

Amadeo Bordiga

# The Spirit of Horsepower

(1953)

---

First Published: *Il programma comunista*, no. 5, 1953,

Source: <http://www.geocities.com/CapitolHill/Lobby/3909/bordiga0.html>. (no longer available)

HTML Mark-up: Andy Blunden. (2003)

Proofread: Einde O’Callaghan. (September 2019)

---

The main aim of our considerations of various subjects – which makes it indispensable to continually repeat the facts remembered from basic “theorems”, even better if it’s with the same words and phrases – is the criticism of the frenzy around the “unforeseen” and deformed forms of very modern capitalism which supposedly compel a reconsideration of the bases of the “perspective” and thus of the marxist method itself.

This false position can easily be related to the refusal to recognise, or even with a total ignorance of, the essential outlines of our doctrine and its basic points.

The whole discussion now underway on revolutionary forms in Russia and China boils down to the judgement to be made of the historical phenomenon of the “appearance” of industrialism and mechanisation in huge areas of the world previously dominated by landed and precapitalist forms of production.

Constructing industrialism and mechanising things is supposedly the same as building socialism whenever central and “national” plans are made. This is the mistaken thesis.

Classically, marxism historically identifies mechanisation with capitalism. The difference between the employment of mechanical forces in a capitalist society and in a socialist one is not quantitative, it does not lie in the fact that technical and economic management passes from restricted circles to a complete circle. It is qualitative and consists in the total *overthrow* of the capitalist characteristics of the use of machines by human society, something much more thoroughgoing and which consists in a “relationship between men” in opposition to the cursed “factory system” and the social division of labour.

Three historical forms: industrialism in autonomous enterprises, industrialism in increasingly concentrated enterprises and then commonly managed enterprises, socialism; all three were foreseen and described by Marx

“from the very start”. Nothing has occurred which was unforeseen and which lies beyond the bounds of the analysis which outlined this once and for all. Damn those who talk about dogmas. There has yet to be a renegade who did not use this word. Mao Tse Tung compared it with “cow shit”. Well, bon appetit!

## Yesterday Man and the machine

John Stuart Mill, one of the prophets of capital, stated in his classic ‘Principles of Political Economy’ (London, 1821) that it remained to be seen if mechanical inventions had lightened the labour of any human being. Marx sets out from this quotation in his study of mechanisation. For the first time in the field of the social sciences the discussion began with a radical shifting of the way the arguments were *formulated*. The question as to whether the machine was a blessing or a curse would at best remain a nice theme for literature. Marx concentrates on and immediately orientates the question to the *capitalist use* of machines. Such a use *is in no way* aimed at the reduction of the labour of the human species. “Like every other instrument for increasing the productivity of labour, machinery is intended to cheapen commodities and, by shortening the part of the working day in which the worker works for himself, to lengthen the other part, the part he gives to the capitalist for nothing.” This rigorous definition (at the beginning of Capital, Volume I, Chapter 15) as ever contains within it, and one can easily see this, the communist *programme*. Will we do without machines and so punish them for performing such swindles? The opposite is the case: in the first period we will use them as and when we can so as to raise production costs and to reduce the amount of time in which the worker works for the capitalist, and then later “to increase the productive capacity of labour”, but not in order to have lunatic quantities of products, but so as to use less labour.

Always testing the *anti-metaphysical* method, the footnote on this page is delightful on the subject of lightening the labour of *which particular human being*.

“Mill should have said, ‘of any human being not fed by other people’s labour’, for there is no doubt that machinery has greatly increased the number of distinguished idlers.” [\[1\]](#)

So if the thesis that “machines were indispensable for arriving at the communist revolution” is marxist, the commonplace of the marxist apology for modern mechanisation is the effect of a banal and impotent reading.

Marx stated that the starting points of “the industrial revolution” in the mode of production are *labour power* in manufacturing and *instruments of labour* in large factories. Labour power is the workers, which even in manufacturing take up *tools* and thus have *instruments of labour*. Let us patiently follow the text in the “analysis” of the characteristics of the new *instrument of labour* which we can call the *machine*. We come to understand that the capitalist social and political revolutions occurring before the eighteenth century, that is, when the instrument of labour was prevalently a *hand tool* and not a *machine*, determined social relations of *labour power* (of workers) and political relations which were necessarily and *predictably* different to those of the capitalist industrial revolutions (Russia, China) of the twentieth century in which the *instrument of labour* is mechanical on a gigantic scale. They nevertheless remain historically capitalist and bourgeois revolutions. An orgy of mechanisation is one thing, “the building of socialism” another. Even in these cases – let us jump ahead a little – the arrival of the machine-god inevitably brought the bourgeois system of “factory autocracy” and the worship of commodity production. This is historically going in the *opposite direction* to that to be taken by the socialist revolution which we await, as did Marx, with the same *forms* which we find described in our Bible – **Capital**. Blind rage of every bourgeois “free spirit”!

That progress made in instruments of labour is available to all above and beyond frontiers and a series of generations is not our precious discovery. Science belongs to all, but today only to all the capitalist powers. Only tomorrow will it belong to all the human species, of the anti-Mill kind.

*A footnote:*

“Science, generally speaking, costs the capitalist ‘nothing’, a fact that by no means prevents him from exploiting it. ‘Alien’ science is incorporated by capital just as ‘alien’ labour is. But ‘capitalist’ [in quotation marks in the original] appropriation and ‘personal’ appropriation, whether of science or of material wealth, are totally different things.” [2]

Little men, think it over for forty minutes. Marx proved the thesis with the fact that the individual capitalist, the expropriator and exploiter, is, in many cases, a complete and utter idiot when it comes down to technical questions. We would like to invite you no longer to be surprised by the fact that even if in Russia there is no longer any (?) *personal* appropriation of others’ labour (wealth), that does not mean that there is not the full *capitalist* appropriation of it, the Russian capitalist state having obviously been able to appropriate *for nothing* western science. It therefore had at its disposal all the mechanical and technical inventions and thus could leap over the long development leading from the artisan’s workshop through independent small-scale industry; but it did not simultaneously make the fanciful leap over *the capitalist historical and social* form of production. But had Marx imagined this leap to have been possible? Yes, given the condition that the united “anational” revolutionary forces had available comparable territories, one of fully developed industrialism (e.g. Germany), the other of as yet undeveloped industrialism (e.g. Russia). Lacking this particular relation, there *must* intervene a period of capitalism’s growth, presenting itself more as an advance in geographical space than in the succession of time, as a conquest more in quantity than in quality or in the chain of evolutive stages.

## Work and Energy

Let us return to the little doctrine. In an organism like the Roman church that has reached two thousand years (by now we do not think we will get rid of it earlier), the infallible pope teaches nothing, the parish priest teaches everything. Laugh if you like, idiot, there is nothing to laugh about.

Marx started to define the machine with concepts from physics and went on to historical ones, which are useful in unravelling the huge enigma of the man-machine relationship.

The mechanical theory of the *simple machine* deals with those instruments or devices that *modify* into a more convenient form the energy applied to them by an agent, which may also be the hand of man: they do not produce new energy but merely return what is put into them. They are the lever, wedge, pulley etc. A man cannot shift a rock weighing a ton with his own strength, but he can if he takes a long lever to it. He cannot split it into smaller parts that can be lifted, but if he can use a wedge driven in with hammer blows he can.

Socially one can say that a simple machine is one on which one cannot base business. Classical political economy knows that labour is value. Labour (the quantity of labour) is the same thing as mechanical energy. The physicist says: force times distance (movement of the rock) gives us energy. The economist says: the number of workers multiplied by their labour time gives us value. So as long as we use only the muscle power of workers in production, the *simple* machines – to which can correctly be added both socially and mechanically the *tools* which

the independent artisan handles – nothing changes. With the lever, that man moves the rock ten metres in eight hours: eight workers without a lever would have rolled it the same distance in an hour.

Mechanically one could say that the *compound* machine, meaning a greater or lesser complex of simple machines (wheels, levers, cogs etc.), does not provide new energy, while motor machines, which transform the heat of fuel and other forms of energy into mechanical energy do so. Now it would be to make a present of *value* to permit the elimination of so much *labour* that has to be performed physically by men. But it would be so *only* with communist mechanisation: in *capitalist* mechanisation, the energy relation, which is physically true, is socially *incorrect*.

As long as mechanical energy is introduced so as to produce more commodities and not to employ less human time in labour, we have to say that the transition, whatever the ideological and juridical presentation, is a capitalist process.

So Marx defined the difference between the tool of the craftsman's social period and the *machine* of the capitalist period not on the basis of the use of muscle power substituted by other energy, but by naming as machines in a social sense not only the *motor* machines of the various contemporary industries and factories, but also the *transmitters* of energy (a series of simple machines that add no energy) and the *working* machines applied to the raw material to be transformed and which vulgar technology calls *machine* tools (lathe, press, punch etc.). Moreover, we have already reached the phase of mechanisation even when the new *working* machines are not yet set in motion by mechanical energy, but by human muscle power: crank and pedal driven machines.

If it were not so, Marx said, we should have to say that the machine driven by non-human energy existed long before the capitalist factory.

Man, in fact learnt very soon how to adopt other natural energy. A simple two-ox plough is no longer a tool, but a proper machine which allows a man to plough a greater area than that he can dig over with a spade.

But then, Marx said, Claussen's circular loom, with which a single worker weaves ninety-six picks a minute, though used by a modern, not a primitive, man, would be a tool as it is set in motion by hand, just as is Wyatt's spinning machine. They became machines only from the moment that the former was set in motion by a motor and the latter, as from 1735, by ... a donkey.

The animal was one of the first *natural* energy sources used by man to help in production, and from earliest times. But there were others too: the wind and running water.

One cannot therefore call these sporadic and scattered cases of the use of mechanical energy, instead of human muscle power, capitalist mechanisation, but instead the introduction of the machine tool which long preceded that of the mechanical motor (the steam engine).

“It is this last part of the machinery, the tool or working machine, with which the industrial revolution of the eighteenth century began. And to this day it constantly serves as the starting-point whenever a handicraft or a manufacture is turned into an industry carried on by machinery.”[\[3\]](#)

Let us take a step back. With the *trade*, that is, with the independent, isolated artisan worker, we are in precapitalism, in the guild-feudal regime. With *manufacture*, we have already arrived at full capitalism. The conditions noted have in fact been realised: concentration of a mass of workers, capital in the hands of a master

who can rent buildings, acquire materials and pay wages. Even before mechanisation, simple manufacture has changed to *organised* manufacture with the technical division of labour among various operations which, even with simple hand tools, are carried out by different craftsmen on the uncontested order of the 'master'. This name from the time of slavery is reborn, ignobly substituting the less hateful "Sir". The Sir was a living and fighting knight, a human being, the master in the end becomes a monstrous *automaton*.

## The factory autocrat

We read in Marx not an apology, but an implacable indictment of the capitalist factory system. The *instruments of labour*, as long as they could be handled by a single craftsman's hand, were also, oh modern idealist sins, of his mind and a bit of his heart.

Today the craftsman's tool has been substituted by the machine tool. Marx said:

"As we have seen, the machine does not drive out the *tool*. Rather does the tool expand and multiply, changing from a dwarf implement of the human organism to the implement of a mechanism created by man. Capital now sets the worker to work, not with a manual tool, but with a machine which itself handles the tools" [4]

The huge growth in the power of human labour is accompanied by the degradation, not the uplifting, of the working man. The Jenny Mule was the name given to a spinning machine with innumerable spindles. With technological progress in 1863, thanks to a motor of barely one horse-power, two and a half workers were enough for 450 rotating spindles and produced 3,666 pounds of spun cotton a week. With a hand spinning-wheel, the same amount of cotton would have required 27,000 hours instead of 150: productivity rose 180 fold! We cannot follow and develop these comparisons Marx made here, applying them, for example, to calculating how many navvies are replaced by digging and rolling machines imported here by the Americans after the war to construct roads.

Dr. Ure gives us two definitions of the factory. On the one hand he describes it as:

"combined co-operation of many orders of work people, adult and young, in tending with assiduous skill a system of productive machines continuously impelled by a central power' (prime mover)"

and on the other hand as:

"a vast automaton composed of various mechanical and intellectual organs, acting in uninterrupted concert for the production of a common object, all of them being subordinate to a self-regulated moving force'." [5]

Marx shows that:

"the second is characteristic of its use by capital and therefore of the modern factory system." [6]

The first could, however, correspond to our programme: "the combined collective worker, or the social labour body, appears as the dominant subject, and the mechanical automaton as the object."

But today instead

"the automaton itself is the subject, and the workers are merely conscious organs, co-ordinated with the unconscious organs of the automaton"

Have you heard, you liberal liberators of bodies, spirits and consciences, who accuse us of automatising life!?

“Ure therefore prefers to present the central machine from which the motion comes as not only an automaton but an autocrat. ‘In these spacious halls the benignant power of steam summons around him his myriads of willing menials’.”

Doesn't the centrality of the concept show for the hundredth time that it is not a question of describing capitalism, as even Stalin pretends, but of discovering the social characteristics that the revolution will have to do away with? Here are other passages.

“In handicrafts and manufacture, the worker makes use of a tool; in the factory the machine makes use of him ... In manufacture the workers are parts of a living mechanism. In the factory we have a lifeless mechanism which is independent of the workers, who are incorporated into it as its living appendages.” [7]

A further comparison of Fourier's of the factory with a mitigated gaol, which the chapter closes with, recalls that in the *galley* [8], the rowers were incorporated into the ship, chained for life to their benches: they had to row or sink with it.

“Every kind of capitalist production[or even manufacture], in so far as it is not only a labour-process, but also a process of creating surplus-value, has this in common, that it is not the worker that employs the instruments of labour, but the instruments of labour that employ the worker [programme: the collective socialist-worker will himself dominate the instruments of his work!]. But it is only in the factory system that this inversion for the first time acquires *technical* and palpable *reality*. By means of its conversion into an automaton, the instrument of labour confronts the labourer, during the labour-process, *in the shape of capital*, of dead labour, that dominates, and pumps dry, living labour-power.” [9]

A cold description, is it not, you band of vulgar falsifiers?

The *physical person* of the individual master is thus *not* required, and bit by bit he disappears into the pores of share capital, of management boards, of state-run boards, of *the political state*, which has become (since a long time ago) entrepreneur and manufacturer, and into the very latest vile form of the state which pretends to be “the workers themselves” and thus is able to tie them to the feet of the sinister steel automatons.

Factory despotism: only the communist revolution will tear it up by the roots when there is no longer intoxicating involvement in “struggles for political freedom” and similar *popular* mirages, denounced in bourgeois industrialism from its very beginning, accompanied by real class revolutions, but made up with stinking democratic rouge. Not a syllable is to be touched of the sentence that we have had ready formulated for ninety years, and which unfortunately is still not ready to be carried out.

“... unaccompanied by either that division of responsibility otherwise so much approved of by the bourgeoisie, or the still more approved representative system. This code is merely the capitalist caricature of the social regulation of the labour process which becomes necessary in co-operation on a large scale and in the employment in common of instruments of labour, and especially of machinery. The overseer's book of penalties replaces the slave-driver's lash.” [10]

The latest liberal phantasms; autocracy and dictatorship, “in life” and not in the pallid legal lie, did not *begin again* with Mussolini, Hitler, Franco... not even with Stalin and his proconsuls, not even with Truman, Eisenhower

and the stupid slaves of *United Europe*: they are a technical fact linked to the beat of huge central generators turning on the banks of the Hudson, Thames, Moscow and the Pearl River.

## Machine and revolution

But “the machine is innocent of the misery it brings with it”. Here a marvellous page shows the stupidity of the official economists who, being unable to explain the huge antagonisms springing from the use of machines, pretend to ignore them and close their eyes to the fact that:

“... machinery in itself shortens the hours of labour, but when employed by capital it lengthens them ... in itself it lightens labour, but when employed by capital it heightens its intensity ... in itself it is a victory of man over the forces of nature, but in the hands of capital it makes man a slave of those forces ... in itself it increases the wealth of the producers, but in the hands of capital it makes them into paupers ... Therefore whoever reveals the real situation with the capitalist employment of machinery does not want machinery to be employed at all, and is an enemy of social progress!” [11]

The machine, which in the hands of the working collectivity will be a source of wellbeing and rest, becomes a killer in the hands of capital. We do not condemn the machine for this.

Here Marx quotes a character from Charles Dickens’s famous novel **Oliver Twist**. It is the self-defence of the great rogue Bill Sykes:

“Gentlemen of the jury, no doubt the throat of this commercial traveller has been cut. But that is not my fault, it is the fault of the knife. Must we, for such a temporary inconvenience, abolish the use of the knife? Only consider! Where would agriculture and trade be without the knife? Is it not as salutary in surgery, as it is skilled in anatomy? And a willing assistant at the festive table? If you abolish the knife – you hurl us back into the depths of barbarism.” [12]

No. We will not fall back into *total barbarism* and such a risk does not worry us. We will merely take from your hands the handle of the knife-machine.

The machine will be precious tomorrow in a non-mercantile mode of production and its appearance has been equally precious in fact for the revolutionary antagonisms which it created between capital and the proletariat.

“There is also no doubt that those revolutionary ferments whose goal [the programme, you deaf ones] is the *abolition* of the old *division of labour* stand in diametrical contradiction with the *capitalist form of production*, and the economic situation of the workers which corresponds to that form. However, the development of the contradictions of a given historical form of production is the only historical way in which it can be dissolved and then reconstructed on a new basis.” [13]

Still another invective against “the division of labour” which communism will bury. Dialectically it was wise at the time of the guilds: *nec sutor ultra crepidam*, cobbler stick to your last! But:

“‘*Nec sutor ultra crepidam*’, a phrase which was the absolute summit of handicraft wisdom, became sheer nonsense from the moment when the watchmaker Watt invented the steam-engine, the barber Arkwright the throstle” [14]

And it is also with a battle cry that we close this part of Marx's work after the detailed examination of the social legislation on work and the shortening of the working day:

“is to increase the anarchy and the proneness to catastrophe of capitalist production as a whole, the intensity of labour [Stakhanov! Stakhanov!], and the competition of machinery with the worker. By the destruction of small-scale and domestic industries it destroys the last resorts of the ‘redundant population’, thereby removing what was previously a safety-valve for the whole social mechanism. By maturing the material conditions and the social combination of the process of production, it matures the contradictions and antagonisms of the capitalist form of that process, and thereby ripens both the elements for forming a new society and the forces tending towards the overthrow of the old one.” [\[15\]](#)

## **Today From horsepower to the kilowatt**

Marx fully established, on the basis of the technological elements of his time, that the introduction of mechanical motive power (better, energy) accelerates the concentration of productive activities into huge factories and that the factory labour legislation itself acted in this way:

“... thus artificially ripen the material elements necessary for the conversion of the manufacturing system into the factory system, yet at the same time, because they make it necessary to lay out a greater amount of capital, they hasten the decline of the small masters, and the concentration of capital.” [\[16\]](#)

We have cited many times the famous passage from the chapters on accumulation, which is illustrated, for example, by the technical modifications occurring in steel making:

“In any given branch of industry centralisation would reach its extreme limit if all the individual capitals invested there were fused into a single capital. In a given society this limit would be reached only when the entire social capital was united in the hands of either a single capitalist or a single capitalist company.” [\[17\]](#)

Engels transposed this perspective to the trusts, the monopolies and the state managers in a no less notorious manner.

If the commodity laws themselves, confluent in the production of surplus value, provided Marx with the basis of the demonstration, fully confirmed by history, of gigantic capitalist accumulation in colossal amounts, the new technical forms of producing motor power have an equally important influence.

As long as we are referring to the steam engine, the first case of large scale employment of mechanical power in production, we see that the best solution is autonomy for each factory to produce the amount of energy required. The power station changed everything, especially after the massive extraction of fossil fuel, made imposing in turn both by machines and by the capitalist form of mine management (once it was largely state owned). Before then the cost *per* horsepower clearly became decreasingly small as the boiler became increasingly large, and thus there is another reason for the small factory to be subjected to the large one. Nevertheless, no organisational link was imposed between factories as all could get coal on the “open market”.

All this changed enormously with the progress of electro-mechanisation. The advantage of *making energy into a commodity* became decisive with the creation of a transmitted electrical supply. Every factory now tends not



to *produce*, but to *buy* its energy.

Ure's *central motor* could control the working machines along with the men made slaves to them, but within a small radius: that allowed by transmission by means of "simple mechanisms" – pulleys, belts, conical gears ... No one had even thought it useful to distribute steam under pressure to other machines through long ducts, the huge heat loss making such a system uneconomical.

Let us offer an example: supposing natural methane gas had been found before the discovery of dynamic electricity and electrical current. This, too is a fossil fuel of organic origin, like the solid and liquid ones. But, unlike them (the liquid one can be piped as a commodity, but not as a fuel, for technical and economic reasons), it can be distributed through a mains system. From this fact would have emerged the need for a close organisational link between all the factories fed by a single distribution system.

In fact, the energy consumed by each individual factory can no longer be varied at the will of the local management as it could cause the single power station to run out of energy or to have to "throw it away". Instead, the capitalist with the factory based on autonomous motive power could cut out burners and boilers at his pleasure, or install others to increase production.

As the whole plan of employing workers, the slaves of the machine tools, depends on that of the energy provided, the entire social industrial mechanism falls into line with these new norms, it links up, centralises and subordinates itself to an infinity of rules.

## **Planning is not socialist!**

Such an adaptation to, and the discipline of, general networks is not a change in the historical type of production: the factory is still the factory, the worker is still the wage-labourer, the compulsion of the factory automaton increases rather than diminishes. The general norms from which thousands and thousands of special laws emerged is not a social revolution. It is useless for the reader immersed in modern life to extend the comparison of motive power for factories and plants that produce manufactured goods to the thousand other communication, transport, and all types of service networks.

Even antiquity administered motors that were not autonomous. The domesticated animal was undoubtedly autonomous and the farm or small-holding was all the stronger for the number of horses or oxen it possessed. The windmill was autonomous, but, however, depended on nature's whim.

Not autonomous, at least not over a long tract of the same water course – river or "industrial canal" – was the water mill. And here laws of very old states provided a clear discipline so that no one could modify the lay out of weirs to consume more hydraulic energy than the grindstone, for example, up or down stream. A sentence or a commission abolishing privileges in Calabria in 1810 stated *inter alia*: "All can install hydraulic machinery as long as they do not cause any damage and loss to previously existing hydraulic machines."

Giacchino Murat's [\[18\]](#) regime was extremely liberal. Imagine a modern regime as liberal as this that says: anyone is free to install electrical machinery and to plug it into the first electrical cable that comes to hand!

In all periods, then, public authority has had to regulate and co-ordinate productive activities and energy sources, all the more so when their dependence on a single network, on the same material flow of energy

provision, became technically inevitable; and there is a full parallel between the flow from a certain head of water and that of electrons from a conductor at a given voltage.

And now then, forgetting for a moment the unfolding of particular historical episodes and the names of the mercenaries, let us ask ourselves what a social organisation in power which had to industrialise a still backward country would do. Naturally it would not await the repetition of a slow development from guilds lacking work co-operation to manufacture without machine tools to the factory with machine tools but without steam engines to large scale industry with its own boiler. It would pass directly to the building of electrical power stations, and, as far as possible, hydroelectric ones, using the modern methods of applied science to control water, creating heads of water later to be distributed in given amounts, clearly fixed in a plan of the project, to individual factories that were to produce manufactured goods for consumption.

The same mercantile motive as that of competition on the world market in the acquisition of what is indispensable for such plant thus operates for the supposed authority because every other way would be more costly and would imply greater funding and use of savings “on imports”.

The pretended differences between Russian capitalism and the one which developed, let us say, in England, France, Germany and America, thus do not consist in and do not mean a step towards a different social form which escapes from the despotic factory system and the social division of labour and the frantic work intensity, but instead consist in the most rapid and direct way of arriving at this very system.

History is there to tell us that on 22-29 December 1921 at the Eighth Congress of the Soviets, the foundations were laid for planned industrialisation, adopting the electrification programme of which, it is noted, Lenin was a chief proponent.

## **Thought and history**

Despite the availability to man of new powerful means provided by the domination of electrical energy, the social law of transition from one type of production to another has not been broken. Autonomous or centrally planned, steam or electrified, the productive mechanism under construction in the USSR is capitalist.

Can the discoveries of pure and applied science emerging from the human brain change and form the course of history? We can ask ourselves if the form of atomic power, given that in a handful of material which is now inert there lie millions more horse power and kilowatts than in the entire course of a huge river, permits the return to local autonomous factories and to the “liberal” economy, with an analogous human ideology. That cannot happen and, besides, the means to unleash such an eruption of energy, breaking open the first nuclei, consists in energy from an electro-mechanical source at such a voltage, a thousand times higher than those of the industrial motor which enslaves human arms and brains, that no group of capitalists, but only the political state can put it in place. [\[19\]](#)

An immense path leads from the modest horse, first a beast of burden, then through horse power, which turned the spinning machine, to the millions of volts in the huge “cyclotron”. But Marx had already recalled in the section we’ve studied that Descartes and Bacon, for whom work animals were “machines” and who were ideological precursors of capitalism, maintained that “altered methods of thought would result in an alteration in the

shape of production, and practical subjugation of nature by man”. Descartes in his **Discours sur la methode** makes the prophecy that:

“in place of the speculative philosophy taught in the schools, one can find a practical philosophy by which, given that we know the powers and the effectiveness of fire water, air, the stars ... as well and as *accurately* as we know the various trades of our craftsmen, we shall be able to employ them in the same manner as the latter to all those uses to which they are adapted ...” thereby contributing “to the perfection of human life.” [20]

From Marx onwards, we have placed such a realisation at the end of the difficult historical course, but we do not maintain that the creative forces of thought generate new productive forces, rather that the development and conflict of social processes are reflected in the conquests of thought.

It is therefore useless to use the will, dream or illusion or the hundred ways of deforming thought and opinion to change the name of the fact and of the inexorable process, and to pretend that merely by exploiting the “mechanical intelligence” of modern capitalism, as an obedient Cartesian pupil who goes further than his master, one can succeed in identifying a system of capitalist compression of man and labour with the *perfection of life*. For this – at the present moment in history – the work of the mind is inadequate, and instead one needs another social war, conducted by men against men, classes against classes.

\* \* \*

## Footnotes

[1] **Capital**, Vol. I, p. 492.

[2] **ibid.**, p. 508.

[3] **ibid.**, p. 494.

[4] **ibid.**, p. 509.

[5] **ibid.**, p. 544.

[6] **ibid.**, p. 545.

[7] **ibid.**, p. 548.

[8] *Galera* means both galley and prison.

[9] **ibid.**, p. 548.

[10] **ibid.**, p. 550.

[11] **ibid.**, p. 569.

[12] **ibid.**, p. 569 (quoting Dickens).

[13] **ibid.**, p. 619.

[14] *ibid.*, p. 619.

[15] *ibid.*, p. 635.

[16] *ibid.*, p. 607.

[17] *ibid.*, p. 779.

[18] Murat introduced Napoleonic legislation to Southern Italy.

[19] **Publisher's note:** This passage seems to confuse nuclear fission in a reactor — brought about by bringing together a large quantity of naturally fissile material (Uranium-235 or Plutonium) in a small space so as to create a “chain reaction” — with the shattering of atomic nuclei which can be carried out by accelerating particles in a cyclotron using very high voltages, but the comments about the huge investment required to establish it are correct.

[20] *ibid.*, p. 513.

---

[Bordiga Archive](#)

Last updated on 11 September 2019