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Partially independent variables and internal logic in classical Marxist economic analysis*

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The theoretical framework

The main propositions of Marxist economic theory, as applied to the capitalist mode of production, can be summarized as follows:

(1) Capitalist production is generalized commodity production. Commodity production is impossible without the parallel circulation of commodities and money (a special commodity serving as a general equivalent for all other commodities). Commodities therefore always have prices and can only be acquired through their exchange against money. These prices might fluctuate in the short run under the pressure of market laws (the law of supply and demand). But these fluctuations are around an axis in the last analysis determined by value of these commodities, i.e. by the costs of production measurable in abstract human labour (hours of labour). Production in the long run determines circulation and consumption, and not the other way around.

(2) Under capitalism, production is organized by private owners of the means of production (capitalist firms) who, with their money capital, purchase means of production (buildings, equipment, raw material, energy, etc.) and labour power, in order to produce goods and services to be sold as commodities on the market. Their initiative

is decisive for determining the level and dynamic of productive activity, and therefore the state of the economy as a whole. Private property implies competition, i.e. decisions taken by firms independently from each other. Under the spur of competition, these independent firms are forced to operate with the purpose of realizing profits (maximizing profits) for themselves, because without enough profits they cannot expand (accumulate capital), and without enough expansion they lose ground in the competitive struggle and eventually disappear.

(3) The only ultimate source of profit (and therefore of capital accumulation) is surplus-value, the amount of value produced by living human labour over and above its own costs of maintenance and reproduction. Capital's drive to maximize profits and capital accumulation is therefore a drive to extort the maximum amount of surplus-value from the wage-labour force, either in the form of wage cuts, longer working hours or more intensive labour expenditure, or through an increase in labour productivity not compensated by an equivalent increase in real wages (i.e. cheapening and diversification of wage goods).

(4) Under capitalism, commodities are not simply products of labour; they are products of labour acquired and dominated by capital. They therefore do not exchange proportionally to the amount of labour directly spent in their production; they do not lead to profits proportional to the direct labour input in their production. They exchange proportionally to the total amount of capital spent on their production. Given the different structure of capital in different branches of production, for a given commodity, this might lead to profits considerably different from surplus-value directly created through their production. But for the economy as a whole, over a certain time-span, the sum total of the prices of production — production costs

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plus the average rate of profit — will equal the sum total of value produced in the course of the process of production.

(5) As a result of capitalist competition, large firms emerge more and more in industry, transportation, banking and credit, foreign trade, wholesale trade, etc. The number of decisive competitors decreases in each particular branch, after an initial period of experimental and chaotic expansion. From a certain threshold, this concentration and centralization of capital leads to a restriction of price competition and the appearance of various market control techniques (oligopolies, monopolies). But given private property, no absolute long-term control of markets is possible by monopolies.

The law of value continues to assert itself, be it only in the long run. Monopolies do not eliminate the trend towards the equalization of the rate of profit. They can only assure, for certain periods, the emergence of two "average rates", a lower one in the non- monopolized sectors of the economy, a higher one in the monopolized sectors (incorporating an [4]"average rate of surplus profits", i.e. of rents). In the very long run, these two rates will also tend to equalize.

(6) Competition and capital accumulation take essentially the form of constant changes in technology, with the purpose of cutting production costs. Technology progress and technological revolutions are basically labour-saving under capitalism, although they cheapen equipment and raw material as well as wage goods. Labour-saving biased technological progress implies substitution of dead labour for living labour, i.e. not only mechanization but, as a secular trend, semi-automatization and automatization. High rates of capital accumulation (capitalist growth) can momentarily neutralize or overturn this tendency to reduce the rate of growth of living labour spent in the productive process. But in the long run, this tendency will assert itself and even lead to stagnation or an absolute decline of living labour spent in production.

(7) The division of the new value produced e.g. during a year — i.e. the net product or national income in a given country — between capital and labour (surplus-value and the productive workers' wages and salaries) is not exclusively determined by market forces. The value of the commodity labour power is a peculiar one, for the costs of reproduction of human labour power are not purely physiological but include a moral-historical element, i.e. the satisfaction of needs which are socially recognized as indispensable for workers hired at any specific moment. This incorporation or expulsion of a given set of commodities and services into or from the socially recognized minimum (average) wage results from ups and downs of the class struggle. These are in turn influenced by the fluctuations of employment and unemployment (the fluctuations of the "reserve army of labour"). Hence labour-saving biased capital accumulation also serves the key function for capitalism to guarantee that the rise of wages induced in periods of relative scarcity of labour power will not go beyond a threshold where it would seriously threaten to wipe out profits.

(8) The rise in the "organic composition of capital" leads to a tendency for the average rate of profit to decline. This can be partially compensated by various counter-forces, the most important of which is the tendency for the rate of surplus-value (the rate of exploitation of the working class) to increase, independently from the level of real wages (which can rise under the same circumstances, given a sufficient rate or increase in productivity of labour). However, in the long run, the rate of surplus-value cannot rise proportionally to the rate of increase in the organic composition of capital, and most of the "countervailing forces" tend to be superseded in their turn, at least periodically (and also in the very long run).

(9) The very nature of private property, decision-making by private firms, and the tendency to make investments depend upon profit (both *ex ante* and *ex post)* give economic life under capitalism the form of spasmodic development, i.e. make the levels of output, employment, income and consumption fluctuate, passing through successive stages of the business cycle and

making periodic crises unavoidable. The objective overall results of decisions taken by independent firms can be completely different from their intended goals. Measures taken by all firms for individual profit maximization can lead to an overall decline of profits in the economy. Together with the decline in the average rate of profit, the tendency of production (productive capacity) to outgrow effective demand (consumption) determined by the bourgeois laws (norms) of income distribution is the basic cause of capitalist crises. These are simultaneously crises of over-production of capital (over- accumulation) and crises of underconsumption (overproduction of commodities). The business cycle (of an average duration of seven years in the last 160 years) is the normal time-frame in which the value of commodities asserts itself as the basic axis for market prices, in which the average rate of profit is equalized and in which the less efficient (in the capitalist sense of less profitable) firms are eliminated.

(10) While there is no necessary linear trend of crises becoming ever more grave with each business cycle, the combination of the secular trend of a tendency of the average rate of profit to decline, the secular trend of the mass (number of hours of) living labour in production first to stagnate and then to decline, the secular trend of the geographical expansion of the system (and hence the world market) to stop and the secular trend of the class struggle to become more intensive and to have more and more radical goals (undermining the inner logic of the system), leads to the growing possibility of the system degenerating towards more and more violent upheavals (wars, revolutions, counter-revolutions) and finally breaking down either into a big decline or overall collapse of human civilization, or into a higher form of social organization: socialism.

We could call these ten propositions:

(1) the law of value;

(2) the law of capital accumulation;

(3) the law of surplus-value;

(4) the law of equalization of the rate of profit;

(5) the law of concentration and centralization of capital;

(6) the law of the tendency of the organic composition of capital to rise;

(7) the law of class struggle determination of wages;

(8) the law of tendency for the average rate of profit to decline;

(9) the law of the cyclical nature of capitalist production and of the inevitability of crises of over-production;

(10) the law of the unavoidable collapse of the system *(Zusammenbruchs-theorie).*

Most of these laws would be accepted by all those claiming to be Marxists, with the possible exception of proposition (10). My own contribution to Marxist economic theory contains an additional time-frame for proposition (9): the "long waves of capitalist development", in which among other things, basic technological revolutions are realized, and the equalization of the rate of profit between non-monopolized and monopolized sectors asserts itself.

Partially independent variables

The above-mentioned ten propositions have a logical coherence and are essentially endogenous from an economic point of view. Given the general initial framework and "push" (private ownership of the means of production, plus primitive accumulation of money capital, plus creation of a class of wage earners, plus expanding commodity production, i.e. market economy) they flow automatically from the structure of the system itself, independently from the operation of other forces or the influence of outside factors. These can determine the speed, direction, degree of homogeneity/heterogeneity of the development. They cannot alter the nature of the system or overturn its general historical trends. Even when large-scale semi-feudal landowners are still around, or when there is still a large number of small producers, the number of capitalist factories will not decline secularly but increase, capital accumulation will not disappear but grow, the number of wage-earners will not go towards zero, money economy will not be throttled, growth will not be smooth and evenly distributed throughout time, wages will not explode upwards, etc.

But if we look more carefully at the ten propositions, we shall notice that many of them imply a certain number of partially undetermined conclusions (outcomes). Besides the inner logic of the system, exogenous factors are at work, which partially co-determine the system's development, at least at short and medium-term ranges (one can even add: long-term, as long as one doesn't identify the "long-term" with "secular", but situates it between the duration of a single business cycle and the secular trend).

Why is this so? Because the concrete historical process of capitalist development is always the result of an interaction between the system and the environment in which it develops; this environment is never 100 percent capitalist. In other words: the laws of motion of capitalism (its inner logic) would be the *exclusive* determinants of history under the prevailing capitalist mode of production only if that mode of production would be a "pure" one on a world scale. But this has never been the case until now, and it does not look like ever becoming so, be it only for the fact that long before capitalism has thoroughly "capitalized", i.e. industrialized the whole world, it has itself, since 1914-17, started to decline and slowly disintegrate.

Hence what really happens in economic history since the beginning of capitalism is the product of the contradictory combination of capitalist, semi-capitalist and non-capitalist (first pre-capitalist ones, and later also post-capitalist) relations of production and circulation interacting with each other.

Does that mean that the laws of motion of the capitalist mode of production, as layed bare by Marx, are either "false" or "inoperative"? Of course not. First of all they assert themselves — they can be verified empirically — in the long run; after all, there *have* been twenty-one crises of over-production since 1825, and they can *all* be explained in terms of the Marxist theory of crises. Secondly, to say that they do not assert themselves in a "pure" way, that they are combined with exogenous factors reacting upon them, is not identical with stating that they do not operate.

The theory of rent is a good example in that respect. Grain prices, oil prices, can deviate for some time — and even deviate strongly — from the value of the [4]"price of production" of these commodities, under the influence of several extra-economic "institutional" factors (i.e. social and political forces). But as both the American farmers and the governments of the OPEC countries are presently finding out at their expense, they cannot violate the law of value for ever, or even for a long time. The law of value ends by asserting itself, US government policies, US political parties' electoral calculations, oil sheikhs' greed, anti-imperialist mass mobilizations, military relationship of forces, etc. notwithstanding.

On the other hand, the impact of exogenous forces upon the development of the capitalist economy during the last 200 years has been very real. The present structure of the world economy, the geographical distribution of agriculture and industry, the size and composition of the world market would be impossible to understand, if the influence of these extra-economic factors were not taken into account. One cannot explain the emergence of the USSR — to give just that example — and its later impact on the politics and economy of the twentieth century exclusively as a result of the ten propositions spelled out above, through 'the inner logic of capitalism, either in Russia or on a world scale.

But before we pass on to a more detailed examination of these exogenous factors, their relation to, and their reaction upon the system's intrinsic laws of motion (inner logic), two methodological difficulties which arise precisely out of the specific nature of the Marxist method of analysis in social science should be underlined.

Marxism views society as an organic structured totality, moved by the weight of its inner contradictions. This dialectical approach cannot be reduced to the operation of feedback mechanisms or similar devices. An organic whole reproduces itself, i.e. has precise parameters which limit its possibilities of change. One of the key differences between Marxists and non-Marxists when analysing history (including economic history) relates precisely to that nature of a social system.

It is not that Marxists underestimate the capacity of capitalism to change, to adjust itself, etc. (although, of course, some Marxist analyses were guilty of such underestimations). It is that they understand the limits of such changes, the constraints springing from the very nature of the system. Capitalist states and governments can do many things, and so can capitalist entrepreneurs and firms. But they cannot abolish money capital and profit as the starting-point and final point of the system's operations, nor can they abolish the operation of market forces, or eliminate the law of value. Neither Hitler nor the Pentagon could realize such qualitative "changes" in capitalism's *modus operandi*. The only way this could be achieved is by abolishing capitalism, by eliminating the system. *Inside* the system you can boost or undermine profits, deliberately or inadvertently. But you cannot suppress profits.

Hence any interaction between endogenous and exogenous forces is always limited by these parameters, by these constraints, it reaches its limit when it threatens to eliminate basic mechanisms of the system (the role of the class struggle as a source of "social wages" or different labour-protecting social policies is a good example of the kind). This interaction is in its turn [4] 'over-determined" by the nature of the system itself. This means that the influence of exogenous factors upon the capitalist economy cannot go beyond a certain point. Or, to say it otherwise, politics, the class struggle, cultural traditions, national peculiarities, etc., from a given degree of impact on the economy, all become themselves "economic', cease to be "exogenous" altogether.

Furthermore, these exogenous forces never are *totally* independent. In order to be completely autonomous from a given economic structure, they would have to be completely outside a given social framework; and if they would be completely outside that framework, they would obviously be outside any action upon that framework as well. The capitalist system and the environment in which it operates can in its turn be viewed as a higher "unity" (less pure, less homogeneous than "pure capitalism", but nevertheless a unity), in which both sides — the system and the environment — cannot be mechanically separated from each other.

For that reason we prefer the formula: "partially autonomous variables" to "independent variables". Not only does the latter correspond better to a scientific analysis of what really occurred in history during the last 200 years, it also enables us to avoid the pitfalls of vulgar eclecticism.

Nothing is further from Marxism, i.e. the scientific method applied to the study of social phenomena, than a crude juxtaposition of "factors" based upon analysis redundant with formulas' like: "on the one hand ... but on the other hand", giving each of these "factors" more or less equal weight in explaining reality. "On the one hand" capitalism is crisis-torn; "on the other hand", it produces mechanisms of self-preservation, i.e. of avoiding crises. "On the one hand", capital accumulation leads to unemployment;

"on the other hand", economic growth, spurned by capital accumulation, leads to full employment. And so on and so forth, *ad nauseam*. That type of "analysis" does not lead to any understanding of what is happening, nor allow any prediction of what is going to happen.

Reality is always concrete. In spite of all its mechanisms of self- preservation, capitalism *does* necessarily lead to crises. In spite of all mechanisms of economic growth, even long-term booms end by producing massive unemployment. In spite of all its eagerness to maintain socio-political consensus through full employment policies, capitalism ends by producing situations in which it is forced to accept structural long-term unemployment (with the very real risk of a decline of the socio-political consensus between capital and labour around a certain number of fundamental policy assumptions).

Analytical eclecticism can only be avoided if the impact of the extra-economic variables upon the economic process is seen in turn as being at least partially determined by the logic of the economic system itself. And this implies that these variables are only partially independent variables, that they are themselves connected, through an umbilical cord so to speak, with the inner logic of the system, even if they are not its direct products (in which case they would not be autonomous at all).

Historical specificities

The impact of the past upon the present, more precisely of precapitalist and semi-capitalist past relations on the concrete shape of capitalism in each specific social-economic formation (each specific country in a specific epoch), is the most obvious of extra-economic influences upon the capitalist economy. It includes a great variety of variables, of which we shall enumerate only the most important ones:

(a) *The relative weight of petty-commodity producers* in society, and the degree to which subsistence farming limits the scope of the internal market. This has led to quite different dynamics of capitalism, say in China and in Japan, between 1870 and 1920.

(b) *The degree to which the native capitalist class* can use the state as an instrument of "primitive capital accumulation", i.e. the specific historically grown nature of the state apparatus, its relation with pre-capitalist ruling classes (and their specific nature), with foreign powers, etc. This led, e.g., to quite different dynamics of capitalism in Italy and France between 1780 and 1830, or in India and Japan between 1850 and 1900.

(c) *The precise historical roots and specificities of each "national" bourgeoisie,* its relations with other social classes, and its particular "specialization" in each historical epoch. The special relationship of the English commercial and banking bourgeoisie with the landowning class (which was in no way "endogenous" to capitalism) of the eighteenth and early nineteenth centuries exercised a precise influence upon the level of food prices and hence upon the level of wages in Britain. Likewise, the "overspecialization" of the Dutch bourgeoisie in the carrying trade and in banking in the seventeenth to eighteenth century made it unable to carry through the industrial revolution, in spite of a relative abundance of capital and relatively high wages in Holland. Dutch capital rather participated in financing the industrial revolution in Britain.

(d) *The specific political tradition of each country's bourgeoisie, petty-bourgeoisie and working-class,* which can have roots as far back as 1,000 years. The relative weakness of central power under Western European feudalism led to a rapid relative autonomy of the towns, therefore to a long historical tradition of class politics and class consciousness of the Belgian, Dutch, English, French bourgeoisies, quite different from, e.g., that of the Prussian, Austrian, Polish, Spanish bourgoisies, not to speak of the Turkish, Russian or Chinese ones. This difference in historical tradition expressed itself throughout the second half of the nineteenth century and the beginning of the twentieth century in terms of quite different abilities to manoeuvre with regard to the working class, which even led to different levels of wages unrelated to fundamental differences in industrial and/or financial strength of various bourgeoisies.

(e) *The difference in modern revolutionary tradition*, closely related to the date and specific forms of the bourgeois revolutions, and their impact on the traditions of the labour movement. The fact that the development of the American labour movement has been so strikingly different from that of the Western European, is at least influenced by that "exogenous" factor, which has had profound repercussions upon the American economy throughout the twentieth century. Likewise, the tradition of the French Revolution has had a much greater impact on the French labour movement (and on French politics in general) than any revolutionary tradition in Germany has had. This situation has had a deep influence upon the march of German capitalism in the twentieth century, and upon the German economy, especially in 1918-19 and in 1923, but also in 1930-34 and later.

More generally, Karl Marx (in vol. 3 of *Capital)* pointed to this key influence of historical specificity upon each concrete social- economic formation, a proposition which, according to him, does not only apply to the capitalist mode of production but to all modes of production:

> The specific economic form in which unpaid surplus labour is pumped out of the direct producer determines the relationship of domination and servitude, as this grows directly out of production itself and reacts back on it in turn as a determinant. On this is based the entire configuration of the economic community arising from the actual relations of production, and hence also its specific political form. It is in each case the direct relationship of the owners of the conditions of production to the immediate producers — a relationship whose particular form naturally corresponds always to a certain level of development of the type and manner of labour, and hence to its social productive power — in which we find the innermost secret, the hidden basis of the entire social edifice, and hence also the political form of the relationship of sovereignty and dependence, in short, the specific form of state in each case. *This does not prevent the same economic basis — the same in its major conditions — from displaying endless variations and gradations in its appearance, as the result of innumerable different empirical circumstances, natural conditions, racial relations, historical influences acting from outside, etc., and these can only be understood by analysing these empirically given conditions* (Our italics) (*Capital*, vol. 3, Penguin, 1981, pp. 927-28).

De-synchronization of the class struggle cycle and of the business cycle

Proposition (7) stresses the importance of the class struggle on the level of wages and therefore on the level of profits. It is not the only determinant and not even the most important determinant of wages, as the neo-Ricardian proponents of the "profit squeeze" theory, as well as most of the neo-liberal economists, wrongly assume. But it is certainly one of the determinants of the relative wage levels of different industrialized capitalist countries.

Classical and neo-classical economists alike — including Ricardo and not a few socialists influenced by Ricardo, even among self- styled Marxists — assumed that the relative level of the class struggle and the way it could influence wages depended itself in the last analysis upon market forces, i.e. basically on the level of employment and unemployment. Mrs Thatcher's and Mr Reagan's economic and social strategies are to a large degree determined by that conviction.

However, experience confirms what theoretical analysis suggests: the level and intensity of the class struggle in a given country in a given period is much more a function of the relative militancy of the working class accumulated as a result of the effects of the *previous* phases of the business cycle, than a straight function of *current* levels of employment. It is sufficient to compare the strike curves say in Italy and Belgium on the one hand between 1978 and 1983 and those of France and Britain on the other hand, to see that there is absolutely no mechanical correlation between the level of the class struggle and the level of unemployment. Likewise, if one compares the dynamic of real wages in the countries during the present depression, one will find a much greater correlation with relative levels of workers' militancy than with relative levels of unemployment. The same is even more true if one brings countries like Sweden or Japan into the picture. Likewise, there is no mechanical correlation between the level of unemployment and the rate of decline of union strength. An example of this is Britain, if one compares the most recent years with the 1930-39 period.

Another striking confirmation of this role of workers' militancy as a partially independent variable is offered by the labour history of the United States and its impact on the level of wages (both direct wages and — later — socialized wages) in different periods of its history. There was a general upsurge of workers' militancy in the periods of 1890-1914 and 1934-46 in the USA, linked both to increasing levels of unionization, important progress of political mass activity, and massive strikes. The weight of "radicals" inside the organized labour movement also increased significantly in these periods. In reverse, in the 1914-24 period, and even more in that since the vote of the Taft-Hartley Law and the surge of MacCarthyism, there has been; a significant decline of unionization, of mass strikes and of mass political activity. It is impossible to establish any direct correlation between these ups and downs of class struggle intensity on the one hand, and the business cycle, or "long waves", or the level of employment/unemployment on the other hand.

The conclusion is obvious: there is a definite de-synchronization between the business cycle and the cycle of the class struggle. The level of class militancy of the workers at a given moment is much more a function of what happened during the previous fifteen to twenty years in the class struggle than of the economic situation (including the degree of unemployment) *hic et nunc*. For sure, a high level of unionization will *in the long run* be eroded by massive, structural lasting unemployment. Likewise, near full employment lasting for several decades will certainly strengthen the workers vis- à-vis the employers in the labour market. Such modifications in the relationship of forces between capital and labour will have a certain impact on workers' militancy too. But what precisely that impact will be, how it will manifest itself, how long it will take for it to lead to a radical modification (increase or decline) in workers' militancy, how and in what rhythm it will "radicalize" either the employers, or the workers or both, that will depend also on a variety of other circumstances, and must therefore be considered at least partially as "exogenous" to the current economic process itself.

What is true for the class struggle in general is even more true for the class struggle in its highest form, i.e. revolutions and counterrevolutions. If one studies the curve of such revolutions and counterrevolutions in Europe in the twentieth century (leaving aside the problem of revolutions and counter-revolutions in so-called Third World countries), one will be unable to establish any correlation with ups and downs of the business cycle or the general state of the economy. Marx's conclusion of the 1850s that a new revolution could only occur in relation with new economic crises, is certainly not true for twentieth-century Europe. The great dates which leap to one's mind — 1905 in Russia; 1917 in Russia; 1918-19 in Germany, Austria and Hungary; 1920 in Italy; 1923 in Germany; 1936 in France and Spain; 1946-48 in France and Italy; 1956 in Hungary. 1968-69 in France and Italy; 1974-75 in Portugal; 1980-81 in Poland — have absolutely no common denominator in the economic conjuncture. To understand why they occurred one has to take the sum total of economic, social, political, military circumstances of the previous five to ten years (at least) into consideration, as well as a lot of structural-historical causes.

But the result of these revolutions — global victory, global defeat, partial victory, partial defeat — will have a profound impact on the economic development in the ensuing years. It must therefore be seen at least as a partially autonomous variable of the inner logic of capitalism properly speaking.

The same remark should apply to decisive victories of counterrevolution. To give the most striking example: the victory of fascism in Germany, which has decisively influenced the march of the German capitalist economy not only in the 1933-45 period but up to the 1960s (among other things, through a decisive upward switch of the rate of surplus-value, making possible a strong increase in the rate of capital accumulation) can in no way be explained as a mechanical result of the economic situation, or the relationship of forces between capital and labour on the labour market between 1930 and 1933.

This relationship of forces certainly deteriorated at the expense of labour, while the gravity of economic crisis made the conservation of the bourgeois-democratic framework with free trade unions difficult for German capitalism. But from this it does not follow that Hitler's victory was inevitable, determined by the logic of the capitalist economy. This victory depended upon short-term shifts in the political and social relationship of forces, in which the levels of mass mobilization, the policies of social-democracy, the Communist Party and the trade unions, their analysis of the situation and of the perspectives, their understanding (or lack of understanding) of the nature of the Nazi Party and the dynamics of a Nazi government, were much more important than the level of wages and profits or the number of unemployed.

Hitler could have been stopped — not in the first place by a reduction of the unemployed by 500,000 or one million, but by a mobilization of millions of workers in the streets. Objectively, that was possible. If it did not happen it was for political and not for economic reasons. This historical fact — together with the victory of the Russian Revolution in 1917, the defeat of the German Revolution in 1918-19, the defeat of the Spanish Revolution in 1936-37 — is perhaps the best example of the impact on the world economy and on world history of forces, at least at a given moment, independent from the "inner logic" of the capitalist economy in and by itself.

The role of science and technology

The cycle of technological revolution is to a large degree co-related to the "long waves of capitalist development". Generally, in a "depressive long wave", the pressure to increase the rhythm of technological innovation is evident. We are witnessing such manifold pressures right now throughout the world. Simultaneously, however, during such a "depressive long wave", the forces operating against *massive* implementation of technological innovations, and especially their generalization throughout the whole economy, are overwhelming. When the general level of profits is rather low, and there exists massive overcapacity, the incentives of a massive increase in the level of productive investment are limited.

On the other hand, during "expansionist long waves", conditions favour "extension", vulgarization, massive application and generalization of technological innovation. This is what happened with electricity in the period of 1893-1913 and with motorization and semi-automatization in the period of 1940(48)-70.

However, if this correlation is obvious, and if the "feedback" effects between technological innovation, rise in the average rate of profit, rise in capital accumulation, expansion of the market, technological innovation turning into massive technical revolution, can be easily outlined, there remains one partially autonomous variable in the equation. The *precise* nature of one or several key technological innovations, and their dependence upon one or several key scientific discoveries, cannot be seen as a direct product of the business cycle, or of the "long waves of capitalist development", or of any economic logic in and by itself.

The very most one could state here is that a certain economic climate (as well as a certain politico-cultural one, somehow correlated to it) either favours or hinders basic research, the increase of the number of scientists, their interchange of opinion, the equipment of research laboratoria, etc., all of which is somehow linked to economic needs and possibilities. But even that limited correlation is more complex than appears at first sight.

Nazi rule in Germany certainly hindered free research and free scientific debate, thereby causing growing delay in technological innovation in that country: massive emigration of German first-rank scientific scholars greatly increased the rhythm of scientific research and discoveries in the USA and Britain. But, on the other hand, limited, pragmatic war economy oriented state-funded research in Nazi Germany with ruthlessly established priorities, did enable German science and technology to make significant breakthroughs, the jet plane and the rockets being outstanding examples.

Be that as it may, the character of scientific discovery and initial technological innovation in and by itself makes it at least partially independent from purely economic logic, and at least partially dependent on the inner logic of the development of a given science itself (whether one accepts Kuhn's theory about the nature of scientific revolutions or not). In a given economic situation, at a given turning-point of the "long waves", a great number of already applied scientific discoveries may lie around, a sufficient number of technological innovations already being experimented with. But not all of them lend themselves to widespread generalization throughout the economy. Not all of them lead to genuine technological *revolutions*, yielding technological rents (surplus profits) by the billions of dollars during many years. For such revolutions to occur, specific discoveries and specific innovations are indispensable. And they depend at least in part upon factors "exogenous" to the economy properly speaking.

Qualitative changes in the domination of the world market

Capitalist competition leads to competition between bourgeois nation-states, which leads to imperialist competition (as well as competition between imperialist and dependent bourgeoisies). The world market is structured by these states, each with a given impact upon the international division of labour, world trade, financing of industries and infrastructure in other countries, etc. This competitive strife is not purely economic. States intervene through taxation, subsidies, custom systems, currency manipulations, trade restrictions, political pressure, corruption, economic-military alliances and outright wars, in order to modify economic relationship of forces to their advantage. The outcomes of these wars in their turn deeply influence the march of the international capitalist economy for years if not decades, and produce sharp shifts in the rhythm, orientation, structure of capital accumulation.

Again, the variable "political-military weight upon the world market" is only partially independent from the "purely" economic relationship of forces of different "national" fractions of the international capitalist class. In the long run, no power which is weaker than others from the point of view of industrial productivity of labour or from the point of view of globally accumulated capital can maintain a position of political-military hegemony on the world market and in world politics. But for given periods, such an incongruity between military-political power on the one hand, and economic power on the other, can exist and has existed. Britain's naval-political supremacy in the 1900-20 period no longer corresponded to an industrial or even financial hegemony. France's military and political hegemony on the European continent in the period 1920-35 was likewise incongruous to the industrial and financial strength of that country. The same applies to Japanese military hegemony in East and South-East Asia in 1941-45. And since the mid-1960s there has been a growing incongruity between the USA's decisive weight in world politics and the military field, on the one side, and its relative decline as the technologically and industrially hegemonic power among the imperialist states on the other side.

This temporary incongruity makes situations of hegemony on the world market and in the field of world politics (generally linked to military hegemony), into partially independent variables of the world economy. For the impact of such hegemonies on the general march of the capitalist economy is obvious. It is sufficient in that respect to point to the fact that the hegemonic power's paper currency is able to play the role of reserve currency for the capitalist economy as a whole, to be a substitute or at least a partial "relay" for gold, as a necessary motor for expanding the world economy.

Such hegemonic positions on the world market and in world politics are generally at least partially results of *previous wars* (there are few examples in world history of radical shifts in the international relationship of forces which are not the outcome of wars. Perhaps for the first time in centuries we are witnessing right now such a rare example in the change of the relationship of forces between the USA, Western Europe and Japan). Britain's hegemony in the nineteenth century was a product of the Napoleonic wars. It was finally upset by the first world war. The USA's emergence as the hegemonic power of the capitalist world was an obvious result of the second world war.

These shifts are clearly related to previous shifts in the economic relationship of forces. But once they have occurred, they have the tendency to be frozen for longer periods, as they are institutionally propped up, especially, through armed forces, above-average levels of military expenditures, international currency regulations which allow these expenditures, diplomatic alliances which extend them throughout time. The relative rigidity of these institutions makes it difficult to upset them thoroughly in a purely gradual way. New radical shifts need violent upheavals, i.e. revolutions, counterrevolutions and wars.

The impact of these conditions of domination and/or subordination in the field of world politics on the economic development of nations, and of the world as a whole, goes far beyond these "institutional" factors. The whole problem of imperialism and under-development of the Third World has at least partially to be studied under that heading. In order to avoid repeating trivialities, we shall not deal any further with these obvious aspects of nineteenth and twentieth century world history.

The value of gold

We already indicated that the capacity of a given hegemonic capitalist power to see its national paper currency used as "world money" (a substitute for gold) does not depend exclusively upon the financial solidity and industrial advance of that power (although it cannot in the long run survive divorced from these conditions). But the existence of gold, of "world money", independent from all "partisan" manipulations by a particular sector of the international capitalist class, is indispensable for a smooth expansion of the world market, of the international capitalist economy. Hence the key importance of the value of gold for the dynamic of that economy.

We say *value* of gold, and not the amount of gold mined each year. Empirical studies have confirmed the correctness of Marx's theory about the fact that all gold currently mined and accumulated historically by no means needs to enter or remain in circulation. It can always be "sterilized" in central bank stocks or private hoarding. The ups and downs of the trade cycle determine the ups and downs of gold (gold currencies, good-as-gold paper currencies) circulation, and not the other way around. It follows that gold production is generally counter-cyclical to the business cycle, a phenomenon the South African economy is just now experiencing at its expense.

However, what is true for the quantity of gold annually produced and its current[4] 'price" (more correctly: the amount of gold a unit of leading paper currencies actually represents) is not true at all for the value of gold whenever that value is *radically* altered. Each of the great revolutions in gold production — that of the sixteenth century; the one after the discovery of the Californian gold fields; the one after the discovery of the rich South African Rand mines — meant a sharp decline in the value of gold, i.e. in the amount of labour (time) necessary to produce one ounce of gold. This meant a steep increase in the general price level of all other commodities, as long as the strong sudden increase in the productivity of labour in gold mining was not neutralized by an equivalent increase in the productivity of labour in industry and agriculture. A general increase in the price level, together with important surplus profits being gained out of gold mining itself, favours a long boom throughout the international capitalist economy, as the one which occurred after 1848 and after 1893.

Again, while a climate favourable for frantic searches of new gold fields throughout the world certainly depends upon current economic conditions (or can be hindered by a given phase of the "long waves" or of the business cycle), the actual discovery of a large gold *bonanza* depends upon many accidental factors. It is therefore at least a partially independent variable of the march of the world economy. If such a new gold *bonanza* would, e.g., be discovered today in Brazil (of the scope, say, of the South African gold fields), this would certainly help international capitalism to overcome the present debt crisis and overcome the long depression of the 1970s and 1980s. If such a new gold *bonanza* is not discovered, it will be an additional obstacle for overcoming the depression.

Radical changes in the value of gold are not necessarily limited to increases in the productivity of labour in gold mining. They can also take the form of sharp lasting increases in the production costs of an ounce of gold, either through the need to use less and less productive mines for keeping up at least a minumum of annual output, or through a sudden sharp increase in miners' average wages before mechanization can substantially reduce the relative weight of wages in total production costs.

From that point of view, the relative stability of the *apartheid* regime in South Africa, or alternatively the relative capacity of the black working class of South Africa to impose unionization and wages approaching white workers' wages in the South African mines, have an important impact upon the general price level throughout the world, and therefore an important impact on the world economy as a whole. This explains why, all hypocritical assertions to the contrary, the international bourgeois class has a vested interest in maintaining *apartheid*, far beyond the immediate profits which investments in *Anglo-American* or *De Beers* annually produce for the bourgeoisie.

Again, the vagaries of the discovery of new important gold fields on our planet (and, who knows? At the bottom of the oceans? In outer space?), as well as the changes in the institutions and social relationship of forces inside South African society, are at least partially autonomous variables of world economic development, although their connections with the inner logic of the capitalist mode of production are manifold.

Conclusion

We have tried to indicate the operation of certain exogenous factors, as partially independent variables, on the development of the capitalist economy. We have tried to avoid the pitfalls of eclecticism arising out of a simple juxtaposition of "endogenous logic" and "exogenous forces". Generally, the conclusion is that the former asserts itself in a decisive way in the long run (certainly at the level of "secular" trends), while the latter have important weight in short and medium-term time-ranges.

It is useful to consider this interaction — and its overall result — in the light of the key aspect of capitalist development: the weight of the *secular* trend of the "reserve army of labour" (as distinct from its fluctuations as a function of the business cycle) upon the general level of wages and, hence, the rhythm of capital accumulation. Here, the impact of "exogenous" forces and their gradual neutralization through the inner logic of capitalism, comes strikingly to the fore.

When the rate of demographic growth plus the rate of decline of employment in petty commodity production outdistance the rate of capital accumulation there will be a secular increase in unemployment, hence a secular tendency of stagnant real wages even with growing industrialization. This was the situation in Western Europe 1770-1870, in Eastern Europe 1870-1940, in the Third World 1900 (or earlier)-60.

According to whether this situation leads to a qualitatively growing access to foreign markets or not, it can reverse itself (as it did in Western Europe) or not (as is the case e.g. up till this day in India). The first move will be decisively assisted by massive emigration of surplus labour. An impossibility of such emigration of a substantial fraction of the "reserve army of labour" is again a key factor in the stagnation of wages in India.

But massive emigration of labour needs massive reserves of free and/or available capital to which it can be attracted; this is the unavoidable logic of capitalism. The USA after the war of Secession and Arabia after 1973 are examples of the kind (as was Western Europe after 1960). This means also that the thin population of the USA in the eighteenth and the beginning of the nineteenth century determined from the outset a high level of wages which prevented that country from being the centre of world capitalist industry in the nineteenth century, in spite of its huge mineral wealth. Only after 1870-80, after the disappearance of the Frontier, i.e. free land, did it start to achieve that supremacy.

Capitalist logic ends by asserting itself as a logic of surplus-value extraction; but only after a certain time and after the impacts of several "exogenous" factors have been neutralized. The correlation between the distribution of masses of "free land", "excess capital" and "excess labour" throughout the world — in different specific geographical zones — was not *predetermined* by the inner logic of capital. It became subordinated to that logic after a time — and in different time spaces in each geographical area. In other words: the *unevenness* of capitalist development has *both* precapitalist and capitalist origins, indissolubly combined and intertwined with each other.

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