. Non-Marxist interpretations follow this reductionistic trend only too naturally, since they are not based on a social-historical world-view that could eliminate the need of appealing to transcendental or reified determinants. Superstructuralists, for their part, in adopting technological determinism show their neo-revisionist stand, and at the same time play into the hands of capitalist ideologues.

Notes.

- 1) Advocates of the theory of post-industrial society do not divide history into the same periods, and the terminology employed varies greatly from author to author. However, they all share the view that history is determined by technology, and they all agree to talk of "industrial" (or "modern") stages. Kahn's model is representative of the mixture of serious scientific analysis and openly fanciful views that is typical of these interpreters of history and society. Were it not for the fact that these interpretations are supremely influential in the capitalist countries, one could dismiss them outright, without the need to show their failures and misrepresentations.
- 2) H. KAHN & A. WIENER (1967); D. BELL (1973). B. GENDRON (1977), considers that the theory of post-industrial society should be called "technological Utopianism". He says that "(t)oday it is not terribly fashionable to be a Utopian. Our technology seems helpless in the face of a growing scarcity of food and power, and of economic stagnation and inflation. But not too long ago, technological Utopianism was quite popular. It even received the official blessing of the Kennedy administration and of such of its ideologues as John Kennedy himself, John Kenneth Galbraith, Robert MacNamara and Walt Rostow. In a famous speech, Kennedy stressed that 'what is at stake in our economic decisions today is not some grand warfare of rival ideologies', but rather the 'practical management of a modern economy'. What is most needed, he said, is 'basic discussion of the sophisticated and technical questions involved in keeping a great economic machinery moving ahead' rather than diatribes about political philosophies and ethical principles. While the problems of the 1930s had required 'political answers', the problems of the 1960s, he said, primarily required 'technical answers'"(p.11).
- 3) B. GENDRON (1977) includes in this group some Marxists like Marcuse and H. Braverman.
- 4) T. ROSZACK (1969); J. ELLUL (1964); H. KAHN (1979). Other representatives of the post-industrial interpretation of history and society include Z. BRZEZINSKI (1970); the later work of R. ARON (1969); and the works of P. DRUCKER (1970); J.K. GALBRAITH (1958) and (1971); A. GOULDNER (1976); A. TOURAINÉ (1969); and D. BELL (1976). For a critique of this theory see, among others, N.I. DRIAJLOV (1975); G.S. KHOZIN (1973); V.I. MAZUR (1976);

J.R. NUÑEZ-TENORIO (1977); A.N. SHLEPAKOV (1976); ACADEMIA PRAGUE (1973); A. BIRMAN (1978); L. GOLOVANOV (1977); E. MANDEL (1976).

- 5) This view has been developed by J.K. GALBRAITH (1971).
- 6) Authors that propose a Marxist analysis of the "scientific and technological revolution" (defined below, note #8), have paid a lot of attention to the changes in the work process which new technologies bring about, as well as to the organizational changes in the work process demanded by a communist society based on automated technologies. Although advocates of the theory of post-industrial society usually consider the implications for labour in a rather general and imprecise manner, they also recognize that with an automated productive system the role played by the worker changes radically. However, they prefer to leave this problem unresolved, because it is difficult to resolve while arguing within the theoretical framework of bourgeois economics, sociology and history. For, as the productive system increases the productive capacity of each individual worker, and as the introduction of automated productive processes diminishes the number of workers required, the capitalist economy becomes increasingly unable to give an adequate socio-economic response. Three main consequences follow from the capitalist incapacity to cope with an automated productive system: (a) the tendency of the rate of profit to fall grows parallel to the increases in the organic composition of capital and the economic system becomes prone to develop an "onde longue à tendance stagnante" (E. Mandel); (b) the industrial reserve army also tends to grow, in apparent contradiction with (a); and (c) the uneven development of economic sectors accentuates and creates further economic difficulties and produces stagnation in the research and development processes. Table III was developed to illustrate what happens when automation occurs in a socialist economy; and I use it here to point out the changes in the work process. O. VARSAVSKY (1974) has developed a model for technological development in a socialist economy which stresses the substantial differences in comparison with what occurs in a capitalist economy.
- 7) E. MANDEL (1976), III, p.232.
- 8) ACADEMIA PRAGUE (1973), p.155. By "scientific and technological revolution" Marxist authors understand the combination of two processes typical of the post-war period. (1) The revolution-

ary changes which occur in the pace, magnitude and quality of development of both science and technology, when they become an integrated system of research and development (R&D). In this R&D system, for the first time in history, technological developments become systematically dependent upon scientific research, while the traditional dependence of science on technology is maintained and reinforced. (2) This revolutionary integration of science and technology is made possible only because of the reorganization of the system science-technology as a social institution which fulfils a relevant role in a parallel social cultural and politico-economic revolutionary process. The integration of science and technology is a social institution which provides the means for the overall socio-political and economic changes leading to communism, as instrument of social organizations other than the system science-technology. The theory of the scientific and technological revolution stresses two points: one, that, for the first time in history, science becomes a direct productive force since it now enters the productive process immediately and as one of its determinant elements; and two, that social and politico-economic conditions determine the scientific and technological developments, so that both dimensions (the politico-economic and the technoscientific) can develop evenly and rapidly: in other words, that the scientific and technological revolution is part of the process by means of which class society is brought to its end. For expositions of the theory of the scientific and technological revolution, see, among others, ACADEMIA PRAGUE (1973); A. BIRMAN (1978); L. BLYAKHMAN & O. SHKARATAN (1977); T. DOS SANTOS (1977); N.I. DRIAJLOV (1975); J.R. NUÑEZ-TENORIO (1977); R. RICHTA (1968); L. GOLOVANOV (1977). It is interesting to notice how scholars living in advanced capitalist countries usually do not even mention this Marxist conception of the scientific and technological revolution. For example, B. GENDRON (1977), who attempts to build a Marxist critique of bourgeois theories of post-industrial society as well as to present "the socialist view" on scientific and technological development in contemporary society (pp.185-245), only mentions the works of Marx, Engels, Lenin and Mao Dzedong. Not that the works of Marx, Engels and Lenin are not important, but it is unwise to overlook the specific analyses of contemporary science and technology that contemporary Marxists outside the capitalist countries have produced.

9) E. MANDEL (1976), III, p.237.

10) Idem., p.245.

- 11) See M. WEBER (1968), I, pp.64-67.
- 12) Idem., p.223.
- 13) Idem., p.224.
- 14) Idem.
- 15) A.A. BERLE & G.C. MEANS (1968), pp.312-313. See also T. NICHOLS (1969), pp.19-30.
- 16) See R. DAHRENDORF (1959), pp.3-35.
- 17) See K. MARX, Capital, III, Chapter XXIII, pp.370-390.
- 18) R. DAHRENDORF (1959), pp.42-43.
- 19) T. NICHOLS (1969), p.45.
- 20) K. MARX, Capital, III, p.385.
- 21) See R. ARON (1967), pp.5-6.
- 22) W.W. ROSTOW (1971), pp.179-180.
- 23) R. ARON (1967), pp.58-60.
- 24) Idem., p.61.
- 25) Idem., p.80.
- 26) Idem., p.3.
- 27) Idem.
- 28) Idem., p.235.
- 29) See K. MARX, Capital, III, p.219. What I am calling here "mass of surplus-value" is what Marx simply calls "mass of

profit" or "surplus-value". I adopt this terminology in view of Marx's own explanation: "The surplus-value or profit, consists precisely in the excess value of a commodity over its cost-price, i.e., the excess of the total labour embodied in the commodity over the paid labour embodied in it. The surplus-value, whatever its origin, is thus a surplus over the advanced total capital. The proportion of this surplus to the total capital is therefore expressed by the fraction $\frac{s}{C}$, in which C

stands for total capital. We thus obtain the rate of profit $\frac{s}{C} = \frac{s}{c + v}$, as distinct from the rate of surplus-value $\frac{s}{v}$.

The rate of surplus-value measured against the variable capital is called rate of surplus value. The rate of surplus-value measured against the total capital is called rate of profit. These are two different measurements of the same entity, and owing to the difference of the two standards of measurement they express different proportions or relations to this entity". Idem., pp.42-43.

30) See R. ARON (1967), pp.73 and 187.

31) Z. BRZEZINSKI (1970), p.xiv.

32) As B. GENDRON (1977) says, optimistic views of post-industrial society rest on an empirical analysis of current developments in the USA. "(T)he viability of the Utopian view depends crucially on the occurrence and nature of the so-called postindustrial revolution in technology. Where is this revolution taking place? The usual answer is that it is occurring primarily in the United States, and less so in certain advanced "capitalist" states... and even less so in the one advanced "noncapitalist" society, the Soviet Union. Thus, for Utopians, the United States is the paradigmatic revolutionary society in the world ... For better or for worse, the whole case for technological utopianism rests on the analysis of present trends and conditions in the United States"(pp.19-20).

33) Z. BRZEZINSKI (1970), pp.205-206.

34) Idem., p.24.

35) Idem., p.25.

36) Idem., pp.25-31.

- 37) Idem., pp.32 and 196. "As the world's first post-industrial society, the United States is no longer shaped by the same forces that have stimulated social change in the advanced countries ever since England first confronted the machine" (p.197).
- 38) "The technological thrust and the economic wealth of the United States now make it possible to give the concept of liberty and equality a broader meaning, going beyond the procedural and external to the personal and inner spheres of man's social existence. By focusing more deliberately on these qualitative aspects of life, America may avoid the depersonalizing dangers inherent in the self-generating but philosophically meaningless mechanization of environment and build a social framework for a synthesis of man's external and inner dimensions". Idem., p.270.
- 39) Idem., p.255.
- 40) "(A) novel relationship between the United States and the world (is being created). There are imperial overtones to it, and yet in its essence the relationship is quite different from the traditional imperial structure... (T)he concept of "imperial" shields rather than reveals a relationship between America and the world that is both more complex and more intimate. The "imperial" aspect of the relationship was... a transitory and rather spontaneous response to the vacuum created by World War II and to the subsequent felt threat from communism... (T)he "imperial" attributes recede once conditions change..." Idem., p.41.
- 41) See Idem., in particular Part III, "Communism: The Problem of Relevance", pp.123-194, and pp. 7, 9, 29, 54, 275, 277, 282-284, 296, 301-303.
- 42) Idem., p.173.
- 43) Idem., p.301.
- 44) H. KAHN (1979), p.267. For an assesment of developments in the USA see, among others, M CASTELLS (1978), C.N. DEGLER (1960); T. DOS SANTOS (1978); M. DRAGUILEV (1960); A.M. JOHNSON (1974); E. MANDEL (1976); S. MELMAN (1974); S.M. MIENSHIKOV (1970); E. SAXE-FERNANDEZ (1978a) and (1978b); J. SAXE-FERNANDEZ (1977) and (1980); E. SEMO (1975); E. VARGA (1963).

45) Z. BRZEZINSKI (1970), p.277.

46) ACADEMIA PRAGUE (1973), p.156.

DEVELOPED TECHNOLOGICAL DETERMINIST INTERPRETATIONS

Both superstructuralist and non-Marxist versions of technological determinism are based on the assumption that contemporary capitalism has undergone fundamental changes. These analyses attempt to salvage some aspects of Marx's views, in particular some of his philosophical and sociological points. But both either disregard Marx's analysis of the labour process, or consider it in non-economic terms. In either event, the analysis of the labour process is not seen to be central to the interpretation of historical materialism in terms of technological determinism. For these reasons, versions of technological determinism developed by superstructuralists and non-Marxist authors grossly misrepresent Marx's views, in particular his considerations on political economy, as these are presented in Capital. I thus refer to such superstructuralist and non-Marxist interpretations as "primitive" technological determinist versions of historical materialism.

Recently, two English-speaking authors, W.H. Shaw and G.A. Cohen, have attempted to present a technological determinist interpretation of Marx that is not based on the assumption that capitalism has changed fundamentally, nor on a philosophical or sociological analysis. They have rather tried to develop a tech-

nological determinist interpretation of Marx focusing their analyses on the study of the economic "base" and, particularly, on a careful study of Marx's views on political economy. Both Shaw and Cohen center their interpretations on an examination of Marx's notion of the labour process and, in general, the productive process of society, rightly considering that, if Marx is a technological determinist, this can only be shown by such analyses. They reject any metaphysical approach, and downplay the role of the superstructures for socio-historical development. Their interpretations, as contrasted with those of the superstructuralists, could be called "infrastructuralist" versions, and the specific tendency of their views can be said to constitute a "developed" technological determinist interpretation of Marx.

However, even these developed forms of technological determinism misrepresent Marx's ideas and lead to positions like those proclaimed by classical revisionists. In this Chapter I shall offer a general characterization of these two versions of developed technological determinism and, at the same time, how they misrepresent Marx's thought and embody revisionistic views. In this way, the whole range of possible technological determinist interpretations of historical materialism will be shown to be linked to revisionism.

In order to demonstrate the failure of the developed technological determinist interpretations, we must see, first of all, that they stop short of considering the whole of Marx's theory, even though they incorporate much of Marx's analysis of the political economy of capitalism. The unilateral conception of the capitalist political economy that is at the basis of the developed technological determinist versions is due to these versions' being grounded on what I call the "base-superstructure approach". The base-superstructure approach was Marx's way of developing the study of political economy when he gave up attempting to analyse it "philosophically". But this approach, which finds its best presentation in the 1859 'Preface' to the Introduction to the Critique of Political Economy, was abandoned by Marx in Capital. This change of direction, however, seems not to be appreciated sufficiently by those who argue for developed technological determinist interpretations, since they take the 1859 'Preface' as the central text of Marx and attempt to fit the statements of Capital within the framework it defines. This adaptation of Capital to the 'Preface' is achieved by reducing the concepts of Capital to the notions of "productive forces" and "relations of production", as these appear in the 'Preface', and holding that these two notions are the dynamic elements of the economic "base" of the society. Thus, developed forms of technological determinism ultimately reduce Marx's views on po-

litical economy to the base-superstructure approach.

(A) The base-superstructure approach.

Definition. By a "base-superstructure approach" I mean any interpretation of historical materialism and of the political economy of capitalism which is based on Marx's and Engels' earlier works (1), and which conceives historical materialism as being based on a philosophy or a general theory of history, or both.

The base-superstructure approach takes Marx's 1859 'Preface' as the fundamental text of Marx, in particular the following part:

My inquiry led me to the conclusion that neither legal relations nor political forms could be comprehended whether by themselves or on the basis of a so-called general development of the human mind, but that on the contrary they originate in the material conditions of life, the totality which Hegel... embraces within the term 'civil society'; that the anatomy of this civil society, however, has to be sought in political economy... The general conclusion at which I arrived... can be summarized as follows. In the social production of their existence, men inevitably enter into definite relations of production appropriate to a given stage in the development of their material forces of production. The totality of these relations of production constitutes the economic structure of society, the real foundation, on which arises a legal and political structure and to which correspond definite forms of social consciousness. The mode of production of material life conditions the general process of social, political and intellectual life. It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness (2).

The fundamental contention of the base-superstructure approach is that historical materialism is based on a general theory of philosophy of history. Such a general theory is assumed to be theoretically self-sufficient. Moreover, it is assumed to be independent of Marx's later work, especially the analyses offered in Capital. These later analyses are conceived as being based on the 'Preface's explanations, and as mere applications of Marx's earlier, more general views. In other words, the analysis developed in Capital is thought to provide nothing more than "empirical confirmation" of the philosophical hypotheses sketched out in the 1859 'Preface': Whereas Capital only deals with the capitalist mode of production, the views presented in the 'Preface' refer to all modes of production.

Historical materialism is held to be based on a general theory of history because it cannot be identified with, nor reduced to, any particular social science, not even to political economy. Historical materialism, in this view, is thus a theory which deals with the more general aspects of society and history by focusing on the interrelations existing between the base and the superstructure, through the dynamics of the productive forces and the relations of production. Historical materialism is said to use particular social sciences, but not to be one itself.

It is true that historical materialism can lead to a general theory of history, and even to a philosophy of history. But it is not correct to say that it is based on either of these. It is true that historical materialism studies the interrelations between the base and the superstructure of society. But it is not obvious that such interrelations can be defined a priori. Nor is it correct to say that particular social sciences are only "empirical confirmations" or mere applications of historical materialism. On the contrary, the interrelations between "base" and "superstructure" must be analyzed in the terms of political economy, political economy being "the anatomy of civil society". In fact, the base-superstructure approach should give way to a critique of political economy. The notions of "base" and of "superstructure" appear in the analysis, but they are not understood in a manner depending on a general theory or philosophy of history, when this is conceived as being prior to the political-economic analysis.

Advocates of the base-superstructure approach are usually divided into two opposed camps: those who defend the primacy of the base, and those who hold that in contemporary capitalism the fundamental determinations come from the superstructure. Since Marx explicitly says that the economic base is the real foundation of society, interpreters who emphasize the role of the superstructure must argue that:

- (a) Marx's assertion is not true in all circumstances; in particular, it is not true for the advanced stages of capitalism; and that
- (b) what Marx is contrasting is not base and superstructure but social existence and consciousness. Therefore, the basic task is to establish the relations between social existence and consciousness, not those between the economy and the other aspects of society.

Interpreters that emphasize the role of superstructures usually regard Marx's analyses as a philosophy, and downplay the role played in his thought by political economy.

On the other hand, interpreters that emphasize the role of the economic basis tend to pay more attention to Marx's views on political economy. However, they also tend to adapt Marx's views as they appear in Capital, to those presented in the 1859 'Preface'. This adaptation is made, either by reducing the notions of the political economic analysis to the philosophical views on history in general or, as it is the case with advocates of developed forms of technological determinism, by adapting the notions of political economy to the concepts of "productive forces" and "relations of production". Here, productive forces and relations of production function sometimes as philosophical concepts, sometimes as economic concepts, depending on the circumstance.

Problems that the base-superstructure approach creates. I have already mentioned the fundamental problem it creates. Because

it reduces the analysis of capitalism, as presented in Capital, to the "philosophical" terms in which Marx and Engels discussed the issue in their early works, it also reduces the study of historical materialism to its primitive and undeveloped forms.

The principal consequence of this retrograde step in the analysis is that political economy is replaced by philosophy or by a general theory of history as the theoretical basis of historical materialism. Since it is not based on a precise analysis of the process of production and reproduction of social life, such interpretations misrepresent the social relations which constitute those productive and reproductive processes.

If one adopts the base-superstructure approach one must possess a set of philosophical recipes before engaging in the theoretical analysis offered by political economy or the concrete study of given socio-historical processes and events. The philosophical doctrine is used to classify processes and events, to determine which processes and which events belong to the base and which to the superstructure. Political economy is then relegated to filling in the general philosophical scheme, a procedure that can be extremely misleading. For it is not correct to say that philosophy determines what historical materialism is, nor that political economy merely finds out how socio-historical processes develop (3).

Since base and superstructure are not clearly defined philosophical concepts, the findings of political economy cannot be properly organized. Moreover, even if they were clearly defined, the findings of political economy would be organized in such a way as to fit into basically arbitrary philosophical categories. On the other hand, if instead of the notions of base and superstructure, those of productive forces and relations of production are employed, even in this case some philosophical assumptions are used to determine what productive forces and what relations of production mean, according to different circumstances in the course of the analysis. In the case of technological determinist interpretations, the philosophical assumption that productive forces are not social in any case is used to redefine particular notions or findings of political economy.

For these reasons, it is not surprising that Marx abandoned the philosophical approach to socio-historical problems and moved towards a more precise and scientific perspective based on the critique of political economy.

C.W. Mills has touched on this problem:

Exactly what is included and what is not included in the "economic base" is not altogether clear, nor are the "forces" and "relations" or production precisely defined and consistently used. In particular, "science" seems to float

between base and superstructure; and it is doubtful that either base or superstructure can be used... as units, for both are composed of a mixture of many elements and forces... The distinction between base and superstructure itself is by no means clear-cut. The institutional organization of a society, including relations of production, certainly penetrates deeply into technological implements and the scientific developments, including forces of production, shaping their meaning and their role in historical change (4).

Mills' complaints are well taken. However, they do not lead him to criticize the base-superstructure approach (5). Worse still, in the base-superstructure approach there is no definitive answer to Mills' questions. For in the base-superstructure approach not only do we have only philosophical prescriptions and socio-historical particularities, the political-economic analysis cannot change the philosophical prescriptions but only results in the collection of data. As I shall show when studying G.A. Cohen's version of historical materialism, even a conceptually developed version of the base-superstructure approach results in inconsistencies.

When the base-superstructure approach is abandoned, historical materialism can find a more adequate basis, and become more precise and more profound. Political economy cannot be considered as being based on (or as being merely an instrument of) a philosophy of history. Marx's philosophy of history (if he has one), and his general views on historical development, can be regarded as resting on the analyses provided by political

economy, not the other way around. In this way it is possible to reintroduce the notions of base, superstructure, productive forces, and relations of production. Each of these concepts can be given a precise definition, and the relations between them can be accurately studied and described.

(B) The version of W.H. Shaw.

Shaw's interpretation of Marx is based on an analysis of the 1859 'Preface', and claims that Marx was a technological determinist. He engages in a discussion of the notions of productive forces and of relations of production, to demonstrate that the latter depend on the former and that productive forces are basically technological. In particular, Shaw emphasizes that the fundamental productive force, namely labour-power, is to be considered "material" and technological, but not social.

Characteristics of the interpretation. Shaw argues that for Marx socio-historical processes evolve according to the following schema:

The development of the productive forces through history tells the story of man's evolving dialectical intercourse with nature. This development necessitates adjustments in men's relations to each other and to the productive forces. With these changes in the social relations of production, the rest of the social world alters (6).

On this view, the development of the productive forces ultimately determine^s social and historical developments (7). The fundamental issues at stake, therefore, consist in determining what the productive forces and relations of production are and how they are interrelated.

Productive forces are defined in a general way by saying that they constitute

the simple factors of the labor process —that is, those elements which analysis reveals as part of the immediate production process itself. The labor process is the process of producing material use-values. (8).

Shaw defines the "simple factors" of the labour process in the following fashion:

(T)he productive forces include human labor-power and the means of production. Labor-power is the capacity to labor, the abilities upon which one draws in producing something. The instruments with which persons labor and the raw materials on which they work comprise the means of production. The forces of production, thus, are the basic elements of any labor process.(9).

While the means of production pose no problems —they comprise machines, instruments, and the raw materials employed in material production—, Shaw's description of labour-power deserves closer attention. In Shaw's view, productive forces should

not be reduced to technology in the sense of "technical" forces, which are non-human agents. For him, productive forces

include more than machines or technology in a narrow sense. In fact, labor-power, the skills, knowledge, experience and so on which enable labor to produce, would seem to be the most important of the productive forces. The forces of production are, for Marx, thoroughly human (10).

However, for Shaw the most important of the productive forces, namely labour-power, although "human" it is not "social". Thus, productive forces are "technological", but not "social":

Marx studies the social world and social relations, but the productive forces are not relations. Even with regard to human labor-power, in examining it in its role as a productive force, one is disregarding its social characteristics to consider its technical aspect; rather than constituting the social world, the productive forces, viewed in themselves, are an abstraction from it (11).

Labour-power is then defined as the capacity human beings possess for engaging in labouring. It is that part of workers which they themselves own and which they eventually sell to the capitalist entrepreneur. It is something which human beings have always possessed, independently of whether they live in a feudal or a capitalist economic organization. The distinction between "the worker" and "the labour-power of the worker", as meaning two different parts of human beings considered as economic agents, only surfaces in the capitalist system. For, in

contrast with other modes of production, in capitalism the workers do not sell their whole being, but only a part of their capacities, and for clearly specified periods of time. In Shaw's view, given this distinction between labour and labour power it follows that it is labour-power and not labour or the worker that which is the fundamental "human" aspect of the productive forces:

Although men are the bearers of labor-power, it is the labor-power and not the men which belongs to the productive forces. This is despite the fact that it is only through men that labor-power enters into the production process. Men are more than labor-power. They stand in relations other than production (12).

Labor-power is the capacity to labor, and labor is, in turn, the manifestation of this power. Labor-power has the ability to develop, to gain skill, and to become more experienced, which its mere expenditure, labor itself, lacks. For this reason, labor-power, not labor, is a productive force (13).

Next, we need to note an important claim which emerges in Shaw's description of the relations of production. The notions of productive forces and of labour-power are contrasted by him with that of relations of production. Shaw thinks of these relations as

relations within which production is carried on; they link the productive process with human agents in the process of material production (14).

Shaw goes on to distinguish two types of relations of production, namely "work" and "ownership" relations of production. Work relations are defined as

the material, technical relations which govern the actual labor process itself, abstracted from its socially and historically specific form (15).

For Shaw, work relations of production are the links that occur between labourers, and between labourers and the means of production, in the process of the production of use-values. Work relations are "abstracted" from socio-historical forms because they refer to the production of "any use-value"(16). These work relations "regulate (human beings') access to the productive forces"(17), and they are determined by the level of development and the types of productive forces available (18).

For their part, ownership relations of production are defined by Shaw as "the social relations which govern the control of the productive process and the products of production"(19). Ownership relations are a part of the given social and historical form within which the productive process takes place. At the same time, ownership relations are the most important element of the socio-historical form, since they regulate the access to the productive process. Ownership relations are thus "the socio-historical integument of... work relations"(20).

The last major claim of Shaw refers to the interrelations taking place between productive forces and relations of production. We may approach this issue by considering his notion of economic structure. For Shaw, work and ownership relations of production constitute the economic structure of society. This structure is largely determined by the productive forces, although there is a way in which relations of production condition the speed of development of the productive forces, either by stimulating their growth or by hindering it. For example, in its initial stages the capitalist ownership relations of production helped to bring about an unprecedented development of productive forces, although in its later stages the capitalist form of ownership tends to slow down and to stop the development of these same productive forces.

The institutional and ideological organization of society depends on its economic structure. Therefore, changes in the productive forces will determine, through the mediation of the economic structure, corresponding changes in the society as a whole. Since productive forces are basically technological forces, it follows that for Marx all socio-historical processes are technologically determined.

Shaw's claims contested. There are three main criticisms I have of Shaw's position. The first is about his notion of "production

of material things", which is in contradiction with the understanding of the labour process as intended for the production of material use-values. The second criticism refers to Shaw's conception of labour-power, and to his distinction between labour and labour-power. Shaw's views in this respect misrepresent Marx's, and are based on the incorrect identification of the labour process with the productive process. The third criticism refers to Shaw's notion of relations of production, in particular I argue that the notion of work relations of production misrepresents Marx's views. For Shaw, work relations link labour-power to the means of production, and also link the individual labour-powers of a group of workers. Such links, in his opinion, are not social. By attending to Marx's notion of capitalist cooperation I show that Shaw is wrong to consider work relations as "material" but not social. After presenting these three criticisms against Shaw, I shall argue that they are all based on the revisionistic notion of materialism as something non-social, and will also establish other connections between Shaw's views and those of the classical revisionists.

1). As we have seen, Shaw holds that the productive forces constitute the "simple factors" of the labour-process, and that the labour-process, in turn, is the process of "producing material use-values". Shaw then defines "material production" as the "production of material things", where "material things" are

not use-values as he initially observed (see note #8). Shaw asks himself what is material production and gives the following answer: "simply... the production of material things". He adds that

(r)ival answers to this question might be that material production is the production of (a) use-values, (b) commodities, (c) surplus-value, or (d) those things necessary for material life. None of these candidates are theoretically satisfactory (21).

Since Shaw does not clarify the point further, it appears that there is a contradiction in his definition of "material production". When he relates material production to the labour process he says that it consists in the production of use-values. But when he considers the issue of material production by itself he sees it as composing the production of "material things", where these are not use-values.

It is difficult to think that the production of material things is not intended to yield things necessary for material life. After all, material life must be provided by material production, and both material life and material production use "material things", i.e. "physical" objects. Also, it is difficult to hold that human beings would engage in any material production that does not have any useful purpose, even if this purpose were merely aesthetic. Probably Shaw wants to distinguish bet-

ween "material production", use-values, and the production of things needed for material life in order to stress that the production of some useful "things" needed for material life results not in "material" but, say, "ideological" goods. And, besides, there may be use-values which do not result from physical or material production—for example the production of scientific concepts—, provided that mental activity is not considered "physical" or "material". However, Shaw's definition of material production becomes cumbersome when we are to relate it—as Shaw himself requires—to the labour process, since this process is, as he himself affirms in many places, the process of production of use-values.

If the labour process produces use-values, and if these values are not, in some way, "material things", are there, then, labour processes not intended for material production? And is it not correct to think that the agents employed in such non-material labour processes are proper productive forces? Obviously, Shaw wants to restrict the notion of "material production" to those types of labour process where only "physical" production is achieved. In this way the possibility that "material production" might be understood as implying a process of social production is eliminated. But, at the same time, Shaw's definition of "material production" is at odds with his definition of productive forces in terms of agents employed in any labour process,

since at least some labour processes do not produce "material things" or, conversely, use-values. This, of course, contradicts the very definition of labour process. Therefore, Shaw's account of material production as production of material things is at variance with his account of the labour process as the process where productive forces are used, and his definition of material production fails to take into account productive forces themselves in a proper way —according to Shaw's own definition of these forces.

2). In Shaw's distinction between labour and labour-power there is another inconsistency to be noted. First, he confuses the labour process with the productive process, which results in his maintaining that human beings enter into the productive process only as labour-power bearers. It is indeed possible to think that human beings only count in the labour process as bearers of labour-power. But it does not follow that, as elements of the productive process, human beings must be considered only as bearers of labour-power. After all, the productive process is not identical with, nor can it be reduced to, the labour process. Shaw, however, holds such an identification or reduction in the texts quoted above (p.168), although in other places he adopts a different view. In fact, as Shaw himself stresses elsewhere, human beings enter the productive process as bearers of "relations of production", and these relations necessarily

involve the whole "being" of the persons so related, i.e. they put into their relations of production social, economic, political and ideological dimensions of themselves. Moreover, relations of production are a social phenomenon. Indeed, for Marx they are the fundamental social phenomenon. Shaw, however, reduces the productive forces to the labour process and argues that human beings are productive forces because they enter the labour process only as labour-power bearers. But when he says that human beings "stand in relations other than production", Shaw is implying that the only relations of production which human beings develop are those corresponding to their being labour-power bearers in the labour process. As a result, the productive process is reduced to or identified with the labour process, and the relations of production are reduced to or identified with the "work" relations of production, as these relations correspond to the labour-power. Therefore, either "ownership" relations of production are not part of the productive process, or else they would need to be reduced to, or identified with, the "work" relations of production as these work relations spring from the labour process. Neither case corresponds with Marx's view, nor with Shaw's own description of the economic structure. For Marx, relations of production are social relations involving more than mere labour-power.

But there is still more to be said about this issue. For

it is not consistent with Marx's view to say that it is labour-power only and not labour that which composes the human part of the productive forces. This point has been well developed by H. Laycock:

In the first place... although we must distinguish between a power or capacity and the bearer of that power or capacity, Marx sometimes... uses his notions of power and force and capacity in an extended sense to refer to those agencies that are the bearers of power or force in the core sense... Hence Marx sometimes speaks of men, and —much less often— of machines, as actually being productive forces or productive powers... (Examples follow) ...Since, therefore, Marx sometimes speaks of men and machines as productive forces or powers, the dispute about whether it is men or their labour power which is what he really intends by "productive power" or "productive force" is a somewhat idle dispute. But if one insists, contra Marx, that it is just labour power, as opposed to the labourer, which is a productive force, then consistently one ought to speak of machine power and not its bearer, the machine, as a productive force. Equally, if one insists on regarding machinery itself as an element in the forces of production (as Marx rarely does), then one ought to regard men and not their labour power as a force of production (as Marx more often does) ... In general, then, Marx's conception of productive forces or powers is such that not only the powers of men and other objects may be counted as productive powers, but so too may their bearers. Furthermore, and if in the context "labour" means "the exercise of labour power", then Marx sometimes regards the exercise of the power, and not just the power or its bearer, as a productive force... (22).

The main consequence of Shaw's misrepresentation of the notion of labour-power as an element of the productive forces is that such forces lose the social character that Marx assigned to them. Shaw's failure in this respect is exemplified, as Laycock points out, in his misunderstanding of Marx's notion of co-

operation (23). If labour, and not only labour-power as Shaw thinks, is to be considered as a productive force, it follows that co-operation, which is the specific social relation of production involved in the capitalist productive process, needs to be regarded as a productive force. But this means that productive forces are not exclusively or characteristically technological but, instead, fundamentally social.

3). As we noted, Shaw distinguishes between "work" and "ownership" relations of production. Here again Shaw is not consistent. On the one hand he affirms that

although the two types of production relations... are intimately connected... the distinction between them is central to Marx's thought (24),

but on the other hand he recognizes that

Marx's concept of Produktionverhältnisse covers both types of relations, but I do not argue that Marx himself explicitly distinguished the two. I nurture this distinction, only implicit in his writings, in order to sharpen the analysis of "relations of production" and to introduce greater clarity into the discussion (25).

Certainly, one might distinguish different types of relations of production in the capitalist productive process to have a clearer idea of what these relations are. But such a move is necessary only if the analysis of the capitalist productive pro-

cess is to be developed on the basis of the productive-forces/-relations-of-production approach, that is, on the basis of the base-superstructure approach. Marx does not need to make such distinctions because in Capital he is no longer using the base-superstructure approach, but rather a more complex and accurate politico-economic analysis. Moreover, such a distinction between types of relations of production, in the sense developed by Shaw, are necessary only if the analysis aims to demonstrate the technological determinist thesis. Shaw makes the distinction in order to argue that work relations refer to "physical" and "material" aspects, while ownership relations refer to "social" aspects.

Marx did not make such a distinction between work and ownership relations because he regarded "technical" and "social" aspects of the productive process as reciprocally determined. This is particularly true with respect to the role of human beings in the productive process, i.e. with respect to the "technical" and "social" parts of themselves that human beings put into the productive process. For example, in capitalist co-operation a social reorganization of the workers' roles generates a technical reorganization which results in enhanced labour productivity. And conversely, the capitalist development of machinery accentuated the "despotic" character of the social relations occurring in the capitalist productive process. In Marx's view, technical and social aspects of the productive process are interconnected:

Marx regarded the labour process, initially, abstracted from its social aspects but, subsequently, he brought these social aspects into the picture. When social aspects of the labour process are considered, the labour process undergoes a change, and transforms itself into a social process. Says Marx, talking about capitalist co-operation:

If then, on the one hand, the capitalist mode of production presents itself to us historically, as a necessary condition to the transformation of the labour-process into a social process, so, on the other hand, this social form of the labour-process presents itself, as a method employed by capital for the more profitable exploitation of labour, by increasing labour productiveness (26) (Emphasis added).

Marx is saying here that the capitalist mode of production fulfils the historical task of transforming the labour process into a social process. But, at the same time, this transformation can be regarded from a technical point of view, as a "method" of labouring. According to Marx, the socialization of the labour process achieved by capitalism results in a contradiction between the new social character of the labour process and its technical form, since the co-operative method of production is used by the capitalists "for the more profitable exploitation of labour". In the capitalist transformation of the labour process, the social and the "technical" aspects are interconnected and reciprocally determined.

Shaw would regard this passage of Marx as only meaning that co-operation is the "moment" of the productive process where the labour process is dressed up with a social form without being "transformed" in any substantial manner. For, from a technological determinist perspective, the labour process cannot, under any circumstance, become a social process. However, in order to sustain such a view Shaw must demonstrate that Marx holds

- (a) that capitalism is not the only mode of production where the labour process becomes a social process; and
- (b) that capitalist co-operation is only a "work" relation of production.

Assertion (a) is not Marx's view because for him the specific historical task of capitalism is to develop the social productiveness of labour, something that former modes of production had not achieved. For example, when listing the "three cardinal facts of capitalist production", Marx says that the second of these cardinal facts consists in that capitalist production accomplishes the

(o)rganization of labour itself into social labour: through co-operation, division of labour, and the uniting of labour with the natural sciences... the capitalist mode of production abolishes... private labour, even though in contradictory forms (27).

Assertion (b) is false in Marx's view because for him co-operation does not involve a change "in the system of working" (28), does not consist of "isolated individual labour" but of "the collective power of the masses"(29). For Marx co-operation is "the fundamental form of the capitalist mode of production" (30), and is thus a social relation of production. Shaw, for his part, affirms that co-operation is not a productive force but a relation of production. However, he does not explain whether it is to be regarded as a "work" or as an "ownership" relation (31). Nonetheless, he uses the notion of co-operation to mean a work relation of production. Discussing petty agriculture and the guild system, he says that such ownership relations of production

exclude concentration of the means of production, cooperation and division of labor within the production process —in a word, they prohibit the larger, technical production which the level of the productive forces makes possible (32)(Emphasis added).

Petty agriculture and the guild system are ownership relations which inhibit the development of the productive forces (in particular the concentration of the means of production) and of the "work" relations of production, i.e. the other "technical" aspect of the productive process (including division of labour and co-operation).

If the distinction between work and ownership relations of production is "central to Marx's thought", as Shaw affirms, it is difficult to understand why Marx was so unaware of this. More important in this respect, however, is the fact that Marx was able to develop a complex analysis of the capitalist mode of production in Capital, without basing his study on the distinction proposed by Shaw, and this even though, as Shaw concedes, the emphasis in Capital is put on the analysis of the capitalist relations of production.

Thus, all the major claims of Shaw's interpretation of Marx rest on the reduction of productive forces to their technological aspects and, to an important degree too, a similar reduction of the relations of production. Such reductions attempt, unsuccessfully, to eliminate the social character of the social productive forces and of the social labour process that Marx thought he had described while studying the capitalist political economy.

Shaw's notion of "material" and "materialism" is basically the same as that which we found in Bernstein. For both of them the "material" refers to physical, not to social aspects. Even when Shaw regards the labour-power as the basic productive force, this power is said to be human, not social. And the relations between individual labour-powers that Shaw calls work relations

of production, although human, are not social.

However, Shaw does not follow the classical revisionists on all points. For example, he recognizes that productive forces are "dependent" (though not "determined") on the relations of production which accelerate or fetter their development (33). This view, in turn, leads him to support a "dialectical approach" to historical explanation, in the sense that

dialectics demands a sensitivity to the antagonisms of things or, at least, in processes and relations, to their development and change, and to their interconnection within a framework larger than that of cause and effect (narrowly understood)(34).

Unfortunately, Shaw explains neither what a "non-narrow" cause-and-effect framework is nor how this is integrated into the dialectical way of explanation. He rejects "Humean" causality, and propounds a dialectical "organic" but "hierarchical" model, in which "causal relations are integral to... social and historical views" (35). But none of these hypotheses is developed, and, as with the relations between historical materialism and the other aspects of Marx's thought, their comprehension is left to the "intuition" of the reader (36).

Finally, Shaw concedes a large determining role to revolutionary upsurges on the part of the proletariat in the transit-

ion from capitalism to socialism. This contrasts, of course, with the revisionistic view of Bernstein. But, at the same time, such a contention weakens Shaw's technological determinist stand. The determining role assigned to the workers' revolution undermines the determining role formerly assigned by Shaw to the productive forces. Instead of arguing that productive forces "determine" a social change, when confronted with the analysis of the transition from capitalism to socialism Shaw says that productive forces only "create conditions hospitable to social upheaval and revolution". In particular, he concedes that productive forces "do not establish (the new socialist) relations (of production) themselves. In capitalism that is the job of the proletariat"(37)(Parentheses added).

(C) The version of G.A. Cohen.

The interpretation of Marx presented by Cohen differs from that of Shaw only in the emphasis he places on certain issues and in the detail he develops his views. In general terms, it can be said that while Cohen holds a "strong" version of the technological interpretation of historical materialism, Shaw holds a "weak" version of it.

Cohen's version is, by far, the most complex technological determinist interpretation of Marx among those we have reviewed

here. His is a lengthy and dense analysis, attempting to combine what Marx says (or should have said, in Cohen's view) with a functionalist understanding of social and historical dynamics. Cohen moreover employs the instruments provided by analytical philosophy in order to carry on with the exegesis of Marx's ideas. However, because such an approach puts a high premium on a systematic account of Marx's thought^t and because Cohen is committed to the technological interpretation of Marx, his version tends to rest on a single conceptual issue. In particular, Cohen's interpretation rests on the distinction between "social" and "material" aspects of socio-historical processes. This distinction is the clef d'oeuvre of Cohen's version of historical materialism, and if it can be shown to be implausible, then the whole interpretation is shown to be flawed. Here I shall only discuss this distinction between the social and the material aspects of socio-historical processes, attempting to demonstrate its implausibility. But first I outline the main lines of Cohen's interpretation of Marx.

Characteristics of the interpretation. I shall first outline how Cohen understands the general course of historical development, as well as the notions of productive forces and relations of production, and then how he relates these notions one to the other.

Cohen follows the base-superstructure approach when developing his interpretation of Marx. In this respect, the main text of Marx employed is the 1859 'Preface', for there Cohen finds grounds to emphasize the role of productive forces (understood as technological forces) for the determination of historical development:

(I)t is an old-fashioned historical materialism which I defend, a traditional conception (whose "most pregnant" statement is the Preface to The Critique of Political Economy...), in which history is, fundamentally, the growth of human productive power, and forms of society rise and fall according as they enable or impede that growth (38).

(T)he productive forces enjoy explanatory primacy over the production relations... We shall propound what is called a 'technological' interpretation of historical materialism (39).

According to Cohen's view, productive forces, understood as technological forces, constitute the element whose historical growth determines how social forms evolve. Productive forces are defined by him as follows:

To qualify as a productive force, a facility must be capable of use by a producing agent in such a way that production occurs (partly) as a result of its use, and it is someone's purpose that the facility so contribute to production (40).

Anything that productive agents employ to produce can be regarded as being productive forces. However, as Shaw also claimed, Cohen argues that only "physical" production is involved in a productive process where productive forces are employed. Moreover, Cohen says that "material" is to be identified with "physical", so that "material production" needs to be viewed as "physical production". Thus, argues Cohen,

(o)nly what contributes materially within and to productive activity as Marx demarcates it counts as a productive force (41).

And something contributes materially to a productive activity only when what is involved is a necessary activity, i.e. an activity which is "physical" and "material":

That an activity is necessary to production makes it a productive activity only if its necessity is grounded in the physical facts of the situation... (I)f an activity is essential, then its essentiality makes it a productive activity only if it is materially grounded (42).

Cohen classifies productive forces as being either means of production or labour-power. Means of production include the instruments of production (tools, machines, premises, instrumental materials), raw materials and spaces (43). For its part, labour-power is considered to be the fundamental productive force:

(T)he productive forces develop over time and condition the character of the production relations. But the development of the productive forces is largely the growth in knowledge of how to control and transform nature, and that is a development of labour power...(44).

The productive forces must include labour power because the centre of their development is a development of labour power (45).

However, says Cohen, it is necessary to draw a distinction between labour-power and labour (or labouring), and to appreciate that only the former one needs to be regarded as a proper productive force. This distinction between labour and labour-power is explained as follows. In the first place, says Cohen,

(a) human being is not a productive force except when his intentionality is suppressed and he is used as a physical object (46).

And second, Cohen argues that labour-power and not labour is to be considered a productive force because the latter does not create any value when used in the capitalist productive process, whereas labour-power does. Moreover, labour-power is that part of the workers that is sold to the capitalists and that, therefore, is used by them to create value (47).

Besides, for Cohen the fundamental productive dimension of labour-power consists in the fact that it is knowledge, i.e.

applied science:

Labour power is a productive force, and one dimension of labour power is productively applicable knowledge. It follows that scientific knowledge which is open to productive use is a productive force... What is more, the development of knowledge is... the centre of the development of productive forces. In its higher stages the development of the productive forces therefore merges with the development of productively useful science (48).

Since Cohen does not mention the issue, we must assume that "productively useful science" is to be contrasted with science in general, in the sense of purely speculative inquiry. And since Cohen does not say why only "productively useful science" and not also science in general is a productive force, we must assume that productively useful science is "grounded in the physical facts of the situation" involved.

For Cohen, science does not belong to the superstructure of society but to the productive basis, because the superstructure is made up of institutions and ideology, and science is neither of these. On the other hand, for Cohen science is something "mental" but not social, and something "material" but, again, not social:

It is unclear whether Marx means that (a) mental productive forces are a subset of material ones, or (b) mental and material productive forces form distinct sets. Take alternative (a). Then the question is: how can something mental

be a species of something material? It cannot be if the antonym of "material" is "mental", but it can be if the antonym of "material" is, in this context, something else. We submit that, if reading (a) is right, then the antonym of "material"... is "social"... In short, when we oppose the material to the social, as Marx systematically did, we may classify mental productive forces as material, though they are of course not material in a more familiar sense of that term (49).

Next, Cohen defines the relations of production as involving only social aspects, and as being separated from the productive forces:

Production relations are EITHER relations of ownership by persons of productive forces or persons OR relations presupposing such relations of ownership. By ownership is here meant not a legal relationship but one of effective control (50).

Cohen says that there are two types of relations human beings enter when they produce, namely "work" and "social" relations of production, where work relations are regarded as "material" relations. Below I shall discuss in more detail the meaning and plausibility of this distinction. Here it will suffice to add that, according to Cohen,

(w)ork relations are material relations of production, and, being material, they fall outside the economic structure... Henceforth... whenever 'relations of production' is used without a modifying adjective, the reference, unless otherwise indicated, is always to social relations of production... (51).

As for the notion of economic structure, it should be noted, in the first place, that for Cohen in contrast with Shaw's view, it does not include work relations but only "social" relations of production. For Cohen, the economic structure is the basic "form" of the productive system of a given society (52), so that were work relations to be included in it, "material" (i.e. technological) aspects of the productive process would enter the economic structure, and vice versa. For according to Cohen, the economic structure is

composed of production relations. Nothing else is said (by Marx, in the 1859 'Preface') to participate in its composition. We conclude ex silentio that production relations alone serve to constitute the economic structure. This means that the productive forces are not part of the economic structure (53) (Parenthesis added).

Since relations of production constitute the economic structure of a society, that structure is determined by the distribution in it of (effective) ownership rights over persons and productive forces... (54).

In Cohen's view, societies possess a complex structural basis, composed of the economic structure on the one hand, and of the productive forces on the other. The economic structure is called "basis-1", when understood as forming the basis of the "social formation", and because it is made up of social relations of production. As the basis of the social superstructure, however, the economic structure is considered to be the

"basis-2", since the economic structure is "external" to the superstructure, which in fact rests on it. Productive forces are a part of neither basis-1 nor of basis-2, although these forces are said to be the substratum upon which the economic structure rises.

By separating the productive forces from the economic structure, Cohen attempts to draw a clear-cut distinction between the social and the technological ("material") aspects of the social productive process. At the same time, his distinction of the functions of the economic structure as basis-1 and basis-2, enables him partially to avoid the problems and ambiguities generated by the base-superstructure approach that is at the root of his analysis. Having a distinction between the social and the technological aspects of the economic base, and distinguishing between the "organic" and "external" functions of the economic structure, Cohen thinks it possible to present a coherent and unambiguous description of Marx's analysis of the productive process in terms of the base-superstructure approach. However, it is unclear whether this view was Marx's, and it is possible to find inconsistencies in Cohen's interpretation.

In order to explain his distinction between the technological and the social bases of the social structure, Cohen

employs some metaphors:

(T)he productive forces occur below the economic foundation ... (O)n the 'technological' reading favoured in this work ... the productive forces strongly determine the character of the economic structure, while forming no part of it (55).

The foundation upon which a house rests is —arguably anyway— a part of the house, but the plinth upon which a statue stands is no part of the statue (56).

Since I shall not consider this point later on, I will note here some problems arising from Cohen's view on this respect. First, at a very simple level of analysis, it should be noted that Cohen's description of the economic structure as basis-1 (house model) and as basis-2 (statue model), does not properly illustrate the point he is trying to make. For he only presents his view in metaphorical terms, which are not at all convincing. On the one hand, they are not conceptually parallel, since Cohen is comparing an image (or notion) of architecture (the house) with an image (or notion) from sculpture. Moreover, the fact that the foundation of a house can be perceived as being "part of" the house is based largely on the "functional" meaning of a house and, correspondingly, of its foundation. And the "external" character of the statue's plinth in relation to the statue itself is based on the consideration of the aesthetic character of the statue and its plinth, not on the consideration

of the functional role the plinth plays in relation to the statue. On the other hand, even if we accept as good a comparison between "functional" and "aesthetic" aspects of two different arts (architecture and sculpture), nonetheless it is always possible to think that the plinth of a statue is aesthetically and functionally part of a statue. Moreover, even the surrounding landscape or environment can be considered to be an "integral part" of a statue; the issue depends on whether we are considering a statue by Canovas, or one by H. Moore, for example. In other words, Cohen's metaphors make sense only if we possess beforehand an account of what is functional and what is aesthetic, and if we also have at our disposition a shared notion about what canons compose art.

More important is the point Adamson has made that even if Cohen's metaphors are correct, it follows that Marx had quite an implausible conception of what a social structure is and, besides, that Cohen's views are self-contradictory:

If we contend that Marx took the economic structure to include relations but not forces of production, and that he took both relations and forces of production to be the "real basis" of society but in different senses of the word "basis", then it follows that Marx held that society has not one but two bases, one of which functions like a foundation of a house, the other like a plinth of a statue. But this depends on the rather implausible assumption that Marx could and did form a single image of society with both kinds of bases (like, presumably, the statue of a house)(57).

Moreover, Cohen's position on this issue seems correct only on the assumption that the productive forces are "material" (i.e. technological) and never "social", and that the economic structure is social, not material. Says Cohen:

Marx says, outside the Preface, that the productive forces are 'the material basis of all social organization'... But this is basis-2 (i.e. the statue-like basis), as confirmed by Marx systematic opposition, to be demonstrated later, between the material and the social (58)(Parenthesis added).

And, as Adamson remarks, even assuming that

Cohen is right... it is clear that the "economic structure" cannot be "the sum total of relations of production", for some relations of production are excluded from it. Cohen acknowledges this implication and amends Marx on this point (p.112). But, in doing so, Cohen can only be self-contradictory. For while here (p.112), the proposition that the economic structure is the sum total of productive relations is abandoned... it was precisely on a literal reading of this proposition that Cohen excluded productive forces from the economic structure. Obviously, Cohen cannot have it both ways. Either he must drop the notion of the two bases and include forces as well as relations of production in the economic structure... or he must abandon the view that work relations are not part of the economic structure (59).

Thus, even though Cohen attempts to overcome the difficulties posed by the base-superstructure approach, he fails in his attempt and ends by contradicting himself.

The opposition between "material" and "social". As we have seen, Cohen's main claims rest on the assumption that Marx holds that in all cases the "social" and "material" aspects of the productive process are opposed or, as Cohen prefers to say, are antonyms.

For Cohen,

- (a) a productive activity is any activity grounded on "physical" facts, where "physical" is synonymous with "material";
- (b) a human being is a productive force only when "used as a physical object";
- (c) science is a productive force because it is considered to be non-social but material, where material is synonymous with "material";
- (d) relations of production are social but not material, whereas "work" relations are material but not social; and
- (e) the distinction between a technological and an economic bases of society rests on the opposition between "social" and "material" (60).

Cohen's technological determinist interpretation of Marx is plausible only if Marx holds that social and material aspects of the productive process are antonyms.

Cohen employs a variety of arguments to demonstrate the

opposition between the social and the material. Here I shall discuss the two most important of these.

1) The distinction between material content and social form.

According to Cohen, Marx distinguished between what is and what is not a socio-economic characteristic (where "economic" and "social" are considered synonyms), on the basis of a distinction between the social form and the material content of a society:

People and productive forces comprise its material content, a content endowed by production relations with social form. On entering production relations, persons and productive forces receive the imprint of the form those relations constitute: a Negro becomes a slave, a machine becomes a portion of constant capital (61).

However, Cohen notes, Marx did not use this distinction consistently, for he "describes capital, slaves, etc., in two divergent ways"(62). On the one hand, Marx says that capital is a relation and not a thing but, in other places or at the same time, Marx describes, say, a machine, as being capital, where there is no relation involved. (This is the case with constant capital). Capital considered as a relation is a social form, and considered as a thing it is material content. For Cohen, these two ways of explanation used by Marx are not compatible, so that it is necessary to correct Marx, and to re-define what should be understood by "relation". In Cohen's view,

in contrast with Marx, a relation is not something occurring between two entities but, rather, a property that an entity acquires (or possesses):

A husband is a man related by marriage to a woman; he is not also a relationship of marriage. Being a husband is a property of that man, one he has in virtue of that relationship, and commonly styled a relational property. Being capital and being a slave are, similarly, relational properties of means of production and men. More specifically, they are social relational properties, whereas being means of production and being a man are not. The latter are possessed independently of the social form. Remove the social form in thought experiment, and those properties persist (63).

Cohen proposes for explanatory purposes that a distinction between the social forms (relational properties) and material contents be established. At the same time, this distinction does not eliminate the fact that an entity possesses both material content and social relational properties:

So if we say, with Marx, that productive forces are not by nature or 'in themselves'... or 'as such'... social, we must not let it follow that they are not social, for standardly they are. Some properties of things are wholly social and other are wholly material, but the things which concern us have properties of both kinds (64).

This same view applies to human beings considered as productive agents, and in this sense Cohen says that there are relations between productive human beings that are not social, but purely

material (65). (An example is the work relations of production). When discussing Cohen's second argument I shall deal with this particular topic. Here the important thing to notice is that if the distinction between social and material characteristics (or properties, or relations) is right, then it follows that society can be described in two ways, i.e. in "social" and in "socio-neutral" or "material" terms. In this way,

(w)e may envisage a complete material description of a society —a 'socio-neutral' description— from which we cannot deduce its social form (66) (Emphasis added).

Such a description is exemplified by Cohen as follows:

If we consider a statue from the point of view of its matter we abstract from its form, and we describe it under that abstraction by stating what it is made of. Yet what it is made of does not have the form of the statue. It has both material and formal characteristics. So it is with men and productive forces. They have material and social characteristics, but no social characteristics may be deduced from their material characteristics, any more than the statue's shape may be deduced from its matter (67).

According to Cohen, even though it is not possible to deduce (68) the social form from the material content, nonetheless the social form can be non-deductively inferred, "by dint of general or theoretical knowledge" (69). In this way, it is possible to say that "the handmill gives you the feudal lord"

and such like expressions. Thus, argues Cohen,

(t)he relationship between man and nature is 'mediated' by the social form: it does not occur outside it. The development of nature, described in socio-neutral terms, is therefore an abstraction. But it is a theoretically important abstraction. For central features of social institutions are explained by their contribution to the transformation of nature. Productive power is socially developed, but it is natural in character... We are arguing that the familiar distinction between forces and relations of production is, in Marx, one of a set of contrasts between nature and society (70).

In response to this argument I wish to urge the following critical comments:

Cohen complains of Marx's "divergent" and "incompatible" ways of describing, say, capital or slaves. In order to overcome Marx's deficiencies Cohen introduces the notion of relational property and tells us that, in thought experiment, the social relational property does not alter the "material" content of the entities involved. For Cohen, if we remove the "slave" relational property attached to a human being, the "material" content of that human being as such will persist. Likewise the social relational property of a means of production that makes it constant capital can be removed without altering the "material" content of the means of production as such.

However, it is possible to think, and Marx did so think, that what human beings, or means of production, are as such depends on a historical determination. A human being as such is different if that human being lives in, say, Crete in the year 1450 B.C. or in the U.S.A. in 1975. Probably human beings have had quite similar physical and biological characteristics for many hundreds of years, but these physico-biological characteristics do not tell what human beings are as such. In particular this leaves out of consideration their labour-power and their social productive capacities and relations. In other words, Cohen's view assumes that it is possible to consider social entities (human beings) and productive instruments (means of production) outside a given historical framework.

Cohen needs this extra-historical consideration to establish that it is not possible to deduce, but only to infer, social forms from material contents. However, when Cohen says that "in thought experiment" we can separate the social forms from the material contents, he implicitly introduces the assumption of a shared historical framework. For, unless there is a shared historical framework underlying the distinction, the separation of social forms from material content presupposes an eternal and essentialist human nature and a trans-historical notion about the meaning and function of particular means of production,

neither of which Cohen accepts. Thus, to do what Cohen requires, the distinction between social forms and material content presupposes a non-historical perspective, but the distinction itself presupposes a historical framework.

My argument will be made clearer if I present an alternative to Cohen's "thought experiment". It is true, for instance, that a truck considered within the historical framework of today's society can be regarded either as constant capital (a social form) or as a means of production (its material content). But outside the shared historical framework of contemporary society neither the social form nor the material content of the truck can be distinguished. For a Toltec human being living in Monte Albán in the XIIth century, a truck would not appear with the specific social form and material content that the truck possesses to us today. The case of the social form is obvious, and moreover, it is the point Cohen is trying to make. Not knowing its social meaning and use, a truck cannot be considered as constant capital. But the same thing can be said of the truck considered as a means of production. Certainly, he or she would consider the truck to be a "thing", a "physical" something. But that Toltec would never consider the truck as a means of production unless its productive functions and meaning were demonstrated. Thus, it is possible to argue that, in thought experiment, the

"material content" that a thing retains is not the type of "material content" Cohen is arguing for. The trick of Cohen's argument consists in his identifying the "physical" material content with the "productive" material content, an invalid identification at least for purposes of studying political economy.

Something similar to what we have said about a truck can be said concerning a human being. However, here the argument against Cohen requires a consideration of Marx's notion of human nature, as something historically changing. For, as said above, if human nature is basically historical, even when in thought experiment we eliminate some social forms attached to a human being (for example, being a worker), other social forms already incorporated into the "material" content of the human being will still remain. Thus, as in the case of the truck, the material content that we can discern in all human beings through time is (to a certain extent) only the physical and, for humans specifically, the biological, characteristics, but not, as Cohen thinks, human beings' productive material content. Moreover, a human being's productive material content is, as Cohen himself recognizes elsewhere, a historically developing capacity and, as such, socially determined.

This argument against Cohen can be put in yet another way.

Certainly, Marx made an abstract distinction between the content and the form of different aspects of society. But Marx made this distinction assuming that (a) a shared historical framework is presupposed, and (b) a non-deductive inferential procedure, not a deductive one, is used. I shall now attempt to establish these two points.

On the one hand, Marx distinguishes between the form and the content of various aspects of society assuming that this distinction was made within a historical framework. Marx says that in capitalism the distinction between the form and the content of the productive process must be disclosed to disprove the views of the bourgeois political economists who consider capitalism as the "natural" productive process. Marx wants to show that capitalism is a historically and socially specific mode of production, not an eternal one. It is only because of the existence of ^{the} capitalist productive process that the distinction between form and content is apparent in Marx's analysis. Indeed Marx assumes the capitalist social form when judging both former modes of production and the content of the capitalist productive process itself.

On the other hand, the distinction between the form and content of productive aspects of society cannot be made follow-

ing a deductive procedure, because such a procedure leads to considering forms and contents sub specie aeternitatis. The distinction between form and content can be made only by following a non-deductive inferential procedure, i.e. by taking into consideration "general or theoretical knowledge", in particular historical knowledge. The fact that Marx considered, say, capital or slaves in two "divergent" ways is not a failure of Marx, but a proof that he constantly attempted to present the historical and the "natural" sides of the thing considered, something that a deductive procedure can never do. Moreover, Marx's "divergent" explanation shows that he followed the path of non-deductive inference for, if he were following a deductive procedure, he would have had to argue as Cohen does.

Only when considering the distinction between form and content from a deductive point of view is it possible to argue, as Cohen does, that the "social" is always the form and the "material" always the content. For Marx, on the contrary, the social aspects of the productive process, at a certain level of analysis need to be considered as content and even as material. This is true, in particular, as I mentioned when discussing Shaw's views, about the notion of capitalist co-operation. Even more, for Marx the "social" considered as a form is sometimes also "material": for Marx, as I have remarked throughout this work, social relations and social practices are material re-

lations and practices.

2) The opposition between social and material in the labour process. Cohen also attempts to establish his position regarding the distinction between "social" and "material" by showing how Marx presented the labour process as a non-social process. Cohen draws from Marx's Chapter VII of Vol. I of Capital, in particular from Section I ("The Labour Process and the Process of Producing Values"), but avoids linking this section with Marx's subsequent analysis of the labour process considered as a way of extracting surplus-value, in which Marx considers the latter as a transformation of the labour process itself.

Cohen's main points in this respect are:

- (a) the labour process is that part of the productive process intended solely for the production of use-values;
- (b) the analysis of the labour process, considered as a way of producing use-values, is not concerned with the social forms of the productive process and of the labour process; and
- (c) the analysis of the labour process yields the existence of "human" or "material" relations between the workers (i.e. work relations of production), which are not social relations. In this context, "human", "natural" and "material" are synonymous, and they are contrasted with "social".

I accept that Marx made the two first claims, but I add

to this one proviso, namely that this "abstract" analysis of the labour process does not exhaust the analysis of the labour process as such nor a fortiori the productive process. For Marx, as I explained when discussing Shaw's views, the labour process undergoes a transformation when it is considered as a means for the extraction of surplus-value. For Marx the abstract analysis of the labour process is only a preliminary stage in the study of the labour process, and the full meaning of the abstract analysis only becomes clear when this is related to the analysis of the labour process as a means for extracting surplus-value. It is here and only here that the labour process becomes a fully socialized process. Moreover, since the labour process undergoes a process of socialization, Marx talks of capitalism as that mode of production where the labour process is finally socialized.

Cohen, by contrast, ignores the issue and thus becomes committed to the view that the analysis of the labour process is exhausted in its abstract analysis, and that the socialization of the labour process is "external" to it, belonging rather to the economic (i.e. non-material) aspects of the productive process.

I do not accept Cohen's third claim that when Marx studies the labour process in its abstract form he assumes the existence

of non-social relations between workers. Cohen's argument for this third claim rests on the fact that the notion of "nature" (identified by Cohen with "material") has a "physical" basis, even though it is historically determined:

The material description captures a society's underlying nature. In this sense of 'nature' nature is of course a product of history, changing within and as a result of social forms... (But) (t)he modification of the natural basis does not, of course, cancel its material character (71).

Moreover, Cohen recognizes that

(m)aterial production does not occur in history except enveloped in a social form, for 'non-social man', if he ever existed, disappeared when history began. Hence the purely material process (i.e. the labour process) is an 'abstract conception which does not define any of the actual historical stages of production'. The content cannot exist without form, but that does not diminish its importance (72) (Parenthesis added).

Here we note first that for Cohen all relations between content and form are "external" relations, and that he does not recognize the possibility that content and form are so interrelated that they can, combined, constitute, say, a new form or a new content. In other words, form-1 and content-1 can become in the course of the development of their interrelations, say form-2, in a subsequent moment. In this case, form-1 and content-1 are parts of form-2. The same can be said about form-1 and content-2 becoming parts of a subsequent content-2. For example, elements

of the form and content of the feudal society became constituent elements of subsequent capitalist institutions.

Second, the historical character of "nature" (including human nature) certainly does not cancel its "physical" or "biological" (for Cohen, "material") character. However, on the one hand, the "material" content of nature cannot be reduced to, nor simply identified with, the physico-biological aspects of it. On the other hand, according to Marx, the historical character of nature does alter nature. Moreover, according to Marx "human nature" develops, historically, into an almost completely "social" nature, human nature being nothing more than its historical process of development. In other words, since Marx believes that human beings are, naturally, a social species, this social trait must be considered as part of the human beings' "material" content (if not of their physico-biological one), one that evolves in such a way as to make human beings fully socialized animals (in the communist society).

For Cohen, on the contrary, "human", "natural", and "material" are to be conceived as being opposed to "social". And from this assumption he derives the implication that there are relations between human beings that are "natural", "human" and "material", but not social.

However, Cohen bases his derivation of the "material" relations between human beings on a misrepresentation of a text by Marx. Cohen takes it out of context and uses it to affirm exactly what Marx is trying to reject. Says Cohen:

So if we look through the social form we discern something conceptually separated from it: the human —here opposed to social— interaction with nature which is material production. Having 'nothing to do with the social form', it is "the productive activity of human beings in general, by which they promote their interchange with nature, divested not only of every social form and well-defined character, but even in its bare natural existence, independent of society, removed from all societies... an expression and confirmation of life which the still non-social man in general has in common with the one who is in any way social" (K. MARX, Capital, Vol. III, p.795 —1962 edition). Social man has relations with nature and with other men which are not social but, 'if you please, human'(73).

Here Cohen represents Marx as arguing for the existence of non-social man and of non-social relations. But in the text quoted by Cohen, which appears in Chapter XLVIII of Capital, Vol. III, "The Trinity Formula", on page 815 of the 1977 edition, Marx is denouncing the views of bourgeois political economists who hold that capital, land and labour are the creators of "wealth" in any society, i.e. he is rejecting "the trinity formula which comprises all the secrets of the social production process"(74). Marx attacks the conception that capital and land "produce wealth" and follows this with an attack on the bourgeois notion of "labour":

And finally, as third party in this union, a mere ghost — "the" Labour, which is no more than an abstraction and taken by itself does not exist at all, or, if we take (that which is behind it), the productive activity of human beings in general, by which they promote the interchange with Nature, divested not only of every social form and well-defined character, but even in its bare natural existence, independent of society, removed from all societies, and as an expression and confirmation of life which the still non-social man in general has in common with the one who is in any way social (75).

Obviously, in this passage Marx is not defending a conception of "'the' Labour" as being non-social but "human" or "material". Rather, he is castigating bourgeois political economists who adopt the notion of the non-social man in order to present the capitalist productive process as the "natural" productive process of human society in general. Cohen not only misrepresents Marx's views, but he adopts the position of the bourgeois political economists.

Cohen's account of "material" relations between human beings (i.e. work relations of production) in the labour process also rests on his amending Marx's view as it appears in the 1859 'Preface':

(W)ork relations are production relations, but, despite Marx's Preface of 1859, not all production relations belong to the economic structure... We call the production relations which form the economic structure social relations of production, and work relations are material relations of production (76).

However, as Adamson notes, such a rectification of Marx's views is not consistent with Cohen's own views, since Cohen's definition of the economic structure is based on accepting Marx's position in this respect as presented in the 'Preface' (see above, p.195). Moreover, if we look at Chapter VII of Vol. I of Capital, where Marx presents his abstract account of the labour process, we notice that Marx does not talk of human beings in plural but only in generic or individual terms, i.e. he talks of "Man" or of "the individual labourer", or "a man", never of "men" or of "human beings" (77). This is an indication that, when considering the labour process in its abstract form, Marx does not conceive the existence of relations between human beings. Even though he may make reference to collective activity, he treats it only as generic activity.

It is true that in an earlier Chapter of Capital Marx does say that there are "material" relations between the workers. In the last Section of Chapter I of Vol. I of Capital, "The Fetishism of Commodities and the Secret Thereof", Marx does indeed say that purely material relations between labourers appear in the capitalist productive process, where "material" is to be regarded as opposed to "social". But it is also true that he remarks that these relations only appear because of the social determination imposed on the productive process by its characterization as commodity production. That is, such non-social relations are

produced by the schism generated in the productive process when it is directed to the production of exchange values, not of use-values:

As a general rule, articles of utility become commodities, only because they are products of the labour of private individuals or group of individuals who carry on their work independently of each other. The sum total of the labour of all these private individuals forms the aggregate labour of society. Since the producers do not come into social contact with each other until they exchange their products, the specific social character of each producer's labour does not show itself except in the act of exchange. In other words, the labour of the individual asserts itself as a part of the labour of society, only by means of the relations which the act of exchange establishes directly between the products, and indirectly through them, between the producers. To the latter, therefore, the relations connecting the labour of one individual with that of the rest appear, not as direct social relations between individuals at work, but as what they really are (in the production of commodities, namely), material relations between persons and social relations between things (78) (Emphases and parenthesis added).

In sum, contrary to Cohen's view, Marx does not consider the relations which occur between workers when he studies the labour process in its abstract form. Moreover, he emphasizes that "material" relations between the workers only appear when the productive process has been socialized in such a way as to put it under the "fetishism of commodities". Marx only considers the relations that develop between the workers when he begins the analysis of the capitalist labour process as a process for extracting surplus-value, that is, when the notion of capitalist

co-operation is analyzed. As H. Laycock remarks,

the conception of the forces of production developed by capitalism as social —as themselves involving co-operation and division of labour— is crucial to Marx's view of capitalism...(79).

In view of Cohen's idea of the forces of production as non-social factors determining the social, and in view of the undeniable intimacy of the link between co-operative work relations and the forces of production, Cohen attempts to cover his position by claiming that work relations are just not social relations at all. But if Marx's "co-operation" and "social configurations" do not involve social relations, it is not clear what does"(80).

Therefore, having demonstrated that Cohen's distinction between "material" and "social" is implausible in view of Marx's thought and, moreover, inconsistent with Cohen's own views, we may conclude that Cohen's version of historical materialism as a technological determinism is fatally flawed. For as I noted at the outset, Cohen's account rests crucially on the distinction between "social" and "material" aspects of the social productive process.

The failure of Cohen to demonstrate the plausibility of the technological determinist interpretation of Marx is particularly important since his version is exceptionally sophisticated, and constitutes "the best case" for such a technological view. The problem once again lies in the assumption of the revisionist's

premise that "material" and "materialism" concern the "natural", "physical", "human", and even "mental", but not the social. Cohen shares with Bernstein this non-Marxist notion of material and materialism. A non-Marxist notion of materialism will always yield a technological determinist version of historical materialism, and vice versa. But this technological interpretation of Marx is, as we have shown through the analysis of its most important and representative versions, implausible.

Notes.

- 1) Together with the 1844 Manuscripts and The German Ideology, the 'Preface' to A Contribution to the Critique of Political Economy constitute the central texts for the base-superstructure approach.
- 2) K. MARX, 'Preface', A contribution to the Critique of Political Economy, pp.20-21.
- 3) P. WALTON & A. GAMBLE (1972) have tried to offer arguments to show that the earlier "philosophical" concern over alienation is central to Marx's thought, by pointing out how this notion develops into the analysis of surplus-value in Capital. In this way these authors attempted to present a coherent view of Marx's work based on the base-superstructure approach. Their analytical effort was directed against Althusser's theory about the "break" between the young and the mature Marx. This forced Walton and Gamble to revert to the superstructuralist positions, in the sense of being unable to grasp the qualitative specificity of the analysis developed by Marx in Capital, i.e. they insist in reducing Capital to be a mere application of earlier analytical views of Marx. Walton and Gamble try to show "the developing unity" of Marx's thought, the "consistency of his ontological conception of the dialectics of labour"(p.39). Their task is to demonstrate that Marx's "law of value" is but the offshot of the notion of alienated labour. They quote Marx's letter to L. Kugelmann (11 July 1868): "All that palaver about the necessity of proving the concept of value comes from complete ignorance both of the subject dealt with and the scientific method... Science consists precisely in demonstrating how the law of value operates"(Quoted in p.40). In Capital, thus, Marx is supposed to be developing the "scientific" analysis of capitalism. So, say Walton and Gamble, "this 'science' is not a break from his early work; rather it can only be meaningful understood as an application of his dialectics of labour"(Idem) (Emphasis added). See also p.196.
- 4) C.W. MILLS (1962), pp.105-106.
- 5) In Mills' analysis there are no traces of an alternative approach. On the contrary, in the text quoted the assumption of the base-superstructure approach is apparent: he takes positions about disputed issues, and does so from the point of

view of trying to clarify how base and superstructure should be organized. For example, Mills says that in the superstructure there is a place for the relations of production, and he also says that "scientific development" occurs in the base. But these are not unproblematic assumptions, and cannot be resolved—as Mills concedes—as long as historical materialism is understood as Mills understands it, i.e. on the assumption of the base-superstructure approach.

- 6) W.H. SHAW (1979), p.158.
- 7) W.H. SHAW (1978), p.53. This is understood by Shaw as meaning that history is technologically determined, although he admits that "technological determinism is a slight misnomer since Marx speaks, in effect, of productive-force determinism" (W.H. SHAW (1979), p.158). Throughout his analysis Shaw refers to the determination of historical development both in terms of productive-force determinism and in terms of technological determinism. Moreover, one of his points is to show how and in what ways these two concepts coincide (See W.H. SHAW (1978), pp.25, 53-55, 81 and 150-151).
- 8) W.H. SHAW (1978), p.10. Shaw specifies what he understands by "material production" by saying that it is "simply... the production of material things". Thus, we should regard the labour process as the process where "material things", understood as material use-values, are produced. However, as I shall point out below, Shaw is not consistent in this usage of the phrase "production of material things".
- 9) W.H. SHAW (1979), p.157.
- 10) Idem., p.158.
- 11) W.H. SHAW (1978), p.74.
- 12) Idem., p.17.
- 13) Idem., p.16.
- 14) W.H. SHAW (1979), p.157.
- 15) W.H. SHAW (1978), p.28.

- 16) Idem.
- 17) Idem.
- 18) Work relations of production, as Shaw sees them, "respond to the nature of the productive forces"(Idem., p.35), although neither directly nor only to the means of production: "It is not just the means of production which determine the nature of the work relations; rather, the work relations are largely dependent upon the skill and experience of the labour-power engaged"(Idem).
- 19) W.H. SHAW (1979), p.157.
- 20) Idem.
- 21) W.H. SHAW (1978), p.33.
- 22) H. LAYCOCK (1980), pp.342-344.
- 23) See H. LAYCOCK (1980), pp.344-347.
- 24) W.H. SHAW (1978), p.31.
- 25) Idem., p.29.
- 26) K. MARX, Capital, Vol. I, p.317.
- 27) Idem., Vol. III, p.266. See also the whole Chapter XXV, "Exposition of the Internal Contradictions of the Law", loc. cit., pp.241-266.
- 28) Idem., Vol. I, p.307.
- 29) Idem., p.309.
- 30) Idem., p.317.
- 31) W.H. SHAW (1978), pp.23-24.
- 32) Idem., p.144.

- 33) Idem., pp. 62-66.
- 34) Idem., p.108.
- 35) Idem., p.103.
- 36) Although Shaw attempts to develop a plausible presentation of historical materialism as an "empirical scientific theory" ((1978), p.2; see also W.L. ADAMSON (1980), p.188), he says that he will not try to "... mold the different aspects of historical materialism into... a systematic theory, nor to segregate it formally from other aspects of Marx's thought ... I leave the boundaries between Marx's conception of history and his other ideas at an intuitive level" ((1978), p.171, note #1).
- 37) Idem., p.103.
- 38) G.A. COHEN (1978), p.x. R.W. MILLER (1981) notes that Cohen's book is based on the centrality assigned to the 1859 'Preface' in the following manner: "Marx's Theory of History begins with an enormous epigraph, a page and a half of closely-spaced type, part of Marx's Preface to A Contribution to the Critique of Political Economy (1859)... (T)his celebrated passage (is) the central text of technological determinism... Karl Marx's Theory of History is, in effect, an extended commentary on its extremely pregnant epigraph... Cohen often cites passages from Capital, Theories of Surplus-Value, the Grundrisse, and The German Ideology. But he constantly returns to the initial passage from the Preface, the center of gravity of his book" (pp.94-95).
- 39) G.A. COHEN (1978), pp.28-29. See also pp. 134-142, and 147, note #1.
- 40) Idem., p.32.
- 41) Idem., p.34.
- 42) Idem. Cohen remarks, commenting on Senior's views, that "(i)t is the social conditions which make the soldier's presence necessary to agriculture. His indispensability does not make him productive, because his service is not materially necessary: it is not imposed by the nature of the soil and the technology available for working it" (Idem., pp.33-34). Productive forces, therefore, are material, never social.

- 43) Idem., p.55. See also p.32.
- 44) Idem., p.41.
- 45) Idem., p.42.
- 46) Idem., p.43.
- 47) Idem.
- 48) Idem., p.45.
- 49) Idem., p.47.
- 50) Idem., pp.34-35. See also pp.64-67.
- 51) Idem., p.35, note #1. See also p.93.
- 52) Idem., p.37.
- 53) Idem., p.28.
- 54) Idem., p.35. See also pp. 63 and 85-87.
- 55) Idem., pp.30-31.
- 56) Idem., p.30.
- 57) W.L. ADAMSON (1980), p.192.
- 58) G.A. COHEN (1978), p.30.
- 59) W.L. ADAMSON (1980), pp.192-193.
- 60) COHEN (1978) himself refers to the importance he attributes to the distinction between social and material on p.88.
- 61) Idem., p.89.
- 62) Idem.

- 63) Idem., p.90.
- 64) Idem., p.92.
- 65) Idem., pp.92-93.
- 66) Idem., p.94.
- 67) Idem., pp.91-92.
- 68) Cohen says that in his book "'deduce' is used strictly, to mean 'perform a valid deductive inference'. 'Q' may be validly deduced from 'p' if and only if he who asserts 'p' and denies 'q' contradicts himself... (But) (n)ot all good inferences are deductive... (and he uses) non-deductive inferences from material to social properties..."(Idem., p.92). See also p.96.
- 69) Idem., pp.95-96.
- 70) Idem., pp.97-98.
- 71) Idem., p.96.
- 72) Idem, p.99.
- 73) Idem.
- 74) K. MARX, Capital, Vol. III, p.814.
- 75) Idem., p.815.
- 76) G.A. COHEN (1978), p.112.
- 77) See K. MARX, Capital, Vol. I, pp.179-180.
- 78) Idem., pp.77-78.
- 79) H. LAYCOCK (1980), p.348.
- 80) Idem., p.347.

THE ERFURT CONGRESS

After the abolition of the Anti-Socialist Law in Germany, the German Social Democratic Party (SDP) had to come to terms with the possibility of developing legally sanctioned political activity, within the established political institutions of capitalist Germany (1). This change in the practical life of the SDP generated a parallel change in its programme, although in a paradoxical manner. For while the practical tasks of the SDP tended to become less revolutionary, the new programme rejected the moderate Lassallean views formerly predominating, and adopted a more revolutionary and more explicit Marxist position. At the Erfurt Congress in 1891, a new programme for the party was produced (2), in which both the SDP's practical and theoretical concerns found expression.

The practical proposals which were approved at the conference were put forward mainly by those members of the SDP that held reformist and opportunistic stands, while the theoretical part of the programme was the work of those of more "orthodox" Marxist orientation. As D. Howard has observed,

The program adopted at Erfurt was a work of brilliant compromise into which one could read the interpretation he wished. The Erfurt Program contains a formal affirmation of faith in the principles of Marxism (as interpreted and popularized by Katusky), and a practical program, written by Bernstein, which accepts the capitalist terrain as the foundation of Social Democratic tactics (3).

Among the facts that prompted this formal allegiance to the principles of Marxism, Engels' publication of Marx's Critique of the Gotha Programme in the SDP's Neue Zeit played an important role (4). As for the practical tactics of the SDP, described by Engels as "philistine" (see note 3), they represented the views of the reformists and revisionists in the party. This point has been well stated by G.D.H. Cole:

(T)he Erfurt Programme was silent about such matters as the class-character of the State and the necessity of overthrowing it by force. It demanded universal suffrage, including women's suffrage, the secret ballot, proportional representation, biennial elections, payment of members, direct legislation by the initiative and the veto, and administrative autonomy at every level... It also demanded popular election of public officials, and the responsibility of such officials before the law. In short, the Erfurt Programme embodied a radical demand for constitutional reform, but left open the question whether the changes demanded were to be brought by parliamentary action, backed by the pressure of public opinion, or by revolutionary means (5).

Clearly, the practical policies adopted at the Erfurt Congress embody non-Marxist conceptions about the nature of the capitalist state, and also about the economic development of capitalism. The official formal introductory part to the programme, written by Katusky and approved by Engels, cannot serve as theoretical justification of those practical tasks because it discuss capitalism in Marxist terms.

The theoretical discussion centered, as L. Colletti says, on the notions of the capitalist economic development and the capitalist state (6). The contradiction between the practical and the theoretical parts of the Erfurt Programme is an expression of the confusion and the contradictions that were reigning in the SDP about these notions. On the one hand there were those members of the SDP who accepted that the capitalist state was an instrument of class domination, and those who did not. On the other hand, there were those who thought that economic reforms would peacefully accelerate the advent of socialism and those who argued that any such reforms would retard it. However, both groups shared theoretical Marxist principles about the historical process of society in general.

The fundamental aspect of the theoretical part of the Erfurt Programme was that it spoke of a revolutionary political struggle in order to attain power, and that it saw the SDP as the vanguard of the proletarian movement in Germany. This was a consequence of Kautsky's adoption of a Marxist rather than a Lassallean theoretical position (7). As J. Rovin has noted, the theoretical part of the Erfurt Programme was "la base idéologique de l'action d'un parti révolutionnaire tout entier tendu vers un changement total de la société et de l'économie existante"(8). This strategy was developed with reference to Marxian themes related to the current development of capitalism,

including its increasing contradictory character, its impending dissolution, the approaching workers' victory and the impending dawn of socialism (9).

This account of capitalism was based on Kautsky's understanding of Part VII of Vol. I of Marx's Capital ("The Accumulation of Capital"). From this exposition of Marx, Kautsky derived the interpretation of the "breakdown" of capitalism that would predominate among the orthodox Marxists in the SDP, namely that capitalism would succumb due to inevitable technological and economic collapse (10), not to political reasons. Techno-economic tendencies were taking capitalism, "with the force of a natural law", to its final breakdown.

Kautsky mistakenly thought that Marx's theory of historical development was composed by two different sets of explanations, one "scientific" and deterministic dealing with the economic processes understood, in the final analysis, as "technological-natural factors", the other "moral" and voluntaristic dealing with ideological and political issues. Thus, in the Erfurt Programme Kautsky presented, on the one hand, a fatalistic vision of history and spoke of the theory of the final breakdown of capitalism (Zusammenbruchstheorie) in the following terms:

We consider the breakdown (Zusammenbruch) of existing society as inevitable, since we know that economic development creates with a natural necessity conditions which force the exploited to strive against private property; that it increases the number and power of the exploited while it reduces the number and power of the exploiters, whose interest is to maintain the existing order; that it leads, finally, to unbearable conditions for the mass of the population, which leave only a choice between passive degeneration and the active overthrow of the existing system of ownership.

Capitalist society has failed; its dissolution is only a question of time; irresistible economic development leads with natural necessity to the bankruptcy of the capitalist mode of production. The erection of a new form of society in place of the existing one is no longer something merely desirable; it has become something inevitable (11).

On the other hand, he addressed the political struggle in such a way as to eliminate the fatalism of his economic analysis:

Every class struggle is a political struggle. The proletariat cannot fight its economic struggles without political rights; it constantly encounters state power when it fights the exploiter. Gaining and using political rights (and) making state power subject to its interests are absolute necessities for the proletariat. It must therefore organize itself as an independent party to which falls the task of maintaining its interests in political life, which must devote itself to the end of conquering the state, this most powerful and only adequate lever to bring about the transfer of the means of production to the possession of all (12).

Kautsky considered that Marx's dialectics consisted in a blending of economic, technological determinism with moral, voluntaristic political activism. Later on, Kautsky changed his in-

terpretation of the economic development of capitalism as well as his conception of the capitalist state. However, he never changed his philosophical views (13).

Moreover, the subsequent change in Kautsky's views on economic and political issues showed explicitly the dualism that constituted their original basis. Kautsky's philosophical views, fundamentally a mixture of Darwinism and a naturalistic and deterministic conception of history, lead him to sustain dualistic economic and political views. As D. Mclelland says, "Kautsky was a Darwinian before he was a Marxist and remained one, to some extent, all his life, his conception of social evolution being always tied to that of natural evolution"(14). In his conception of Marx's dialectics we can see the influence of the Kantian revival that was already attracting so many Marxists, though Kautsky himself would only become aware of it in his Ethik und materialistische Geschichtsauffassung (Ethics and the Materialist Interpretation of History)(1906). In this work Kautsky tried to resolve the conflict between technological and economic determinism and voluntaristic political and subjective activism. But the moral aspects of his view were a simplistic reductionism: he "attempted to demonstrate, in rather a crude way influenced by Darwinian evolution, that ethical ideas varied according to class"(15). In this way Kautsky pretended to refute the neo-Kantians of the Austro-Marxist School. As L. Kolakowski notes:

(For Kautsky) the necessity of the downfall of capitalism and the transition to socialism is no different from the necessity whereby technological progress has in the past brought socio-economic systems into existence. Of course Marx's idea that socialism will be consciously brought about by the organized working class, when it has acquired knowledge of social processes, remains in force. But neither Kautsky nor his neo-Kantian adversaries realized the true sense of Marx's attempt to transcend the opposition between necessity and freedom, between description and prescription (16).

Thus, in Kautsky's analysis there is a tendency to isolate the economic sphere from the social and historical analysis. He objectifies social processes so that they become natural processes; and he objectifies the "economic factors" of social processes, so that they become technical rather than social. For Kautsky, the role technology plays in history is essentially the same as the roles that physiology and genetics play in the biological realms. As Kolakowski goes on to say,

(Kautsky) took a naturalistic and positivistic view of consciousness as knowledge which, being itself the result of necessary development of society, was part of that development inasmuch as it provided the indispensable basis for effective social technology. Knowledge of society, and the practical application of that knowledge, were distinguished from each other in the same way as in any technology (17).

But, if Kautsky is mistaken about the theoretical issues underlying his interpretation of the economic development of capitalism and the process of social development, his political

strategy for the SDP at Erfurt appears in a better light, especially when compared with that of Bernstein. In the practical part of the Erfurt Programme, written basically by Bernstein, we find not only an implicit non-Marxist economic analysis, but also an implicit non-Marxist explanation of the capitalist state and the political strategy of a revolutionary party. Kautsky and Bernstein shared, however, a similar understanding of the philosophical issues underlying their politico-economic positions. Although in 1891 Kautsky and Bernstein differed in their views about the economic development of capitalism and the capitalist state, they had a common understanding of Marx's historical materialism. Their differences came to light only slowly, between 1895 and 1898, when Bernstein published his articles aimed at revising Marxism as a whole, and when, reluctantly at first, Kautsky disputed Bernstein's position. However, throughout their famous dispute they shared a dualism (techno-economic aspects vis-à-vis socio-political ones) which underlies their politically different positions.

At the moment of the Erfurt Congress, the most apparent aspect of Bernstein's revisionism was the implicit non-Marxist notion of the capitalist state (18). But Bernstein still did not challenge the Zusammenbruchstheorie, nor did he attack the consequent "economic determinism" that he will later attribute to both Marx and Kautsky.

In short, we see in the Erfurt Programme the slow emergence of a fundamental theoretical contradiction in the ranks of the most developed Marxist party of the epoch, a dispute that will eventually divide Marxists both politically and in their interpretation of Marx's ideas into "revisionist" and "orthodox" Marxists. Both sides, unfortunately, misunderstood Marx, and they took sides in a mistakenly presentation of the problems. At the core of the dispute between revisionist and orthodox Marxists lies a shared technological interpretation of historical materialism. Kautsky's simplification of the Marxist analysis of the economic development of capitalism, and Bernstein's misrepresentation of the Marxist analysis of the capitalist state, are the kernel around which a technological interpretation of Marx finally emerged explicitly (19).

NOTES

- 1) W.O. HENDERSON (1976) says that "The success of the socialists at the general election of February 1890, when nearly 1,500,000 votes were gained, was the climax of the 'heroic age' of the Social Democrat Party. The socialists had defeated Bismark's attempt to crush them by force. Bismark soon resigned and the government did not seek to renew the Anti-Socialist Law when it expired at the end of September 1890. Now that the Social Democrat Party was again a legal organization it could openly resume its propaganda among the masses. Important decisions had to be taken concerning the adoption of a new program and the policy to be pursued by socialist deputies in the Reichstag" (p.663). G.D.H. COLE (1967), for his part, affirms that "The Party, though sorely beset, was able to fight elections and conduct electoral propoganda; and its deputies, when elected, could speak freely in the Reichstag or in the State Landtags, and could even address their constituents provided they were careful not to give the police too easy a handle" (p.249). And L. COLLETTI (1971) notes that "At the Erfurt Congress... the prevailing attitude seemed largely inspired by confidence and optimism... The period which was now opening would see the party and the trade-union movement grow with gradual but irresistible force. In a reasonable period of time, Social Democrats would conquer the majority of seats in the Reichstag —a majority that no government soldiery could ever disperse. At that point, backed by the maturity and consciousness attained by the masses, the party would undertake the socialist transformation of society, using parliament itself to this end. The fact that the party did not yet have this decisive influence in the Reichstag should not induce it to condemn the system outright" (pp.104-105).

- 2) The Erfurt Congress was mainly dedicated to the discussion and approval of the new programme. As G.P. STEENSON (1978) puts it: "Paul Singer, the congress co-chairman, opened the first session by declaring that just as the Halle congress had provided the party with new organization, so this one was to provide a new program 'which scientifically and indisputably expresses our demands in clear and generally understandable form, and like the previous program will be a polestar for us in the struggles, a guide to victory'"(p.98). See also C. LANDAUER (1959), pp.295-301.

- 3) D. Howard, "Introduction" to R. LUXEMBURG (1971), pp.31-32. In Steenson's biography of Kautsky (1978), we read that "In its final form the Erfurt Program combined a theoretical section written mostly by Kautsky and a tactical section written mostly by Bernstein and Bebel. The theoretical point was short, only two pages, and defined economic and political developments in what by then were orthodox marxian terms. Engels had read Kautsky's final proposal, but of the four or five changes in wording he suggested, only one was incorporated into the program... The theoretical point in its final form pleased both Engels and Kautsky, though Engels found the practical demands 'philistine'" (p.99). Engels was pleased with the theoretical part of the Erfurt Programme because it was a Marxist analysis, instead of the formerly predominant Lassallean one. J. ROVAN (1978) notes that "L'influence des grandes idéologues... de Marx et d'Engels, est beaucoup plus apparente dans le texte de 1891 que dans le programme de Gotha de 1875, et parallèlement s'y réduisent et s'effacent les traces de l'idéologie lassalléenne... Le marxisme devient ainsi la doctrine officielle et reconnue du Parti... Engels peut constater triomphalement que 'la critique marxienne (du programme du Gotha) a vaincu sur toute la ligne'" (p.88). See also the following note. The text of the Erfurt Programme appears as an Appendix to K. MARX & F. ENGELS, Critique des programmes de Gotha et d'Erfurt.
- 4) G.D.H. COLE (1967) says: "In 1891, in preparation for the revision of the party's constitution... Engels published ... Marx's suppressed letter attacking the Gotha Programme of 1875. This was a material factor in inducing the party to open the new programme with an uncompromising affirmation of its Marxist faith" (p.255). G.P. STEENSON (1978) comments that "A brief, but intense storm broke in SDP circles over the publication of the Critique of the Gotha Program. Although Engels steadfastly claimed responsibility, the majority of the SDP Reichstag Fraktion, including above all Dietz and Liebknecht, harshly chastized Kautsky as the villain. In the Vorwaerts, the Fraktion denounced Kautsky for deception and further assaulted him both by letter and verbally" (p.95). C. LANDAUER (1959) explains the ensuing events as follows: "The reaction was not quite what Engels had presumably expected. Aside from the direct attack upon the Lassallean formulas and traditions, Marx's letter contained a statement to the effect that a proletarian dictatorship would be necessary in the period of transition from capitalism to socialism. This was ammunition for the enemies of the socialist movement. Did not Marx's own words justify the antisocialist

law and demonstrate that its abrogation had been unwise? The party could not possibly permit itself to be labeled as an advocate of dictatorship, and, therefore, through the mouth of Representative Karl Grillenberger, disavowed Marx's statement publicly in the Reichstag. The socialist spokesman stressed the point that, 'the Social Democratic party rejected the suggestion which Marx had made for its program. Marx was annoyed by the fact that the German Social Democratic Party has worked out its program as it thought fit in view of conditions in Germany, and that therefore for us any revolutionary dictatorship of the proletariat is out of the question'" (p.297).

- 5) G.D.H. COLE (1967), p.255. See also Colletti's text on note 1 above.
- 6) See L. COLLETTI (1971), "Bernstein and the Marxism of the Second International", *passim*.
- 7) See J. ROVAN (1978), p.90.
- 8) J. ROVAN (1978), *loc. cit.*
- 9) According to J. ROVAN (1978), in the Erfurt Programme, "Kautsky offrait moins un programme qu'une analyse de l'évolution économique de la société bourgeoise et des conséquences qui devait obligatoirement en découler: l'intensification de la lutte de classes comme conséquence de l'élargissement continu de l'âbime séparant possédants et non-possédants, de l'augmentation de l'armée des travailleurs en surnombre, de l'accroissement de la misère et de l'exploitation. A ces maux, seule la transformation de la propriété capitaliste privée des moyens de production en propriété sociale... 'peut porter remède at aboutir à un état de bien-être suprême et de perfectionnement universel harmonieux... libération non seulement du prolétariat, mais du genre humain tout entier qui souffre de l'état actuel des choses'. Les crises, fondées sur l'essence même du système capitaliste, deviennent de plus en plus vastes et dévastatrices. Les classes moyennes sont entraînées dans le processus d'humiliation et d'exploitation, mais l'oeuvre de libération ne peut être entreprise et menée à terme que par le seul prolétariat" (p.89).

- 10) L. COLLETTI (1978) puts this as follows: "Predominante en la socialdemocracia alemana hasta el estallido de la Bernstein-Debatte, la tesis del fin del capitalismo por razones económicas (de las que estaba totalmente imbuido el Programa de Erfurt) cede poco a poco paso, en los primeros años del siglo, a la tesis —aparentemente análoga pero, en realidad, antitética— del derrumbe por razones políticas... El capitalismo ya no naufragaría por obra de la progresiva exasperación de las crisis económicas o debido a una brusca detención del mecanismo de acumulación. Al contrario, desde este punto de vista, sus posibilidades de maniobra se habían acrecentado notablemente en los últimos decenios" (p.40). It is possible to think that the interpretation of the breakdown of capitalism because of political reasons originated precisely as an unwanted consequence of Bernstein's interpretation of capitalism, although the theory only found expression in R. Hilferding's Das Finanzkapital (1910).
- 11) K. KAUTSKY, Das Erfurter Programm, pp. 106 and 136. Quoted in L. COLLETTI (1971), pp.55-56. This text by Kautsky is his enlarged version of the Erfurt Programme that he published in 1892, and to which I unfortunately had no direct access during my research. See also L. COLLETTI (1978), pp.187-188.
- 12) K. KAUTSKY, "Der Entwurf des neuen Parteiprogramms", Neue Zeit, 9:2 (1890-1891). Quoted in G.P. STEENSON (1978), p.97.
- 13) See L. KOLAKOWSKI (1978), II, pp.34-35; and D. McLELLAND (1979), p.36. See also note 15 below.
- 14) D. McLELLAND (1979), loc. cit.
- 15) Idem. McLelland also adds that "Kautsky felt the attraction of neo-Kantianism. Kautsky admitted (quite correctly) in 1898 that 'philosophy was never my strong point', but maintained that 'the economic and historical standpoint of Marx and Engels is capable of being integrated, if necessary, even with neo-Kantianism'".
- 16) L. KOLAKOWSKI (1978), II, pp.40-41.
- 17) Idem, p.42.

- 18) See W.O. HENDERSON (1976), p.666; and also note 5 above.
- 19) At the moment of the Erfurt Congress the theoretical issues of the Bernstein-Debatte were not yet fully developed, and the strategic and tactical positions were in fact an eclectic compromise. As L. COLLETTI (1971) puts it: "German Social Democracy chose the 'parliamentary' road at Erfurt, not because it had already abandoned the class conception of the State, but because its 'fatalistic' and 'providential' faith in the automatic progress of economic evolution gave it the certainty that its eventual rise to power would come about 'in a spontaneous, constant and irresistible way, quite tranquilly, like a natural process'. On the other hand, the naturalistic objectivism which is the counterpart to this concept of 'economic evolution' had its counterpart in the dissolution of the Marxist theory of the State" (p.105).

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