

MARX, THE PRESENT CRISIS AND THE FUTURE OF LABOUR*

Ernest Mandel

I

For several years, the *political* thesis that human emancipation can no longer rely on the 'proletariat', the class of wage labour, has been increasingly buttressed by economic arguments. Some posit that wage labour is receding rapidly from its position as the main sector of the active population, as the result of automation, robotisation, mass unemployment, growth of small independent business firms, etc. (Gorz, Dahrendorf, Daniel Bell, Hobsbawm).¹ Others state that there is no future for mankind (and therefore for human emancipation) as long as 'classical' industrial technology and thence 'classical' wage labour are maintained at their present level because such a situation would lead to a complete destruction of the ecological balance (Ilitch, Bahro, Gorz).² The present crisis is therefore seen not as a typical crisis of overproduction and overaccumulation. It is seen as a fundamental change of structure of the international capitalist economy, with a long-term fundamental shift in the weight, cohesion and dynamic of wage labour, at the expense of that class, as a 'crisis of the industrial system'.

Can this hypothesis be verified empirically? If not, what is the meaning and what are the long-term potential consequences of growing structural unemployment, which, in and by itself, is an undeniable phenomenon? If yes, what is the explanation of the phenomenon of the supposed 'decline of the working class' as an objective phenomenon? What are its potential economic consequences?

II

Empirically, the *basic* trend which is statistically verifiable is that of the growth of wage labour on a world scale, and on all continents, and not that of its absolute or relative decline. If one looks at the ILO statistics, one can see this at first glance. When I say basic trend, I mean of course not three-months or six-months variations, but 5 or 10 years averages. Even since the beginning of the present long economic depression, for

*This paper was initially delivered to a colloquium 'The Future of Human Labour' organised by the Institute for Marxist Studies at the Vrije University, Brussels, February 14-16, 1985.

example since 1968 or since 1973, this remains the predominant tendency.

The verification of this tendency implies a series of conceptual **precisions**:

- (a) That one does not reduce 'wage labour' to 'manual labour in large-scale industry' (Marx's definition of the 'total worker', der *Gesamt-arbeiter*, in *Capital I*, and in the unpublished section VI).
- (b) That one defines 'wage labourers' (proletarians) in the classical way as *all those who are under economic compulsion to sell their labour power* (excluding thereby only those managers and high functionaries who have high incomes which allow them to accumulate sufficient capital to be able to survive on the interest of that capital).
- (c) That one does not reduce the proletariat to productive workers but includes in it all unproductive wage-earners who fall under condition (b), as well as all unemployed who do not become self-employed (see Marx's *Capital*, Rosa Luxemburg's *Einführung in die Nationalökonomie* and the general concept of the 'reserve army of labour').
- (d) That one gives an objective and not a subjective definition of the class of wage labour (class 'in itself'); i.e. that one does not make its existence **dependent** on levels of consciousness.

This implies, among other things, that wage labour in agriculture (e.g. India) and in the so-called 'service industries' is wage-labour to the same extent as wage labour in mining and in manufacturing industry. With that criterion the statistical evidence that we are still witnessing a growth and not a decline of the 'world proletariat' is undeniable. The total number of non-agricultural wage-earners in the world today is somewhere between 700 and 800 million, a figure never attained in the past. Together with agricultural wage-earners, it reaches 1 billion. This is confirmed by, the following data even concerning the imperialist countries:

Changes in annual civilian employment of wage earners
(annual average 1973-1980)

Norway	+2,5%
Portugal	+2,5%
United States	+2,2%
Australia	+1,1%
Italy	+1,1%
Denmark	+0,8%
Japan	+0,8%
Austria	+0,3%
France	+0,2%
Belgium	0,0
United Kingdom	-0,1%
West Germany	-0,2%

(ILO, *Le Travail dans le Monde*, Geneva, 1984)

There remains the problem of the relative decrease of wage labour employed in the largest capitalist factories, i.e. of a relative **deconcentration** of labour accompanying a further concentration and centralisation of capital. This has been the tendency since the beginning of the present slump in the imperialist countries, not in the semi-industrialised ones and not on a global scale, where concentration of labour continues to advance. Whether in the metropolis this is only a conjunctural phenomenon like the relative decline of the so-called 'old' industrial branches before large-scale plants appear in 'new' branches, or whether it has become a long-term trend, remains to be seen. We will have to wait at least till the 1990s before we are able to draw definite conclusions in that respect.

III

The short- and medium-term impact of full scale automation or robotisation on total employment (the number of wage-labourers employed) has been practically nil till the beginning of the seventies (taking into account shifts of employment between branches, which are of course very real), and remains modest today and for the foreseeable future. Recent OECD studies predict that between now and the nineties, robotisation will cut somewhere between 4% and 8% of all existing jobs in the West (and between 2 and 5% of all existing wage jobs on a world scale).³ It does not add how many new jobs will be created in the industrial branches producing robots and automatic machines. Predictions vary wildly between the 'optimists' and 'pessimists' in that regard. But even if we follow the most pessimistic predictions according to which the number of new jobs created in these new industries will be negligible, the total number of wage-earners employed will still constitute the overwhelming majority of the active population till the end of the century (between 80 and 90% of the population in the West, Eastern Europe and the USSR).

So there is no objective ground for speaking of a 'decline of the proletariat' in an objective sense of the word.⁴

This does not mean that one should underestimate the dangerous potential of long-term mass unemployment. This has basically two causes in the capitalist countries:

- (a) The decline of rates of growth during the long depressive wave, rates of growth which fall below the average rate of growth of productivity of labour (third technological revolution).
- (b) The impossibility of the economic system absorbing population growth into employment under these same circumstances, all other things remaining equal.

In addition, we have to take into consideration the precise effects of robotisation on specific branches of industry which have played a key role in the organisation and strength of the working class and the labour move-

ment, e.g. the automobile industry in the United States and Western Europe. Here, the prospects are threatening and should be understood before it is too late (as has been unfortunately the case in the steel and ship-building industries).

The consequences of growing long-term structural unemployment (in the West: from 10 millions around 1970 to 35 millions today and 40 millions in the mid-eighties) are a growing fragmentation of the working class and the danger of demoralisation, already visible in certain sectors of the proletarian youth (e.g. black youth and Spanish-speaking youth in the USA and in certain regions of Great Britain),⁶ who have *never* worked since they left school and are in danger of not finding jobs for many years to come.

Japanese socialists⁷ have tried to study the effects of new technologies especially on the automobile industry. Also stressing qualitative aspects of the changes (loss of skills, increase in accidents, emergence of new layers of workers and of skills etc.), the authors find a reduction of shop floor workers of around 10% at the most highly 'robotised' automobile plant in Japan, Nissan's Myrayama Plant, between September 1974 and January 1982, accompanied however, by small increases in white-collar personnel. Even the Japanese 'company unions' seem worried by these developments, 'life-long employment' still the rule in Japan notwithstanding (*Japan Economic Journal*, February 21, 1984).

IV

The only serious answer to the growth of massive structural long-term unemployment during the present long depression is a radical international reduction of the working week without a cut in weekly pay: the immediate introduction of the *35-hour week*. This means the spread of the existing work-load among the whole proletariat without loss of income (12% of unemployment can be suppressed by every worker working 12% weekly hours less), and with obligatory additional hiring and the reunification of the working classes torn apart by unemployment and fear of unemployment. This should be the central strategic short-term goal of the whole international labour movement, in order to prevent the relationship of forces between Capital and Labour from being changed in a serious way at the expense of Labour. The longer-term perspective is the 30-hour week.

All considerations about 'national competitiveness' and 'enterprise profitability' should be abandoned in favour of that absolute social priority. One could easily prove that from a global and international— not single firm— point of view, that this is also the most economically rational solution. But of course capitalist 'rationality' is single-firm based 'rationality', i.e. *partial* rationality, which leads more and more to *overall*

irrationality. The disastrous political risks of massive unemployment, both nationally and internationally, do not need to be stressed.

Marx was unequivocally clear on both issues: the beneficial effects of a radical reduction of the working week without reduction in pay, and the need for international solidarity of labour to substitute itself for 'national' (or regional, or local, or sectoral, or even one-corporation) solidarity between workers and capitalists.

It is sufficient to quote *Marx's Adress (Inauguraladresse) to the Working Men's International Association* (First International):

Past experience has shown to what extent the neglect of the fraternal links which should tie and inspire the workers of different countries to firmly stand together in all their struggles for emancipation, is always punished by the common failure of their unconnected attempts (*Marx-Engels-Werke* volume 16, pp. 12-13, my translation—E.M.).

And in his quarterly report on the activity of the General Council of the WMIA, Marx wrote:

And even its national organisation easily leads to failure as a result of the lack of organisation beyond national boundaries, as all countries compete on the world market and **mutually** influence each other. Only an international union of the working class can assure its final victory (MEW, vol. 16, p. 322, my translation—E.M.).

In an even more categorical way, Marx stated in his Instructions to the First International's General Council Delegates to the Geneva 1867 Congress of that Organisation:

We declare the limitation of the working day to be a precondition, without which all other endeavours for amelioration and emancipation must fail (MEW, vol. 16, p. 192, my translation—E.M.)⁸

V

The struggle between the forces which push in the direction of long-term massive structural unemployment on the one hand, and of a new radical reduction of the working week on the other, are intimately related to the two basic motive forces of bourgeois society: Capital's drive to increase the production of relative surplus-value, i.e. the development of the 'objective'. (**objectivised**, materialised) productive forces, machinery, machine systems, semi-automised systems, full-scale automatised, robots on the one hand; the counter-pressure of the class struggle between Capital and Wage-labour on the other. One of the main analytical achievements of Marx consisted precisely in indicating the *dialectical* (not mechanical, of

the Malthus-Ricardo-Lassalle type) *interrelation between the two*.

The increase in mechanisation has a *contradictory* effect on labour. It reduces skills, suppresses employment, bears down on wages through the rise of the industrial reserve-army of labour, effects which can be partially offset through the increase in the accumulation of capital ('economic growth'), international migration of labour, etc. But likewise, the increase in the mechanisation of production tends to *increase the intensity of the work effort* (physical and/or nervous), and therefore exercises objective pressure in the direction of a reduction of the working week. This second effect has often been overlooked by working class militants, including socialists and Marxists. It is strongly emphasised by Marx.⁹

But Capital will not grant this physically and economically indispensable reduction of the working week out of the kindness of its heart. It will only do so after a fierce struggle between Capital and Labour.

Workers' rebellion—as Marx called it—can however only be (temporarily) successful under relatively favourable relationships of forces. *These are created by the effects of employment and organisation of labour of the phase prior to the long-term depression and surge of unemployment*. And precisely in the late nineteen-seventies and nineteen-eighties, the international (especially the Western European) proletariat entered the growing confrontation with Capital around the issue 'austerity vs. shortening of the working week without a reduction in take-home pay or social security allowances', with a much increased numerical, organisational and militant strength accumulated during the nineteen-fifties, sixties and early-seventies, i.e. during the period of the long-term post-war 'boom'. *It is for that reason that resistance of the working class against the austerity offensive will increase, will spread, will become periodically explosive and will tend to be generalised* nationally and internationally. It is for the same reason that the capitalist class will not find it easy to implement its own historical 'solution' to the present depression.

Precisely because the *organic strength* of the working class (wage labour) is so large at the outset and in the first phase of this depression, the outcome of this intensified class offensive of Capital against Labour is far from certain. The likelihood that the proletariat will suffer a crushing defeat as in Germany in 1933, Spain in 1939 or France in 1940 in any of the larger capitalist key countries in the foreseeable future is limited.

This does not imply that a proletarian-socialist solution of the crisis is certain or already visible on the horizon. The main obstacle for such a crisis is *subjective* and not objective: the level of consciousness of wage labour and the capacity of its leadership are still absolutely inadequate. But this means that at least the *objective possibility* of a socialist working class solution of the crisis of mankind remains with us. The rest depends on the socialists themselves, their awareness of the gravity and the risks implied in the crisis (the very physical survival of mankind is now

at stake), the impossibility of solving it within the framework of generalised market economy, i.e. 'exchange value production', i.e. capitalism, the necessity to develop an anti-capitalist programme of action starting from the real existing concerns and needs of the real existing wage labourers, in all their varieties, the necessity to unite this mighty force into a battering ram to shake the fortresses of capital, the necessity to organise for the overthrow of capitalism.

VI

Let us now make the hypothesis that all this will be disproved by experience during the coming decades; that both for economic reasons (**robotisation**) and political ones which we allegedly 'underestimate', **wage-labour** will decrease considerably between now and the end of the 20th century; that therefore the proletariat has already started to decline objectively (both in numbers and inner cohesion) and that for the same reason its objective capacity to transform society in a socialist sense will also decline more or less steadily. In that case, one should not only say 'goodbye' to the proletariat. One would also have to say:

- 'goodbye' to socialism and any realistic (materialistically based) project of human emancipation;
- 'goodbye' to the market economy and capitalism itself.

One of the basic theses of Marx, to which no evidence can be opposed on the basis of the last 100 years of experience, is that only the class of wage-labour acquires through its place in capitalist production and bourgeois society those 'positive qualities', i.e. the capacity for massive (self)-organisation, solidarity and co-operation, which are the preconditions for a socialist solution of the crisis of mankind. These qualities do not automatically create the emancipatory revolutionary role of the proletariat; they only lead to a social potential of that nature. But no other social class or layer has a similar potential, neither third-world peasants, nor revolutionary intellectuals, and certainly not technocrats and functionaries. Other social classes and layers have a huge revolutionary anti-capitalist (anti-imperialist) 'negative' potential, e.g. the peasantry in underdeveloped countries. But history has proved again and again that they don't have the 'positive' potential for conscious socialist organisation.

On the other hand, if a massive substitution of 'living' by 'dead' labour (robots) leads to a massive absolute decline of wage labour, it is not only the **future** of the proletariat and of socialism which is threatened. It is the very survival of capitalist market economy which becomes more and more impossible. This is expressed in a graphic, be it somewhat simplified way, by the already classical dialogue between the factory manager and the trade-union militant:

- 'What will become of your trade-union strength when all the workers

will be replaced by robots?'

- 'What will become of your profits in that case? Your profits are realised through the sale of your goods; robots unfortunately don't buy goods.'

Marx foresaw that development more than 125 years ago, in his *Grundrisse* (which, incidentally, confirms the point which I have made many times that, far from being an 'economist of the 19th century', he was a visionary who detected trends which would only come into their own in the late 20th century)' He wrote there:

But to the degree that large industry develops, the creation of real wealth comes to depend less on labour time and on the amount of labour employed than on the power of the agencies set in motion during labour time, whose 'powerful effectiveness' is itself in turn out of all proportion to the direct labour time spent on their production, but depends rather on the general state of science and on the progress of technology, or the application of this science to production. . . Labour no longer appears so much to be included within the production process; rather, the human being comes to relate more as watchman and regulator to the production process itself.

(*Grundrisse*, Pelican Marx Library, pp. 704–5.)

And again:

The theft of alien labour-time, on which the present wealth is based, appears a miserable foundation in face of this new one, created by large-scale industry itself. As soon as labour in the direct form has ceased to be the great well-spring of wealth, labour time ceases and must cease to be its measure, and hence exchange-value [must cease to be the measure] of use value. *The surplus-labour of the mass* has ceased to be the condition for the development of general wealth, just as the *non-labour of the few*, for the development of the general powers of the human head. With that, production based on exchange value breaks down. . .'
(*ibid.*, p. 705)

Obviously, this development cannot fully unfold under capitalism, because precisely under capitalism, economic growth, investment, the development of machinery (including robots), remain subordinated to the accumulation of capital, i.e. to the production and realisation of surplus-value, i.e. to profits for individual firms, both expected profits and realised profits. As I already indicated in *Late Capitalism* more than ten years ago,¹⁰ under capitalism full automation, the development of robotism on a wide scale, is impossible, because it would imply the disappearance of commodity production, of market economy, of money, of capital and of profits (under a socialised economy robotism would be a wonderful instrument of human emancipation. It would make possible the reduction of the working week to a minimum of 10 hours." It would grant men and women all the necessary leisure for self-management of the economy and society, the

development of a rich social individuality for all, the disappearance of the social division of labour between the administrators and the administered, the withering away of the state and of the coercion between human beings).

So what is the most likely variant under capitalism is precisely the long duration of the present depression, with only the development of partial automation and marginal **robotisation**;¹² both accompanied by large-scale overcapacity (and over-production of commodities), by large-scale unemployment, and large-scale pressure to extract more and more **surplus-value** from a number of *productive* work-days and workers tending to stagnate and decline slowly, *i.e.* growing pressure to overexploitation of the working class (lowering of real wages and social security payments), to weaken or destroy the free organised labour movement and to undermine democratic freedoms and human rights.

VII

In his *Grundrisse*, Marx not only foresaw the basic trend of capitalist technology towards the progressive expulsion of human labour from the process of production. He also foresaw the basic contradictions this trend would lead to under *capitalism*:

- huge overproduction, or, what amounts to the same, under-capacity. During the last recession **1980-1982**, over **35%** of the capacity of output of USA industry remained unused. If one also deducts arms production—useless from a reproduction point of view—one arrives at the staggering amount of nearly **50%** of America's productive capacity not being used for productive **purposes**;¹³
- high unemployment. Marx opposes the emancipatory *potential* of automation and robotism—its capacity to increase greatly the amount of human leisure time, time for full development of the all-round personality—to its oppressive tendency under *capitalism*. He synthesises this opposition precisely as being that between a class society and a classless society.

In a class society, appropriation of the social surplus by a minority means *capacity of extending leisure time for only a minority*, and therefore reproduction on a larger and larger scale of the division of society between those who administer and accumulate knowledge, and those who produce without or with only very limited knowledge.¹⁴ In a classless society, appropriation and control of the social surplus product by all (by the associated producers) would mean a radical reduction of labour time (of necessary labour) *for all*, a radical extension of leisure *for all*, and thereby the disappearance of the division of society between administrators and producers, between those who have access to all knowledge and those who are cut off from most knowledge. In a striking passage of the

Grundrisse, linked to the above-quoted passage, Marx writes:

The creation of a large quantity of disposable time apart from necessary labour time for society generally and each of its members (i.e. room for the development of the individuals' full productive forces, hence those of society also), this creation of not-labour-time, appears in the stage of capital, as all earlier ones, as not-labour-time, free time, for a few. . . . But its tendency always, on the one side, *to create disposable time, on the other, to convert it into surplus labour*. If it succeeds too well at the **first**, then it suffers from surplus production, and then necessary labour is interrupted, because *no surplus labour can be realised by capital*. The more this contradiction develops, the more does it become evident that the growth of the forces of production can no longer be bound up with the appropriation of alien labour, but that the mass of workers must themselves appropriate their own surplus labour. Once they have done so—and *disposable time* thereby ceases to have an *antithetical* existence—then, on one side, necessary labour time will be measured by the needs of the social individual, and, on the other, the development of the power of social production will grow so rapidly that, even though production is now calculated for the wealth of all, *disposable time* will grow for all. For real wealth is the developed productive power of all individuals (*ibid.*, p. 708).

And Marx 'indicates how, *under capitalism*, science, the results of general social labour, i.e. general social knowledge, gets systematically divorced from labour, how—a striking anticipation of capitalist 'robotism'—science under capitalism becomes *opposed* to labour (MEGA, II, 3.6, p. 2164).

VIII

How does capitalism **try** to overcome this growing new contradiction, resulting from the reduction of the absolute amount of human labour necessary to produce even a growing mass of commodities saleable under the present (i.e. bourgeois) conditions of production and distribution? Its solution is that of the *dual society*, which divides the present proletariat into two antagonistic groups:

- those who continue to be included (or are newly incorporated, especially in the so-called 'third-world countries') into the process of production of surplus value, i.e. into the *capitalist process of production* (be it for tendentially declining wages);
- those who are expelled from that process and survive by all kinds of means other than the sale of their labour power to the capitalists (or the bourgeois state): welfare; increase of 'independent' activities; becoming small-scale peasants and handicraftsmen; returning to domestic labour (women); 'ludic' communities, etc.

A transitional form of 'dropping out' of the 'normal' capitalist production process is 'black' labour, 'precarious' labour, 'part-time jobs', etc., hitting especially women, youth, immigrant workers, etc.

	<i>Part-time employment in 1979 as % of total employment</i>	<i>of which female labour</i>
West Germany	11,4%	91,5%
Belgium	6,0%	89,3%
Denmark	22,7%	86,9%
USA	17,8%	66,0%
France	8,2%	82,0%
Italy	5,3%	61,4%
Holland	11,2%	82,5%
UK	16,4%	92,8%

(ILO: Le Travail dans le Monde, *op. cit.*)

What is the *capitalist rationale* of that dual society? It is a gigantic historical turning of the clock backward on one key issue: *indirect (socialised) wages*.

Through a long historical struggle, the working class of Western Europe, Australia and Canada (to a lesser degree that of the USA of Japan) had conquered from capital that *basic cement of class solidarity* that wages should not only cover the reproduction costs of *actually employed* living labour, but the reproduction costs of the proletariat *in its totality*, at least on a national scale: *i.e.* also the reproduction costs of the unemployed, sick, old, invalid male and female workers and their offspring. That is the historical meaning of social security, which is part and parcel of the wage bill (its socialised part, or at least that part of wages which 'transits' through the hands of social security institutions).

Through pressure in favour of a *dual society*, part-time labour, casual labour, 'dropping out of the rat-race', etc., capital now wants to reduce its wage-bill to directly paid-out wages only, which will then inevitably tend to decline as a result of a hugely inflated industrial reserve army of labour. It already succeeds with that goal with the mass of the 'casual' and 'precarious' labourers, who generally do not enjoy social security benefits. It wants to realise the same gains with regard to the unemployed as such.

In other words: the 'dual society' *under capitalism* is nothing but one of the key mechanisms to increase the rate of surplus-value, the rate of exploitation of the working class, and the mass and the rate of profit. Any excuse of a 'sophisticated' nature for supporting *this goal of capital* (be it 'third world-ism', ecologism, 'the immediate realisation of communism', the desire to 'break-up the capitalist consumers standard', etc.) is in the best of cases a mystified capitulation before bourgeois ideology and capital's economic purposes, in the worst of cases a direct help to the capitalist anti-working class offensive.

To advocate that unpaid labour should spread, even for 'socially useful purposes', when there is a huge number of unemployed, is not to build 'cells of communism' inside capitalism; it is to help the capitalists divide the working class through a new rise in unemployment, to help them

increase profits.

But it is more than that. It puts new and formidable stumbling blocks on the really emancipatory potential of new technologies and 'robotism', in as much as it tends to perpetuate in an elitist way, the subdivision of society between those who receive the necessary leisure and potential to appropriate all the fruits of science and civilisation—which can only occur on the basis of the satisfaction of elementary fundamental material **needs**—and those who are condemned (including those who condemn themselves through self-chosen ascetism) to spend more and more of their time as 'beasts of burden', to quote again **Marx's** eloquent formula.

The real dilemma, which is 'the basic historical choice with which mankind is faced today, is the following one: either a radical reduction of work-time for all—to begin with the half-day of labour, or the half-week of labour—or the perpetuation of the division of society between those who produce and those who administer: the radical reduction of the work time for all—which was **Marx's** grandiose emancipatory vision—is indispensable both for the appropriation of knowledge and science by all, and for **self-management** by all (i.e. a regime of associated producers). Without such a reduction, both are a utopia. You cannot acquire scientific knowledge nor manage your own factory, neighbourhood or 'state' (collectivity), if you have to work at drudging mechanised labour in a factory or an office 8 hours a day, 5 or 6 days a week. To say otherwise is to lie to yourself or to lie to others.

The emancipatory potential of robotism is that it makes socialism, communism, much easier, by making a 20 hour, 15 hour, or 10 hour—working week possible for all. But any step in the direction of the dual society, even with the best of intentions, goes in the diametrically opposed direction.

We leave aside the question whether 'labour' reduced to 20 or 15 hours a week is still 'labour' in the classical sense of the word.¹⁵ We also leave aside how far the development of the individual, to quote Marx again, is a development in which 'productive' activities remain separated from cultural, creative, scientific, artistic, sportive, purely recreative ones, in which, in other words, Lafargue's famous *droit à la paresse* becomes realised. Human happiness certainly does not depend on strenuous permanent activity, although a certain minimum amount of physical and mental activity and mobility seems to be an absolute precondition for a healthy growth including the growth of the mind.

But independently of any consideration of that nature—the future of labour in the secular sense of the word—one conclusion seems inescapable; what will happen to human labour and to humanity is not predetermined mechanically by technology or science, their present trends and the obvious dangers which they encompass. It is determined in the last analysis by the social framework in which they develop. And here the difference

between a development in the framework of capitalism, competition, market economy on the one hand, and socialism, i.e. collective property and collective solidarity through the rule of the associated producers, through the mastery of all the producers over all their conditions of labour as a result of a radical reduction of the (productive) work-time, is absolutely basic.

The employers (and the bourgeois state) can likewise be helped in their strategic goal of introducing the *dual society* by the workers' obviously ambiguous attitude towards wage-labour, towards work under capitalism, and work in the modern factory in general.

It is true that workers are forced, *under capitalism*, to be attached to full-employment in order to receive a full (direct and indirect) wage. The alternative, again *under capitalism*, is a sharp decline in their standard of living, i.e. material and moral impoverishment and degradation.

But likewise, the workers are clearly aware of the increasingly degrading character of capitalist labour organisation and capitalist productive effort, especially under the conditions of extreme parcellisation of labour (Taylorism). Precisely when their standard of living is going up, as it did in the period **1950-1970**, the needs of 'work satisfaction' and of increased leisure (increased health, increased culture, increased self-activity) take on a new dimension. This became strikingly evident through and after the May **1968 explosion**.¹⁶ This awareness still exists—and employers as well as the bourgeois state consciously try to capitalise upon it in order to make the appeal for the *dual society* appear as something else from what it really is: an attempt to have the working class itself pay the burden of unemployment, and thereby sharply increase the mass and rate of profit.

In the same way as the demagogic outcry that the workers (why not the capitalists?) should share their income with the unemployed, and as the myth that 'excessive wages and social security payments' are really responsible for the crisis, all the talk about 'meaningless labour which you had better do away with' is therefore today nothing less than an ideological weapon of the capitalists in their class struggle against wage labour for lowering the worker's shares in the national income.

IX

We have likewise to stress that any idea that present-day 'dirty', nature-destroying or directly life-threatening technology is an 'inevitable' outcome of the inner logic of natural science, has to be rejected as obscurantist, a-historical and in the last analysis an apologia for capitalism.

Under capitalism, technology develops in the framework of money-costs-accounting and money-profit-projection for the individual firm. Hence general social costs, human costs, ecological costs, are 'discounted',

not only because they are 'externalised' (i.e. individual firms do not pay for them), but also because they appear often much later than the profits which the new technology permits on a short- or medium-term basis.

Examples of such technological choices which were profitable from the individual firm's point of view but irresponsible socially as a whole in the long run are the internal combustion-engine for vehicles and the detergent-vs-soap washing agents. In each of these cases choices were involved.

These were by no means the only technologies existing at these points of time." On the contrary: many alternatives were present. The choices were not made for reasons of 'purely' scientific or 'technical' preferences. They were made for reasons of profit preferences by *specific* branches of industries, or better still leading firms in these branches, i.e. power relations inside the capitalist class. No 'technological determinism' was or is deciding humanity's fate. What is at stake is a socio-economic determinism, in which material interests of social classes or fractions of classes assert themselves, as long as these classes or fractions of classes have the actual power to impose their will (guided by these interests) upon the whole of society.

There is nothing new in understanding that technology developing under capitalism is not the only possible technology, but *specific* technology introduced for specific reasons closely linked to the specific nature of the capitalist economy and bourgeois society. Karl Marx was perfectly aware of this. He wrote in *Capital* vol. I:

In modern agriculture, as in urban industry, the increase in the productivity and the mobility of labour is purchased at the cost of laying waste and debilitating labour-power itself. Moreover, all progress in capitalism is a progress in the art, not only of robbing the worker, but of robbing the soil; all progress in increasing the fertility of the soil for a given time is a progress towards mining the more long-lasting sources of that fertility. The more a country proceeds from large-scale industry as the background of its development, as in the case of the United States, the more rapid is this process of destruction. Capitalist production, therefore, only develops the techniques and the degree of combination of the social process of production by simultaneously undermining the original sources of all **wealth**—the soil and the worker.

(Capital, vol. I, Pelican Library edition, p. 638)

Marx also stressed that this tendency of applying specifically capitalistic technologies—i.e. only technologies which lead to an increase in the production, of surplus value—implied that new techniques had to be not only means for reducing the value of labour power, for cheapening consumer goods, and for economising constant capital (cheaper machinery, raw materials and energy). They could also be means for breaking or reducing labour's power of resistance at factory, industrial branch or society's level:

But machinery does not just act as a superior competitor to the worker, always on the point of making him superfluous. It is a power inimical to him, and capital

proclaims this fact loudly and deliberately, as well as making use of it. It is the most powerful weapon for suppressing strikes, those periodic revolts of the working class against the autocracy of capital. . . It would be possible to write a whole history of the inventions made since 1830 for the sole purpose of providing capital with weapons against working-class revolt.

(*ibid.*, pp. 562-563)

The history of the introduction of numerically controlled machine-tools after the big 1946 strike wave in the USA is a striking confirmation of this rule.¹⁸ Actually, when the balance-sheet is made 'after the facts', to-day less than 1% of the machine-tools used in US industry are numerically controlled ones. But the scare created by their initial introduction was sufficient to break union power at the machine tools producing plants.

A similar function is being played at present by the scare created in the trade union movement and the working class by the 'suppression of labour through robots'. Reality is still far removed from anything of the kind, as is indicated by the following table:

Robots per 10,000 wage-earners in manufacturing industry 1981

	1978	1980	1981
Sweden	13.2	18.7	29.9
Japan	4.2	8.3	13.0
W. Germany	0.9	2.3	4.6
USA	2.1	3.1	4.0
France	0.2	1.1	1.9
Britain	0.2	0.6	1.2

(*L'Observateur de l'OECD* no. 123, July 1983)

And to quote *Electronics Week*, January 1, 1985:

Even if the use of robots increases as predicted. . . by 1990, this would still affect only a few tenths of 1% of all employees in the industrialised countries, industry sources estimate.

It is necessary to answer this scare *by familiarising workers with computers*, by demanding that working class children's schools should put computers at their disposal without any costs. This year up to 5 million 'personal' home computers are supposed to be sold in the USA. Competition is ferocious. Prices will fall accordingly. Trade unions and other working class organisations should see to it, that workers and employees learn to master these mechanical slaves, whether or not endowed with 'artificial intelligence'. Then the scare will recede, and the working class will view new machines as it came to view old ones: as *instruments of labour* which can be transformed from instruments of despotism into instruments of

emancipation, as soon as the workers become their collective masters.

Post-capitalist societies like that of the USSR generally borrow capitalist technology and suffer in addition from the consequences of bureaucratic management and bureaucratic power monopoly, i.e. the absence of free critical public opinion. But in a regime of associated self-managing producers under a socialist democracy with a plurality of political parties, no such constraints would operate. There is no reason to assume that such producers would be foolish enough to poison themselves and their environment, as soon as they knew the risks (when the risks are unknown, this is not due to too much but to too little scientific knowledge!). There is no reason to assume that they could not use machinery, including robots, as tools for the reduction or suppression of all mechanical, uncreative, burdensome, tedious, i.e. wasted human labour, as instruments for making possible the reunification of production, administration, knowledge, creative activity and full enjoyment of life, after having transformed them for that precise purpose.

X

There remains one unanswered question, a question which Marxists have not taken up till now because it was not posed before humanity. But after dwelling for decades in the realm of science fiction and futurology, this question has now been brought to the threshold of the materially conceivable, as a result of the huge leaps forward of applied science and technology in the last decade: could human labour construct machines which could escape the control of humanity, become completely autonomous of men and women, i.e. intelligent machines, and machines with a potential to rebel against their original creator? After a certain point, would robots start to build robots without human instructions (without programming), even robots inconceivable to humanity and largely superior to them from the point of view of intelligence?

In the abstract, such a possibility certainly is conceivable. But one should circumscribe more precisely the present and reasonably foreseeable material framework of the problem, before getting hysterical or feeling doomed concerning human mastery over machines.

To build a 'perfect' chess playing machine, which has an answer to *all* possible combinations (10^{120}) you would need a *number of combinations which far exceeds the number of atoms in the universe*. To have an existing computer calculate all numbers with 39,751 digits in order to discover a possible prime number among them, *it would take more time than the age of the universe up till now*. But with the help of the same existing computers, *human intelligence* in the month of September 1983, actually discovered such a prime number with 39,751 digits (which, if fully printed, would extend for sixty metres) at Chippewa Falls, Wisconsin, USA.¹⁹

Furthermore, there are 15 billion nerve cells and 15 trillion synapses in the human brain—in *one* human brain—a figure today's computers cannot compete with in any foreseeable future.

So the days in which we could become controlled, overwhelmed, mastered, by our chippy friends and slaves, are still far far off. They are all the more so as humanity, i.e. human labour, commands their production and determines their calculating power. If necessary, humanity can decide to limit or stop the development of that power, or even to stop the production of robotised computers and computerised robots altogether. They are human tools, subordinated to specific human purposes. Humanity can avoid begetting sorcerers' apprentices, if it gains full control over its own tools and products.

But there we are at the heart of the matter: the structure and the laws of motion of *human society and economy*. That is what the problem is really all about, and not the undefined potential of mechanical calculating tools.

If humanity becomes master of its society, of the social organisation of labour, of the goals and purposes of labour, i.e. master of its own fate, then there is no danger of it becoming enslaved by thinking computers. But that presupposes abolition of private property, market economy, competition, and 'sacred egoism' as the main incentive for social labour. That presupposes a labour organisation based upon co-operation and solidarity for the common good, i.e. self-managing socialism. If we don't achieve that mastery, then the threats are innumerable: nuclear annihilation; suffocating in our own excrements, i.e. ecological destruction; massive poverty and decline of liberty; universal famine. Possible enslavement by machines would be only one of the threats, and probably not the worst.

What is therefore the rational kernel of that irrational scare is the fact that the changes in human consciousness necessary to bring about a socialist world might be rendered more difficult by the *short-term effects of new communication techniques on human thinking and sensibility*, in as much as these techniques are subordinated to particular goals of privileged social groups (ruling classes and *strata*). Substitution of video-cassettes for the written book; extreme narrowing of choices between conflicting sets of ideas; decline of critical thought and of research free from the tyranny of short-term 'profits'; decline of the theoretical, synthetic, imaginative thinking in favour of narrow pragmatism and short-sighted utilitarianism (generally combined with a generous zest of mysticism and irrationalism regarding 'broader' issues): there is the real danger that the robot and computer reshape our way of *thinking*,²⁰ but not through the fault of these poor mechanical slaves themselves but through the fault of those social forces who have an immediate social interest in achieving these disastrous effects.

Likewise, *human brains helped by computers* can more easily oppress,

repress, exploit, enslave other human beings—the oppressed and exploited social classes in the first place!—than could human brains without computers. And this is so not because of the 'wickedness' of the computer or of applied science, but because of the wickedness of a given type of society, which creates the temptation and the incentives, for such types of behaviour and *endeavour*.²¹

Against these dangers we must mobilise, not under the slogan of 'Down with science and its dangerous potential', or 'destroy the computer' but under the slogan 'Let humanity become master of its social and technical fate, master of its economy and of all the products of its manual and intellectual labour'. That is still possible today. That is more necessary today than it ever was before.

NOTES

1. See, among others: André Gorz, *Adieux au prolétariat*, Paris, 1979; Daniel Bell, *The Post-Industrial Society*; Ralf Dahrendorf, in *Geht uns die Arbeit aus?*, Bonn, 1983; Eric Hobsbawm, *Labour's Forward March Halted*, London, 1980.
2. Joseph Huber, *Die verlorene Unschuld der Oekologie*, Frankfurt, 1982; Ivan Illich, *Le travail fantôme*, Paris, 1981; Club of Rome, *The Limits to Growth*, (1972); Rudolph Bahro, *From Red to Green*, London, 1981; André Gorz, *Adieux au prolétariat*, Paris.
3. OECD, *Robots industriels*, Paris, 1983.
4. Obviously, this does not imply that in given branches of industry (e.g. coal mining) there is no absolute decline in world employment, or in others (like textiles, shoe industry, ship-building, steel) a decline in employment in certain regions (USA, Western Europe) and a rise in others (Asia).
5. See the excellent study by Winfried Wolf, 'Volkswagen's Robots', in *Was Tun?*, December, 1983.
6. This phenomenon expresses itself among other things in the rise of drug addiction in the USA, hooliganism in Britain, etc.
7. Saga Ichiro, *The Development of New Technology in Japan*, Bulletin of the Socialist Research Centre, Hosei University, Tokyo, November 1983.
8. In his pamphlet *Lohn, Preis und Profit*, Marx stated equally:

In their attempts at reducing the working day to its former rational dimensions, or, where they cannot enforce a legal fixation of a normal working day, at checking overwork by a rise of wages, a rise not only in proportion to the surplus time exacted, but in a greater proportion, **workingmen** fulfil only a duty to themselves and their race. They only set limits to the tyrannical usurpations of capital. Time is the room of human development. A man who has no free time to dispose of, whose whole lifetime, apart from the mere physical interruptions by sleep, meals, and so forth, is absorbed by his labour for the capitalist, is less than a beast of burden. He is a mere machine for producing foreign wealth, broken in body and brutalised in mind. (Marx: *Value, Price and Profit*, Selected Works, p. 329.)
9. It is especially developed in: Karl Marx, *Zur Kritik der Politischen Oekonomie (Manuskript 1861–1863)*, in Karl Marx–Friedrich Engels Gesamtausgabe (MEGA), vol. 1–6, Part II, sub-part 3—quoted as *Mega II/3/1–6*, Berlin, Dietz-Verlag, 1976–1982). First comments on this hitherto unknown manuscript of Marx can be found in *Der Zweite Entwurf des 'Kapitals'*, Dietz-Verlag, Berlin, 1983.

10. Ernest Mandel, *Late Capitalism*, New Left Books, London, 1975, p. 2077.
11. A workers and trade-unionist group in France, writing under the pseudonym of Adret, published a book in 1977 under the title *Travailler deux heures par jour* (Le Seuil, Paris), which has had too little echo. It showed the material possibility of a radical reduction of the work day, even before the appearance of **robotisation**.
12. See in that respect the very subdued conclusion of a recent conference on robotics: P.H. Winston & K. Prendergast (eds.), *The A.I. Business—The Commercial Use of Artificial Intelligence*, MIT press, Cambridge, Mass., London, 1984.
13. What most advocates of the capacity of capitalism to 'regulate' its present crisis forget, is the fact that **every** step forward in mechanisation, and certainly of automation, is accompanied by a **huge increase in the mass of goods produced** (see *Grundrisse*, *op. cit.*, p. 325 and *MEGA*, II, 3.6, *op. cit.*, p. 2164), **which have to be sold** before capital can **realise** and appropriate produced surplus-value.
14. Aristotle drew attention to the fact that those who deal with politics and science (i.e. those who 'administer', 'accumulate' in the Marxist sense of the word) can only do so because **others** produce for them their livelihood.
15. In his *Nicomachean Ethics*, Aristotle had already developed a view of the relationship between labour and leisure which comes near to that of **Marx's Grundrisse** and *Capital*. One should remember the etymology of 'leisure': the latin word **licere**, i.e. **to be free** to act as one likes.
16. See on this subject Danièle Linhart, *Crise et Travail, Temps Modernes*, January 1984.
17. Barry Commoner, *The Closing Circle*, 1972, London, Jonathan Cape.
18. See David F. Noble, *Forces of Production*, New York, 1984, Knopf.
19. See on this subject Reinhard Breuer, *Die Pfeile der Zeit*, München 1984, Meyster Verlag.
20. A.J. Ayer has dealt with the same question in a review of J. David Bolter's book, *Turing's Man: Western Culture in the Computer Age*, University of North Carolina Press, 1983, which appeared in the New York Review of Books, March 1, 1984.
21. 'Denning Mobile Robotics Inc., Wobum, Mass., said it had signed an agreement to provide Southern Steel Corp. with up to 680 robots for prison guard duty over the next three years. It said the contract was worth between \$23 million and 30 million' (*The New York Times*, January 9, 1985).