

Elementary Concepts of Historical Materialism

Ch. 3: Productive Forces

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1. *The productive forces.* 2. *The socialization of the productive forces.*
3. *Correspondence and non-correspondence between productive forces and the social relations of production.* 4. *The role of science in the productive forces.*

1. The Productive Forces

In the previous chapters, we have studied the elements of the labor process, and we have seen that the means of labor are the determinant elements of this process, those which determine the form that production takes and, therefore, the kind of technical relations which can be established between the workers and the means of production. We have seen, moreover, how these technical relations are over-determined by the social relations of production. And all this has helped us to understand one of the basic concepts of Marxism, the concept of *relations of production*.

Marx tells us in the Preface to the *Critique of Political Economy*:

In the social production of their existence, men invariably enter into definite relations, which are independent of their will, namely relations of production appropriate to a given stage in the development of their material *forces of production*. . . . At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production. . . . (Progress Publishers, 1970, pp. 20-1)

What do we mean, then, by productive forces?

The productive forces are apparently no more than the elements of the labor process considered from the point of view of their productive potential, especially power (1) and the means of labor (2).

Nevertheless, to understand the productive forces as such, it is not possible to examine the elements of the labor process in isolation.

When Marx studies manufacture, for example, he shows us how the technical division of labor and the forms of collective labor established therein not only augment the individual productive forces but also produce new productive forces which are not limited to being a simple sum of the forces combined there.

The simple fact that the workers work in a common place, although only under simple forms of cooperation, augments the productivity of labor power by developing the spirit of competition among the different workers. Later, when forms of complex cooperation are established, the specialization of the

workers into different tasks and the coordination of these tasks into a single collective worker produces a notable increase in the productive forces of most groups of workers. The difference between the sum of the individual productive forces and the productive force of the collective worker is greater and greater. Thus is born a *new* productive force which, under capitalist conditions of production, becomes the property of the capitalist without his having to pay the slightest amount of money for it.

From what has been said above, we can understand why we maintain that to understand the real productive forces we cannot consider the elements isolated from one another.

The decisive factor in lending the potential productive elements a real productivity is the labor power of man. He is the only one who can put the means of production into action. Without human labor, the means of production have only a potentially productive character. For this reason, Marx, in considering the development of the productive forces, conceives of the way in which the productivity of human labor is increased in terms of the utilization of this or that means of production.

From the above, we conclude that it is necessary to distinguish between *potential productive forces*, which would be the elements of the labor process seen as isolated from one another, and productive forces as such, which arise from a historically determined combination of these elements.

We believe that it is in this sense that the following text of Marx can be interpreted:

Whatever the social forms of production, laborers and the means of production always remain factors of it. But in a state of separation from each other either of these *factors* can be such only *potentially*. For production to go on they must unite. *The specific manner in which this union is accomplished distinguishes the different economic epochs of the structure of society from one another.* (3)

These different combinations produce different productive results, which can be measured by the level of productivity of labor. (4)

The productive forces of a society grow, develop, and are perfected in the course of history. And this development is determined, fundamentally, by the level of development of the means of labor.

The advance from stone implements to iron ones permits, for example, an important increase in the productivity of labor of primitive peoples, thus increasing the development of the productive forces.

The same thing happens with the introduction of machine tools in capitalist production. From that moment the development of the productive forces grows at a dizzying pace.

It is important to point out that the rhythm and character of this development of the productive forces depends directly on the nature of the relations of production under which the labor process develops.

It is the capitalist form of accumulation in the pre-monopoly stage which produces the massive integration of machine tools in the production process, thus giving a great impulse to the development of the productive forces in this mode of production.

Nevertheless, the same process of accumulation is what, later, in the monopoly stage, tends to brake the development of the productive forces, as we shall see later.

The development of the productive forces is, therefore, neither linear nor cumulative; it is a development which depends on the structure of the production process: on the relations of the agents among themselves and of the agents to the means of production, that is, on the relations of production.

How then are the affirmations of Marx as to the determinant character of the relationship which the productive forces have over the relations of production to be understood? By saying that it is these latter relations which determine the rhythm and form of the development of the productive forces are we not denying what Marx asserted?

We think not. We think that when Marx, Engels, and Lenin use the words base, root, conditions sine qua non, support etc., to explain the relation that exists between the productive forces and the relations of production, what they are doing is pointing out the determinant role which the development of the means of labor has in the creation of certain material conditions which make possible the establishment of determined relations of production.

Thus, we understand better and better the Marx text which affirms that the instruments of labor indicate on the one hand the level of development of man's labor power, and on the other the social conditions in which he works.

They [the instruments] indicate the level of development of man's labor power because the productivity of his labor depends fundamentally on the means of labor which he utilizes. The level of labor productivity carried out with a tractor cannot be compared to the labor realized by a cart drawn by oxen.

They indicate the social conditions of labor because the technical characteristics of the instruments of labor determine the specific structure of the labor process, on which specific relations of production are based. We have already seen, in the previous chapter, how the introduction of machine tools produces a very important change in the structure of the labor process which is characterized, on the one hand by the conversion of the labor process into a highly socialized one in which collective labor fulfills a technical need and, on the other hand, by the conversion of the worker into an individual absolutely separate from the means of production, since in addition to not owning the latter, he has lost all dominion over them. This technical relation serves as a support for the capitalist social relations of production.

Both relations, as we shall see further on, will come into contradiction with the nature of the productive forces, that is, with the increasingly more socialized structure of the labor process within the whole of production and with the increasingly greater interdependence of the different sectors of production.

Before studying what is meant by the increasingly social character of the productive forces whereby we shall be able to better develop what is meant by the contradiction between the productive forces and the relations of production, let us define some concepts.

POTENTIAL PRODUCTIVE FORCES are the elements of the labor process, when considered apart from it, from the point of view of their productive potential. Productive forces proper are the *forces* which result from the combination of the elements of the labor process under specific relations of production. The result is a given productivity of labor. (5)

The level of development of the productive forces is measured by the level of productivity of labor.

2. The Socialization of the Productive Forces

As we have already seen, the productive forces are, except for rare exceptions, constantly developing. This process of development transforms itself, beginning with individual production, into a process of production more and more social.

The production of an artisan which is an individual production process is surpassed by industrial production in which the production process has a social character. The means of production can only be set in motion by a group of workers and, hence, none of them can say that the product of his specialized labor is *his product*. Production is transformed from a series of individual acts into a series of social acts, and the products from individual to social products.

The ever more social character of the productive forces cannot be reduced to the socialization of the labor process within the factory as some Marxist texts seem to suggest.

The socialization of the productive forces overflows the boundary of the factory. It depends principally on two factors: a) the ever more social origin of the means of production, and b) the ever more social destination of the product.

a) *The Ever More Social Origin of the Means of Production* (6)

The ever more social origin of the means of production is understood to express the fact that those means of production come from an ever greater number of branches of economic production. Thus, primitive agriculture, for example, is self-sufficient, that is, the number of means of production of non-agricultural origin that it uses is very limited. But agriculture

progressively requires for its own production means of production whose origin is more and more diverse: more complex tools, disinfectants, electrical energy, electrical equipment etc. The same happens in each branch of industry, whether it extracts raw materials or manufactures secondary products.

The growing socialization of the productive forces, therefore, manifests itself in the fact that each branch of production needs means of production whose origins are increasingly diverse. This process is the counterpart of the greater division of labor and the growing specialization of economic activity.

b) *The Ever More Social Destination of the Product* (7)

The ever more social destination of the product is understood to express the fact that the products which are the result of a production are destined generally, either directly or indirectly, for a growing number of users.

This phenomenon has diverse implications, especially the following:

1) Each branch of production works directly or indirectly for a growing number of other branches. This is merely the other side of the growing division of social labor. Thus, for example, the chemical industry, which when it appears for the first time as a distinct sector of production only works for a small number of industries, progressively extends the range of applications and uses of its products. Presently, the range of applications for the products of the chemical industry is almost infinite. It extends to agriculture, to extractive industries, to metallurgical industries (especially in the treatment of metals), etc. If we take into account the indirect uses, it appears that currently each branch of production works for every other branch and, therefore, also experiences the repercussions of all the variations which can occur in any sector of the economy.

2) The ever more social destination of the product is also manifested in another form, if we examine the dimensions of the whole system which is served by one unit of the product. With the progress of the productive forces, these dimensions are generally (although not necessarily) growing. Thus, we pass successively from the local, to the micro-regional, to the regional, then national, then international level.

The necessity of state ownership of certain means of production is so much the stronger as these means are utilized more in activities (or economic units) more highly integrated in the social division of labor, set in action in it whether because of the very nature of the means of production or because of the destination of their products.

In summary, the socialization of the productive forces is not limited only to what happens within the factory but refers fundamentally to the growing interdependence of the different sectors of the national and world-wide economy.

THE SOCIALIZATION OF THE PRODUCTIVE FORCES is the ever more socialized character of the labor process in a given production process and the ever greater interdependence existing between several sectors of social production. (8)

Each capitalist depends more and more on all other capitalists. This was not the case of the small, isolated industries working for a very limited market. If one of them stopped, it only provoked a local disturbance. On the contrary, a stoppage in a grand enterprise devoted to a very specialized industry can provoke an upheaval throughout the society.

On the other hand, it is the growing socialization of the productive forces of the society which has brought even those countries ruled by the laws of the capitalist system of production to recognize the urgent necessity to plan their economy and to transform *into state property* those sectors which are basic to the progress of the global economy.

The ever more social character of the productive forces comes into increasingly acute contradiction (9), with the private nature of capitalist appropriation of the means of production.

We say that it comes into increasingly acute contradiction, not that it gives rise to contradiction since, from the beginning of the capitalist mode of production, a contradictory unity has existed between the private character of capitalist ownership of the means of production and the social character which labor power has had since its beginning, a contradiction that did not exist in the era of artisan production. Precisely this contradiction has been the principal impulse to the development of the productive forces in the first stages of capitalist development. The capitalist driven by the desire for profit and having united under his command a certain number of workers and stimulated thus the development of the productive forces, has continually sought to obtain greater profits: first by specializing the workers to the maximum point, then by introducing machinery.

But, to the degree that the productive forces develop, especially to the degree that the instrument of labor is perfected, the machine, too, continues to socialize the collective worker within the factory and, at the same time, continues to intertwine different sectors of production, to the point where the contradiction is transformed from the motor force for the development of the productive forces into the brake. This contradiction, then, takes on an antagonistic character, thus preparing the material conditions for the destruction of the capitalist relations of production.

The classic Marxist-Leninist text treats this antagonistic contradiction as the non-correspondence between the development of the productive forces and the existing relations of production. Now let us look at the classic Marxist theses in respect to this problem.

3. The Correspondence and Non-Correspondence of the Productive Forces and the Relations of Production

Marxism maintains that the productive forces and the relations of production develop unevenly. In general, the development of the productive force is constant (although periods of stagnation can exist). On the contrary, the relations of production do not change everyday, and they tend, therefore, to be left behind in relation to the development of the productive forces. Bit by bit, a non-correspondence emerges, the relations of production begin to be inadequate for the expansion of the productive forces, they begin to block and to brake their own development; an example of this non-correspondence is the monopoly-capitalist system, in which the productive forces, which have reached a high level of socialization, in contradiction to the private character of property relations.

On the other hand, the development of the productive forces is abetted and stimulated when the social relations of production correspond to the level of development of the productive forces. This is called the LAW OF CORRESPONDENCE between the productive forces and the relations of production.

This idea of correspondence is frequently employed by Marx and Engels. In the Preface to the *Critique of Political Economy*, Marx writes:

In the social production of their existence, men inevitably enter into definite relations which are independent of their will, namely relations of production which correspond to a given stage in the development of their material forces of production.

It is important to dwell on this notion of *correspondence* since it forestalls the establishment of a one-sided relation: the productive forces lead to the relations of production, and vice versa. That is, it keeps us from thinking of the relations between the productive forces and the relations of production as relations of cause and effect.

The relations of production, as we have seen, are not the simple effect of the productive forces. For example, *capital* makes us see that the establishment of capitalist manufacture in the heart of feudal society was not produced solely as the simple effect of the division of social labor nor of the perfection of the instruments of production. The participation of an element external to the productive forces was also necessary: the accumulation of a certain quantity of capital in the hands of a certain group of people. The establishment of the capitalist system of production requires what Marx called PRIMITIVE ACCUMULATION. This is not explained by the development of the productive forces alone. The productive forces are, therefore, only determinant in the last instance. It is important that we not forget the phrase "in the last instance" because it serves to establish a line of demarcation between *mechanical determination* in which the determined element is the simple effect of the dominant element, or cause, and this *different kind of determination* takes place within a complex structure in which the other elements of the structure act, in turn, on the determinant element in the last instance.

Thus, the expression "determination in the last instance" does not resolve the theoretical problem. It has a negative utility, it rejects mechanical determinism, but what is its positive content? It would seem to be that of indicating the material limits within which given relations of production can be established.

There is no kind of exploitation which can be established in a social group before a surplus product exists.

Socialist relations of production cannot be established before the existence of a significant level of socialization of the productive forces.

Therefore, in studying the kinds of determination realized by the productive forces, it is necessary to avoid two important errors: *mechanistic determinism* supports the idea that the socialization of productive forces will bring as its inevitable result the establishment of socialist relations of production, and corollary to that, there is nothing more to be done than to wait for this to take place spontaneously.

The second error consists in the *underestimation of the minimal limits necessary to establish socialist relations of production*. If we cannot expect the conditions to be absolutely mature for the establishment of socialist relations of production, neither can these relations be instituted by political decision. For example, to oblige peasants who are tied to their land and who cultivate it individually and with very rudimentary instruments to work collectively is to impose an idealistic measure unrelated to any necessary minimal material conditions. On the other hand, the introduction of tractors and other agricultural machines makes the peasants understand, through new working conditions, the necessity of collective labor and, thus, socialist relations of production might be established on a firm base. In this respect, it is interesting to study how the revolution in China and Vietnam has learned how to conduct the changes in the countryside all the way to the establishment of socialist relations of production, without forcing the peasants to accept decisions by higher governmental agencies.

4. The Role of Science in the Development of the Productive Forces

We refer, finally, to the question of the relation between science and the productive forces, since science occupies an ever more important role in the present world.

Some theoreticians of the Second International sought *the* final or determinant cause of the development of the productive forces in the progress of knowledge, and in the advances of science. This was Kautsky's outlook, for example.

It is obvious that the progress of science, and especially the natural sciences, has exercised an important influence over the development of the productive forces and in particular over the development of technology. Contemporary large-scale industry would be impossible without the application of modern scientific discoveries in the fields of mechanics, physics, and

chemistry. Modern, large-scale agriculture is based on the application of chemistry, and of agro-biology, etc.

But, although scientific knowledge plays a very important role in the development of the productive forces, it would be incorrect to seek the fundamental and determinant cause of this development there.

The development of science depends on the form in which a given society produces its material wealth.

In a letter to Starckenburg, on the 25th of January, 1884, Engels wrote:

If, as you say, technique largely depends on the state of science, science depends far more still on the state and requirements of technique. If society has a technical need, that helps science forward more than ten universities. The whole of hydrostatics (Torricell, etc.) was called forth by the necessity for regulating the mountain streams of Italy in the sixteenth and seventeenth centuries. We have only known anything reasonable about electricity since its technical applicability was discovered. But unfortunately it has become the custom in Germany to write the history of the sciences as if they had fallen from the skies. (10)

The economic and social conditions of production determine not only the acquisition of certain scientific discoveries, but also their application.

For example, the property of steam as a source of energy had already been discovered in ancient Greece. But at that time the existence of slavery made the utilization of that discovery unnecessary, since it was possible to take advantage of the large quantity of manual labor available.

The capitalist laws of competition represent, in contrast, an enormous stimulus for the development of technology and, consequently, of science as well. New machines with a greater output are constantly needed in order to produce at lower and lower costs, and in this way to conquer the market. The situation changes when capitalism becomes transformed into monopoly capitalism. The monopolies corner the inventions' patents to prevent their falling into the hands of competitors. Only an infinitesimal portion of them is ever utilized. An example of the braking effect of monopoly capitalism on the development of science and its application to production is the case of atomic energy. The capitalist monopolies have put up great resistance to the peaceful development of atomic energy.

Summing up, scientific discoveries only create the possibility for the development of the productive forces, but they are dependent on the social relations of production for their realization, that is to say, for the application of scientific discoveries in production.

Summary

In this chapter, we have defined what we mean by productive forces and what it means to say that the productive forces determine in the last instance - the relations of production, although it is the latter which itself determines the rhythm and nature of the development of the productive forces.

We have explained what is meant by the socialization of the productive forces and how this socialization comes into contradiction with capitalist relations of production. We have expounded upon the manner in which the classics pose the correspondence and non-correspondence between the productive forces and the relations of production, applying to the fullest extent the terms correspondence and determination in the last instance. Finally, we have briefly looked at the relation between scientific development and the development of the productive forces.

We have had before us the following general concepts of historical materialism in this chapter: *productive forces, socialization of the productive forces, and determination in the last instance.*

Questions

1. Are the elements of the labor process productive forces?
2. What are potential productive forces?
3. What are the productive forces as such?
4. What do we mean by the character or nature of the productive forces?
5. How are the productive forces measured?
6. What is the productivity of labor?
7. What does it mean that the relations of production determine the rhythm and nature of the development of the productive forces?
8. How do we explain that the productive forces are determinant in the last instance of the relations of production?
9. What is meant by the ever more social origin of the means of production?
10. What is meant by the ever more social destination of the product?
11. What is meant by the socialization of the productive forces?
12. How do you explain the contradiction between the productive forces and the relations of production in capitalism?
13. What do we mean by the determination in the last instance of the productive forces over the relations of production?
14. What is the correspondence or non-correspondence between the productive forces and the relations of production?
15. How does science figure in the development of the productive forces?

Themes for Reflection

1. What is the most adequate definition of the relation between the productive forces and the social relations of production?
2. Does the labor process based on complex cooperation necessarily imply a separation of the worker from the means of production in socialism?
3. In advanced capitalist society, can science be considered as an element of the productive forces?

4. What must be done to establish socialist relations of production in a country where there exists agricultural production of a rudimentary and individual nature?
5. Does there exist in Latin America sufficient development of the productive forces so as to be able, through a revolution, to establish socialist relations of production?

Endnotes

1. In this process (of labor), man as a natural power confronts the material of nature. [Man] puts into action the *natural forces* which form his body-being, his arms and legs, head and hands, in order to in this way assimilate, in a way useful for his existence, the materials that nature offers him. Marx, *Capital*, Vol. I (italics by Marta Harnecker). In a letter of Annenkov, Marx speaks of "productive faculties of man" (December 28, 1846).
2. In the chapter about large industry, Marx speaks of the productivity of the machine and says that it can be measured comparative to the productivity of the human labor force.
3. Marx, *Capital*, II, pp. 36-7 (Marta Harnecker's italics).
4. That is to say, the number of products that can be produced in a determined amount of time.
5. We must not confuse the *forces of production* with the *character or nature of these forces*. For example, a determined force may have a mechanical or human character depending on where its impetus comes from, or it could be from a mixture of the two. Nevertheless, as the forces of production are whichever ones arise from the combination of the elements of the labor process in a determined production process, it is the specific type of combination that determines the nature or character of a force of production. This could be individual in the case of artisan production, or social in the case of a cooperative system. But the social character lends specific characteristics to manufacturing and to large industry: a workers collective formed by parcel (packing) workers in manufacturing and the collective socialized worker in large industry. What's more, the social character extends to the interrelationship between diverse sectors of production, as we will see in the following point. It is this *character*, which the forces of production take in each concrete production process, that enters into contradiction with the character of the production relations.
6. This point is a textual translation from the text of Professor Bettelheim: "Les cadres sociaux-economiques et l'organisation de la planification sociale," which appeared in the journal *Etudes de Planification Socialiste*, 1-2, p. 23.
7. *Ibid.*, pp. 24-25.
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