

CEPAL Review

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Biosphere and development

*Raúl Prebisch**

In some of his recent articles—in particular those appearing in numbers 6 and 10 of this *Review*—the author's object has been to describe the principal components and relationships characterizing the structure of peripheral capitalism, to bring to light the fundamental conflicts which it generates as it evolves, and to sketch out guidelines for its transformation.

From the socio-economic standpoint, the essence of the system lies in the form taken by capital accumulation and income distribution and their interrelationships, which produce various negative effects, in particular insufficient dynamism and distributive inequity. The environment problems which have gained relatively recent notoriety, such as the depletion of natural resources, the pollution of water and the atmosphere, and urban congestion, stem from the very dynamism of the system, both in the centres and in the periphery, and from its scant capacity to foresee them and deal with them in time. They have likewise helped to aggravate existing problems and to create other new ones, considerably complicating the outlook for the next few decades.

At all events, they have taught the periphery an important lesson, inasmuch as they have helped to dispel the illusion that it could develop in the image and likeness of the centres; once again, hard facts will compel it to search independently for a path of its own.

**Director of the CEPAL Review.*

1. *Problems of the biosphere in capitalism*

It is now possible to obtain a clearer insight than before into capitalist development in the centres. The exceptional impetus gained over the last few decades, until recent times, is the consequence not only of impressive technical progress but also of irrational exploitation of natural resources—above all, of energy—which, in its turn, has had a marked influence on the orientation of technique. So there has been an element of falsity in the operation of the system which has had highly dramatic world implications.

In all this a decisively important role has been played in the periphery of the world economy by the hegemonic power of the centres, especially that of the United States, the main dynamic centre of capitalism. The petroleum-exporting countries had no power to act in opposition to the hegemony in question, although they had long been clearly aware that this product of their sub-soil was being wantonly squandered; but they would have come up against vigorous resistance to any attempt to contain its inordinate exploitation, despite their concern at the depletion of so valuable a resource.

The fact has been in evidence for several decades. But the exporter countries could not adopt measures to reduce the rate of consumption; the opposition they encountered would have been invincible, given the power of the great centres and their transnational corporations. Hollis Chenery, distinguished economist and President of the World Bank, maintained in an article published shortly after the initial rise in petroleum prices that if prices had been put up gradually, in view of the evidence that this resource was not limitless, the world economy would have adapted itself without much ado to so indispensable an adjustment.¹

¹In other words, the main effects of the change in OPEC's price policy derive from its suddenness rather than from its magnitude. If the price of oil had risen to its present level by an annual increase of 3% of its relative price over the past 25 years, the adjustments needed to absorb such an increase would have had little influence on world growth, and it would even have been to some extent beneficial, inasmuch as it would have oriented behaviour and technological experiment towards more efficient utilization of energy. Instead, the progressive lowering of petroleum prices over a period of 20 years made for wasteful use of oil—especially in the United States—and deferred the search

But that is not how the system works; and only in an international conjuncture which allowed them to acquire enough power to face up to the power of the centres have the exporter countries been able to take concerted measures to restrict the growth of production.

The irrationality with which petroleum has been exploited has indeed spread throughout the system. The low cost of oil has had considerable influence on technological research, steering it towards extremely abusive ways of using this non-renewable good as well as other natural resources; and all this has been fostered by the unequal distribution of the fruits of the increasing productivity of technique—an inequity attributable to the nature of the social structure and of the changes therein.

Nor is this all. Until recent times technological research had not concerned itself with the adverse effects of technique on the environment.

Thus, the repercussions of development on the biosphere are very serious: the depletion of non-renewable natural resources, in particular petroleum, and the pollution of the atmosphere, rivers and seas, as well as the deterioration of natural resources which, although renewable, are not exempt from the harmful effects of technique. These are notorious facts, to which must be added what may prove to be the pernicious effects on climate of the increasing emanation of carbon dioxide into the atmosphere.

Such is the ambivalence of technique: on the one hand its enormous contribution to human welfare, thanks to the steady upward trend of productivity, and, on the other hand, its damaging repercussions on the biosphere.

Philosophers and humanists have long

been turning their attention to the psychosocial implications of technique; but economists, in contrast, have generally been unwilling to take account of its ambivalence in the interpretation of development phenomena. They have regarded it as an exogenous factor, like the political, social and cultural aspects of reality. Obsessed by a peculiar doctrinal asepsis, they have withstood the insertion of these elements and of their interrelationships into the dynamics of development.

To define the place of technique and its implications in the development process will be our aim in the following pages. To start with, the major contradictions of its ambivalence elude the so-called regulatory operation of market laws; deliberate action is required to countervail them. In face of them, would it be possible to go on asserting that the unrestricted play of market forces leads to the correct and efficient allocation of productive resources? I do not, of course, deny the importance of the market. But behind it there are structures that distort its workings.

The deliberate action aforesaid inevitably entails the introduction of major adjustments in the operation of the system. But important as these are in themselves, the need for them is supplementary to the necessity of correcting the significant distortions that had been occurring before the problems of the biosphere were brought to the fore. Both these earlier distortions and the contradictions of technique represent deep-seated perversions of the operation of the system. They go far beyond the aggravating effects of energy prices on an inflationary spiral which had already been growing to impressive proportions.

To tackle the energy crisis and the other problems of the biosphere will certainly be impossible without a reorientation of technological research, and will at the same time call for a considerable capital accumulation effort which can only be made at the expense of consumption or of any increase in it: a supremely important political problem. We will begin with the first of these requirements, and then go on to deal with the adjustment of consumption.

for alternative sources of energy. Now we are faced with the need for rapid changes in consumption patterns and heavy investment in developing sources of energy independently of OPEC, in addition to the necessity of financing the cost of indispensable imports. See Hollis B. Chenery, "Restructuring the World Economy", *World Development*, vol. 2, Nos. 10-12, October-December 1974, pp. 1-9.

2. Irrationality in the exploitation of energy, and technological research

As already pointed out, the irrational extraction of petroleum, and its abusive use thanks to its low cost, have sidetracked technological research into channels that have led, in the first place, to greater irrationality throughout the entire system, and, secondly, to the deterioration of the environment. The following are the most important cases in point.

Research has been diverted from other sources of energy which were known, but the development of which was of no economic interest because of the low price of petroleum. I refer in particular to distillation from coal and to the production of gas or liquid fuels from agricultural or forest resources. Solar energy too has been neglected. Today the relevant research is being promoted, with due regard to the necessity of conserving the environment. This last point is also a matter of great technological concern in the field of nuclear energy.

Research for energy-saving purposes has been insufficient. It has gained importance in consequence of the petroleum crisis, with very positive results both for industrial production and for motorized transport. For example, Ford has produced a new engine (the Proco) which reduces at one and the same time consumption of petrol and pollution of the environment. Why was this innovation not introduced before? Technological research in this connexion had previously been devoted mainly to producing heavy vehicles characterized by intensive energy consumption to step up their horsepower, while at the same time speed limits were imposed on the major highways.

Thanks to the cheapness of energy, technological research has succeeded in substituting synthetic and plastic materials for natural fibres and wood: all this to the detriment of employment of labour, especially in developing countries. No attempt has been made to direct research towards improving the qualities of the natural products.

In agriculture, according to Dr. Sauma, Director-General of FAO, the low cost of petroleum brought about the second technological

revolution.² It was the revolution consisting in mechanization and the use of fertilizers and pesticides of petrochemical origin. The first, which had taken place a long time before, had been a revolution introducing new biological procedures, subsequent development of which lost the great impetus it might have gained had cheap petroleum not been available. And now, in Dr. Sauma's view, we are witnessing a third revolution which is precisely of a biological character, or whose lessons can be combined with those of the second revolution.

There would seem to be substantial possibilities of increasing yields by the adoption of biological practices: such as, for example, the use of bacteria for nitrogen fixation in plants. Moreover, this technique and others will make it possible to employ more labour on the land while improving yields per hectare and per worker. Microbes must be set to work, in this and other possible biological procedures! And so must insects!³

The great advantages of mechanization are undeniable. But in the periphery it has been carried too far, to the disadvantage of employment, and has not increased yields per hectare but only per worker. It has been carried too far not only because of low petroleum prices but also because the private interest of farmers—especially that of large-scale agricultural entrepreneurs—incites them to mechanization without the system's being able to absorb all the manpower thus turned off: a substantial proportion is left redundant in the countryside or shifts its redundancy to the towns. In so far as this happens, labour and capital are veritably thrown away.

Again in respect of agriculture, technological research has shown much less interest in questions concerning land in the tropics than in those relating to land in the temperate zones where technical progress has been concen-

²See his recent speech at the symposium on resources, environment, population and development, organized by the United Nations and the Government of Sweden and held at Stockholm, from 6 to 14 August, 1979.

³The *New York Times* of 18 August of the current year reports that in China experiments are being conducted in the breeding of certain spiders which perform the same role as petrochemical insecticides without adverse ecological effects.

trated. It is said that in Latin America 90% of the possibilities of expanding the agricultural area are to be found in the tropics; yet very little research has been conducted on soil use, the most suitable crops and other products and their conservation in tropical conditions. In reality, except in the case of a few products of importance in world trade, this is an agriculture of the poor. And despite the increasing number of poor people in the world, their demand is not sufficient to encourage technical progress within the play of market laws.

But however great an impetus were given to technological research, it would not suffice to combat this grave human problem. It is a good thing that the agriculture of the poor has begun to be an object of concern in international circles, but the problem cannot be resolved out of the context of development; it cannot be resolved without speeding up the growth rate of the product and altering the composition of the social product as well.

Lastly, the considerable rise in productivity, largely based on the low price of petroleum, has greatly influenced technological research directed towards the steadily increasing diversification of goods and services, generally with an accompanying waste of energy and of other resources. A growing proportion of capital accumulation has served the purposes of this diversification; such capital does not step up productivity but improves the efficiency of goods and their capacity to satisfy considerations of emulation and social status. This is consumptive, not reproductive capital. Its accumulation beyond certain limits—whether in the sphere of private activity or in that of the State—has adverse effects on reproductive capital accumulation, to the detriment of the growth of productivity.

This process cannot be properly understood unless the great disparities in income distribution are taken into account. A brief explanation of it will be opportune here.

3. *Incessant diversification of goods and services*

During the early phases of the historical development of capitalism, the power of the upper strata of the social structure, in whose hands a

major proportion of the means of production was concentrated, enabled them to appropriate the lion's share of the fruits of technical progress. In later stages of capitalist development, however, the labour force gradually acquired increasing redistributive capacity; and in the course of structural change it strengthened its power to share with the upper strata the benefits of improved productivity, both spontaneously through the play of market forces and, when these did not allow it to do so, by virtue of its growing trade-union organization and political influence. Trade-union power to push up its wages, political power to obtain employment opportunities and social services from the State.

However, the rising trend of productivity enabled the upper strata to keep their share in income high, despite the aforesaid increase in the redistributive power of the labour force.

The steady growth of income and this inequality in its distribution did much to direct technological research, as noted above, towards the incessant diversification of goods and services on the basis of intensive use of energy and other non-renewable resources. Thanks to this diversification (under the aegis of entrepreneurial oligopolies) it became possible to stimulate the demand and tap the income of the disadvantaged strata.

As the benefits of technical progress filtered downwards, new social strata were enabled to participate progressively in this diversification process, although in widely varying degrees, while new consumption patterns continued to whet the demand of the upper strata. And in this process, alongside the spread of the positive effects of development, its adverse repercussions on the biosphere have been intensified.

Such is the dynamics of the consumer society in the main centre of capitalism, whence it is propagated to the other centres—which contribute to this phenomenon—and to a periphery which increasingly strives to imitate these consumption patterns to the detriment of the social equity of development, as will be seen later. In the peripheral countries inequity is aggravated by the effects of the population explosion: yet another manifestation of the

ambivalence of the technique which protects and prolongs human life in a social structure very different from that of its countries of origin.

In its turn, the prodigious development of the mass communication media has played a powerful part in exalting the consumer society. Here too we witness the ambivalence of technique; no one can deny that the mass media techniques have made a striking contribution to human welfare, but their pernicious effects become increasingly evident in their continual manipulation of the so-called "sovereignty of the consumer".

All these are highly significant cultural changes which the progress of technique brings in its train. The problems involved are not only those of the deterioration of the biosphere, but also those of human values, of the ousting of essential values by the over-ruling value of consumption. Powerful agents of market expansion, the mass media techniques are throwing away their enormous potential for objective information, for clarification of the new phenomena of collective life and, above all, for cultural enrichment.

There is another highly significant aspect of the social inequity of capitalism which cannot be passed over here. I wonder whether the sensational urban congestion and the appalling pollution of the environment would ever have come about if the fruits of technical progress had been disseminated throughout the whole community by way of rising income or falling prices, as the neoclassical economists had imagined. The demands of technique unquestionably entail some measure of urban concentration, which is likewise promoted by historical and political factors; but it is given greater impetus by the initial income distribution pattern which characterizes capitalist development. *De facto*, the income increment is appropriated, in one way or another, by the upper strata, and triggers off an expansion of demand and diversified production of goods and services, with the consequent increase in employment. An increase which is largely achieved by bringing labour from the countryside, since demand for agricultural commodities, as is common knowledge, develops much less intensively than demand for town-pro-

duced industrial goods. Thus there has been a trend towards centralization of demand and employment which would not have been so sharp had the fruits of technical progress been disseminated in a different way.

These centres of demand and employment are the cities of smog and pollution, of frenzied traffic jams; the dehumanized cities whence little neighbourly communities disappear, wiped out by the functional specialization of urban activity. Not unconnected with all this is the motorcar, in which again the ambivalence of technique is strikingly revealed.

4. *Changes in the composition of capital and the growth rate of productivity*

As was previously remarked, in the growth of productivity there has been a veritable falsification due to the depletion of the sources of energy and the deterioration of the environment. The progressive correction of this element of falsity calls for considerable capital accumulation, in order both to save energy and exploit new sources, and to prevent pollution.

This capital accumulation, although, of great social utility, will not be reflected in those constant increases in economic productivity which have characterized the development of capitalism, especially in its dynamic centre. Thus, the composition of capital will be gradually altered, inasmuch as the proportion of capital allocated to the protection of the biosphere, so to speak, will increase, and the proportion of capital earmarked for stepping up economic productivity will decline. This change in the composition of capital must necessarily slow down the growth rate of the system's average productivity, and therefore of the global product.

Obviously, if there were to be an increase in the proportion of the global product used for accumulation purposes—and not merely a change in the composition of capital, as indicated above—the growth of consumption would have to be more tightly constricted. This would be an inevitable necessity over a transitional period, during which the growth rate of consumption would be lower than that of accumulation. After this period, however, the two rates could be the same: but it must be borne in

mind that, in any event, the degree of effectiveness of energy-saving measures will strongly influence the growth of the product.

It is precisely during this transitional period that the major adjustments demanded by the petroleum crisis and the conservation of the environment will have to be introduced. It will be a time of all the more difficulty inasmuch as in the United States a decline in average productivity has already been causing great concern. Various explanations of this downward trend are put forward, but I suppose it is largely influenced by another very important change in the composition of capital; I am referring not only to the consumptive capital used for the increasing diversification of goods and services, but also to the huge amount of capital accumulation required for the manufacture of arms. Whatever its importance for national defence, this capital is obviously partly responsible for the reduction in average productivity in the economy as a whole, although it is true that technological research in the field of national defense has appreciably influenced the system's productivity for the better.

To return to the rate of consumption, it should be recognized that the neoclassical economists advocate very clear and straightforward measures to restrict it; for example, the Nobel Prize winner Milton Friedman has been saying in his articles⁴ that the price of petroleum produced in the United States must be unhesitatingly raised to the same level as that of the imported product, so as to attain two objectives at the same time: to reduce consumption and to provide enterprises with the financial means necessary for the development of new sources of energy.

Let us look at the significance of this idea, which of course captivates the transnational oil corporations. It implies an immense regressive redistribution of income. If existing controls are abolished the United States labour force will have to pay the increase in the price not only of imported but also of domestically-produced petroleum. But why should the exceptional profits accruing from this latter go to

swell the concentration of wealth in the upper strata of the social structure?

Clearly, prices must be raised in order to restrict consumption and encourage the development of other forms of energy. Clearly too, there is an inescapable need to substitute the development of other forms of energy for imports of petroleum and to cut down extravagant consumption. What is not so clear is that in order to achieve the necessary capital accumulation the consumption of the bulk of the population must be squeezed so that more and more capital can be accumulated by the upper strata. Will recourse be had to the same procedure in order to make the heavy investment required for the conservation of the environment?

The labour force is unwilling to accept this. It has acquired trade-union and political power which enables it to recoup itself for the rise in prices by means of wage increases. But we know all too well that this is no way to resolve the problem. The outcome is an inflationary spiral, or rather the intensification of the spiral already existent in the system.

In reality, the mechanisms for distributing the fruits of technical progress and capital accumulation have become obsolete. They fitted in very well with the hegemonic power of the centres over the periphery and in particular over the petroleum-producing countries, which have now gained considerable power of their own. And they were likewise consonant with the internal hegemonic power of those in whose hands most of the means of production are concentrated and of those who are closely linked with them in the upper strata. But this power is increasingly counterpoised by the trade-union and political power of the labour force. And given the mechanisms in question, the system's only loophole is the inflationary spiral: a spiral that eludes the canons of fiscal and monetary orthodoxy.

Such is the crisis of capitalism, above all in the main dynamic centre. A crisis that will aggravate the enormous difficulties that were already besetting peripheral capitalism long before the upswing in petroleum prices.

Let us not forget, however, that capitalism is not that tired-out horse of Nikita Krushév's excited imagination. It has plenty of drive, and

⁴Published in *Newsweek*.

considerable creative force stimulated by continual technological innovations, partly originating in research undertaken for spatial and military purposes. What is more, there are innovations that have hardly begun to be applied, such as the incorporation of electronics in production processes. The dissemination of these and other techniques might increase the growth rate of productivity and thus offset, or perhaps in the course of time completely overcome, the unfavourable effects of the adjustment of the system.

This cannot happen, however, until concrete results are achieved in saving energy and evolving substitutes. Never before was so powerful a brake applied to capitalist development.

I have endeavoured to present these phenomena in the setting of an overall picture, in very brief outline, to be sure, and I have to make statements of which the full significance cannot be understood without an explanation of the *modus operandi* of the system's accumulation and distribution mechanism. This is what I am now proposing to attempt: a somewhat risky venture, since I am using instruments of analysis similar to those of which I have been availing myself in my critique of peripheral capitalism. And possibly I may stumble into serious error in seeking to interpret these vicissitudes of developed capitalism from the viewpoint of the periphery, although my mistakes may perhaps be less serious than those committed by certain economists in the centres when pronouncing on the phenomena of the periphery. In reality, no light can be shed on the latter's difficulties without this effort to interpret the disquieting problems that have been generated in the development of the leading centre by the operation of its own dynamics.

5. The accumulation and distribution mechanisms and the crisis of capitalism

I will start with the concept of the economic surplus. It is that part of the fruits of technical progress —of successive increases in productivity— which remains in the possession of the owners of the means of production, in particular those in whose hands the major proportion

of these means is concentrated in the upper strata of the social structure. The surplus manifests itself in the profits of enterprises; albeit there are certain differences between the two concepts, they need not be considered in the present study.

This is an essentially structural phenomenon in capitalist development, of which I shall endeavour to give a concise explanation. Development necessitates a steady increase in accumulation of reproductive capital in order to provide more employment for the labour force—in the broadest sense of the term— while using productivity-raising techniques. This process is characterized by a sort of regressive competition, especially in the early phases of development; much of the labour force employed has no spontaneous capacity within the play of market forces to secure wage increases correlative with the increase in productivity, since it is prevented from doing so by competition on the part of the manpower which is employed in preceding lower-productivity layers of technology or is unemployed. Only those members of the labour force that possess the ever greater skills demanded by technical progress (in particular the executive personnel of large enterprises) have this spontaneous capacity to participate in its fruits.

In more recent phases of the capitalist development of the centres, as changes take place in their social structure, three phenomena have supervened which strengthen the capacity of the labour force to share in the benefits of growing productivity:

- an increase in the proportion of the labour force possessing the aforesaid greater skills;
- a progressive decrease in the labour force employed in lower-productivity layers of technology (process of homogenization of technique);
- growth of the trade-union and political power of the labour force.

Similarly, the State is tending to absorb an ever-increasing share of the fruits of technical progress in order to cover the expansion of its services, social, general and national defence alike. To provide these services the State directly employs manpower or does so indirectly

through inputs of goods and services which the labour force produces and which are not necessary for the performance of its functions. And if all this is to run smoothly a continuous rise in productivity is indispensable.

Thus the surplus is subject to two movements in opposite directions. On the one hand it increases by virtue of the growth of productivity and, on the other hand, it decreases because a share in it is acquired by the labour force, thanks to its trade-union and political power, and because of the expansion of State services.

In the dynamics of development two strong pressures are thus exerted on the surplus: that of the labour force and that of the State. If the system is to function regularly, these two great pressures must be compatible with each other and with the continuous growth of the surplus, by virtue of successive increases in productivity.

In the present advanced phase of the system in the centres there is nothing that makes for this compatibility, nor was there even before expenditure on national defence had contributed to inflation in the leading centre.

There is also food for thought in the fact that the acquisition of trade-union and political power by the labour force so as to share in the benefits of technical progress has been intensified in recent phases of capitalist development.

While that power was weak, or non-existent, it is understandable that the pressure of State services could have been exerted through taxation and without affecting the surplus, at the expense of increases in the earnings of the labour force or even of the level they had attained.

The political power of the upper strata was sufficient to defend the dynamics of the surplus. Now that it is counterpoised by the trade-union and political power of the labour force, the latter manages to recoup itself for the reduction in its earnings by shifting the effects of the tax burden on to the surplus.

Accordingly, a highly significant change has taken place, linked to those that have occurred in the social structure. Thus, as the sys-

tem evolves, when the aforesaid twofold pressure tends to outweigh the increases in productivity, it is met in the end by constraints on the growth of the surplus.

Yet the growth of the surplus is an essential requisite in the dynamics of the system if the accumulation and consumption of the upper strata are continually to increase. Any slackening to that growth has damaging repercussions on the dynamics in question. Enterprises then react by raising prices in order to ensure that the surplus goes on growing as before. And the rise in prices, in its turn, prompts a counter-reaction on the part of the labour force, which seeks to recoup itself by wage increases. And thus the spiral begins.

It may well be that the moderate inflation which occurred in the United States before the State deficit acquired major proportions was imputable to this phenomenon. In point of fact, the accumulation and distribution mechanism is governed by no regulatory principle, nor does it include devices whereby a slackening of the growth rate of the surplus, or of course a decrease in the surplus itself, can be spontaneously offset by an increase in the accumulation of productive capital achieved by the labour force on its own account or by the State.

The implications of the phenomena described elsewhere can now be readily understood:

— firstly, the average rate of increase of productivity has been reduced, with the resultant weakening of the dynamics of growth, mainly —as I assume— by the consumptive investment allocated to the diversification of goods and services as well as by investment in the manufacture of arms in the protection of the environment. To all of which is now added investment to tackle the energy crisis, with effects similar to the foregoing;

— secondly, the increases in costs and prices of goods and services brought about by the rise in energy prices and the defence measures adopted in relation to the environment have also to be borne, in the last analysis, by the surplus, given the power of the labour force.

Obviously, the outcome of all this is an intensification of the inflationary spiral.

6. *The fiscal deficit and inflation*

The State, for understandable political reasons, has been unwilling to increase the tax burden and has had to resort to monetary expansion to cover the fiscal deficit. Nevertheless, even if it had imposed heavier taxes, the consequences would still have been largely inflationary. If the tax burden had fallen in one way or another on the labour force, this latter would have tried to recoup itself by wage increases at the expense of the surplus, as was said before, and this would have brought in its train a rise in prices. Enterprises, in their turn, would have defended themselves in the same way if taxes had been levied directly on the surplus.

Be this as it may, inflationary financing of the deficit has forced up prices, and with the increase —albeit insufficient— in earnings the inflationary spiral that was already developing to a moderate extent has been considerably intensified. And on top of all this, inflation has been given further impetus by the energy crisis and protection of the environment.

These different pressures have been eased, however, inasmuch as part of the inflationary expansion of demand due to the fiscal deficit has been met with an increase in general imports, that is, at the expense of the gross product of the rest of the world. The dimensions of this situation, aggravated as it is by larger volumes of petroleum imports and the considerable rise in their value, have been appreciably influenced by the regressive income distribution that has accompanied inflation. Thus, imports of those goods towards which the demand of the social groups favoured by inflation is primarily oriented have intensively increased, mainly to the detriment of the consumption of the social groups with less redistributive and defensive power.

This growth of imports in excess of exports and other external resources has been the most important factor in the United States' chronic balance-of-payments deficit. And to this are superadded the transnational corporations' investments abroad, in so far as they have not been financed by the enterprises' own external profits.

In other words, the expansion of State ex-

penditure has not been covered by reducing consumption —except for the consumption of the disadvantaged social groups— but has been superimposed upon it and upon private investment. And the consequent overflow of demand in relation to the domestic product has spilled outwards and has been met with part of the product of the rest of the world, as has just been noted.

7. *The international propagation of inflation*

The internal inflationary pressure has been diverted mainly to those centres which, like the Federal Republic of Germany and Japan, have benefited by the inflationary growth of demand in the leading centre. These countries have supplied goods and received in exchange currencies which only in part have been used in their turn to purchase imports from the United States. Why has this happened? Why have those countries with a surplus not increased their purchases from the United States so as to cover its external deficit?

I shall try to give a simple explanation of this complex phenomenon whose world importance is so great.

The growth of exports from the countries favoured by the inflationary expansion of demand in the United States steps up the internal income of the countries in question and stimulates demand for goods and services. To satisfy this growing demand enterprises try to increase their output. Accordingly, they need to pay out larger amounts of income to the factors of production in the course of the production process under way, and to that end resort to bank credit. This is inevitable, given the way the system works.

Thus, to the primary expansion of income deriving from exports, is added this secondary expansion. The growth of domestic demand therefore tends to outstrip that of the supply of end goods, which naturally lags behind the production under way. And so the inflationary pressure of external origin internal pressure is added.

It is understandable that in these circumstances the monetary authorities of the exporter countries should determine to curb credit ex-

pansion. In reality, they are faced with a serious dilemma: to maintain or accelerate, as the case may be, the growth rate of the economy, by allowing prices to rise above the limit deemed appropriate; or to moderate the growth rate in order to contain inflation.

The external implications of the latter course are very important. This slower rate of growth does not allow imports to increase enough to catch up with the expansion of exports, or to outstrip it so that the monetary reserves accumulated are drawn upon.

While this monetary policy of moderation does nothing to help to stabilize the United States' balance of payments, it does tend to mitigate the intensity of world inflation: it contains inflation in the countries with a surplus and at the same time prevents it from being intensified in the United States. If an inordinate expansion of credit in the exporter countries were to increase their imports the dollars forming their reserves would return to the country whence they came —i.e., to the United States—, thus giving further impetus to inflation.

The monetary authorities of the United States are also faced with the necessity of containing the secondary expansion of income, since they cannot restrict the primary expansion deriving from the fiscal deficit. This latter would involve intervening in basic decisions respecting State expenditure, which only the political organ can adopt. So, when the inflationary rise in prices oversteps certain bounds, the monetary authority uses its instruments to curb secondary expansion. It is faced with the same dilemma that was referred to above and opts for reducing the growth rate of the economy.

In any event, the economic recession caused by monetary restriction, both in the United States and in the other centres, means sacrificing the increase in the product that could have been achieved in non-inflationary conditions. Thus we are faced with a paradoxical situation. In the course of the endeavour to slow down the growth rate of private and social consumption so that large sums can be expended by the State through inflationary expedients, the economic recession ultimately

results in a reduction of the growth rate or even a contraction of the product. And this helps to aggravate the inflationary incidence of the expenditure in question.

8. *The crisis of capitalism in the leading centre*

In the light of the foregoing observations, there can be no doubt that capitalism, especially in its principal dynamic centre, is passing through a serious crisis. To maintain that this crisis has been caused by the rise in petroleum prices is to overlook the fact that it had already been brewing before. The petroleum troubles have aggravated it, and the measures to conserve the environment have similar consequences. It is therefore worth while to summarize our explanations even at the risk of a certain amount of repetition.

Notwithstanding their great social significance, investments for the purpose of developing new sources of energy, as well as those required to deal with environmental problems, will slow down the average growth rate of productivity and of the global product, thereby weakening the growth rate of the surplus.

Moreover, the increases in costs and prices of goods and services attributable to the higher energy prices and the conservation of the environment will tend to be transferred to enterprises, to the detriment of the surplus. Given the *modus operandi* of the system, the enterprises will try to restore the dynamics of the surplus by raising prices. But that does not resolve the problem.

The difficulty consists in maintaining, if not increasing, the rate of accumulation while the growth rate of productivity and of the global product is declining. And the only way to do so is to restrict the rate of consumption. It is true that important technological innovations, such as electronics, for example, may give fresh impetus to productivity in the course of time. In so far as consumption is curbed within the inflationary spiral, it will be at the cost of great social inequity.

It must also be borne in mind that prior to the energy crisis the rate of productivity was already rising, and while this was happening the labour force continued to exert, if not to increase, its pressure for income redistribution.

Thus, these two factors in combination helped to weaken the dynamics of the surplus even before the adoption of the measures required by the biosphere. And they consequently account for the system's propensity to generate an inflationary spiral when the trade-union and political power of the labour force is strengthened.

It must be recognized, however, that what has given great momentum to the inflationary spiral in the United States has been and still is the fiscal deficit. The attempt to contain it by restricting credit for enterprises has unfavourable effects on the growth rate of the product, which aggravate the impact of investment that does not directly contribute to the improvement of productivity.

Such is the crisis of a system which nevertheless has enormous dynamic potential: an exceptional technological capacity and considerable entrepreneurial drive. I am inclined to think that the major flaw is the accumulation and distribution mechanism. It is an obsolete mechanism; it is not in keeping with internal changes in the composition of power or with the implications of the external change that took place when the hegemonic power of the centre was countervailed, for the first time in capitalist development, by the power of part of the periphery.

9. Reflections on the crisis

I believe that neither public opinion nor political movements in the leading centre are fully aware as yet of these problems and of the major adjustments which are essential for the operation of the system.

Nor has a consensus been reached among economists, who for the most part are still engaged in interpreting development in the light of a simple economic theory, instead of by means of a global theory which embraces the various components of the complex reality of development. What is more, they delight in proclaiming their discrepancies rather than seeking areas of agreement. It is easy to understand the bewilderment of Kenneth Galbraith, who a short time ago (in a letter to the *New York Times* dated 7 May 1979) expressed his aston-

ishment at a certain fatalistic resignation on the part of official United States economists in face of the aggravation of inflation. Why, he asked, do we need economists in these circumstances? It could not be that his colleagues believed they were only needed to tell us that things were getting worse and that nothing could be done. Were his friends, he wondered, so lacking in professional pride that they did not realize what failure meant?

Easy to understand, too, in face of the prospects of the exhaustion of petroleum and the deterioration of the environment, is the perplexity of many economists for whom the efficient utilization of productive resources through the free play of market laws was an inviolable article of faith.

Nor should it be a matter for surprise that public opinion did not from the very outset of the petroleum crisis support the adoption of efficacious measures to deal with it.⁵ The physical volume of the United States' imports of petroleum rose by 31% between 1973 and 1978. It is doubtless very difficult for so powerful a country to recognize the emergence of the power of the petroleum-exporting countries. For this reason it was insistently predicted that the so-called producer's cartel could not survive.

From time to time, however, a sensible observation comes to light. I remember that a few months ago a *Washington Post* columnist compared OPEC's decision to restrict the growth of production in order to support price increases with the United States Government's decision to control production of grain, with a view to attaining a similar objective at the international level. Except that the attitude of the petroleum producers was dictated by the long-cherished aim of stopping the continued squandering of a non-renewable energy resource. Furthermore, despite low prices, the transnational corporations made huge profits, because of the great expansion of production, and thus were comfortably able to finance their national and international investment, to a

⁵At the time of writing President Carter is making a dramatic appeal to public opinion in his country to face up to the energy crisis.

large extent irrespectively of the development of the producer countries.

Nor have enlightened voices failed to make themselves heard on the OPEC side; ever since 1973 they have manifested deep concern for the want of effective measures to contain the expansion of consumption in the major centres.

In face of these facts the possibility of an agreement between OPEC and the great consumer countries remains an illusion, especially when political factors come into play which complicate the problem. In this way the internal spiral has spread to the international field. United States inflation had already been depreciating real petroleum prices long before 1973, and the rise in prices in that year acted as a further spur to inflation, so that the real price of oil once again deteriorated, while at the same time the real value of the dollar currency reserves of the producer countries decreased. It is understandable, then, that the exporter countries should have again raised prices. Accordingly, the international spiral is closely linked to the internal spiral.

But the inflationary spiral is not a solution either in the international or in the internal field. Let us now revert to this latter.

As noted before, it would be impossible to eliminate the inflationary spiral—whatever its origin—without restricting consumption itself or its rate of growth. Apart from the technical means of doing so, the political problem thus posed is extremely serious. What will be the impact of this adjustment on the various social strata? How will it affect capital accumulation?

Hence arises a question whose significance is self-evident. Will such restraints on consumption be acceptable to the labour force while the owners of the means of production continue increasing capital accumulation and consequently the concentration of wealth in their hands?

Are other methods of accumulation conceivable which would allow the dynamics of the system to be combined with equity? Whatever idea of them may be formed, they would imply a highly important change in the accumulation and distribution mechanism, which is still deeply rooted in the social structure de-

spite the great changes which this has undergone. The political obstacles are formidable; suffice it to recall here that the large enterprises, especially those which hold a key position in the economy, are accustomed to proclaim in round terms the necessity of raising prices in order to increase their own capital accumulation. Any other idea of accumulation, whether State or social, is far from their minds. Have we not recently seen the oil companies vehemently protesting against President Carter's proposal to tap, through taxation, part of the extra profits they have raked in by raising consumer prices?

It must be recognized that hitherto all that has been done is to drift along in face of this crisis of capitalism; it is a very different crisis from the great depression of the 1930s, but in my opinion much more serious because of the formidable obstacles of every kind that stand in the way of its resolution.

What have the major centres done in consideration of the severe warnings of the Club of Rome? There can be no doubt that despite its defects and exaggerations, especially in its early days, the Club put forward a genuine problem, which the energy crisis is now posing in dramatic terms. It has the great merit of having set afoot a most timely controversy.

But there is not much that can be cited as a response on the part of the centres. Their most notable object of concern has been the population explosion, particularly in the developing countries. How should this not be so, in view of its probable adverse effects on natural resources, non-renewable and renewable alike? It is true that at present most of these resources are consumed in the centres. But what would happen if the development of the periphery led it to take an increasing part in their use? I do not say that antagonism to an attitude like this, primarily dictated by the interests of the centres, can account for the regrettable unwillingness of much of the periphery, especially Latin America, to adopt measures to reduce the birth rate. There have been other opposing factors. But I do think that the centres have failed to propose demographic measures in the context of a broad international co-operation policy; rather have they advocated the measures in

question in order to avoid such a policy. It is worth recording that a certain eminent United States politician, desirous of shirking this responsibility, did not omit to point out that one dollar spent on birth control was equivalent to a contribution of a thousand dollars in the shape of international funds!

Furthermore, until not long ago there was strong opposition to the idea that international credit institutions should issue loans to developing countries to enable them to exploit their own natural resources. How should they invade the field reserved *par excellence* for the transnational corporations?

There was once a hope that a new policy might be formulated when the then Secretary of State, Henry Kissinger, presented at UNCTAD IV in Nairobi (5-31 May 1976) an outline sketch of a plan for the creation of a natural resources bank. Nothing came of this proposal, submitted at the last moment and without much preparation, precisely when the programme for the stabilization of primary commodities was under discussion. At all events, Dr. Kissinger later stated, at a meeting of business men in New York, that his aim was to obtain natural resources at low prices. This happened after the petroleum crisis had begun, that is, when the disastrous consequences of having squandered a non-renewable natural resource were already making themselves felt. Such an episode, especially as a man of Kissinger's stature was involved, once again bears witness to the shortsightedness of the great centres in face of the serious problems of peripheral development. And, what is more, the lack of insight—or if the reader prefers, of foresight—shown with respect to basic problems of the centres themselves.

Must the crisis of capitalism in the centres, with all its serious repercussions on the periphery, become yet more acute before it can evoke a new breadth of outlook and the way can be cleared for major adjustments in the system?

10. *The development of the periphery and the problems of the biosphere*

The gravity of the petroleum crisis is dispelling in the centres, especially in the leading centre, a stubborn illusion: the illusion that supported

by their hegemonic power, and availing themselves of their technical and financial superiority, they could go on indefinitely exploiting at low prices the natural resources of the periphery.

Now a clearer insight into all this is being gained, as we said at the beginning of the present article. The case of petroleum is extremely revealing; its irrational exploitation has deprived the exporter countries of abundant financial resources which they could have used for the purposes of their own development, in order to free themselves in time from their dependence on a resource that would not be renewable. But in the end the centres themselves have also suffered, as explained above. The immediate advantages of a long-mismanaged energy resource introduced into the capitalist development of the centres a substantial element of falsity: falsity in the orientation of techniques; falsity in the prodigious growth of productivity at the expense of the biosphere.

All this has aggravated what was already happening in the development process of the centres. It will be very difficult, although by no means impossible, to overcome the crisis, and to do so a more or less lengthy period of transition will be required; in the meantime the consequences of the crisis will bear very hard on the periphery.

With all their inherent evils, crises usually have as a rule one virtue: the virtue of teaching certain lessons. Perhaps these lessons may also help to dispel other illusions: the illusion in the periphery—and I will confine myself to the Latin American region of the periphery—that capitalism could develop there in the image and likeness of that of the centres, reproducing their model; and, similarly, the illusion in the centres that under the banner of their hegemony they could continue to forge increasingly close links with an imitative development based on flagrant social inequity and subject to new as well as outdated relations of dependence.

The centres have believed in the expansionist power of their capitalism, in its capacity to extend the advantages of technique throughout the world. But behind some of these beliefs lurk major interests which generally look no

farther than the immediate present. These immediate interests have led them to urge their transnational corporations to overrun the periphery and there promote and exalt the privileged-consumer society, sowing with enthusiasm and reaping in abundance. They have proclaimed the excellences of the "American way of life" to a periphery avid for such allurements.

It is true, however, that the privileged-consumer society could not have come into being without a social structure which, by favouring distributive inequity, sets a socially exclusive and conflictive stamp on development. Now the centres are surprised at these obstinate features of the imitative capitalism of the periphery, in favour of which they have played all their cards, doing so, moreover, with great inconsistency.

For in the periphery, as it pursues its design of developing in the image and likeness of the centres, the same problems have arisen that the biosphere is posing in the centres themselves. Obviously, imitation of the centres' consumption patterns was bound to involve the irresponsible use of natural resources, although in a much lesser degree. Similarly, the increasing urban concentration gives rise to very marked pollution phenomena comparable to those occurring in the great centres.

This state of affairs is very seriously complicating the increasingly sharp contradictions which imitative capitalism was already displaying, and to which are now added the adverse effects of the crisis in the centres. Let us now attempt an explanation.

First and foremost comes the incidence of the energy problem and of the conservation of the environment on capital accumulation. Just as in the centres, the composition of capital will need to be altered; but if this change is brought about without raising the rate of accumulation, in the periphery too the growth rate of productivity and the global product will decline, with very serious economic and social—as well as political—consequences.

In other words, it will become indispensable to restrict consumption so that much more reproductive capital can be accumulated. But what consumption will have to be restricted?

What will be the impact of this process on the different social strata?

Of course there has long been great need to step up capital accumulation in the periphery; in default of this, the broad masses that have been persistently excluded from the advantages of development could not be socially integrated, nor could other flaws in the system be corrected. But, as I have been arguing in my writings, this social integration is incompatible with the development of the privileged-consumer society and its linkages with the transnational corporations. It is incompatible, because much of the capital accumulation potential that the increase in productivity has brought in its train is frittered away in imitation of the consumption patterns of the centres. And some of it is also lost through the siphoning-off of income by the centres, in which the transnational corporations play an active part. (I do not say that they are not useful in certain fields; but in any action taken a highly selective criterion must be applied and new rules of the game must be observed.)

I do not hesitate to note in passing that in the Latin American region of the periphery these issues cannot be effectively tackled without establishing the social use of the surplus. This not only depends on fundamental changes in the structure of power but also necessitates a clear perception of the aims pursued and of the way to attain them through this transformation of the system.

Apart from the aggravation of the accumulation problem to which we have just alluded, the periphery's long-standing tendency towards an external bottleneck, to which the rise in petroleum prices has given exceptional impetus, will also become still more marked.

The terms in which this last question is posed are a matter of common knowledge. The tendency referred to is one inherent in development, given the great structural differences between the periphery and the centres; the latter, unfortunately, have done nothing of any significance to enable the periphery vigorously to expand its industrial as well as its primary exports to their markets. What is more, when in the case of certain goods such exports have really begun to gain ground, it has not been

long before various restrictions have supervened.

This is why I alluded to the inconsistency of the centres. They encourage and take advantage of the privileged-consumer society, and yet place external obstacles in the way of the expansion of its exports and the payment of its financial remittances.

The effects of the crisis in the centres on the tendency towards a bottleneck are already making themselves felt. There are two important aspects to consider: firstly, the decrease in the growth rate of the centres; and secondly, the deterioration of the terms of trade. Let us pause a moment to look at the latter, since the former calls for no comment.

The explanation of the deterioration of the terms of trade lies in the rise in prices not only of imports of petroleum and petroleum products, but also, as a result of inflation, of goods imported from the centres.

Here again influence is exerted by those structural differences which account for the characteristic disparity between demand for the goods exported by the periphery and demand for those exported by the centres; generally speaking, the former tends to grow faster than the latter. Thus it is difficult for the periphery to transfer the increase in its production costs as the centres do in the case of the goods they export; even more so, when to this increase is added the rise in internal costs caused by measures for the protection of the environment. If, for example, the high income-elasticity of world demand for the goods exported by the Federal Republic of Germany is compared with the feeble elasticity of demand for the manufactures exported by Latin America, the nature of this problem will be better understood.

Apart from this, the impact of these facts on agricultural production and exports is usually severe, for not only do petroleum prices rise, but also those of fertilizers and pesticides of petrochemical origin.

Moreover, agricultural commodities deserve separate comment. In the article by Osvaldo Sunkel which appears in this same issue, mention is made of the depletion of soils by bad

agricultural practices and deforestation; and this situation is noted as common in the periphery. Exports of certain agricultural commodities contain that part of natural wealth which is lost through poor agricultural practices, without its figuring in production costs. And in this way imports partly destined for the privileged-consumer society are paid for, as Sunkel shrewdly remarks. It is true that sooner or later it will become unavoidably necessary to recover the fertility lost by using those petrochemical fertilizers whose prices have risen, among other measures. Here we come upon an additional problem, owing to the aforesaid weak capacity of the periphery to transfer its higher production costs at the international level.

There is yet another aspect of the question to which attention should be drawn. I refer to demand for the agricultural products of temperate zones, which, with its typical fluctuations, has followed a persistent upward trend, although increasing more slowly than demand for manufactured goods. This growth of demand has led to the substitution of petroleum for animal traction and of petrochemical for natural fertilizers, the latter proceeding having helped to improve yields per hectare. So the rising trend of demand does not suffice to absorb the production increment without a fall in prices. And this factor has militated against the expansion of production, thus exercising a moderating influence on the deterioration of the terms of trade.

Here again the centres have demonstrated their superior capacity for adjustment in comparison with the periphery, since in order to prevent prices from falling and even to improve them, they have restricted production or imports of agricultural commodities. Whereas the peripheral countries have attempted to counteract their weakness by means of commodity agreements, which generally arouse strong opposition in the centres, owing to their apprehension lest prices should increase.

To sum up, we are not witnessing new problems but old ones that have grown formidable; they have long been looming up, and the centres have been reluctant to adopt measures to assist the periphery in resolving them. If they were not willing to do so during the long

years of prosperity that preceded the rise in petroleum prices, can a change of attitude be expected while their crises last?

In point of fact the centres, carried away by their immediate interest, have not yet grasped the full significance of the adverse effects of technique on the periphery, as distinct from its contribution to welfare; but they will not be able to escape the economic, political and strategic consequences of those effects, now much more serious than before. As I recently remarked at the fifth session of UNCTAD, held in Manila: "The centres cannot have recourse to a *cordon sanitaire* to isolate them from unfavourable events in the periphery. For the first

time they are talking of interdependence. Interdependence between unequal parties, of course, but at all events any adverse effects on the periphery resulting from inaction on the part of the centres will redound sooner or later to the detriment of the centres themselves. Such is the complexity of the world today.

"Our developing countries too will have to accept the fact that there are no *cordons sanitaires* to isolate the groups that have benefited by development from those that have been left behind. There are none; and to recognize these truths is the most elementary expression of that foresight which is the hallmark of enlightened statesmen."