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The interaction between styles of development and the environment in Latin America

*Oswaldo Sunkel**

The objective of this article is systematically to describe and integrate the main phenomena arising from the interrelation between development and the environment as they appear in Latin America.

With this in mind, the author begins by creating a general theoretical framework by means of which he establishes the conceptual bases which will permit him to outline the specific problems posed for the environment by the dynamics of current development in the region. In the main body of the article he analyses the global changes which have occurred in recent decades, with particular attention to the different types of effects which industrialization, agricultural modernization and urbanization have produced on environmental factors and how these in turn have had repercussions on the possibilities and limits of development.

On the basis of this analysis he maintains that the incorporation of the environmental perspective in the study of development has contributed to calling in question some established beliefs of the conventional ideology of economic growth, such as the values on which its dynamism is based, the forms of economic and social organization to which it has given rise, and its expectations of unlimited expansion. This critical conclusion presents a considerable challenge, since it makes it necessary to conceive and bring about new forms of development which will not lead to the blind alleys of the predominant style. This task, which requires elements ranging from a suitable natural resources policy and a redirection of scientific and technical activity to the search for new forms of socioeconomic organization and patterns of consumption, should be guided by collective decisions based on democratic participation and the technical rationality of planning.

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Introduction

The conception and practice of development have come a long way since the subject became a basic human concern following the Second World War. To start with, attention was centred on economic growth, and in our countries on industrialization in particular, a sector which had lagged far behind within the traditional growth model based on exports of raw materials and imports of manufactures.

Only a little later, however, it was observed that although economic growth was becoming more rapid, intense and diversified with the impetus of intensive State action to encourage it, substantial action in social affairs was also becoming necessary. At the start of the 1960s a great deal of attention began to be given to what are known as the social sectors—health, housing, education, social security—and to the measures, programmes and institutions devoted to improving the situation of the marginalized sectors. In the course of time, however, it began to be admitted that the social problem did not only consist in the backwardness of the social sectors, but went much deeper: its solution required structural changes and the redistribution of wealth and power, particularly of land ownership. In brief, political changes were required.

The variety of economic, social and political dimensions which were incorporated in the interpretation of development led in the middle of the last decade to a review of styles of development. It began to be increasingly clearly perceived that although Latin America was achieving unprecedented results in terms of economic growth and industrialization, a large section of the population was excluded from the process and continued in a situation of unemployment, underemployment and poverty; that the old forms of external dependence were being augmented by others which went far deeper and were more complex; and that within Latin America political tensions and difficulties were accumulating which in many cases had to be resolved by means of very serious crises.

All this led various Latin American countries to try out alternative styles of development and to review the possibility of different roads to development. It therefore seems a

good moment to analyse these efforts and the thinking which guided them. From a retrospective approach it may be seen that, at the level of ideas, these conceptions of alternative styles of development and these optimal policy tryouts suffered from at least two important limita-

tions: they did not recognize adequately the new international setup which had significantly transformed the earlier centre-periphery model, nor did they give adequate consideration to the environmental dimension in the integral analysis of the development process.

I

Conceptual bases

A first conceptual approach calls for a conventional definition of both terms of the development-environment equation, distinguishing between them analytically, but aiming to go beyond this division as the analysis of their interactions reveals the structure and the dynamics of the system which contains them.

(a) *Development*

Development is understood as a process of transformation of society characterized by the growth of its capacity of production, an increase in average productivity per worker and income per person, changes in the structure of classes and groups and in social organization, transformations in culture and value, and changes in the political and power structure, all of this leading to the improvement of average levels of living.

This definition endeavours to sum up real processes; it is not a normative definition of ideal development. It does not therefore imply that the different dimensions of change identified are necessarily consistent with each other or can be maintained in the long term, nor that they are favourable to national autonomy and the well-being of the mass of the population; it is a definition which allows the identification as 'development' of an ascendant international style which, according to the approach adopted here, contains in addition to economic growth and industrialization many adverse features and dangers for the future. Later we shall have to face the challenge of defining alternative styles of development and eliminating these adverse features and dangers from them as far as possible.

Development thus defined has been based on the gradual specialization of labour, with the corresponding technological changes, and on the increased utilization of non-human energy, all of which has made it possible to step up productivity and thus generate a surplus over and above what is necessary to reproduce the labour force. This surplus has been accumulated in the form of production instruments and know-how, which incorporate technological change and a growing energy input, and this in turn once again increases the productivity of labour, permitting a further growth of the surplus, and so on successively. This process of specialization of labour, technological change and increased utilization of energy has not only made it possible to increase labour productivity, but also production, population and levels of living. Obviously, the fruits of this last-mentioned potential have been distributed very unevenly among the different classes and groups, and substantial proportions of the surplus, of the technological innovation and of the increase in production capacity have been employed for armaments and other uses which are counterproductive or at odds with human welfare.

(b) *The interaction between society and nature¹*

This definition of the process of development of the forces of production and the social rela-

¹See Osvaldo Sunkel and Nicolo Gligo (editors), *Estilos de desarrollo y medio ambiente en América Latina*, Lecturas, Fondo de Cultura Económica, Mexico, 1980, 2 volumes, in which the majority of the studies of the

tions of production must be linked to the interaction between society and nature. The reproduction of the labour force is only possible in so far as the necessary elements can be extracted from nature, which implies some form of technology; on the other hand, the accumulation of the surplus in an expanded labour force and the availability of new working tools are likewise not feasible if there is no increase in the extraction of the corresponding natural resources: water, food, textile fibres, wood, minerals, energy, and this once again calls for technical changes.

The increase in the extraction of industrial materials of use to man is also secured by a process of specialization and 'artificialization'.² Instead of the ecosystems producing in a diversified and simultaneous form multiple types of biomass—numerous vegetable and animal species—man intervenes to eliminate those which do not interest him and replaces them by those he desires.

Agriculture—as its very name indicates—is precisely the activity aimed at improving, developing, refining, adapting and cultivating the land; i.e., obtaining from the land products useful to man. In this way, by concentrating solar energy, water and soil nutrients on specific specialized crops, in addition to a series of inputs and working tools and artificial energy elements, an increase in the yields of this activity may be obtained, although it may diminish the total productivity of the ecosystem in terms of biomass, and the ecosystem may, under specific conditions, deteriorate in the course of time.

The specialization of agricultural resources and the population makes it possible to generate a surplus of food products which permits the rural population to move to the cities, where they are needed for the work involved in processing the products extracted from nature.

CEPAL/UNEP project of the same name appear. Henceforth the studies contained in this publication will be cited as taken from *Estilos de desarrollo...*, *op. cit.*

²This important concept is analysed in depth in the studies of Juan Gastó, "Bases ecológicas de la modernización de la agricultura", and Nicolo Gligo, "El estilo de desarrollo agrícola de América Latina desde la perspectiva ambiental", both in *Estilos de desarrollo...*, *op. cit.*

This processing results in infrastructure works, capital goods, and durable and non-durable consumer goods and services. Except for the last-mentioned, which are necessary for the daily life of the population, the traditional process of accumulation of the rest goes to make up the present artificial environment: factories and workshops; dwellings, domestic appliances and drainage, drinking water, electricity and gas systems; highways, railways, bridges and tunnels and the corresponding vehicles; harbours, canals and boats; commercial, financial and government installations and their office equipment; communication networks; etc. The majority of the elements which compose them are more and more concentrated in the largest cities, and along the communication networks which link them with the smaller towns, and it is in these urban areas that the population is increasingly concentrated.

This artificial environment constitutes a material manifestation of the evolution of technology and also represents the accumulated and distilled product of a lengthy period of extraction of natural resources. Since the majority of the population interacts mainly with this environment, which has increasingly been interposed between man and nature, the illusion is created that dependence on nature is dwindling. According to the terminology of development, the primary sectors—agriculture, forestry, fisheries and mining—are losing their importance, while the secondary sector—manufacturing—and the tertiary sector—services—are expanding in proportion. But this is a serious error. Firstly, for this environment to function, i.e., for the factories to work, for the vehicles to move, for buildings to be inhabitable, for there to be an adequate supply of food and water, etc., i.e., for the artificial environment to be inhabitable and productive, a supply of energy is indispensable. The electricity failure which New York experienced for 25 hours between 13 and 14 July 1977, which affected nine million people and caused a veritable collapse in production activities and in the life of society is an eloquent illustration, in the opposite sense, of the above. Because energy comes from nature.

Secondly, in order for this artificial envi-

ronment to be kept functioning regularly, it is also indispensable to replace all its elements to make up for their normal deterioration. This makes it necessary to resort once again to the biosphere, extracting material and transforming it into the appropriate elements.

Thirdly, according to the law on the conservation of matter and energy, which lays down that matter cannot be destroyed but only transformed, all the materials and energy extracted from the environment are transformed, in terms of mass and energy, into an equal quantity of products and residues, which must be reincorporated in nature.

The cities are centres which concentrate natural inputs from agriculture, fisheries, forestry and mining, and this is where most of these inputs are processed and the majority of their products consumed and accumulated. Since the majority of the population is generally concentrated there too, the cities are also the largest centres of production of waste and residues. These are discharged into the air, water and land, i.e., into the biosphere. If this does not succeed in reabsorbing them, it will become polluted, so that these same resources and ecosystems will deteriorate and this will affect the health of the population.

(c) *The environment*

From the above analysis, the definition of the environment which it is proposed to use in this study can clearly be seen: it consists of *the natural biophysical environment, plus its successive artificial transformations and their deployment in space.*³

Specific elements in this are solar energy, air, water, land, fauna, flora, minerals and space—this latter in the sense of the area available for

human activity—and the constructed or ‘artificialized’ environment, and the ecological interactions both among all these elements and between them and society. They are all accumulated in a few kilometres above and below the terrestrial and maritime surfaces of the globe, in a space which contains all the elements and forms of life on which human life, including the human species itself, depends.

The mere enumeration above makes it clear that the biosphere conditions the possibilities of development, which depend to a greater or lesser degree on the availability, type and form, identification and utilization of resources, the accumulation of fixed capital or the artificial environment, the size and location of the country and its demographic features, climate relief, geographical location, etc. The dynamics of the process of socioeconomic development, since this involves the utilization of resources, the generation of wastes and residues, population shifts and production activities, and other processes which alter the ecosystem, affect the biosphere in different forms, and thus development itself in its turn, generating new conditions for the subsequent process of development, and so on simultaneously and successively.

The elements which make up the biosphere—like the human species—are not inert, but constitute systems of mutual interaction which form ecosystems, characterized, *inter alia*, by being in a state of permanent reproduction and evolutionary mutation, in ecological cycles of extreme complexity. This dynamic and dialectic process is possible thanks to an external source of energy—solar radiation—and obeys specific physical, chemical and biological laws.⁴

Human society therefore forms its environment, but at the same time its survival and development require the exploitation of the environment. Its position as far as nature is concerned is thus ambivalent, since exploitation of the environment interferes with the above-mentioned ecological cycles. This inter-

³We shall use indifferently the expressions environment, milieu, physical environment, biosphere and nature. The definition implies ambiguities and problems which we are not unaware of, but we consider it to be adequate and appropriate for the purpose of this study. In any case, see in this regard the following project studies: Gilberto Gallopin, “El medio ambiente humano”; Sergio R. Melnick, “Principales escuelas, tendencias y corrientes de pensamiento”; Warren Crowther, “Information, development styles and environmental problems in Latin America”. All these studies are to be found in *Estilos de desarrollo...*, *op. cit.*

⁴See Juan Gastó, *Ecosistema. Componentes y atributos relativos al desarrollo y medio ambiente* (E/CEPAL/PROY.2/R.27), and Jorge Morello, *Ecología y atributos del ecosistema* (E/CEPAL/PROY.2/R.33).

ference may be assimilated by the ecosystems because, largely thanks to their heterogeneity and complexity, they possess a relatively broad capacity for the absorption and 'digestion' of interferences, and for regeneration and self-reproduction. But when certain limits or thresholds are passed, the intensity, persistence and other characteristics of the interference may disorganize the regenerative and reproductive cycles of the ecosystems to such an extent as to produce an ecological collapse, which in turn will require corresponding social readjustments.

In more general and abstract terms, since the human species is one of the constituent species of the biosphere and the ecosystems, it is evident that human activities influence the biosphere to a greater or lesser extent, while the characteristics of the environment in turn influence society. In order to arrive at a closer understanding of the specific form of these interactions a greater degree of specificity is required both as regards the characteristics of the environment, which implies among other things the description of a specific territory or region, and as regards the concrete and specific processes of development which take place in it: i.e., it is necessary to specify the style of development with full inclusion of the environmental dimension.

In practice, this implies the centering of attention on three aspects where the main superpositions, duplications and interaction between society and nature appear: activities for extracting materials and energy from nature and their processing, accumulation and consumption; the simultaneous generation of wastes and residues which return to the biosphere; and the territorial management of both types of activity.

Although it is generally speaking man who sets off, with new actions, changes in the interaction between society and nature, in many cases it is catastrophic or evolutionary changes in the biosphere itself which determine modifications in society. Whether it is society that unleashes the changes in the interactions, or whether it is only reacting to environmental changes, social actions are always culturally and historically conditioned by society's accu-

mulated experience, knowledge and perceptions as regards the interactions between man and nature.

For example, the distribution of the population on the earth's surface is not a matter of chance; the population tends to be non-existent, very thinly-scattered or only transitory in places such as deserts, tropical jungles, high mountains, the sea and the polar caps, where the conditions of the biosphere are hardly favourable to permanent human life. However, it will tend to be abundant in territories where there is fresh water, fertile land, a bearable climate, variegated flora and fauna, seas or rivers which serve as means of communications, and woods and minerals which provide sources of energy and materials for making the means of transport, construction and work in general.

The properties of a limited environment obviously influence the respective population: the characteristics of the flora and fauna determine to a large extent food habits and diets; climatic conditions influence styles of dwellings, construction and clothing; the type of resources available affects the skills and talents which the population will develop and the techniques of production, etc. In other words, the characteristics of the environment, in the course of a long historical process, influence the culture, customs, life styles and technical know-how of society.

One of the most important formative cultural processes is precisely the acquisition of empirical ecological knowledge as to what forms of exploiting surrounding nature, on the reproduction of which the survival of the population depends, can be permitted and tolerated. In the long process of the evolution of mankind, the societies which did not acquire this knowledge simply disappeared, leaving only archaeological remains.

(d) *The appropriation of nature*

The different forms of social organization which appear in a community include not only the relations between individuals, groups and classes—which is what the social sciences habitually stress—but also the ways in which these individuals, groups and classes actually

appropriate nature. Since human life depends entirely on the availability of numerous elements taken from nature, one of the key aspects of social organization is precisely the form of social appropriation of the elements of the biosphere which are essential for the survival of the society as a whole, which largely influences the location of individuals, groups and classes within the society.

The lack of interest and attention regarding this aspect which certain schools of thought in the social sciences have displayed since the end of last century is certainly not unconnected with an ideological slant which tends to divert attention from one of the crucial determining factors of social inequality and the power structure. A brief historical reference will suffice to illustrate this. In the development of capitalism and its spread to the periphery countries, the private appropriation of land, water and natural resources as a whole became generalized in these countries, for the purpose of using these resources as factors to generate income and money earnings.

The private appropriation of the best land by a few means that part of the population has no access to this land and must consequently survive on other land of inferior quality, or, where marginal land has become depleted, the problem of landless peasants exists. In the first case, this produces the phenomenon of differential income to the advantage of the owners of the best land, while demographic pressures oblige the remaining population to over-exploit the poorer-quality lands and to incorporate and over-exploit other increasingly marginal land or agricultural frontier territory. This usually involves the destruction of forests and the deterioration of soil and the corresponding ecosystems.⁵

The precarious conditions of subsistence of the marginated and landless peasants and

their generally high rates of reproduction create an abundant supply of rural wage-earning labour, and, as a result of emigration, mining and urban labour, which in turn constitutes the fundamental element of growth of the capitalist system, since it permits the generation of surpluses and capital accumulation.

The phenomenon of the private appropriation of land and its social repercussions is not only rural, but is also found to a large extent in the city. In fact, in so far as the best urban lands are taken over by minority sectors whose influence allows them also to direct the infrastructure works to their even greater advantages the rapidly-expanding urban population shows an ever-increasing demand for space in the face of a limited supply, thus generating, as in the rural sector, a differential income from the land for the privileged landowners.

The income levels of the population lead to a discriminatory system of access to urban land: those with the highest incomes can acquire land and houses; those with middle-level incomes can rent dwellings; while those with low and unstable incomes occupy marginal land of little value, usually far away, difficult of access, on river banks or near canals subject to flooding and pollution, on the slopes of ravines and hills threatened by avalanches and landslides, and without the possibility of the installation of urban public services, in deteriorated and polluted industrial areas, or in the areas reserved for reasons of speculation for future town planning. The majority of the urban population has thus to live in precarious conditions and with tremendous overcrowding, which in turn contributes to the deterioration of the conditions of environmental hygiene with serious repercussions on their health.

The foregoing only aims at illustrating —for a better comprehension of the phenomena of development— the importance of adequate consideration of the forms of the social appropriation of the environment.⁶

⁵In respect of these topics see Carlos A. Barrera and others, "Economía y ambiente: análisis del subsistema regional chaqueño"; Charles Mueller, "La expansión de la frontera agrícola y el medio ambiente - La experiencia reciente del Brasil"; Sergio Salcedo and José I. Leyton, "El sector forestal latinoamericano y sus relaciones con el medio ambiente"; and Nicolo Gligo, "El estilo de desarrollo agrícola...", *op. cit.*; all of these in *Estilos de desarrollo...*, *op. cit.*

⁶See the studies by Guillermo Geisse and F. Sabatini, "Renta de la tierra, heterogeneidad urbana y medio ambiente"; Jorge Wilhelm, "Metropolización y medio ambiente"; Lucio Kowarick, "El precio del progreso: crecimiento económico, expoliación urbana y la cuestión del medio ambiente"; Giorgio Solimano and G. Chapin, "Im-

(e) *Natural resources and international relations*

There is another aspect of this same question which should be mentioned now and on which greater stress will be laid at a later stage: the possibility that members of one society may appropriate the natural resources of another. The relatively high degree of geographical and ecological determinism already referred to—the conditioning of society by nature—is basically a function of two elements: the degree of isolation of a community in a specific region, and the degree of development of scientific and technical knowledge, particularly as regards the opportunities and limitations of the environment itself. The second aspect is fairly obvious. Natural resources do not constitute an objective and pre-established fact, but are the product of empirical knowledge and scientific exploration, and of technical knowledge of ways and means of making use of nature, i.e., of how to transform the materials and energy it provides into elements useful to man.⁷

When there exists the possibility of a geographical shift of the population and of transporting the products obtained from nature, a specific population ceases to be related solely to its own environment and may develop relations with the environment which has been taken over by another society. It is obvious that these relations are socially mediatized, since access by society "A" to the resources of society "B" requires changes in the forms of appropriation pre-existing in "B", or the establishment of an interchange between the products obtained from nature in "B" and others available to "A".

The topic is most certainly of enormous

importance for the region. The history of Latin America is of course to a large extent a succession of interventions of extra-regional societies in search of the appropriation of natural (and human) economically exploitable resources in order to obtain products to satisfy their own demands and accumulate a financial surplus, and the corresponding reactions of the Latin American societies.⁸ The advantages which these societies and their different classes and groups have obtained or failed to obtain as a result of these interventions have been conditioned basically by the nature of the socio-political mediation interposed between the external societies and the local sources. This mediation is crucial in determining the form and intensity of the exploitation of the resources, the employment and the wages paid, infrastructure works, local purchases of goods and services, the taxes paid to the national and local governments, and in some cases export prices and markets.

In other words, the use of the natural resources and the proportion of the surplus generated which remains in the country depend on the nature and efficiency of this mediation. On the other hand the rational use of this surplus and its distribution among the social classes depends on the nature and efficiency of the national development policy. Latin American history has been a witness to generally unfavourable experiences in this respect.

There are innumerable cases where non-renewable natural resources of the highest parity and quality have been entirely depleted and continue to be so, while renewable resources continue to decline and be destroyed, to the point of losing their inherent renewable quality. This occurs particularly in cases of extreme specialization and 'artificialization' of agricultural development, since it brings with it the deterioration and destruction of the ecosystems and the need for substantial energy subsidies. This constitutes a warning that we

pacto del desarrollo socioeconómico y el cambio ecológico sobre la salud y la nutrición en América Latina", all in *Estilos de desarrollo...*, *op. cit.* See also Larissa Lomnitz, *Organización social y estrategias de sobrevivencia en los estratos marginales urbanos de América Latina* (E/CEPAL/PROY.2/R.24); Centre International pour le Développement, *Medio ambiente marginal y estilos de desarrollo en América Latina* (E/CEPAL/PROY.2/R.40), and Juan Pablo Antún, *Centros de crecimiento explosivo en América Latina* (E/CEPAL/PROY.2/R.7)

⁷See Amílcar Herrera, "Desarrollo, medio ambiente y generación de tecnologías apropiadas", in *Estilos de desarrollo...*, *op. cit.*

⁸See Nicolo Gligo and Jorge Morello, "Notas sobre la historia ecológica de América Latina"; Carlos Barrera and others, *op. cit.*, and Armando Di Filippo, "Distribución espacial de la actividad económica, migraciones y concentración poblacional en América Latina", all in *Estilos de desarrollo...*, *op. cit.*

must not go too far in specialization in a precipitate rush to make the most of comparative advantages, since in calculating these the external diseconomies associated with specialization and 'artificialization' are not included.

There can be no doubt that the total amount of the surpluses generated in export activities and foreign investment and the proportion retained by the Latin American countries has not been optimized either in the past or in the present, although during the last decade there were numerous attempts to tackle policies and initiatives in this respect, such as the associations of exporting countries, the nationalization of major export enterprises, the deliberate policies to maintain the prices of primary products, the control of transfer prices, negotiation of technology, etc.

The utilization of the surpluses generated in foreign activities in connexion with the exploitation of natural resources has not been satisfactory either. A large part of these surpluses has been earmarked for consumption, particularly of a superfluous nature, and not for productive accumulation, while they have been obtained as a result of the depletion or deterioration of the national heritage of natural resources—the natural capital of society—without further concern for their maintenance and replacement nor for their increase.

It is undeniable that this process of intensification of international trade, of foreign investment and technological transfer, has contributed to the growth of production and earnings. But the costs which the market has not registered in connexion with the differential incomes deriving from the exploitation of better quality resources and the losses to the national heritage owing to the depletion and deterioration of resources and ecosystems have not been deducted from these financial profits. Nor have the production and income which have been foregone owing to the shift of the population which previously used these resources and now frequently finds itself marginalized. Far less has any record been made of the income foregone in export activity itself owing to monopolistic practices, the use of transfer prices, inadequate knowledge and control, etc., nor the different forms of direct

and indirect subsidies frequently used: credit, infrastructure, order and security, education, know-how and local experience, etc.

The above review has referred to the socially mediatized international relations between the natural resources of one society and the productive agents of another, and has restricted itself to the extraction of materials and energy, i.e., in more conventional terms, to exports of primary products.

The other side of the question now remains to be discussed—the imports of goods and services, mainly manufactures, energy and technical, financial and cultural services. These imports constitute the reflection of the life style of the developed countries and incorporate the historical process of mutual adjustment between society and nature in these countries.

(f) *Centre, periphery and ascendant style*

In the development of capitalism in the industrial countries, the particular conditions of each have had a powerful influence. Japan, for example, being a country with a great shortage of natural resources, a small territory and a numerous population, as well as having a vigorous socio-cultural tradition very different from that of Europe, adopted very individual features not only in its style of economic, social and political organization but also in specific aspects such as its style of architecture, its agriculture (which more resembles horticulture) and its forms of external relations.

In Europe, the development of industrial capitalism in the nineteenth century was also marked by the socio-political tradition, the relatively more abundant agricultural resources, an ancient urban civilization and trade tradition, its imperial-colonial background, and the wide availability of coal as a source of energy. These elements, *inter alia*, no doubt had their influence on the rise of a monarchical-parliamentary style of government, a society with relatively inflexible social stratification and a sharp class conflict, intensive agriculture, a system of urban and inter-urban transport based on the railways, and the large-scale development of shipping and international

trade. The massive use of the automobile is a very late development and the use of small and economical vehicles prevails.

Very different is the case of the United States, a country largely populated with immigrants from Europe, possessing extraordinary natural resources, including oil, a territory of continental dimensions, but relatively short of manpower. These factors, among others, went to make up a social and political structure very different from the European style, with relatively high income levels and far fewer inequalities, and a tendency towards the generation of a type of technology aimed at saving scarce and expensive labour, which was therefore capital-intensive and in turn gave impetus to large-scale mass production, in order to take advantage of the economies of scale and a broad and relatively homogeneous market. The availability of oil as a cheap source of energy facilitated the development of a transport system very different from that of Europe, particularly as from the 1950s: large and powerful automobiles, the transport of passengers and freight by road and aviation; rural motorization and mechanization; the provision of the household with electrical appliances to replace the domestic activity of servants and housewives; the development of the petrochemicals and synthetic materials industries. All this was accompanied by the development of big businesses, of continental dimensions and monopolistic or oligopolistic type, with essentially bureaucratic and technocratic characteristics and a great capacity for expansion and innovation.

This description cannot be exhaustive, nor does it claim to be so, but it should be sufficient to show that although in all three cases this is a question of the development of capitalism in its phase of industrial growth, it is no less true that at a more specific level this process has assumed different styles or modes in the different countries in terms of economic organizations, social structure, orientation of techniques and forms of organization in industry, agriculture, transport, architectural forms and construction, etc. As is obvious, the group of environmental characteristics has played an important role in this conditioning process, and has in turn been profoundly modified in the historical process of

intervention in the ecosystems and creation of an artificial environment.

In passing it is important to recall that during the historical period to which we have referred all these centres of industrial capitalism had their colonial extensions or areas of hegemonic influence to which they transferred some of the characteristics of the style of the metropolitan powers. The dominant social forces in politically independent peripheral countries, however, were also able to choose the elements of the style which appeared most attractive or convenient to them; for example, English railways, French architecture and culture, German arms and military technical assistance, North American mining techniques and Japanese decoration.

During the Second World War, and particularly after it, the United States became the central and supreme capitalist power, and its major enterprises became the transnational corporations which began to dominate the world economy and brought to all countries, to a greater or lesser extent, United States patterns of production and consumption, forms of organization, technology, marketing methods and consumer credit, mass media: in short, that country's own individual style. All of this was supplemented by extremely wide-ranging initiatives in the military, cultural, technical assistance and financial fields which also contributed to the dissemination of the patterns, criteria, forms of organization, values and activities of the North American style.

The European countries and Japan were avid recipients of this style, but also developed their own capacity for reproducing it not only at the domestic level but also internationally, and in particular with regard to the United States itself. This has resulted in a symbiosis and homogenization of the contemporary style of development which overrides the national characteristics of its countries of origin and which has been denominated here the transnational style.⁹

⁹As regards this process, which is of central importance in this study, there is already an abundant bibliography. See, *inter alia*, K. Levitt, "Silent surrender", in *The Multinational Corporation in Canada*, Toronto, Macmillan of Canada, 1970; Oswaldo Sunkel, "Capitalismo transnacional

A contributory factor in this is a fact which cannot be overlooked: since nearly all the developed countries have been international and colonial powers (*de jure* or *de facto*), their national styles of development reflect not only the interaction between society and their own national nature, but also the interaction between the national society and colonial nature, and also, to a greater or lesser extent depending on the case, world nature. This is reflected *inter alia* in the fact that although they constitute only a small proportion of the world's population, they have come to take over and consume a large proportion of the world's natural resources owing to the broad-based and diversified access which these societies have had to the natural resources of the entire world in the course of their development process.

Thus, during centuries, some of today's industrialized countries have had the privilege of taking from their own nature and that of the rest of the world the products which the growth of their population and production and the increase of their levels of living required. They were thus able to appropriate the most suitable land in the world to cultivate the products they required or to induce their cultivation; they

were able to cut down the best timber from the best forests; they were able to breed livestock in the most appropriate areas; exploit the best fisheries resources in the most accessible areas and mine the highest quality and best located ores and fossil fuels.¹⁰ It is not surprising, in the circumstances, that nature seemed to them to be infinite and unlimited! The depletion of the highest-quality and best located non-renewable resources and the deterioration of the renewable resources which accompanied this process did not constitute a problem for them, in so far as technological progress and the penetration of new territories and countries continually brought to hand new sources of resources.

In view of this state of affairs it can be said that the provision of resources to which the industrialized countries had access was extraordinarily favourable, particularly in the case of the United States, where this was largely the case in its own territory. This country had a very wide variety of resources, including cheap energy and oil in particular, and up to the third decade of the present century a relative shortage of manpower. From the beginning this motivated a style of development characterized by

y desintegración nacional en América Latina", in *Trimestre Económico*, Mexico City, Vol. XXXVIII (2), No. 150, 1971; Osvaldo Sunkel and Edmundo Fuenzalida, "Capitalismo transnacional y desarrollo nacional", in *Estudios Internacionales*, Santiago, Chile, Vol. XI, No. 44, October-December 1978; S. Hymer, "The Multinational Corporation and the Law of Uneven Development", in J. Bhagwati (ed.), *Economics and World Order*, New York, Macmillan and Co., 1971; R.O. Keohane and J. S. Nye (eds.), *Transnational Relations and World Politics*, Cambridge, Mass., Harvard University Press, 1971; R. Murray, "The Internationalization of Capital and the Nation State", in *New Left Review*, No. 67, May-June 1971; C. Palloix, *Les firmes multinationales et les procès d'internationalisation*, Paris, Maspéro, 1973; U.N. Dept. of Economic and Social Affairs, *Multinational Corporations in World Development* (ST/ECA/190 and Corr.1), New York, 1973; C.V. Vaitsos, *Intercountry Income Distribution and Transnational Enterprises*, Oxford, Clarendon Press, 1974; R. J. Barnett and R. E. Muller, *Global Reach: The power of the Multinational Corporations*, New York, Simon and Schuster, 1974; A. Mazrui, "The African University as a Multinational Corporation: Problems of Penetration and Dependency", in *Harvard Educational Review*, Vol. 45, No. 25, May 1975, pp. 191-210; B. Mennis and K. P. Sauvant, *Emerging Forms of Transnational Community*, Lexington, Mass., D. C. Heath and Company, 1975; C. A. Michalet, *Le capitalisme mondial*, Paris, Presses Universitaires de France, 1876; J.

Somavía, "The Transnational Power Structure and International Information", in *Development Dialogue*, No. 2, pp. 15-28, 1976; F. Frobel, H. Heinrichs and O. Kreye, *Die neue internationale Arbeitsteilung*, Reinbek bei Hamburg, Rowohlt Taschenbuch Verlag Grubb, 1975; R. O. Keohane and J. S. Nye (eds.), *Power and Interdependence*, Boston and Toronto, Little, Brown and Co., 1977; K. Sauvant and B. Mennis, "Puzzling over the Immaculate Conception of Indifference Curves: The Transnational Transfer and Creation of Socio-Political and Economic Preferences", paper presented at the Second German Studies Conference, Indiana University, Bloomington, April 1977; United Nations, *Transnational Corporations in World Development: A Reexamination* (E/C.10/38), March 1978; J. J. Villamil (ed.), *Transnational Capitalism and National Development*, Hassocks, United Kingdom, Harvester Press, 1979.

¹⁰In this connexion Keynes wrote: "Of the surplus capital goods accumulated by Europe a substantial part was exported abroad, where its investment made possible the development of the new resources of food, materials, and transport, and at the same time enabled the Old World to stake out a claim in the natural wealth and virgin potentialities of the New. This last factor came to be of the vastest importance. The Old World employed with an immense prudence the annual tribute it was thus entitled to draw...

...But the greater part of the money interest accruing on these foreign investments was reinvested and allowed to accumulate... The prosperity of Europe was based on the

the extensive use of land resources, and by being capital- and energy-intensive. Owing to its status as a supreme power in world capitalism as from the Second World War, the United States was able to determine to a large extent the characteristics of the organization and functioning of capitalism during its new phase. These characteristics include the large-scale use of oil as a source of energy, taking the place of other options;¹¹ the relatively more rapid growth of the industries most closely associated with this source of energy: petrochemicals, motor vehicles, communications media and domestic appliances; the increase in capital density per employed person, in the size of enterprises and the geographical concentration of economic activity;¹² and in general the development of highly energy (oil)-intensive and capital-intensive technologies in construction and services and in agriculture, this last also being characterized by large-scale chemical inputs.

Up to 1974 energy seemed to be an extraordinarily cheap factor of production, particularly in terms of the price policies followed as regards the cost of oil.¹³ This situation was the principal cause of the generalization in the industrialized countries of styles of production, consumption and social organization which revolved round the availability of cheap energy. This style was reflected in various processes: the predominance of what has been termed 'bulldozer' technology, very dependent on

fossil fuels and little integrated with nature; technologies operating on a large scale; 'artificialization' of products, in which materials obtained directly from nature are replaced by synthetic petrochemical-based substitutes (detergents for soap, nylon for cotton, etc.). This topic, be it said in passing, has already been dealt with by various students of the environment crisis.¹⁴ But what is most important for the study of the links between the style of development and environment is that this style, the crisis of which is now beginning to come to a head in the centre, is precisely the one figuring as the ascendant style in the Latin American countries.

It is therefore appropriate to recognize the existence of an ascendant style at the world (or regional) level and a dominant style at the national level. One could also speak of a style in decline. Different historical periods have been characterized by different ascendant styles; after the Second World War the predominant style was transnational capitalism. Briefly, this phase of capitalism could be described as that in which the capitalist system at the world level begins to function as an integrated system, with a growing homogenization of various processes (production, consumption, technology, etc.), and operates in terms of a world logic or rationale.

(g) *Styles of development*

Before considering in greater detail the penetration of this style in Latin America and its consequences for the interaction between development and the environment, this seems the moment to clarify the senses given here to the concept of 'styles of development'.

According to the most satisfactory definitions for our purposes, a style of development constitutes "the way in which human and material resources are organized and assigned within a particular system with the object of solving such questions as what goods and ser-

facts that, owing to the large exportable surplus of food-stuffs in America, she was able to purchase food at a cheap rate measured in terms of the labour required to produce her own exports, and that, as a result of her previous investments of capital, she was entitled to a substantial amount annually without any payment in return at all." J. M. Keynes, *The Economic Consequences of the Peace*, New York, Harcourt, Brace and Howe, 1920, pp. 22-23.

¹¹See Jorge Trénova, "Perspectivas de la energía solar como sustituto del petróleo en América Latina hasta el año 2000" and Alfredo Del Valle "Los nuevos problemas de la planificación energética en América Latina", in *Estilos de desarrollo...*, *op. cit.*

¹²See Hernán Durán, "Estilos de desarrollo de la industria manufacturera y medio ambiente en América Latina"; Fernando H. Cardoso, "Perspectivas de desarrollo y medio ambiente: el caso de Brasil", in *Estilos de desarrollo...*, *op. cit.*

¹³Joseph Mullen, *Energy in Latin America: The Historical Record*, Cuadernos de la CEPAL, Santiago, Chile, September 1978.

¹⁴Barry Commoner, "The Environmental Cost of Economic Growth", in *Chemistry in Britain*, London, vol. 8, No. 2, February 1972, pp. 52-65. See also, by the same author: *The Closing Circle*, New York, Alfred Knopf, 1971; and *The Poverty of Power*, New York, Alfred Knopf, 1976.

vices to produce, how, and for whom", or "the specific and dynamic modality adopted by a system within a particular context and at a particular moment in history".¹⁵ These complementary definitions made by an economist and a sociologist call for some expansion and clarification.

By 'system' we understand here both capitalism and socialism, which are the two main alternatives in the modern world for the organization and allocation of resources. Our considerations, however, are based almost exclusively on the national variations on the capitalist system predominating in Latin America. They therefore leave on one side the problem raised by the hybrid styles, which appear in other parts of the world and which are difficult to classify as belonging to capitalism or socialism. It should, however, be recognized that the dividing line between styles within the two major socio-economic systems is not entirely satisfactory precisely in terms of the interaction between the ascendant style and the environment. The existing variations on the socialist system have many features in common with this ascendant style and respond to similar values in terms of economic growth and technological innovation, and where the direct penetration of the industrial, financial and cultural dynamics of the style is concerned.

Each real national style evolves out of contradictions and struggles between social forces which endeavour to impose or defend their own forms of resolving the questions. A distinction must be drawn between 'style' as a coherent and inevitably simplified interpretation of certain ascendant or dominant trends at the regional or world levels, and 'style' as the national materialization of complex and contradictory processes. In each country not only do forms of national and State capitalism persist, but also pre-capitalistic and peasant forms which constitute 'life styles' or 'styles of survival' rather than styles of development. They were not eliminated by the ascendant style,

and retain some capacity of self-defence and adaptation, but they are gradually becoming subordinated to this style, and have thus entered on a process of decline or marginalization. At the same time, political and trade-union movements place impediments in the way of the predominance of the style, with results which vary from one country to another. The combinations and interactions among the activities corresponding to the ascendant style and those corresponding to other forms of organizing and allocating resources go to make up the 'structural heterogeneity' which characterizes the peripheral countries within the capitalist system.¹⁶ If attention is centred on the different national results of these interactions, it seems valid to say that various national styles of development exist in Latin America. However, the failure of the majority of the endeavours of governments to resist the ascendant style by favouring other forms of organizing and allocating resources suggests that the common characteristics and the restrictions on other options imposed by the ascendant style are more significant than the variations between countries.

The concept 'style of development' may also be applied not to what it is, but to what, in the opinion of a given social agent, it *should be*. In this case, what is involved is the formulation of 'alternative styles', 'national projects', or 'relevant utopias'. This sense is as important for the purposes of the present study as the two previous ones. In fact, the introduction of the terms stemmed precisely from the dissatisfaction caused by the conception of development as a homogeneous and standard process which follows certain predetermined patterns and whose aim is to achieve economic structures, patterns of consumption and levels of income similar to those of the industrialized capitalist countries. Through the proposals regarding styles of development an effort was made to cast light on the specific trends and contradic-

¹⁵Aníbal Pinto, "Styles of development in Latin America", *CEPAL Review*, first half of 1976, pp. 99-130; Jorge Graciarena, "Power and development styles", *ibid.*, pp. 173-193.

¹⁶Aníbal Pinto, *op. cit.*, and also "Concentración del proceso técnico y de sus frutos en el desarrollo latinoamericano", in *El Trimestre Económico*, Mexico City, No. 128, January-March 1965; Osvaldo Sunkel, "La dependencia y la heterogeneidad estructural", in *El Trimestre Económico*, No. 177, January-March 1978.

tions which could be perceived in the processes of contemporary peripheral development to show that these do not constitute inevitable characteristics of all development processes, and to arrive at norms and strategies for modifying the real style or replacing it by some other preferred and radically different style.

The transnational style, which we have identified as ascendant, has inherited many features from earlier stages of the international capitalist system, but for the purposes of this study it also reveals crucial differences. Its most important dimensions may be summed up as follows:

- The dominant role of the transnational corporations in disseminating and strengthening the style; the replacement of the market machinery by their strategies for maximizing their profits in a world context.

- The generation of near-irreversible changes in the national economies and societies; the reduction of the options open to governments for establishing autonomous styles of development.

- The homogenization on a world scale of patterns of production, marketing, use of the mass media and consumption which have mainly originated in the United States.

- The transformation of the international division of labour, particularly through the internationalization of industrial production.

- The intensified exploitation of natural resources and growing dependence on a single source of energy: oil.

- Intensive and continuing technological innovation, stimulated on the one hand by the need to increase and diversify the consumption of industrial goods, and on the other by the arms race.

- The generation on an unprecedented scale of wastes and pollutants which affect the atmosphere, water and soil.

- The growing spatial mobility of the population for purposes of work and recreation as a result of the use of motor vehicles, and the insatiable demand for space and infrastructure for residential areas.

- The formation of a transnational elite composed not only of managers, administrators and technicians from the transnational corporations, but also of government officials, university professors, scientific researchers, journalists and advertising agents, identified with the ideology of the style and its patterns of consumption and culture.

It should be stressed here that the style is not conceived of as a simple strategy of the transnational corporations to achieve economic dominance, but as a homogenizing trend of the world economy and society, with repercussions on cultural manifestations and forms of perceiving the world not necessarily anticipated or controlled by these corporations.

II

The dynamics of the style of development and the environment

In the section which follows an endeavour will be made to apply the conceptual outline set out in the first part of this article to the interpretation of the recent development process in Latin American society, in an attempt to obviate the two deficiencies mentioned in the Introduction, i.e., the lack of a systematic link between the local and international characteristics of the contemporary style of development, and the absence of the environmental dimension in the region's interpretations of development. In

view of the limitations on space, it is clear that the interpretation can only be made in broad lines and at a very high level of abstraction. This is certainly a serious restriction, because one of the most important consequences arising out of taking the environmental dimension into account in the study of development is precisely the recognition of the great ecological heterogeneity which characterizes Latin America and each of the countries of the region, and the large-scale differences existing between

them in terms of natural resources, volume, density and distribution of the population, geographical dimensions and characteristics, and other aspects relating to the constructed environment.

(a) *Global changes*

Around the 1940s the interaction between the environment, the population and the international system had generated societies in Latin America which were characterized, among other things, by the exploitation of a considerable part of their natural resources in terms of the needs of the industrial countries for food and raw materials. Their demands, investments and technologies determined to a large extent the nature and intensity of the use of those resources in which the region had comparative advantages. In the course of time, this process affected the environment, since it led to the depletion of the finest reserves of many non-renewable resources, to the wholesale felling of forests, to the abuse of some of the best agricultural land and to the regional and urban-rural redistribution of the population.¹⁷

The financial surplus resulting from the exploitation of natural resources mostly went abroad, influencing the development of the metropolitan societies. That part which was locally retained was partially earmarked for financing imports of luxury consumer goods for landholding elites and the related urban groups; another portion was earmarked for the imports required for some public and private investments in urban buildings and infrastructure, railways and communications, ports and some irrigation works in rural areas. All this permitted those elites to reproduce to a certain extent the life styles of the dominant societies.

Manufacturing, as it had developed in the largest and richest countries, mainly consisted of medium-sized and small-scale establishments in some branches of light industry, such as textiles, leather and footwear, food, soap, furniture and others. Since all these industries were based on the processing of local raw materials of natural origin, and since domestic freight costs were relatively high owing to the

lack of development of the national transport infrastructure, these industries were located near their sources of inputs, close to the capital cities and to various regional centres. Consequently, industrial pollution was relatively dispersed, geographically speaking, and was not of great significance.

Although traditional agriculture had very different characteristics in different regions, it consisted basically of a complex and interrelated mixture of *latifundia* and *minifundia*, the former characterized by the under-utilization of the land and the latter by intensive over-utilization, with its inevitable consequences of erosion and desertification. This was particularly the case in Mexico, Guatemala and the Andean countries of South America where there were great masses of the population of pre-Hispanic origin engaged in subsistence agriculture and putting enormous pressure on scanty and frequently marginal land: the survivors of the collapse of the great Aztec, Maya and Inca empires.

The living conditions of the urban and rural poor were very precarious, as could be seen from their scanty incomes and the almost complete lack of basic public services in education, health and housing. Consequently, this broad sector of the population was characterized by a low life expectancy, high general and infant mortality, malnutrition, illiteracy and overcrowding.

This, then, in very general terms forms the background of initial conditions which must be taken into account in studying development in the post-war era. It hardly seems necessary to stress that this is an extremely simplified overall view of long-term development trends in the region, since it is evident that there are significant differences of a socio-economic and ecological nature between countries and regions.

The development recorded in Latin America during the last three decades has basically consisted in the incorporation of the life style of the western industrial societies, and above all that of the United States, the powerful neighbour to the north. The minorities which possessed the required levels of income adopted the patterns of consumption, suburban residences,

¹⁷See Nicolo Gligo and Jorge Morello, *op. cit.*

nuclear family structures, the week-end habit, and the values and culture of the mass industrial society typified by the United States. This process of incorporation of new life styles soon spread to broader social sectors, however, three main factors being of influence here.

First of all, the State began to develop a broader and more influential type of activity, extending its scope both in terms of tax collection and as regards the expansion of its administrative, economic and social activities.¹⁸ The tax yield grew significantly owing to the increasing duties on the sectors exporting primary products, which were those with the highest productivity and the main generators of income and foreign exchange surpluses. These financial resources and others obtained from customs duties and internal taxes were used to promote economic growth (investment in infrastructure, industrial projects, agricultural modernization) and to improve social conditions (health, education, housing and social security services).

Secondly, the industrial sector, which had enjoyed strong protectionism as a result of the world crisis of capitalism in the 1930s and the Second World War, received new impetus from the additional support provided by the State policies of economic growth in the post-war period. This industrialization, as already noted, had initially been manifested through the creation and growth of light industries directed at the broader markets of the middle and lower classes, mainly in urban areas. The higher income groups showed off their new North American-type life styles by importing what at that time were considered manifestly luxury goods (cars, consumer durables).¹⁹ Towards the end of

the 1940s and the beginning of the following decade industrial policy was reoriented towards the heavy industries in order to produce the main basic industrial inputs: iron and steel, electricity, extraction and refining of oil, cement. This was an endeavour to use the natural resources which these countries possessed, but of which they had largely failed to take advantage.

Thirdly, towards the end of the 1950s, when this recently-created industrial structure could have been used to expand production to satisfy the basic needs of the majority of the population, and also to diversify exports so as to reduce the excessive dependence on a few primary products, an extraordinary turnaround occurred in the development process. This was due, *inter alia*, to the combined influence of the local elites and the high-income groups, anxious to pursue and intensify the adoption of the new life style; to the demonstration effect of these elites on the rest of the population, particularly through the new mass media and the brand new marketing and consumer credit systems; and to the renewed vigour with which North American, European and Japanese capitalism was growing at the national and international levels—as may be seen from the outstanding growth and spread of the transnational corporations. The trend was now towards the local reproduction of the production patterns of the industrial countries, and especially those at the basis of the new life style of the industrial societies.

Industrial development, therefore, closely bound up with the branches of the transnational corporations, was above all concentrated in the development of the motor-vehicle industry, the production of consumer durables, electro-mechanical and electronic products, paper and pulp and the petrochemicals industry, using highly capital- and energy (oil)-intensive technology characteristic of the new pattern of development of industrial societies, which also involved heavy dependence on the exterior.

In the transport sector, oil and electricity replaced coal on the railways, and in turn the railways, but above all animal transport, were replaced by the private car, buses and trucks, and for longer distances by aircraft: this new style of transport, which was much more capi-

¹⁸The question of the growing influence of the State is raised in Osvaldo Sunkel and Luciano Tomassini, "Los factores ambientales y el cambio en las relaciones internacionales de los países en desarrollo", in *Estilos de desarrollo...*, *op. cit.* The need to study the problem of environmental law derives precisely from the role of the State. The topic is dealt with in the study by Guillermo Alonso, *Antecedentes jurídicos del medio ambiente en América Latina* (E/CEPAL/PROY.2/R.41).

¹⁹The penetration of the consumer society in the case of the car may be seen in Ian Thomson's study, "Investigación sobre algunos aspectos de la influencia que ejerce el automóvil privado en la sociedad latinoamericana", in *Estilos de desarrollo...*, *op. cit.*

tal-, energy (oil)- and import-intensive, ousted the traditional style.

In agriculture a great effort towards 'modernization' was observed. Continuing a policy initiated in the 1930s, large-scale dams, irrigation and drainage systems were constructed in some countries, together with other infrastructure projects such as roads and rural electrification, all inspired to some extent by the experience of the United States Tennessee Valley Authority (TVA).

Mechanization in agriculture was also promoted and financed, and more recently the 'green revolution' with its new varieties of high-yield seeds and the mass application of fertilizers, pesticides and growth regulators. High capital-, energy- and import-intensive technology thus penetrated the rural areas too.

In the construction industry, highly capital-, energy- and import-intensive methods, designs, materials, know-how and even human resources replaced existing practices, and even changed the customs, local materials and skills with which the majority of the population traditionally constructed their houses.

The reader may apply this reasoning to other sectors of the economy such as the fisheries, the forestry industry, trade, finance, health and education.²⁰ It will always be found that to a greater or lesser extent, imported new methods, criteria, technology, machinery and forms of organization, all highly capital- and energy-intensive, pushed out and replaced pre-existing patterns.

In other words, the adoption of a new life style by the wealthiest sectors eventually produced a massive restructuring of the production system, which has meant the creation of a pattern of development partially corresponding to the new life style, and the displacement and disorganization of the previous patterns of development and life styles. The result is an extremely heterogeneous economic and social structure, characterized by complex interrelations between its parts. Such, then, is the struc-

tural connexion between life styles and patterns of development in Latin America.

The emerging dynamic and modern sector of the economy and society which has been denominated the 'transnational' sector, owing to its broad international spread, makes very intensive use of capital and energy (oil), and has a high consumption of imports. In contrast, that segment of the economy which tends to become stagnant or to shrink uses labour intensively and is most often based on the use of local natural resources and energy. This means that it has difficulty in absorbing the growth of the labour force, and may even reduce its labour force, while although the former sector grows very rapidly, it only requires small numbers of additional workers. The creation of sources of employment in the new activities, although perhaps very dynamic, is insufficient to absorb the manpower displaced by the destruction or stagnation of pre-existing activities, swelled by the additional supply stemming from the growth of the active population, and this leads to growing underemployment and unemployment of a structural nature. The labour force is driven out from the activities which have been displaced or disorganized or which have begun to stagnate, even when modernization programmes are undertaken, and these workers' skills and qualifications become obsolete; meanwhile the new activities constitute areas of attraction for workers with new skills, but only to a very insufficient extent.

Moreover, the new expanding dynamic sector of the industrial structure will put strong pressure on the balance of payments owing to its tremendous demand for imported materials and technological and financial inputs, frequently —not taking advantage of local natural and human resources to replace them. Particularly intensive growth is to be seen in the incidence of consumption and imports of petroleum, the energy base of the transnational style, in the oil-deficit countries.

Thanks to the economies of scale which characterize the modern capital-, energy- and import-intensive technology and other factors, the new industrial, commercial, financial and infrastructure activities and the new public housing, health and education services tend to

²⁰The situation of forestry resources is dealt with in Sergio Salcedo and José Leyton, while marine resources are discussed by Constantino Tapias in "El medio oceánico y la actividad pesquera", both in *Estilos de desarrollo...*, *op. cit.*

be located to a large extent in the largest cities, and above all in the capitals. In contrast, a considerable proportion of the activities which are in decline and are being replaced were far more widely scattered in different regions and smaller cities. In particular, the modernization of agriculture displaces large contingents of the population, some of whom remain in the poorest rural areas, while others move to regions of frontier colonization and the remainder simply leave the rural areas completely. All these factors of rejection and attraction have stimulated mass emigration of the population from rural sectors and areas in decline to the main cities, particularly the capitals, giving rise to an accelerated mass urbanization process.²¹

Owing to the scanty resources available for the expansion of the urban infrastructure (due in part to the use of imported and inappropriate norms, designs and technologies), the process of speculation with urban land, and the lack of a reasonable and stable level of income in most of the urban population, the cities have also become heterogeneous structures characterized by a mixture of central areas which grow upwards and contain public offices, the commercial and financial districts, and residential and commercial suburban areas, all characterized by the new transnational style, alongside older intermediate areas in decline, and working-class districts in the industrial areas, all surrounded and infiltrated by marginal settlements. As these settlements multiply it may be asked who the marginal groups really are: these vast masses of the poor, or the opulent transnational minority.

The analysis carried out so far constitutes the background for reviewing the link between the new life styles and their corresponding pattern of development and the aspects relating to the environment.

The development policies of recent decades have generated considerable economic growth, an intensive process of incorporation of technological innovations, and a significant change in the structure of consumption and production, both among the different sectors of

the economy and within them.²² At the same time, there have been very important changes in the regional and urban-rural distribution of economic activity.²³ The population, too, has grown very rapidly and substantial migratory flows have altered its distribution between one region and another and between rural and urban areas. Since production and income increased considerably more than the population, despite the latter's rapid growth, the levels of per capita income rose noticeably, and this has raised the levels of living. This can be seen, *inter alia*, in the improvements of indicators such as life expectancy, general and infant mortality and the degree of illiteracy. However, these averages conceal an extremely unequal distribution of the fruits of progress, since most of the increase in income has benefited the middle and high-income groups, who receive a large proportion of the total income, while 40% of the population remains below the poverty line, and 20% below the indigence line.²⁴

All these changes have had considerable repercussions on the environment: the exploitation of natural resources (both renewable and non-renewable) has been intensified and has undergone radical changes, with intensive technological renovation; a spatial redistribution has taken place in human activity, and in particular rapid urbanization and heavy industrial concentration has occurred; furthermore, a new and unprecedented level of generation of highly concentrated wastes and industrial pollution has grown up in both the urban and agricultural spheres.

(b) *Industrialization and the environment*

Industry grew at an annual rate of nearly 7%

²²The investments have spread to other areas where the centralist characteristics were repeated at the local level. Alejandro Rofman's study, "La interiorización espacial del estilo de desarrollo prevaleciente en América Latina", is illustrative in this respect, in *Estilos de desarrollo...*, *op. cit.*

²³The changes in economic location have generated a process of growth in the smaller urban centres. This topic is discussed by Juan Pablo Antón, *op. cit.*

²⁴The poverty line is that which permits a person the minimum levels of nutrition, lodging and health; the indigence line permits only a minimum level of nutrition.

²¹In this regard see Armando Di Filippo, "Distribución espacial...", *op. cit.*, in *Estilos de desarrollo...*, *op. cit.*

between 1950 and 1970 and on average accounted for over one-quarter of the gross product of Latin America, with much higher figures for some countries such as Argentina, Brazil and Mexico. The structure of industry has changed in many ways. Thus, in terms of product the sectors producing motor-vehicles, petrochemicals, iron and steel, consumer durables, and electrical and electronic articles have grown rapidly, while the traditional sectors, such as textiles, footwear, food and others have lagged behind. As regards market structure, the largest enterprises, which use imported modern technologies and are frequently branches of transnational corporations, have expanded very rapidly, displacing local medium-sized and small enterprises, and in many cases establishing monopolistic or oligopolistic positions. This concentration of ownership and markets has also meant geographical concentration, since many of the largest new enterprises (particularly those producing consumer durables) have been set up near the main urban markets.²⁵

This new structure of industry is the local structure of production which is the basis of the new life styles. It depends heavily on imports of capital goods, raw materials, energy (oil), semi-finished products, technology, know-how, designs, and marketing brands and techniques. This dependence is constantly renewed as new products, processes and innovations are continually and successfully introduced. Thus, the process of industrialization and modernization depends increasingly on imports of goods and services, with the consequent impact on the balance of payments. This in turn must be financed by an increase in exports of primary products, based on the exploitation of natural resources; these are exported to finance a life style increasingly based on imported inputs instead of the country's own reserves of natural resources. Although this can be justified in terms of the theory of comparative advantages, it also brings with it serious disadvantages, as will be seen below. The noteworthy

increase in the use of energy takes the form of an increase in the international petroleum trade, with consequent balance-of-payments problems for petroleum-deficit countries, and this has also given rise to a series of pollution problems stemming from oil refining, use and transport.²⁶

The rapid increase, the absolute level already achieved and the growing similarity of industrial technology and the structure of production to those of the industrial countries, together with a still more pronounced level of geographical concentration and an almost complete lack—until recently—of concern for the problem of industrial wastes, are having very serious effects in terms of environmental pollution and deterioration in all the main industrial areas of Latin America, which generally coincide with the main cities of the region, and therefore seriously affect the quality of life of their population.

The most dynamic industries of the manufacturing sector are characterized by their high degree of toxicity, since among their residues and wastes are to be found, for example, mercury, lead, manganese, chromium, cadmium, and even radioactive materials, etc.—all elements which directly destroy the organic components of the environment. Treatments to eliminate and neutralize their effects are more expensive than for organic pollution.

Another noteworthy aspect of the dominant style relates to the high degree of concentration of industrial activity. The intensive migrations from the country to the city mean that industry has access to large new supplies of low-cost manpower; for example, the population of some municipalities of the city of São Paulo, such as Diadema, Maúa and Osasco, had annual growth rates of 48.5, 21.9 and 22.9% respectively during the early years of this decade. Another point to note is that seven states and provinces in three countries—Buenos Aires, Santa Fe, Guanabara, Rio de Janeiro, São Paulo, Mexico City and Monterrey—account for 75% of the industrial product of Latin Amer-

²⁵See Alberto Uribe and Francisco Szekely, "Localización y tecnología industrial en América Latina y sus impactos en el medio ambiente", in *Estilos de desarrollo...*, *op. cit.*

²⁶Ignacio Vergara, "El problema de la contaminación marina producida por el transporte marítimo en América Latina", in *Estilos de desarrollo...*, *op. cit.*

ica. São Paulo houses 55.7% of the chemicals industry of Brazil, 80% of the transport equipment industry, 90% of the rubber industry, 60% of the textile industry, 46% of the food industry, 66% of the paper industry, and so forth.²⁷

From the point of view of organic pollution, this high degree of industrial concentration amounts to the addition of a *population equivalent* totalling over 5 million inhabitants. Naturally, this high degree of concentration notably affects the pollution of the rivers and bays on whose banks these urban centres are located, and could in the medium term give rise to situations which are incompatible with further human use of these resources and which will be difficult to remedy owing to the high cost of the treatments for their recuperation.

(c) *Agricultural modernization*

The economic activity of the agricultural sector expanded considerably in the ascendant period of the prevailing style. In terms of gross product, Latin American agriculture is 2.5 times bigger than twenty-five years ago.²⁸ To the 117 million inhabitants who constituted the agricultural population in 1950 have been added approximately another 57 million, giving 174 million in 1975 and thus representing an increase of 1.6%; quite a high rate for the rural milieu. Despite the progressive decline in agriculture's share in the formation of the gross domestic product, owing to the greater growth of other sectors, it was still 12% in 1977, and in that year the agricultural sector generated 44.2% of total foreign exchange earnings,²⁹ showing the enormous importance which export crops continue

to have in Latin American agriculture and in the general development process, since agricultural resources supply nearly half the financing for the imported inputs which make it possible to expand the style of development.

Although agriculture has grown, the levels of poverty have not undergone major changes, and a polarization has arisen between areas of modernization with a marked rise in capitalist development and other areas corresponding to peasant sectors.³⁰ The growing presence of transnational corporations both in the use of the land for new crops and in the marketing and industrialization of the products generated in the sector constitutes another characteristic of this period. The partial modernization of agriculture has increased labour productivity and on many occasions has had repercussions on the reduction of employment in the sector: a factor which has had a vital influence on the migratory flow towards the urban centres or towards frontier areas.

The growth of Latin American agriculture has taken place at the cost of the modification, and in many cases deterioration, of the ecosystems in which intervention has occurred as a result of the modernization process. Three-quarters of this growth was based up to the 1970s on the increasing use of new land, in which advantage was taken of the natural fertility and frequently the accumulated production of previously untouched ecosystems. At the present time this relationship has been reversed, reflecting a gradual depletion of the most suitable marginal lands, and takes the form of a more intensive 'artificialization' of the ecosystems, influenced by the dependent model of generation, adoption and dissemination of technologies.

The rise of the new style, with the penetration of capitalism in rural areas, has meant the predominance of forms of production in which the criterion of the economic yield of investments increasingly prevails over the ecological aspect. Alongside these predominant forms

²⁷P. Judet and J. Perrin, "A propos du transfert des technologies pour un programme intégré de développement industriel", Grenoble, IREP-UNIDO, 1971; L. Kowarick, *op. cit.*; Alberto Uribe and F. Szekely, *op. cit.*; Armando Di Filippo, *La pobreza estructural en el desarrollo de América Latina* (E/CEPAL/PROY.1/9), Santiago, 10 August 1979; data from Pérez Carrión, *Estudio de usos sanitarios y causas de la contaminación del agua en América Latina*, Santiago, Chile, ADEMA, 1976.

²⁸CEPAL, CEPAL/FAO Joint Agriculture Division, *Veinticinco años en la agricultura de América Latina, rasgos principales 1950-1975*, Cuadernos de la CEPAL, No. 21, Santiago, Chile, 1975.

²⁹CEPAL, *Statistical Yearbook for Latin America, 1978* (E/CEPAL/1086), June 1979.

³⁰Stress must be laid on the heterogeneity of Latin American agriculture, in which the peasant sector occupies a preponderant place. See Emiliano Ortega, "La agricultura campesina en América Latina y el deterioro del medio ambiente", in *Estilos de desarrollo...*, *op. cit.*

persists peasant subsistence farming, whose fundamental object is the reproduction of the population.

Agricultural development has been subject to structural conditioning factors which have evolved appreciably in the last 25 to 30 years. The characteristic situation of the post-war period showed a land-owning structure in which the *latifundium-minifundium* complex predominated. The different types of *latifundia*—traditional *haciendas*, plantations and farms with incipient modernization—made up the structure of rural power, the forms of peasant labour and the systems of organization of production. In the traditionally agricultural areas, the *latifundia* were characterized by their under-exploitation of the land and the *minifundia* by the extraction of much greater productivity from the land. In the marginal areas, however, the exhaustive exploitation of forestry resources, the extensive livestock systems and the forms of land clearing had serious repercussions in terms of the deterioration of resources.

The changes in the last 25 years in the land ownership structure have been significant. The degree of concentration of land and income has not diminished except in Cuba, Bolivia, Peru and Chile.³¹ The capitalist development of agriculture has, however, been modified. The traditional *latifundium* has been modernized in many areas and the modes of production arising out of this evolution have come to condition development, with the imposition of far more intensive forms of land-use, transforming a situation of under-exploitation into one of over-exploitation. The traditional *latifundium*, once modernized, ceased to be the structural complement of the *minifundium*, because of the increase in the productivity of manpower and the displacement of workers recorded in areas of intensive crop-growing. Consequently, the

problem of the *minifundium* or family unit labour force tended to be exacerbated. On the other hand, the traditional forms of land-holding in the *minifundium* also changed, with the tenant system, *huasipungos* and share-cropping diminishing markedly. This has contributed to the fact that poverty levels in the peasant sector have continued to be high, with 62% of the households under the poverty line and 34% under the indigence line.³²

It is an undeniable fact that the main socio-economic factors changed with the penetration of the new style. The new infrastructures, particularly in irrigation, were mainly built for medium- and large-scale farmers. In Mexico, between 1947-1955 and 1961-1965, for example, 1 476 000 hectares of irrigated land were incorporated, and mainly benefited the capitalist sector.³³ The main price and credit policies were also preferential; marketing was organized round the predominant investments. Vertically-integrated farming enterprises were gradually built up, generated on the basis of capitalist exploitations. These enterprises, associated with or transferred to other transnationals, constitute the bases of transnational penetration in the sector.

The predominant style gradually increased the differences between farms. Those comparative advantages were oriented towards export crops, whereas farms oriented towards production for national consumption frequently met with serious hindrances to their development in view of their low rate of return. Alongside these the *minifundium* setup persisted, oriented towards subsistence agriculture.

Together with this economic and structural situation, the modernization of agriculture penetrated through the model of the generation, adoption and dissemination of technology.³⁴ This model has endeavoured to reproduce

³¹For further details see the Inter-American Planning Society, *Reformas urbana y agraria en América Latina*, Bogotá, 1978. United Nations, *Progress in Land Reform*, Sixth report, FAO/ILO (ST/ESA/32), New York, 1977. Schlomo Eckstein, Donald Gordon, Horton Douglas and Thomas Carrol, *Land reform in Latin America: Bolivia, Chile, Mexico, Peru and Venezuela*, World Bank Staff Working Paper No. 275, Washington, D.C., April 1978.

³²CEPAL, CEPAL/FAO Joint Agriculture Division, *Veinticinco años...*, *op. cit.*

³³Oscar Altimir, *La dimensión de la pobreza en América Latina*, Cuadernos de la CEPAL, No. 27, Santiago, Chile, 1979.

³⁴The process of agricultural 'modernization' is taken here to be the capitalist and technological impetus which tends to alter substantially the levels of productivity of the land and the labour force.

if not totally at least substantially the original model of the industrial countries, and particularly the United States, and for this reason the degree of 'artificialization' in Latin America has frequently been excessive. The varieties and species of the green revolution, which to begin with showed spectacular results, subsequently showed a decline in yields, either because the new land incorporated did not have the high fertility of that used at the start of this technological innovation, or simply because the seeds did not receive the necessary technological backing. Tractors and agricultural machinery, symbols of technological progress and advance in agriculture, had high growth rates. Thus, in the last 25 years the stock of tractors grew at an annual rate of 7%,³⁵ while the use of fertilizers increased at the impressive annual rate of 13.8%.³⁶ Suffice it to compare these rates with that of the increase in the active rural population —approximately 1.6%— to appreciate the intensity of the process of agricultural capitalization and technological innovation. The level of fertilization in Latin America is still well below typical levels in the developed countries, but the use of pesticides has been excessive by any standards, particularly in the case of crops such as cotton and sugar cane. Moreover, the mechanization which has taken the place of manpower has not been consonant with the labour supply; equivalent underemployment in Latin American agriculture has been put at between 20 and 40% of the active population.³⁷

With the technological model described, the dynamics of capitalist penetration has taken the form of the disintegration of the *latifundium-minifundium* system. The lack of work for the peasants has boosted their migration to urban areas and marginal land when they have not been forced to remain on their property,

³⁵CEPAL, CEPAL/FAO Joint Agriculture Division, *Veinticinco años...*, *op. cit.*

³⁶CEPAL/FAO, *Perspectivas del consumo y la producción de fertilizantes en América Latina*, FAO Fourth Regional Conference for Latin America, and CEPAL/FAO Latin American Food Conference (LARCC/76/7(d)), Lima, April 1976.

³⁷PREALC/ILO, *El problema del empleo en América Latina y el Caribe: situación, perspectivas y políticas*, PREALC, Santiago, Chile, 1975.

provoking further over-exploitation of the land.

The new capital incorporated in agriculture has not come in as a result of the stimuli of earlier periods —social status, security, etc.— which developed into situations of under-exploitation of the land, but is now basically motivated by the rate of returns of investment and the possibility of generating surpluses. Consequently, capital mobility has constituted a new factor in the intensive use —and sometimes abuse— of the land.

During the last few decades, millions more hectares of virgin land have been occupied; this expansion of the agricultural frontier has tended to take place mainly in tropical and subtropical areas, using new technologies for land clearance. Thus, the forms of peasant land occupation, carried out manually with rustic methods, have now been joined by the systems used by the large-scale farms, using tractors and other very powerful heavy machinery.³⁸

It is difficult to gain a general picture of the occupation of new land, particularly if this process tends to take place spontaneously. However, one can obtain an idea of the pace of this growth from the variation in the number of farming establishments in the Amazon region of Brazil, which increased from 380 000 in 1960 to 632 000 in 1970 and nearly 800 000 in 1975.³⁹

The spontaneous occupation of new areas was stimulated by the planned building of highways into the interior by various countries. There has thus been a noteworthy population increase in the Amazon region and penetration of the most isolated secondary basins of the River Plate system, such as the Upper Paraguay and the Pilcomayo.

The ascendant style of development has generated processes which have had repercussions on the deterioration of the physical environment. Neither the initial processes nor their effects are new in Latin America; they have even occurred naturally. In earlier periods, the occupation of space and the new forms and

³⁸In this regard see Charles Mueller, *op. cit.*, and Jorge Adámoli and Patricio Fernández, "La expansión de la frontera agropecuaria en la Cuenca del Plata: antecedentes ecológicos y socioeconómicos para su planificación", both in *Estilos de desarrollo...*, *op. cit.*

³⁹Charles Mueller, *op. cit.*

systems of exploitation gave rise to processes of deterioration, but the difference lies in the magnitude of the phenomenon as it has occurred in recent decades, the new technologies used and the areas covered. The most characteristic processes of the ascendant styles of development are: deforestation, unbalanced use of the land, and the excessive 'artificialization' of the ecosystems.

The extent of deforestation is truly overwhelming: it has so far not been possible to evaluate its real rate, but the figures fluctuate between 5 and 10 million hectares deforested per year.⁴⁰ Salcedo and Leyton state that the annual average loss of dense forests from 1958 to 1973 totalled 6.54 million hectares.⁴¹ In this as in other activities, the presence of the transnational corporations is evident. Soil erosion is without doubt the most serious problem affecting Latin American agriculture, and the growing silting-up of water courses may be noted among its effects. Increasing salinity is another disturbing environmental process: 0.7% of the total land area in Central America and 7.6% in South America is affected by excess salt.⁴² The extreme 'artificialization' of the ecosystems has influenced the pollution of natural resources and of human settlements through excessive use of pesticides. Resistance to the vectors of tropical diseases, such as malaria has also arisen.⁴³ Many of these problems have survived from pre-Colombian times but the extremely high rate of deterioration, which is accelerating from year to year, is new.

(d) *Urbanization and the environment*

The rise of the transnational style has coincided with an acceleration of the growth and spatial redistribution of the population and changes in social and employment stratification and in patterns and levels of consump-

tion. From 1950 to 1980, population grew at an annual rate of 2.8%, the highest of all the major world regions. In 1950, the total population of Latin America was around 164 million; in 1980 it reached 358 million. Although the growth rate has begun to diminish slowly, it will continue to be high for many years to come. Thus, by the year 2000 a population of 595 million is expected, growing by nearly 2.4% per year.

From 1950 to 1980, the population of urban centres with more than 20 000 inhabitants increased fourfold, from 40 million to over 160 million inhabitants. The population of these centres is continuing to grow at an annual rate of 4.4%. In 1950, there were only six or seven cities with more than one million inhabitants in Latin America; now in 1980, there are 25, and in the year 2000 there will probably be 46, housing 37% of the total population. There is already a city with more than ten million inhabitants (Mexico City), and three more on the verge of reaching this size (Buenos Aires, Rio de Janeiro and São Paulo).⁴⁴ Within a short period, several Latin American urban agglomerations will exceed the size of any megalopolis to date.

The proportion of the active urban population involved in non-manual medium- and high-status occupations has greatly increased, although problems of defining and comparing data make it difficult to prepare general estimates.⁴⁵ These strata have received the majority of the per capita income increases which moreover, are substantial in nearly all the countries.⁴⁶

For the purposes of this work, it is not necessary to go into detail regarding demographic, employment and income trends, nor to discuss the differences between large, medium-sized and small countries or between countries of

⁴⁰CEPAL, *El medio ambiente en América Latina* (E/CEPAL/1018), Santiago, Chile, 1976.

⁴¹S. Salcedo and J. Leyton, *op. cit.*

⁴²FAO/UNESCO, *Soil map of the World*, UNESCO, Paris, 1964.

⁴³UNEP, *Estudio de las consecuencias ambientales y económicas del uso de plaguicidas en el cultivo del algodón en Centroamérica y Guatemala* (PNUMA/RLAT/801/76/315), Bogotá, July 1976.

⁴⁴CEPAL, *Tendencias y perspectivas a largo plazo del desarrollo de América Latina* (E/CEPAL/1076), 12 April 1979; and César Peláez, *Tendencias y perspectivas demográficas en América Latina 1950-2000* (CEPAL draft), November 1978.

⁴⁵Carlos Filgueira and Carlo Geneletti, *Estratificación ocupacional, modernización social y desarrollo económico en América Latina* (E/CEPAL/DS/185), November 1978.

⁴⁶CEPAL, *América Latina en el umbral de los años 80*, (E/CEPAL/G.1106), November 1979.

early versus recent urbanization, since these data are easily obtainable in the publications of CEPAL, CELADE and other institutions. Nor is it necessary to describe the typical environmental problems of large cities, which are well known in general terms; their local manifestations and causes, however, are too complex and diverse to be adequately considered here.⁴⁷ Clearly, such rapid and large-scale processes of growth and spatial concentration of the population must have intensive repercussions on the ecosystems, the use of resources and the quality of life under any development style. It must also be assumed that the various stages of peripheral capitalist development mentioned above have interacted with these processes, some of which have been in effect for some time, and affected their evolution, and that self-propelled trends with respect to the size, distribution and structure of the population have also influenced the manifestations of the ascendant development style at the national level.

Returning to the focus of this work, it should be noted that by interacting with the remnants of other development styles or life styles and with demographic changes, the multifaceted penetration of the transnational style generates a group of phenomena which raises doubts about the future viability of the style and its acceptability from the point of view of environmental protection and human well-being. It also leads to partial reactions and solutions which may strengthen the style's viability or, through cumulative effects, transform its functioning. We shall highlight some of these phenomena in a very simplified way and attempt to determine what the contribution of the transnational style is, without attributing to it all the negative aspects of rapid and concentrated urbanization under conditions of extreme social inequality.

Development and its environmental consequences have been concentrated in small subsections of the various national territories, particularly in certain metropolitan areas of great demographic and economic weight.

These areas "...generate the majority of the manufactures and the technical, infrastructure, commercial and financial services which complement that activity. Moreover, they are the natural headquarters of the most powerful domestic and foreign entrepreneurial nuclei and, in the majority of cases, also serve as bases for individuals representing the domestic political power and much of the bureaucratic-administrative apparatus through which that power is expressed".⁴⁸

From such national centres, the process of capital accumulation at the national level is directed by the most important foreign and domestic economic agents, and these centres reap the majority of the benefits from the dynamism of general economic and social growth. The greater capacity of such enterprises in the (domestic) 'centre' to generate surpluses is compounded by the transfer of income through trade in merchandise and remittances of benefits from the (domestic) 'periphery'. The fact that this spatial model, extremely concentrated from the geographic point of view, is intimately associated with the dominant development style is proven by the repeated failures of regional economic deconcentration policies instituted by many Latin American governments under differing political circumstances and at various times during the past twenty years.⁴⁹

Capitalist agricultural modernization, combined with the high general rates of demographic growth, the attraction of new urban sources of labour and patterns of consumption and services available principally in the metropolitan agglomerations, have stimulated migratory flows due to which the population of these agglomerations has increased at annual rates of 5% to 10%. 'Development' has been able to draw on a labour force priced below the cost of expanding it and constantly renewed by migration.⁵⁰ Much of the population has been excluded from employment in the modern enterprises and has undergone 'regressive absorption' into personal services and artisanal

⁴⁷CEPAL, *El medio ambiente en América Latina*, March 1976.

⁴⁸Armando Di Filippo, *Estilos de desarrollo económico y migraciones de fuerza de trabajo en América Latina*, CELADE, Santiago, Chile, May 1978.

⁴⁹Alejandro Rofman, *op. cit.*

⁵⁰Lucio Kowarick, *op. cit.*

activities with low rates of return but of great importance for the living patterns of the well-to-do urban strata. The development style has offered neither means nor incentives for the provision of housing, urban infrastructure or social services in line with the needs of the lower-income strata.

The concentration of manufacturing, commercial, financial, communications, recreation, public administration, etc., activities in metropolitan agglomerations, supplemented by 'spurious absorption' well-paid jobs for those who have social power and educational advantages,⁵¹ has generated a refined consumer market which is open to the constant diversification of consumption. The beneficiaries of the modern style of consumption make up a much larger share of the urban population than did the earlier elites and, under the influence of the mass communication media, marketing and consumer credits, acquire attitudes strongly committed to the style which makes possible their privileged participation in the consumer market. Installment purchasing systems allow families from various income strata to become involved in the market for durable consumer goods deeper than their financial capacity will allow, thus generating insecurity and a permanent gap between income and expectations.⁵² Transnational corporations generally take a leading role in the promotion of consumption through television and other media, using techniques already tested in their countries of origin.⁵³

The consumption of new manufactured products is also extended to the lower income strata, probably leading to a large diversion of the resources required to meet their needs for foodstuffs and other basic items. In this market, manufacturing and marketing promote the consumption of goods such as transistor radios, plastic articles, cosmetics and pharmaceutical products, bottled carbonated beverages, etc.

Patterns of settlement in the big agglomerations have been transformed due to the com-

bined 'impact' of accelerated demographic growth, industrialization and the assimilation by the medium- and high-income strata of life styles strongly influenced by the predominance of the automobile as a means of transport and a symbol of membership in the consumer society. This leads to a preference for suburban residences as a means of escaping from the deteriorating urban environment. All of the above has brought with it a series of important consequences:

(a) The area occupied by the large agglomerations has grown even more rapidly than the population, taking land away from agriculture and making infrastructure investments more expensive;

(b) The competition for space and the dynamism of rapid and constant urban expansion has led to speculation and monopolization of land, so that the price of urban real estate has increased much more rapidly than price levels in general. Financial capital plays an increasingly important role in the attraction of speculative investment in land, but due to the predominating power relationship, State attempts to intervene in the real estate market have been consistently ineffective or counterproductive;⁵⁴

(c) The cost of housing construction has also grown more rapidly than other prices because the market is controlled by large construction enterprises and technical construction norms taken from the industrialized countries have been introduced. Public programmes of housing incentives and subsidies have not been able to cut costs down to the level of the lower-income strata and have generally been diverted to the middle- or middle-to-low-income strata. As a result, there has been a steady rise in the deficit of urban housing that meets modern standards in all the countries;⁵⁵

(d) The cost of land and construction makes it impossible for much of the urban population to obtain adequate housing. The consequences are: (i) the emergence of an illegal market selling extremely small building lots without urban infrastructure at prices which

⁵¹Raúl Prebisch, "A critique of peripheral capitalism", CEPAL Review, first half of 1976.

⁵²Carlos Filgueira, *Notas sobre consumo y estilos de desarrollo* (CEPAL draft), 1977.

⁵³Jorge Wilhelm, *op. cit.*

⁵⁴Guillermo Geisse G. and Francisco Sabatini, *op. cit.*

⁵⁵Guillermo Rosenblüth, *Necesidades de vivienda y demanda efectiva en América Latina* (E/CEPAL/PROY. I/R.37), November 1979.

completely consume the savings of middle-to-lower-income families; (ii) the establishment of irregular settlements, generally without property title of urban services and often on land unfit for human habitation, which currently constitute the most rapidly growing areas in many large agglomerations; (iii) the relegation of the lower-income strata to areas especially afflicted by industrial pollution or at a great distance from their places of work, and moreover, in general, badly served by public transport;

(e) The expansion of low-density residential areas inhabited by the most influential and moneyed portion of the urban population leads to strong pressure for public investment in high-speed highways, preferential public transport systems (metros, luxury buses, etc.), water (partially for swimming pools and garden watering), electricity, etc. The size of the agglomerations and the simultaneous requirements of industry and agricultural irrigation are already creating acute water supply problems, and growing energy costs underscore the uneconomical aspects of these settlement patterns. Public responses to these pressures rarely satisfy the residents of suburban areas completely, but at all events imply sharp discriminations against the poorest areas of the city as well as against provincial cities and rural areas, as far as investment distribution is concerned;⁵⁶

(f) The spatial segregation of the urban population by level of income and degree of integration into the consumer society has become more extensive in the recent periods of penetration by the transnational style. Large construction enterprises and financial groups build 'integrated' suburbs, with their own commercial centres, recreation and sports facilities and security forces. Houses and apartments in these suburbs are sold by advertising that they combine the advantages of ultra-modern life, rural life and protection against the

dangers and inconveniences of the rest of the urban environment;

(g) Residential segregation, whether spontaneous or systematic, and discrimination against poor areas in respect of public services weaken any sense of community in the large agglomerations and promote the dissemination throughout the prosperous strata of stereotypes which justify discrimination and the denial of political rights. The lower-income population is perceived as a threat to 'modern' consumption patterns and a source of delinquency, parasitism and aggression against the urban environment. Flagrant contrasts between rich and poor have always existed in Latin American cities, but the fact that the relatively well-to-do strata constitute large minorities within urban populations of unprecedented size creates the conditions for new forms of class struggle;

(h) The spatial mobility associated with the automobile and consumerism in general are not limited to the cities. There has been an enormous increase in the use of space, water and energy for recreation in coastal areas and others with tourist or sporting attractions, and this has had considerable environmental repercussions. International travel by highway or airline has also become a widespread phenomenon, although of minorities, and is being stimulated by differences in prices due to inflationary processes and the national industrial policies associated with the development style. In these types of spatial mobility, there is a segregation by income comparable to urban segregation, with relatively low-income groups attempting to follow the fashion of recreational travel, consequently leading to crowding and congestion on public transport and in parks and bathing areas and heavy waste of petroleum;

(i) The combination of industrial growth and new patterns of consumption means that the production of wastes and contaminants will increase much more rapidly than the growth of the urban population. The resulting problems are well known, and it is not necessary to describe them here. It should be noted, however, as a symbol of the differences between the consumerist style in both the countries of origin and in Latin America, that in the latter the wastes of the well-to-do strata (paper, metal, tin

⁵⁶In Santiago, Chile, the highest-income community (Las Condes), comprising only 8% of the metropolitan population, received 42% of public investment in local urban roads from 1965 to 1975, and 20% of the city's total road investments. This probably played a role in the growth of real estate prices, which increased much more than in the rest of the city. See Guillermo Geisse and Francisco Sabatini, *op. cit.*, p. 7.

cans, bottles, etc.) serve as the means of subsistence for large groups within the lower-income strata: a form of recycling made possible by poverty;

(j) The emergence of large areas, populated by low-income families, which are not equipped with an existing urban infrastructure and where no control is exercised over the adaptation of land for human occupation has naturally led to serious health problems, scarcity of drinkable water and free space for parks and recreation, the accumulation of waste, industrial pollution and vulnerability to disasters such as landslides and floods. In some cases, the suburbs of well-to-do families have directly contributed to the deficiencies of the poor areas: the felling of forests and paving of higher areas has prevented the rains from being absorbed normally and led to periodic floods in the lower areas. Where there is inadequate nourishment, these deficiencies seriously affect the levels of health. The sole major threat associated with this urban development style which is likely to affect both well-to-do families and poor ones equally is that of automobile accidents: the overcrowded and badly maintained public transport probably causes just as many injuries as private automobiles.

The poor areas present nearly insoluble problems with regard to meeting adequate health and quality-of-life standards unless sizeable investments are made and the use of urban space radically reorganized, together with profound changes in the distribution of income and patterns of consumption. There is not sufficient evidence, however, to justify the conclusion that the environmental and health levels of the poor areas are deteriorating everywhere and in all their aspects. The most sensitive indicators, particularly infant mortality, are improving in some cases, although in others they are deteriorating. On the one hand, the authorities generally respond to emergency situations energetically enough to avoid disasters and possibly to eliminate some of the threats to physical health.⁵⁷ Moreover, the population itself shows an ability to solve some of its problems and create a relatively inhabitable

environment, despite its difficulties. In this field, generalizations are especially open to debate.⁵⁸

The most recent stages of penetration of the transnational style have entailed two adverse consequences for the health of the lower-income strata, in addition to the expansion and diversification of industrial pollution. On the one hand, medical treatment has followed the trends of specialization and increasing costs observed in the central capitalist countries and has concentrated on the problems of the strata with the greatest economic resources. Generally, public health services have not been able to improve their attention in response to the problems of the poorest, and in some countries have reacted to the steady rise in costs and demand by reducing their free treatment and allowing health services to be transferred to the private sector. Moreover, pharmaceutical companies are among the most aggressive and ubiquitous of the transnational corporations, which accordingly leads to over-diversification and excessive rises in the cost of medicines. The large-scale promotion of medicines leads poor families to set aside large shares of their spending for such medicines, while it has been noted that public control over the sale of harmful or useless drugs is patently ineffective. In some cases, transnational pharmaceutical corporations have continued to promote among the peripheral countries products banned as dangerous in the central countries.⁵⁹

The large-scale exploitation of new mineral resources, the establishment of industries to process these resources, industrialized fishing, the building of huge hydroelectric dams and the expansion of the agricultural frontier have led to the appearance of many mushrooming urban centres. These centres are a strong attraction for unskilled and underemployed labour, but provide no facilities due to the nearly total lack of infrastructure and services and the inability to supply housing and infrastructure for the population that has been attracted. At all events, however, they have a

⁵⁷Jorge Wilhelm, *op. cit.*

⁵⁸Carlos Borsotti, *Estilos de desarrollo, medio ambiente y estrategias familiares* (E/CEPAL/PROY.2/R.5), August 1979.

⁵⁹Giorgio Solimano and Georgeanne Chapin, *op. cit.*

sharp 'impact' on local ecosystems due to the demographic growth and the industrial or mining processes which led to their creation. Generally, after several years of intense demand for labour in construction, the demand declines and is limited to technicians and skilled labourers for permanent capital-intensive activities. Through inertia, however, the inflow of migrants persists and rates of unemployment rise. Consequently, these centres are characterized by especially acute problems of segregation, marginalization and a constant lack of infrastructure, because the majority lack purchasing power and the authorities are not interested in the 'superfluous' population, since they must provide public services for the employed population. These mushrooming population centres seem to be exceptions to the concentration logic of the development style, since many of them arise during the preliminary stage, that of national capitalism, stimulated by large-scale projects financed by the State and the latter's desire to create regional 'bases of growth'. More recent-

ly they have been set up as suppliers of intermediate goods for transnational industries.⁶⁰

The experience of these centres raises doubts about many recommendations designed to alleviate pressures on the large agglomerations by setting up other poles of growth. The failure of many other attempts at industrial decentralization indicates that the establishment of such centres requires special conditions, but even when they are a success in economic terms their consequences for the environment and the well-being of the population attracted to them may be worse than the growth of large agglomerations. Some of the centres of explosive growth (especially Ciudad Guayana in Venezuela) were established in line with the Government's aim to initiate advanced social and spatial planning; however, this planning has had little effect on the results. In short, the administrative, material and financial capacity of the State seems limited as far as organizing the growth of new centres under the capitalist style of development is concerned.

III

Crisis of the style of development, alternative strategies and planning

The environmental factors whose outstanding manifestations in Latin America have already been examined are having profound effects on the traditional forms of insertion in the international economy and on the styles of development prevailing up to now in the region.

As has been demonstrated, energy plays a key role in all natural or man-made processes in the biosphere, and specially in the functioning of the constructed environment. And, logically, the relative importance of energy sources has varied with time and technological evolution.

Over long centuries, slaves, animal traction, forests, the wind and waterfalls were the basis for agriculture, transport and incipient manufacturing activity. Coal was the foundation for the first industrial revolution, which was characterized by the use of iron and steel

and symbolized by the railroad perhaps more than any other achievement. The last thirty years, in contrast, belong to the petroleum cycle: petroleum is to contemporary urban-industrial civilization what slaves were to plantations, wind to sailing ships or the sun and water to plants.

After more than three decades, urban-industrial civilization had gradually adapted itself structurally, in all its aspects and in its style, to an abundant, cheap and reliable supply of hydrocarbons. The situation changed drastically in the 1970s, however, when a period of limited, expensive and unreliable supply began. The petroleum crisis is in fact the

⁶⁰Juan Pablo Antón, *op. cit.*

principal symptom of the crisis in the contemporary style of development, since it affects its fundamental energy source.

After analysing some of the principal relationships between styles of life, patterns of development and the environment in Latin America, one must inevitably ask how far the transnational development style observed in Latin America, which is in crisis at the world level, can really be sustained in the long term, and whether it gives hope for substantial improvement of the living conditions of the majority of the population.

As already noted, the ascendant style is largely imported and its expansion is gradually nourished by successive technological innovations, which are also imported. The extensive economic and social structure built up on this basis in the region in past decades is fundamentally urban in nature and is ultimately sustained by the exploitation of natural resources and the export of the primary commodities derived from them. Here it seems appropriate to ask if it is not extremely dangerous to finance a life style and style of development which is not self-sufficient on the basis of the export of natural resources which are fairly limited, though substitutes could be sought for them, and which are moreover subject to the vicissitudes on the international market.

Viewing this as a long-term strategy, some basic questions arise: with time, will this pattern of development succeed in diversifying and expanding the export potential broadly and dynamically enough to fund a good part of its own growing needs for external financing? Will this be possible without substantial changes in the international economic order? What is the size and quality of the reserves of renewable and non-renewable natural resources? Are these reserves being managed in a rational and suitable manner, especially in view of the need to preserve and expand them for future generations? Are the financial surpluses generated by the exploitation of natural resources being re-invested in a manner which will help to preserve and expand society's natural resources and capital over the long term? Is the technological capacity needed to face all these tasks being developed?

These questions are all the more urgent when the problem of meeting the most pressing needs of the majority of the population is brought up. Since it cannot be denied that the current development strategy has not been able to reach this goal despite a high economic growth rate, and that extreme inequality between the rich and the poor persists, sooner or later policies designed to improve the living conditions of the broadest sectors of the population must be introduced or extended. In other words, the production of the food, clothing and footwear sectors and the social security, housing, health and educational services must be enlarged. But will this be compatible with the continuation of the current style of development and its needs for financing, foreign exchange and renewable and non-renewable resources? Will it be feasible despite the massive under-utilization of human resources which the current development strategy entails? Is it compatible with current trends towards administrative centralization, economic concentration, urban centralization and the use of a technology characterized by being capital-, petroleum- and import-intensive?

Furthermore, the gravity of the problem of waste and pollution can no longer be ignored, at least in some of the relatively more urbanized and industrialized countries in Latin America, since it is having adverse effects on the health of the population, particularly the poorest sector, and on the quality of urban life in general. It is also requiring huge and growing spending and investment, both public and private, to offset and prevent its effects. Under the current development style, economic growth and urban concentration are beginning to cancel each other out: the benefits of increased income and higher levels of consumption are beginning to wane due to the deterioration of the environment and the growing expenditure required to repair it.

The problems raised in the above paragraphs have not been studied in depth in Latin America, nor are there clear positions on the subject. In particular, little is known about the environment's capacity to sustain a long-term development process in keeping with the current development style. Research is an

urgent task, since continuing in the same vein without paying more attention to aspects relating to energy, resources and the environment, to say nothing of the problems of inequality, dependency and underemployment, could have disastrous consequences in the long-run.

This does not mean that economic growth should be relegated to second place. The development of the productive forces of society is an essential requirement for the improvement of the living conditions of the population. But as the present study has attempted to show, different styles of development have differing consequences with regard to the use of resources, the degree of geographical concentration and the incidence of the problem of waste and pollution. Economic growth in Latin America must continue to generate the necessary resources to enable the needs of the majority of the population to be met, but in order for this to take place a different style of development will probably be required.

All that can be done here is to suggest some of the characteristics which should be present in an alternative development style compatible with meeting the fundamental needs of the majority of the population and preserving and enhancing society's resources base and the environment. Such a style must depend less and less on fossil energy sources (particularly petroleum) and more and more on renewable and less polluting sources; develop technologies that are much more labour-intensive and more in harmony with the natural resource base; depend much more on the recycling or re-use of waste and refuse; administer natural resources through ecologically-based knowledge and technologies; institute much more decentralized administrative and political systems which depend more on local communities; and check the continuing expansion of huge cities and consumer excesses.⁶¹

All these changes and many others which will be necessary must sound excessively utopian. Yet perhaps they are not. Certainly all of them go against the current of the predominant style of development, but this style is en-

countering very serious contradictions and crises, which in turn are dialectically generating most interesting reactions.

The petroleum crisis is the best-known of these and is already having consequences of the greatest importance. To mention only one, it is stimulating great efforts to develop other sources of energy, and this is certainly not a secondary consequence. In so far as the current style of development is based on the large-scale use of cheap petroleum, cheap electricity generated from petroleum, and other petrochemical products (automobiles, aviation, consumer durables, rural mechanization, maritime transport, fertilizers, detergents, plastics, and artificial fibres) all of which are produced by large-scale and extremely concentrated enterprises, the sudden and radical change in the price of petroleum and in its supply situation may have far-reaching effects, not only economic but also social and political.

The urban crisis is also having its consequences: vehicular traffic is being restricted and rationalized, local decentralization and urbanization are being promoted, and communities are preparing themselves to face their own problems: in this regard, industries are undertaking geographical decentralization efforts.

The crisis in health services is changing the traditional accent on large, very sophisticated hospital centres in favour of the development of peripheral, smaller-sized centres with community participation, and the use of the empirical knowledge of various non-professional medical practitioners has even been proposed.

A revolution is also in the making in architecture, where the transnational style is already undergoing a crisis due to its strong dependence on energy and imported materials or those which have a high imported content. The use of traditional local materials and designs which are suited to climatic and other characteristics and which make use of the population's traditional knowledge and abilities in the field of construction are being proposed as alternatives to the dominant trend towards transnational homogeneization.

Everywhere, certain sectors of the younger generation are adopting life styles differing

⁶¹In this regard see Amílcar Herrera, *op. cit.*

greatly from the consumption pattern of the older generation.

Does all this indicate that the seeds of a different life style and pattern of development have appeared? It is difficult to say, since we know very little about what is happening in this field and how large and extensive the manifestations may be. Undoubtedly, however, something is happening and the stimuli of the extremely serious problems and crises characterizing the prevailing development style are being acknowledged and accepted in both industrial societies and underdeveloped ones. To transform the many and varied reactions to the current style of development and the knowledge of its limitations and failures into a viable programme for an alternative development style which could meet the fundamental long-term needs of the majority of the population and achieve *inter alia* an ecologically rational administration of the environment is without doubt one of the most important tasks before us.

The systematic incorporation of the environmental dimension into the consideration of Latin American development which we have attempted to propose here has highlighted a series of phenomena, problems and subjects which usually are not considered in development planning and interpretation: they receive secondary attention at best or simply remain separate and isolated from evaluation and planning exercises. Their importance is such, however, that in future no serious planning effort can fail to take full account of them. Before considering some of the forms and manners in which the environmental dimension may be integrated into planning models and techniques, it seems appropriate to recapitulate briefly the principal problems which have come to light while reviewing Latin American development in the past decades from a point of view enriched by an environmental perspective.

There is a close relationship between society and the environment, since they are both subsystems forming part of a global system which accordingly shape each other. Consequently, a society's development potential largely depends on its ecological and natural

resource base, whereas the type and degree of its development directly affect this environmental base. For this reason, an exhaustive appreciation of a society's actual and potential natural resource base is of high priority. It should be kept in mind, however, that the very state of 'resource' which is attributed to any element of nature depends on empirical, technological and scientific knowledge and social priorities, so that due to a scientific discovery or a change in relative prices, a material which was previously considered useless may be transformed into an energy resource, or an erstwhile valuable mineral may lose all economic and socio-political interest.

Scientific and technological knowledge is aimed at the short-term perpetuation of the style, which accounts for the total or partial lack of attention to the behaviour of ecosystems and what that implies. In the majority of Latin American countries, evaluations of natural resources are available: metallic and non-metallic minerals, soil, vegetal and water resources, climatic geomorphological and geological surveys. Unquestionably, these evaluations are not exhaustive, but in the majority of cases they reflect the demand for information which is influenced by the style. On the subject of integrated comprehension of ecosystems, however, research and evaluation are extremely scanty and sometimes nearly nonexistent. Partial efforts at macro- and micro-regionalization have only helped to carry out statistical analyses of regions with some degree of homogeneity. Analyses of physiographical units such as water basins, inter basins, depressions, etc., have also been limited. Basically, there is a lack of dynamic analyses from an integrated point of view which allow social and natural subsystems and their interactions to be interpreted. Consequently, in addition to supplementing and expanding the classic studies on resources, it is necessary to include integrated development analyses which, in addition to determining the behaviour of each subsystem, provide information on the interaction between them. An analysis conceived in this manner must include the ways in which anthropic action affects systems, the degree to which attributes such as stability, elasticity, etc., are modified,

the detection of damage, levels of 'artificialization' and their ability to adapt to changes in climatic factors, prognoses based on the abolition of energy subsidies and foreseeable behavior, etc.

From the preceding it may be concluded that activities designed to understand and evaluate the natural resources of a country and to monitor them permanently and systematically, as well as those specifically aimed at recognizing and understanding the behaviour of the country's ecosystems, must be a central concern of scientific and technological planning and policy.

Many of the predictions have avoided in-depth interpretations of the contradictions between society and nature which appear in the predominant means of production in Latin America. Focuses which see the deterioration of nature as the natural price of scientific and technological progress disguise the way certain social forces are using nature. The numerous cases where scientific and technological achievements are used to benefit the few at the expense of the many are not inevitably implicit in progress itself, but are the result of forms of development promoted by sectors and groups in various spheres of social life, including science.

The above conclusion is particularly important in the case of the Latin American countries, due to their underdeveloped and dependent position. A considerable amount of their foreign trade is based on the export of natural resources and the import of inputs which allow them partially to reproduce the current life styles of urban-industrial societies. Consequently, the basis of support for the industrialization, urbanization and modernization strategies of recent decades is found essentially in the natural resource capital or heritage of these countries. Although the industrialization process has obscured this, the truth is that the principal capital goods industries in the Latin American countries continue to be their primary export activities: the energy crisis has brought home this situation very dramatically. The higher price of petroleum, which is an essential energy input for the preservation and expansion of the current style of development,

means that a large and growing proportion of currency resources obtained through the export of some natural resources must be used to import another natural resource, hydrocarbons, with a consequent limitation of the availability of currency resources for importing the other consumer and capital goods and inputs needed to preserve and expand the style of development. Although growing external indebtedness has enabled this problem to be sidestepped for the moment, sooner or later the development policy of the petroleum-importing Latin American countries must face the dilemma which this situation entails: in the short term, reducing the economic growth rate, keeping a high level of underemployment in the economy, significantly increasing the prices of petroleum and petroleum products, rationing their consumption, or restricting the imports of other consumer and capital goods and inputs; in the medium- and long-term, increasing the volume, diversity and value of exports, developing alternative sources of energy, and moving towards styles of technology and social organizations which depend less on energy inputs and imported capital and technology and instead rely on the use of the potential of their own resources.

The petroleum-exporting countries, for their part, are currently facing some extremely serious long-term strategy dilemmas. They must take it as a basic assumption that their fossil fuel resources are limited and probably will increase in cost. Consequently, the financial surpluses obtained from their exploitation provide a historic opportunity to create a productive capacity which, with time, will be able to replace this source of wealth. One of the paradoxes which arises here is that the ample availability of financing and low-cost petroleum for domestic consumption militates in favour of large-scale importation of the transnational style of development, which is based precisely on the availability of cheap petroleum. At some point in the future, however, the energy base of the productive and technological capacity that is thus acquired will inexorably tend to become more expensive and less plentiful.

In the short term, these countries face ano-

ther problem of greater urgency. The extraordinary productivity of the petroleum sector and the abundant availability of currency tend to militate in favour of the maintenance of a severely under-valued exchange rate and consequently to facilitate a massive inflow of cheap imports. For the private entrepreneur, long-term investments in diversifying domestic production activities, particularly agriculture, are thus relatively less profitable than speculation and commercial activities.

The petroleum crisis has served not only to bring up problems connected with the depletion and growing cost of non-renewable natural resources, but also to reaffirm the importance of aiming scientific and technological activities at the use of renewable resources and the recycling of waste and refuse. Furthermore, it has led to the realization that energy, and consequently the natural resources from which it may easily be obtained, is a crucial part of development. The plentiful, cheap and reliable availability of petroleum in recent decades obscured the fact that petroleum is not just another natural resource, but an extremely special one: it is the force which made the contemporary style of urban-industrial civilization possible. As this style has been structured and concentrated in an artificial environment with the corresponding technology over many decades, and its functioning depends on petroleum supply, it is not easy to find other energy sources in the short and medium term. Moreover, since petroleum resources are limited and upon recognizing this the exporting countries have adopted conservationist policies in solidarity, access to limited, insecure, and increasingly costly supplies of petroleum will be one of the essential problems, if not the central problem, of international and national short- and long-term policies in the decades to come. Consequently, international energy planning and policies have unquestionably become new fields of the highest importance for any modern planning exercise.

Another problem highlighted by the petroleum crisis is the precariousness of the development strategies followed in Latin America, since the industrialization, urbanization and modernization processes are based on the specialized exploitation of a few natural resources

which involve serious risks, in addition to the depletion of the higher-quality non-renewable resources or the deterioration of renewable resources due to over-exploitation. In the light of current problems, there can be no doubt that long-term, strategic considerations require the Latin American countries to persist with their efforts to diversify their economies and exports, as well as with negotiations and individual and collective actions designed to raise the prices of their exports, increase the share of the value of exports retained in the countries, and re-invest these resources with a view to sustained, long-term development.

Efforts to diversify and increase exports, however, should not be made without prior consideration of the environmental expense and risks involved compared with the expected benefits. Planning should be concerned with the nature of the resources and the various ecological and social effects involved, both at the national and local level, with the ultimate aim of allowing the country to preserve and even increase its natural resource heritage. It is not suggested that an extreme conservationist position should be taken, but neither should a heritage accumulated over centuries of ecological evolution be allowed to be dissipated; rather, ecologically suitable production techniques should be adopted and scientific and technological policy should be given a new basic direction.

So far, however, the necessary direction has not been found. Increased production has frequently impaired the conservation of nature and has tended in many cases to create a serious ecological problem. It might therefore seem that the incorporation of the environmental dimension would inevitably restrict the tasks of production, which would imply renouncing increased productivity of labour and thus freezing growth. Nothing could be more erroneous than to place both positions on the same side of the balance, and furthermore there is no doubt that the balance would inexorably tip toward the side of production. What is really important in the incorporation of the environmental dimension into development is to be able creatively to furnish production options which fulfill the function of preserving the eco-

systems and, consequently, environmental conditions.

As has been shown, the deterioration of natural resources may have serious economic and social consequences. The poor marginal sectors, both urban and rural, survive in limited environmental conditions: they are highly vulnerable to erosion, soil depletion, water pollution, natural disasters and climatic variations. This is largely due to their total or partial lack of access to urban and rural land. Policies designed to eradicate extreme poverty and improve health and housing conditions cannot fail to recognize these basic structural conditions and, particularly, the means by which resources are appropriated. It should also not be forgotten that the distribution of environmental benefits and costs is extremely uneven and helps to accentuate social inequality. The surplus generated by the exploitation of nature allows an extremely favourable and pleasant artificial environment to be created for the middle- and high-income sectors, but for the broader sectors of the population the results are fairly precarious. This gives rise to a state of affairs in which the environmental concern of the affluent sectors rests on the quality of life, which is threatened by atmospheric pollution, noise, congested transport, etc., whereas the environmental concerns of the poor—water pollution, distance from places of work, precariousness and crowding of housing, etc.—threaten their very lives.

The deterioration of natural resources also affects economic development: it reduces the capacity for production and employment, increases production costs, leads to redundancy in the infrastructure works installed in the regions affected, reduces the income of the population in question and constitutes one of the most important causes of migration to cities and the agricultural frontier, not only nationally but also internationally. Due to the accelerated processes of urbanization and frontier penetration, generally in areas susceptible to serious ecological damage, these migratory phenomena and their causes should be another area of fundamental concern in development and planning strategies.

When economic growth in Latin America

was taking place under conditions of plentiful, high-quality resources, these were wasted, squandered and damaged with impunity, because they could always be replaced by others: this was the phase of 'extensive' growth. But in proportion as economic and demographic growth have been using up the most accessible and best-quality resources, the costs of incorporating additional resources have been growing and there is a need to intensify the use made of resources already incorporated. At this point ecological concerns arise, since the new frontier resources can be damaged very easily through the injudicious use of current technology, whereas the intensification of the use of resources may also lead to their decline.

Policies designed to conserve, improve and expand natural resources and their productivity as well as those aimed at conserving, improving and expanding the artificial environment and its productivity must be part of the development policy, since they make it sustainable in the long term. They cannot, however, make positive contributions to solving some of the characteristic problems of the current style of development. Soil and forestry conservation projects, reforestation projects, the dredging and conservation of irrigation canals, the maintenance and construction of access roads in rural areas and the construction of housing and equipment by the community itself in urban areas, if appropriately designed, can help to alleviate the problems of unemployment and underemployment and simultaneously promote basic social organization, the increase of productivity and the improvement of living conditions. This is another fundamental area of concern for planning, especially because social participation organized at the local and regional level is a fundamental pre-requisite for generating the political pressure required to achieve an allocation of resources which will allow the needs of those sectors of the population to be met.

All the analyses that have been carried out demonstrate that with respect to concerns arising from environmental perspectives, the free play of market forces has serious deficiencies as a development mechanism. This is particularly true in two regards: on the one hand,

because the market is unable to meet requirements for infrastructure and collective consumption services, especially those of the poor sectors, and on the other, because the market has a short-term time horizon and tends to over-exploit resources, creating serious threats to the development possibilities of future generations.

Consequently, the State and planning have a fundamental responsibility in these matters, but for this purpose the State cannot be simply an apparatus which legitimizes and reproduces the market forces. Rather, it must be an institution which correctly reflects both the short- and long-term interests of the largest sectors of the population. The reorientation of the style of development towards the satisfaction of the fundamental needs of the entire population and towards long-term, steady development inevitably requires the broad participation of the population at all levels. This must be another fundamental concern for planning, and is connected with State organization and planning proper. This undoubtedly constitutes a major challenge, but the crisis situation presented by the current style of development, which will probably be intensified in years to come, will of necessity call for the adoption of economic and social policy measures designed to mitigate or overcome those problems. In this situation, planners must be able to propose concrete solutions preventing the weight of the needed adjustments from falling on the less favoured sectors of the population or from being carried out at the expense of the over-exploitation of resources and environmental damage. They must also take maximum and creative advantage of opportunities provided by changes in technology and in relative prices. There is no doubt that the various countries will be in different situations when it comes to meeting the challenges and using the opportunities mentioned above, according to their degree of development, the availability of resources, their scientific and technological capacity, the nature of their external dependence and, fundamentally, their capacity for political action.

The foregoing does not cover all of the lessons and guidelines which may be derived from the introduction of the environmental

perspective into development analysis, nor is an attempt being made to do so in these pages. One aspect, however, underlies all those mentioned so far and is of the greatest importance: the task of integrating the environmental perspective into planning cannot be carried out by simply adding it to the economic and social dimensions. Rather, planners and institutional planning systems must internalize an awareness of the fact that society and nature shape each other; expressed in the wise words of Sir William Petty, it is necessary to learn that "work is the father and nature the mother of wealth".

A change of emphasis and attitude is necessary. To illustrate this with an example used by economists, we may say that generally their work is based on a view of the economy as a closed, circular-flowing system wherein, through the production process, income is generated on one side and products on the other, which change hands in the market, where that income is spent in acquiring those goods, and each factor is capable of initiating another similar circuit. From the point of view of growth, it is most important that in the repetition of this circuit, part of the income should be saved and part of the products accumulated, so that the ability to produce and to generate income may expand steadily. In essence, economic planning is also based on this concept.

The introduction of the environmental perspective means recognizing that this growth process is shaped by the local, national and global biospheres, both because these have varying impacts on economic growth and because they themselves are substantially influenced by such growth, increasingly so as the development process advances.

The introduction of the environmental perspective sheds doubt on a series of orientations arising from the ideology of economic growth which have prevailed in recent decades. Accordingly, the following have become open to question:

(a) confidence in exponential and unlimited economic growth;

(b) the possibility of sustaining over the long term a style of development largely based on the export of natural resources in exchange

for the import of the style characteristic of contemporary urban-industrial civilization;

(c) behaviour aimed at accumulating the maximum of material consumer goods;

(d) the advantages of urban concentration;

(e) indiscriminate faith in scientific and technological progress and its unlimited ability to 'artificialize' nature;

(f) the ability to make the high and growing levels of consumption practised by industrialized countries and by high-income groups in underdeveloped countries compatible with the achievement of similar levels of consumption for the broad masses.

On the other hand, the introduction of the environmental dimension means that planning must accord special emphasis and concern to the following:

(a) guaranteeing access to and proper use of the natural resources required to ensure the satisfaction of the current basic needs of the entire population;

(b) promoting the appropriate use and renewal of natural resources to allow long-term development to be sustained in order to ensure the survival and well-being of future generations;

(c) reorienting scientific and technological activity towards the integrated use of the potential of the biosphere proper, and especially the use of renewable resources and the recycling of wastes and refuse: this is crucial in the case of energy;

(d) adopting an integrated multidisciplinary perspective regarding the various levels and fields of planning, incorporating especially knowledge provided by the natural sciences and the physical and spatial dimensions of planning;

(e) promoting profound and systematic concern over the way in which the structure and functioning of society in all its dimensions, and increasingly in the environmental one, is being constantly influenced by its international context. The forms of articulation with the

dynamic and radiating centres of the prevailing style are one of the key aspects of the limitations and opportunities which must be kept in mind in the search for alternative styles;

(f) searching constantly for forms allowing the participation and social organization of the broadest sectors of the population to be increased and for means of decentralizing the implementation of planning so that through these measures the power-concentrating trends and structures prevailing in the economy and in society can be counteracted;

(g) making a large-scale effort to re-educate the entire population so that they may become aware of and internalize the environmental dimension and ecological aspects of development.⁶² This is particularly important with regard to higher professional, technical and scientific education, because these are the principal sectors which contribute to the local reproduction of the transnational cultural style.

This set of orientations and elements must insipitate itself into the various components of a planning system: its ends, targets and goals, strategies and policies and technological instruments. Planning models form a central part of these instruments. In recent years, a great variety of efforts to incorporate the environmental dimension into these models have been carried out and on the whole, although with differing emphases, they reflect the principal concerns of the developed countries, especially as regards pollution and the world availability of resources. It is necessary to promote the critical examination of these models and the elaboration of others which more adequately reflect the characteristics of the various countries in the region, with their specific environmental and development problems.

⁶²Vicente Sánchez analyses this topic in "Papel de la educación en la interacción entre estilos de desarrollo y medio ambiente", in *Estilos de desarrollo...*, op. cit.

Comments on the article "The Interaction between Styles of Development and the Environment in Latin America"

*Comments by Aníbal Pinto**

I wish at the start of these comments to state, without false modesty, that I am one of the people least qualified to comment, because I suffer from a sort of generational blindness towards environmental problems which, although it has been clearing up gradually, in no way qualifies me to discuss them. At all events, I shall put forward some points of view and appeals for caution regarding concepts and policy lines which appear in documents and presentations on these matters. At the outset, I wish to refer to and reiterate the position taken by Osvaldo Sunkel and Enrique Iglesias, that for an economist of my generation, as for many in succeeding ones, it is almost unbelievable that this vital relationship of man to the environment or of society to its physical surroundings remained unnoticed for so long, not even appearing tangentially in our discussions. We must acknowledge and recall, modestly and even repentantly, that those who were ringing warning bells and sounding the alarm on this issue were not only listened to indifferently but often considered well-intentioned eccentrics dealing with more or less irrelevant problems compared with those which really mattered to us. I believe that all the meetings currently being held on the subject should begin by paying homage to those who blazed the trail and raised concern over these issues, but received so little attention in the past. The economists, some absorbed by the relationship between classes and individuals and others by mercantile fetishism, overlooked the 'little detail', as a famous Mexican comedian would put it, that these processes took place in a finite

context which was constantly being depleted or deteriorating. Not to mention the more noble aspects of the quality of life. As often happens, unfortunately, and notwithstanding the optimistic image of *homo sapiens*, traditional approaches only began to be reconsidered substantially after the impact and testimony of flagrant and menacing crisis exposed man's myopia and weakness. I do not feel it necessary to belabour this point, however; what is important is that critical reconsideration has rapidly progressed and a new and integrated view of development is being developed and carrying over into action.

I should like to make my first remarks on this thematic integration, applying CEPAL criteria, although naturally they are not entirely an exact reflection of the thinking of that institution. I agree with Osvaldo Sunkel that the most important aspect has been precisely this attempt to structure the new topic systematically within some approaches or contexts which are vital for understanding it and in order to draw from it all the necessary conclusions. These approaches are transnationalization and styles of development. Since we have all been concerned with this matter for some time, I believe it is time to point out that in the search for an integrated approach, chapters have continually been added which have never combined to form a true novel, a complete work. Thus, we have incorporated the environment, employment, critical poverty, habitat, human settlements, etc. often adding little substance because all these topics often lie along the same road, and it is difficult to determine their separate identities. I feel that this is the first time that there is a systematic effort to articulate all aspects within a single whole, and it would clearly be very useful for this to be done

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in the case of other topics: they could thus be better identified, and the ensuing lines of action would be more fruitful than when based on an incomplete viewpoint, the limitations of which I shall not dwell upon.

I would like to make some remarks on these two general contexts, beginning with that of styles, which is most closely linked to CEPAL's analysis. As Sunkel states, the fundamental contributions of some persons closely involved in CEPAL must not be overlooked here: naturally, I wish to mention Jorge Ahumada and Oscar Varsavsky who, unfortunately, are no longer with us, but who were pioneers in the discussion and analysis of the topic of styles. Everyone knows that on the initiative of these two men, CENDES of Venezuela (and in that respect Venezuela deserves credit, a fact of which no Latin American should be unaware) began the studies which we continued in CEPAL with the direct collaboration of Oscar Varsavsky.

With regard to this concern with styles, however, I am also fearful that in the end it will become yet another concept which sweeps in at gale force and then, used and abused, inevitably falls into disuse, another of those categories piously kept in a drawer and replaced by relatively similar ones which seem new but in reality add little. This could happen with the styles approach, and much caution and precision must be exercised when using the term, in addition to great concern for sifting out its real and specific meaning. The work done in CEPAL has already thrown light on several aspects, such as the varying usages of the concept, and has touched on the category of the system, and the antinomy or conflict between the two competing systems coexisting in the world, capitalism and socialism, although of course within them and between them there are a number of peculiarities and extremely complex relationships. The concept of structure, which is extremely broad, since it ranges from the physical surroundings to aspects such as institutions, social and demographic structure, structure of the active population and others, has likewise been clarified, as has that of styles, which in a way are the product of the fusion and real development of the two other

contexts; this concept also includes all sorts of variations, even within the same systems or ones with similar structures. Within this theoretical framework, which also includes the dynamic interrelations between these categories, I am not sure where the environment fits. At first, we considered the problem of the environment, the physical surroundings, as part of the structure, and notable environmental aspects appear in certain classifications of structural traits. But as one becomes familiar with the work of experts on these subjects, which has broadened our horizons so greatly, the impression remains that the environment is probably a category of such importance and significance that perhaps its inclusion among the so-called structural factors is artificial. Explaining how the environment can be included, ordered and integrated into the discussion of styles is therefore something which requires much work and thought.

The second context or approach, transnationalization, must also be analysed cautiously and circumspectly, because it lends itself to certain ambiguities. It may be identified, as sometimes happens, with the controversial problem of transnational corporations. They are obviously an essential part of the problem, but I believe that it goes far beyond them. It might actually be better to use the term 'internationalization', in which these corporations are a key mechanism. Internationalization is a much broader, more complex and, undoubtedly, contradictory phenomenon. I feel that trends towards internationalization are unavoidable and contradictory, since they have both positive and negative elements. This is a dialectical (excuse the pedantry) process which may not be overlooked in any full analysis of the topic. To indicate its complexity, I shall merely point out that transnationalization and internationalization extend beyond the capitalist work, since they also involve, as promoters of change, the 'central' socialist countries which are also encountering many problems in adjusting their viewpoints and practices to the real situations of countries on the periphery. It suffices to recall certain episodes in Asia and Africa, the Sino-Soviet conflicts, etc., which are very relevant to this complex

and contradictory process of internationalization.

Another concern which I wish to raise stems from the material relating to environmental deterioration. An unwary observer or reader, observing the difficulties and damage which seem to invite total rejection or criticism, could easily arrive at a doomsday vision. The matter is undoubtedly much more complex, since between the apologetic and the disaster schools there must be, not some 'middle ground', because we are not proposing to take an eclectic position, but rather a vision which integrates and balances these dissimilar elements. By way of clarification, it could be recalled that CEPAL's analysis of Latin America has been mainly critical, becoming a sort of Socratic gadfly on the region's back by calling attention to the deficiencies of development, the conflicts it produces, the limitations affecting it, the social waste it engenders and the inequality inherent in it. But it is also certain that this critical view has not failed to appreciate the profound and largely progressive changes which have taken place in Latin America. I would say that CEPAL's vision has been governed by a kind of *critical optimism*. In some circumstances, at some times, it is more critical than optimistic; at other times, it is a bit more optimistic than critical. In this it differs both from the apologetic view, which sees only the favourable aspects of what is taking place—flashy or eccentric consumerism for example—and from the opposite view, which records only the negative aspects, which certainly exist and give rise to a doomsday vision. An awareness of this contradictory reality must therefore not be lost, and in this connexion, just by way of illustration, I wish to point out that in a brief analysis we have been making of the situation and evolution of some 25 vital or basic indicators of social development in Latin America—nutrition, infant mortality, education, etc.—, from mid-1950 to mid-1970 relating to all Latin American countries, in so far as the data permit, we have found that virtually no country has lost ground. This is of obvious importance, all the more so if we begin by assuming that the high- and middle-income groups were already at more satisfactory levels in terms of these social indicators, and that conse-

quently the changes must have taken place at the base, and particularly in the middle, of the social pyramid. This fact, which perhaps we do not value sufficiently, perhaps for fear of being taken for apologist, must likewise not be overlooked in the analysis of Latin America. And it is of great importance because, paradoxically, we find that much of the critical thinking about Latin American development has been done by persons who are fundamentally unaware of these advances and are hostile to methods which were adopted by force of circumstances rather than doctrinaire design, although ideas and policies derived from this background had an important influence. Thus, CEPAL's 'critical optimism' has furnished weapons to both sides, each of which drew antagonistic conclusions concerning Latin America's situation and perspectives. It is of fundamental importance, consequently, not to lose one's sense of balance regarding the contradictory statements and chiaroscuro of the regional panorama.

My final remark refers to Osvaldo Sunkel's statement of the need to orient this discussion towards policy formulation. Obviously, fairly clear proposals have been emerging and they must be systematized and defined. The comment which I wish to add on this matter, however, is based on the fact that the conventional discussion of markets and planning has become obsolete with the entry onto the scene of environmental topics; it is as clear as daylight that these must not be left to the play of the market. Any reasonable person, that is to say, a person who does not have overly dark ideological blinkers, cannot reject this assertion. We are dealing with complex problems requiring long-term policies which can hardly be decided on by the market mechanism. This clearly does not mean that it should be rejected or ignored. Whoever does so must pay the consequences, as has been demonstrated in so many international and Latin American experiences. The market has played, and will continue to play, a fundamental role in every economy, in some, clearly more than in others. But it is equally clear that its social squint and historical myopia make planning's role as a basic instrument of economic policy essential, no longer as an academic problem or a need of the technocrats, but as a social imperative. This also means that we

need planning in order to deal with all of the influences behind the deterioration of the environment which must be regulated in order to establish better relations with our physical surroundings and thus to achieve a more favourable situation than the present one. This is an irrefutable conclusion of great institutional significance, particularly for organizations linked to the United Nations.

Finally, I wish to return to my consideration of the use, disuse and abuse of concepts.

Although the emergence of environmental problems is a fundamental and far-reaching step, I cannot hide my fear that with time it will dissolve or disappear into bureaucratic routine. We have here the same problem as in sports; how to maintain the intensity of the effort, the *élan*. Valuable, abundant material has been accumulated and placed in extremely fruitful analytical categories, but the problem is how to sustain the momentum. Each document is a step which must be taken towards the future.

*Comment by Jorge Sábato**

Following the exhaustive analysis by E. Iglesias¹ and O. Sunkel of the global problem of energy, I wish to deal with the individual problem of nuclear energy, although without entering into technical detail on such a specific topic. One aspect deserves to be developed, however, because it goes beyond nuclear energy itself and may provide valuable insights into the central theme of the environment. I must confess that the problem which worries me most in connexion with the energy crisis is not so much the crisis itself, the gravity of which is entirely indisputable, but rather the possibility that we may become confused regarding its causes and consequences, and particularly its impact on the situation of the Third World countries. The commotion produced around the crisis is so strong that I sometimes fear we are developing a sort of intellectual hysteria which prevents us from distinguishing reality from fiction and that we shall finish by confusing the winners and the losers in this geopolitical game. I believe that the most important tool for confronting the crisis is our own intellectual capacity in the face of this mine field strewn with lies and half-truths generated by extremely powerful interests; many studies which are presented as objective and scientific in fact are nothing more than ideological and

semantic veils aimed at deceiving us, or at least at confusing us.

The case of nuclear energy is an example of what happens when, in the absence of any critical capacity, non-truths are accepted as true and the fashion of the moment is merely followed. In this area, the semantic veils have fulfilled to perfection their function of hiding reality or presenting it deformed so as best to suit those who have sought to obtain all sorts of advantages. I shall attempt to show some of these veils and their most pernicious effects in order to assist in exposing certain central aspects of the global energy problem.

The first example is the benefits and damage of nuclear energy used to generate electricity. We have, of course, proceeded from the belief that nuclear energy was the greatest wonder, the final solution to our energy problems, to the belief that it is a trap fraught with mortal dangers, both for ourselves and for our descendants. From the end of the Second World War until a few years ago, the conviction was held that nuclear energy was 'cheaper, better and brighter' and that its future was virtually magical, as the existing reactors would be succeeded by breeders, which would generate more fuel than they burned and yield their place to fusion reactors which would run on hydrogen from sea water, a virtually inexhaustible fuel. Naturally, we were all dazzled by this spectacular Eldorado: little or nothing was said of its dangers because, even if they existed, scientific and technical advances would quickly overcome them.

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¹E. Iglesias, "The Energy Challenge" *CEPAL Review* No. 10, April 1980.

This idea has collapsed, however, and it is now asserted that the dangers of nuclear energy are so tremendous that they far exceed its dubious benefits, so that it would be sheer insanity to continue installing nuclear reactors. It is suggested that a world-wide moratorium should be declared, all ongoing programmes abandoned and the same resources applied to 'healthier' forms of energy such as solar, wind, biomass, geothermal, and sea energy, etc.

What should we in the Third World do in the face of this dilemma? Firstly, we must learn the lesson of what happened with the first idea, so as not to repeat the mistake: at the time, most of our countries simply accepted it without critical analysis or individual consideration. We believe almost blindly what the developed countries said (not in all cases, certainly, but in most). Now we face a similar danger: that the new 'fashion' will sweep us up and we will leave aside everything to do with nuclear energy ... until it comes to the forefront again, and so on.

This is not the path which should be followed regarding this or any other problem. It is the exercise of our own intellectual capacity, analysis made from our own point of view and with regard for our own interests, which can lead us through this complex labyrinth. Obviously, we may make mistakes, but it is time for us at least to be masters of our own errors and not the eternal victims of mistakes introduced or imposed by others. It is for this reason that I wish to comment on current ideas regarding nuclear energy.

Let us begin by acknowledging that nuclear energy is certainly dangerous, perhaps the most dangerous of all known forms of energy, and that such serious problems as the radioactive waste produced by the operation of nuclear power stations, the genetic effect of low doses of radiation, etc., remain unresolved. But will these dangers be sufficient to make humanity reject nuclear energy forever? or, phrased more urgently: are the central countries prepared to abandon the nuclear way?

Let us first of all note that the entire world has been living immersed in nuclear energy, and its most dangerous form, nuclear armaments, for the past 35 years. Nuclear bombs and

missiles are located throughout the world, either directly, in fixed bases and installations, or in planes (which overfly literally every country on the planet), submarines (which cruise in all waters without asking anyone's permission) and artificial satellites, as well as in trucks, railway cars and boats, while being shipped from factories to military and other bases and from there to storage points. By way of example, one need only consider the thousands of nuclear warheads installed throughout Europe: these warheads must constantly be transported from one place to another, not only for tactical or strategic purposes but for the simple reason that they must be replaced yearly by new models, which must be taken to where the old models are located and the old models, in turn, to the depots where obsolete weapons are stockpiled. This means that every day, by highways, main roads, subsidiary roads and railways, a large number of nuclear weapons traverse both western and socialist Europe. Often, at the very moment when in some corner of Europe an energetic popular demonstration is taking place against the imminent installation of a nuclear power station, a truck or train passes by that very site carrying bombs of much greater actual destructive power than the potential danger from the planned power station.

An equally paradoxical example is what is currently taking place in the United States with the moratorium on plutonium. As we know, that country has suspended its breeder reactor programme and, consequently, the separation of plutonium for those reactors. But in no way has it suspended its separation of plutonium for manufacturing bombs, a fact which is overlooked when the subject is discussed; many people in the United States are satisfied with the moratorium on plutonium, but the fact is entirely forgotten that military production continues in many factories 24 hours a day, every day of the week!

The conclusion is obvious: whereas the dangers which may be caused by the operation of nuclear plants are currently described most vividly, all the dangers derived not even from the use, but merely from the production and deployment of nuclear armaments are glossed over. The nuclear-weapon countries have been

enormously successful in their propaganda, having accustomed all mankind to 'living with the bomb' as if it were simply a matter of another explosive which just happens to be a little more powerful. Although we do well to be concerned about nuclear power plants, we must never forget armaments, because otherwise we would be contributing to the silence enshrouding a much more serious threat and implicitly defending those who possess bombs. For this very reason, if we draw attention to the first of these dangers, we must not only include the other, but should proclaim it all the more energetically, and with far greater concern. The menace of nuclear power plants must not be used as a veil to hide a much greater threat!

Also with regard to nuclear armaments, I wish to refer to the SALT agreements, which likewise help to mask reality. These agreements are being presented to the world as serious efforts in nuclear *disarmament* on the part of the United States and the USSR. SALT I, signed some years ago, *limited* the type and number of strategic arms for both powers. SALT II, still not ratified by the United States Congress, set new *limits* regarding arms which could be developed and deployed by them. When the situation is presented this way, it seems that this is indeed an effort in favour of disarmament; however, it is not, since both SALT treaties leave both powers capable of destroying the entire planet. When SALT I was signed, the nuclear potential of the United States was enough to destroy all of the large cities in the USSR some 20 times over; the USSR's potential was enough to do the same to the large cities of the Western bloc, but *only* 5 times over. Accordingly, and in the midst of rhetorical statements, SALT I was signed. The treaty having been in force for several years, the current situation is as follows: the nuclear potential of the United States allows it to destroy each of the cities not 20, but 140 times over, whereas the USSR has increased its power to destroy each Western city from 5 to 120 times over. In other words, not only has SALT I done nothing for nuclear disarmament, but the lethal potential of each of the superpowers has increased. And believe it or not, SALT I's defenders argue that if it were not for the treaty,

the aggressive potential would have been still greater than it has in fact become — as if it were not enough to kill someone 145 times for him to be dead! And unfortunately, the new SALT treaty will have an effect similar to the previous one, since it will increase the nuclear potential, making it even more formidable. An innocent person might then ask what these treaties are for? On the one hand, to optimize investments in armaments, thus preventing an unlimited race from leading to the economic ruin of both powers. On the other hand, to make public opinion, primarily in their own countries, believe that they are doing *something* for the disarmament which we all anxiously desire.

Another veil which must be drawn back is that of the great campaign against nuclear proliferation. Naturally, no one in his right mind could wish nuclear proliferation to continue, but the objective of this campaign must be understood well. Firstly, it should be made clear that there are two types of proliferation: horizontal, which means that *new* countries *may* acquire nuclear armaments (India in 1974, for example) and vertical, referring to the *increase* of such armaments in countries which already have them, such as the incorporation of the neutron bomb into the nuclear arsenal of the United States. There is no doubt that the detention of vertical proliferation is a much more urgent priority; however, it is horizontal proliferation which receives almost exclusive attention and which is the focus of every meeting on the problem of proliferation. The propaganda has been so effective that it has been able to concentrate all concern on horizontal proliferation, which is potential, and has relegated the proliferation which actually exists to the background. Certainly, horizontal proliferation involves great potential risks, but the risks of vertical proliferation are immediate and concrete. Whenever I attend an international meeting at which horizontal proliferation is discussed while vertical proliferation is enveloped in pious silence, and listen to representatives of the nuclear-weapon countries discussing in great detail what must be done to ensure that some new country does not acquire the atomic bomb (as is currently taking place with Pakistan, for example), I get the impres-

sion that I am attending a congress of courtesans convened to discuss 'ways and means' of preventing a Saragossan nun from losing her virginity...

I believe that the true objective of the campaign against horizontal proliferation is to ensure that the two superpowers retain their control over nuclear technology, not only for military purposes, but also and above all for the production of energy. It should be recalled that the key to ensuring autonomous control of the nuclear energy used in the production of electricity is management of the fuel cycle, from uranium in the mines to radioactive waste. Any medium-sized country attempting to use nuclear energy, whether it be Brazil, Argentina, Chile, México, Spain, Czechoslovakia, Poland, etc., will attempt by all means to secure its control of the fuel cycle; otherwise, its production of electricity from nuclear reactors will depend upon those who provide it with the fuel and technology to use them correctly. It is therefore not surprising that the nuclear policy of these countries revolves around this key, the autonomous management of the fuel cycle. The non-proliferation policy of the superpowers, however, consists of preventing other countries from achieving this autonomy, in order to keep them dependent in the nuclear field. In the case of the Soviet Union, this policy is exercised strictly: if a country acquires a nuclear power reactor from the USSR, it must agree that the fuel be manufactured in the USSR, that it be installed as a sealed unit which cannot be manipulated by the receiving country and returned to the USSR once used, to be reprocessed there. In short, the USSR maintains complete control over fuel as a *sine qua non* condition for selling nuclear installations.

In the case of the United States the situation is different, although the final objective is the same. Until very recently, a country which bought a reactor from the United States could achieve an acceptable degree of autonomy in fuel management, but this situation changed radically as a result of an Act which was appropriately titled "Nuclear Non-proliferation Policy Act", adopted in 1978. Under this Act, and for the purpose of avoiding nuclear proliferation, the United States will not sell installations or technology which allow the buyer to

achieve autonomous management of the fuel cycle.

In sum, until now the non-proliferation policy of the great powers has not prevented horizontal proliferation, much less vertical proliferation, which continue unabated; rather, it has placed all sorts of obstacles to the autonomous development of nuclear technology, and has tenaciously opposed the nuclear programmes of the Third World countries designed to produce energy, such as Brazil's decision to establish installations to enrich uranium and process fuel, India's Tarapur installation and the Argentinian decision to install a heavy water plant. It must be recalled in this connexion that the United States and the USSR have organized a virtual cartel to control the export of nuclear technology and installations (elegantly called the London Club), of which some 15 industrialized countries, both of the West and of the socialist bloc, are members.

Now, what is happening in the industrialized countries during this high-water period in the fashion of opposing nuclear energy? The answer is surprising: with the exception of the United States, and to a much smaller extent West Germany, the other industrialized countries, both Western and socialist, remain embarked on formidable programmes for installing nuclear power stations. The vigorous programmes of France and the USSR are particularly noteworthy: the latter is not only installing power stations throughout its territory and those of its direct allies including Cuba, but has also started to export them to countries such as Finland, the Philippines, Turkey, Libya, etc. According to the Soviet Government, nuclear energy presents no danger which cannot be controlled, and on the contrary is the best solution for electrical energy supply. Furthermore, it has built a city, Atommach, dedicated exclusively to mass production of components for nuclear power stations and which will become the largest nuclear production installation in the world. West Germany, which has run into public opposition to the continuation of its nuclear programme as intensively as before, has become one of the principal exporters, as shown by its large contracts with Brazil and Argentina. Canada continues to install power stations on its territory and also to export them,

while England has again intensified its domestic programme, Spain is installing some twenty power stations, etc.

The United States is a special case, because its domestic programme for installing new nuclear power stations is practically paralyzed, as are exports; nevertheless, it continues to install power stations in accordance with a previous programme which will allow it to remain, for a few years at least, in the forefront of the countries generating nuclear-based electricity. Of course, its military programme has not only not decreased but has intensified, and its research programmes on breeder and fusion reactors continue to have the largest budgets of the entire world. My personal view is that the current policy of the United States will soon change, and once again a nuclear programme for large-scale electricity production will be promoted.

At all events, the evidence shows that despite all these actual and potential dangers, nuclear energy will remain with us for many years, unless a serious disaster takes place. The industrialized countries cannot give it up because they have no other alternative source in the short term and will in no way accept reducing their current life style in order to adapt to a situation of scarce and expensive energy. But if nuclear energy is not rejected by them,

sooner or later it will come to our countries, as it already has done and is doing in some.

For these reasons, it is important that the Third World countries should not allow themselves to be seduced by the new 'fashion' into believing that nuclear energy should be put aside; otherwise, when it reappears they will not be capable of using it autonomously and will have to surrender themselves, bound hand and foot, to the central countries, as they have done in the past with other sources of energy and technological capacities. Consequently if we do not draw back the veils which hide much of the reality, we could fall into a trap from which it would be very difficult to escape. The obvious suggestion is to keep our eyes very wide open and use our own analytical capacity in order to understand clearly what is happening in the complex sphere of nuclear energy.

The recommendations from the central countries, in this as in other fields, have already lost the coherence and ideological force they had in the past. Many of the events of recent years have demonstrated that the sacred truths of economics, politics, culture, etc., have proven to be pseudotruths which were foisted upon us, sometimes by force, but more often through continuous and thorough brainwashing. Under these circumstances, we must face the most difficult task without fear or complexes: to look at reality through our own eyes.

*Comments by Gabriel Valdés S.**

Those of us whose duty it is to attend meetings, congresses and seminars, know how much wear and tear language has seen, how blunted concepts have become, how dangerous the keen edge of creative thinking is regarded as being, how compartmentalized reflexion and analysis have become, how little concern there is for human beings and how desperate is the desire to have things.

One of the major problems of the last few decades has been the specialization in science

and technology. The evil also spread to the United Nations where a tacit conspiracy of bureaucrats and governments pursued the course of taking each individual science and activity, putting it into a new institution, inventing an acronym for it, placing a director-general in charge of it, and appointing a series of officials, in the belief that the addition of another specific institution to the many already in existence might lead to a general solution of the problems of man and society. However, as Aníbal Pinto has rightly maintained, a very original effort was made here not to add another element to the already complex and sometimes confused

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concept of development. The concept of economic growth, easy to measure, was replaced by that of development; and greater depth was then sought by adding a definite social dimension all round. In this process of telescopic conceptual comprehension—an indubitable merit on the part of CEPAL—the aim is now to consider development from the standpoint of the environment. I think that this is an intelligent, upstanding, humanistic—and I would also say Latin American—way of seeking more integral solutions to the problems of contemporary societies. It is not an Anglo-Saxon *modus operandi* and has its dangers. This is a search for something which Kalman Silvert would have said constitutes a Catholic form of thinking, i.e., seeking first of all to arrive at certain principles in order to try to cover all the facts. If they do not fit in, so much the worse; the dogma stands firm. It is dangerous to fall into this temptation but on this occasion CEPAL was able to resist it. Few facts have escaped the documents it has prepared on the subject, and I think that this is where the originality of its expression lies. It is also original because in the environmental field for common mortals the emphasis is always on the physical environment which was the *idée-force* of the Stockholm Conference. This approach, which reached a peak when some of its supporters brought forward the idea of the limits of growth, generated a doomsday vision of ultimate physical depletion, the increasing aridity of the earth contrasting with the overwhelming demands of the multitudes oppressed by hunger and poverty and wanting to live like the rest and enjoy the goods of this transnationalized civilization.

The problem to be tackled above all was that of the poor, since it was a question of demonstrating that if the inhabitants of India were to consume 30% of what the United States or Europe consumes there really would not be sufficient raw materials, land or energy for the Indians, Americans or Europeans. Thus, without an in-depth criticism of civilization, it would seem preferable for the Americans and Europeans to keep what they had, since if the Indians has waited so long without revolting, they ought to be satisfied with 'a different development' and intermediate technologies. As

a reaction, 'zero' growth was proposed—an evasive attitude to the problem. This is when development begins to be viewed from the standpoint of human beings as such.

What is the link between the environment and human beings, between society and its surroundings? By managing to understand environment development as a dialectical process between man and society and between society and nature and viceversa, one will really be entering into the heart of the analysis of civilization. Frequently, rather than an analysis of this environment, the crisis of civilization which we are experiencing is described. Without prophesying disaster, it seems obvious to us that a certain civilization is beginning to show signs of strain; and this is more clearly seen when living in the centres than in the periphery, because in the latter one still enjoys a certain human largesse; although material wealth is lacking, one profits more from the air, and space, and I would even say that one enjoys friendship and the natural things of life more than in the centre where these supreme values of life seem to have withered away, since it is constantly necessary to do many very important things which are increasingly of less importance. There is a tiredness, a sort of loss of speed and direction of this civilization which has now also received a rabbit-punch with the crisis in oil, on the back of which it confidently rode.

There can be no doubt that there is a loss of speed and direction. This can be seen equally clearly in Latin America because of a more intensive withdrawal of resources, a greater deformation of societies and a greater social dichotomy stemming from the clash between the modern, imported from abroad and moving with the speed and rhythm of the machine age, and traditional society which continues to be bound by its values and its structures; this dichotomy splits social life, breaks the necessary political consensus and replaces everything by so-called order, which is as ephemeral and forced as it is of debateable efficacy.

Perhaps we are witnessing the breakdown of civilization. Maybe some future historian will be able to tell us whether consumerism is a manifestation not just of a crisis of capitalism in

its highest form of expression but of a crisis of the whole system of international relations. Personally, I do not believe that socialism has resolved this problem either in the central or in the peripheral countries. Consumerism occurs in those countries too, on a different scale, perhaps, with different characteristics, but they have not found other objectives: the pace is different, but the trend is the same, because they have not imagined solutions other than material ones.

The gravity of this phenomenon is so evident that consumerism has been denounced and a call has gone out to reform the structures and not only the style but also the trend and direction of development; a call in relatively similar terms from many thinkers and from different positions. In a single month three different personalities have brought up the same subject. Pope John-Paul II and Prime Minister Fidel Castro speaking at the United Nations have revealed a surprisingly critical attitude towards the situation. Reflecting on their statements it may be seen that they coincide in denouncing the existing situation and in their reasons for so doing; this would have been inconceivable 5 or 10 years ago. Reading the speech recently given in Belgrade by R. MacNamara, President of the World Bank, we observe that both the context and the closing words are also a denunciation of these phenomena. McNamara goes so far as to say that unless tremendous structural changes occur there will be no significant alteration in what he describes as a sombre and negative picture on all sides.

There can be no doubt as to the great significance of the link between the environment and man, between society and its surrounding milieu. There are factors of concentration within societies, and factors which make societies dependent on external forces; there is loss of actual life on earth, but also a failure to take advantage of living the life of a human being as it should be lived. We are all in favour of self-rule; we encourage the highest possible degree of self-rule in our societies, but at the same time as the participation of our economies and our societies in the world increases, we reject external imposition out of dignity, and also for practical, cultural and ecological reasons.

The phenomenon of transnationalization has been superimposed on that of internationalization; and this is not only a question of semantics. Transnationalization has been considered only an expression of activity of enterprises, while internationalization is associated with the interaction among States. What is happening is that States, conceived of as absolute entities, are dissolving away. I think that within 20 or 30 years, in the transnational world of technology, science, culture, finance, ideologies, information and concern for human rights, the concept of the sovereign State is going to lose identity and power from the international point of view, succumbing to transnationalization which is rapidly gaining ground; in the press one reads statements made by personalities to the effect that ambassadors are of no interest to them if they have good relations with the international bankers. This is a fact. The ministries of foreign affairs, which represent the tradition of the sovereign State, are becoming nineteenth-century instruments with their decorative and necessary solemnity. They are less essential because there are other real, more effective and silent instruments, like those handled by the bodies responsible for finance and information. As one speaks of formal democracy and real democracy, so it should be admitted that there is a formal world and a real world. This real world exists not through the machinations of some executives nor because of financial flows; it stems from the very dynamism of transnationalization which is beginning to act with a great deal of force. What is curious is that the transnationalization of enterprises, of finance and of information is accepted, but where basic rights are concerned it is rejected. In this transnationalization, which should be considered very coolly and calmly, one must be able to distinguish between what is worth keeping as one's own and what should be incorporated into a stock of genuine advancement, the progress which mankind is constantly building on as part of its creation.

There is an initial feeling of rejection towards those goods which seem to run counter to customs or culture. They are initially rejected but finally win acceptance because it is better to use tools than hands, just as it is better

for the world to have transistor radios and television. What is important is the idea or the image, and not the tool. How can one distinguish that which destroys what is original and specific in culture, that which is the characteristic mark of a human being, from that which is external, instrumental and does not affect its substance but enhances and distributes it? Societies are like people; they know what it is that destroys men or permits them to liberate themselves, the forwards steps mankind is making, the scientific and technological creativity which leads to higher levels of freedom; as well as what it is that is destructive.

These problems of cultural and ethical content are directly related to the environment; if this question were not clarified we should be in mortal doubt. We cannot isolate ourselves in order to build our America or our countries as we should like, in accordance with our own strength and our own utopia. We cannot isolate ourselves because those who attempt to do so—and we have seen very dramatic cases—had to make heroic sacrifices and yet ended up yielding slowly, paying a heavy price. In the last resort the Monetary Fund is called in. What is essential for being a person in a civilized society? What is essential for being a nation? What is essential for being a national or a local society? What can one receive and assimilate without ceasing to be what one is? I ask these questions, the answers to which do not yet seem clear, because it is necessary to establish a balanced relationship between dependence and ecological problems.

In this regard I shall refer to two elements: one is planning, and the other is economic policies. From my point of view planning, i.e., the image of the organization of the elements which will lead to a desired future, has unfortunately lost its significance; there is nowadays less of a commitment to it in the world and in America. Work in this discipline has regressed, and planning is being performed more on a day-to-day basis; the problems are all urgent: social pressure, political tensions, changes in the prices of raw materials, inflation, the energy crisis, external indebtedness—all phenomena which sap the self-confidence of our societies having them without a vision of the

future. The market is supposed to provide a solution, because the economy always has an invisible hand which, manipulated by the haves, later will see to a judicious distribution on behalf of the expectant have-nots.

Our young continent has come to be a continent of profitability and old models. The continent of hope lacks a political objective and there is no more planning in it. The energy crisis constitutes a tremendous accusation against the market economy and the lack of planning. To plan is not only to express one's confidence in the future on the basis of political vision so that within certain realistic margins societies can achieve determined collective objectives; it is also to set right the deformed domesticity into which we have fallen and the simple and automatic form of external dependence so well represented by the concept of the market as the great regulator of right and wrong, of freedom and law. Among unequal partners, a free market necessarily leads to abuse and dependence. I think that planning needs re-thinking as a form of mobilizing the tremendous energy which lies concealed in our geography, our biology, our ecology, and our culture, using as a fulcrum society's desire to be more self-reliant and to be able to distinguish between what belongs to it and what is foreign to it. Planning would thus acquire a new dimension, and my opinion is that a fundamental step forward would be to incorporate the environmental dimension into the very nucleus of planning.

The other element is that of the so-called economic policies. Any mention of these policies refers to policies for correcting balance-of-payments disequilibrium, increasing investment or combating inflation. All of these are no doubt important, but they are all adjectival. Generally speaking, they are used in any context; they are taken as independent instruments which are not intrinsically linked conceptually with global aims.

Pace the economists (whom I respect) and the science of economics (which I admire) I think that many of them proceed like surgeons, called on to operate on any patient in any state. It has been common for them to become enamoured of their art and empty it of its social and

ethical content. When they work towards 'improving the economic situation' they are in fact working in a specific social and political direction always foreordained by someone since there is no neutrality in economics which is not an exact science but a social science. All technologies, like economic policies, are committed, serve certain interests, respond to an ideology and produce specific effects. But these very frequently escape the economists, who even go so far as to say that such effects are not their responsibility. They work with theoretical men, faceless and soulless. This is one of the major imbalances between the theoretical conception and the political functioning of development. If account is really taken of a balanced concept of the relationship between man and his environment, account should be taken of the protection of the environment, and in this regard protection of the ecology in the traditional sense is not sufficient. It is not only a question of preventing the continuing erosion of land or cutting down of forests, but of something very much more important —that man should once again reach an equilibrium, because man comes from nature and goes to nature, and is a part of the earth's vital energy; his breakaway from the earth damages psychologically just as it damages the structure of society and corrupts it, as we are seeing in so many

countries where the physical or social equilibria are upset. It is a matter of fundamental importance to rethink the objective of planning and the design of economic policies, incorporating a new human and ecological dimension into them, if we want to make really serious attempts in Latin America to set the development process back on course with social efficiency. What more real objective can there be than to return man to the land? Not to return to pastoral times but to the rational dialogue between what man is and what surrounds him, and then form a much clearer conception of what is important, and seek a greater capacity of development for men and women, and the largest possible income in keeping with the nation's capacity.

Perhaps a study is needed of man's medium, the cultural pith of societies, a kind of quintessence or heart of the process, the *raison d'être* of societies, because this is what makes history, builds the present and forges the illusion of the future. The economic, social and political dimensions must have the cultural dimension, as their spirit which grows until reaching its true form. And when we refer to the relationship between man and his environment, we normally deal with the external characteristics of societies, but not their cultural values.

*Comments by Jorge Wilhelm**

"The people like luxury; it's the intellectuals who like poverty."

Joaozinho Trinta, leader of the Beijaflor samba school.

'It's amazing!' exclaimed Aníbal Pinto, noted CEPAL economist, "truly amazing that for decades we economists were able to formulate so many theories and theses on the development of Latin America without taking into account the physical variable: natural resources and urban concentration".

This sectoral bias did not only affect CEPAL economists, however. Economists, planners and politicians throughout the world, swept up by the rush towards growing and ceaseless consumerism, manipulated statistics and formulated theses whose conclusions 'fitted' with Cartesian perfection, outlining optimistic solutions which prudently avoided the reality only sensed by the hippy movement, artists and poets, and isolated voices within the professional establishment.

Anyway, the intellectual's real role is not to compose perfect conceptual structures but to formulate pertinent questions: to raise the 'why', the 'wherefore' and the 'who for' of

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things. During the past decade, the reality of such dramatic events as the Seveso poisonings, oil spills in the North Atlantic, desertification, London smog, etc., finally motivated the intellectuals, various professionals and politicians to take into account this 'physical variable' of development and economic growth in general, since the style of growth seemed decidedly unhealthy, in addition to its accentuation of inequalities. However, it was the so-called oil crisis (October 1973) that dramatized these problems.

Although the new concern was first raised in Europe, it was not because the effects of aggression against nature were concentrated there: in reality, Europe is a small continent whose well cared-for soil has remained fertile since the neolithic era, centuries-old vineyards are treated with tender loving care, even today there is traffic on the Appian way and Renaissance mansions are being carefully adapted for modern uses. Perhaps the concern emerged in Europe because on that continent, more than in the Americas, professionals and other persons have an old and deep-rooted tendency, reflected in their educational system, to engage in an agonizing but necessary activity, exclusive to human beings: that of thinking deeply.

The wise warnings which began to be given in articles, congresses, and seminars sometimes had an ingenuous flavour of 'how to survive in the jungle', placing stress on mother-int. It is indisputable, however, that in querying the style of growth and the misuse of natural resources, questions were formulated which were relevant to planning. The sensitivity of CEPAL and Latin American professionals was awakened by this questioning, but they included it within the general frame of reference of underdevelopment and the type of growth characterizing the continent.

Thus, we were recently set to thinking by the plain speaking of Iglesias, Sunkel and Pinto: it seemed incredible that we had been able to overlook the subjects of 'non-renewable natural resources' or 'the environment' when writing of economic growth in Latin America. It took the petroleum embargo of October 1973 and the sharp and constant increase in the cost of this commodity and in our external debt to

remind us of facts which had been with us for at least two decades: (1) the growing internationalization and economic interdependence of the world; (2) the beginning of a shortage of certain natural resources due to the increase in world population and production, which made necessary the renewal of technology; (3) the strong metropolitanization of the world's population and the lack of truly modern urban technologies to cope with this phenomenon; (4) the increasingly evident widespread poverty and hunger; and (5) the gradual globalization of information and the homogenization of cultures, demands and expectations.

The bibliography of the 1970s which bears out these facts and seeks to resume the discussion of development alternatives in a more objective manner is extensive and rich in brilliant and profound authors and theses. Likewise, certain international meetings, from the preparations for the Stockholm Conference (1972)¹ to the recent meeting in Tepoztlán, and including the CEPAL seminar on "Styles of development and Environment in Latin America", allowed important renewals of theses on the development of the Third World countries and the 'deficient' development of the rest of the world to be formulated, discussed and published.

Without presuming to present a major synthesis, I shall begin by accepting that it is desirable and even necessary to change the "life-style" and consequently the style of development in order to achieve the following objectives: (1) to develop means of producing types of products more suited to the available natural resources, both renewable and non-renewable; (2) to modify the use of time, working relations and forms of management; (3) to reexamine and create human values closer to the feelings of solidarity among people and less destructive coexistence with nature. Regarding this subject, however, in this article I mean only to touch on the *modus faciendi* of this eventual and desired change of direction. How can changes of life-style compatible with these ob-

¹Especially the Tunis and Cocoyoc meetings and the useful publications of the International Foundation for Development Alternatives (IFDA).

jectives and acceptable to the citizens be introduced?

Both the diagnosis of modern civilization and the above-mentioned generous intentions are positive indications that, as Hegel said, humanity only recognizes the problems it is capable of solving. Despite the fact that diagnoses and intentions are necessary parts of the solutions, however, it must be acknowledged that they are not sufficient, and that additionally we must understand more precisely the "*raison d'être*" of the actions of the major agents of change. In other words, we must investigate (1) the possible and probable paths to be followed by the capitalist system within the rationale represented by transnational corporations; and (2) the possible and probable paths to be followed by State-controlled economies within the rationale of their political pragmatism, characterized by the prevailing bureaucratic domination. Finally, it will be necessary (3) to understand thoroughly the cultural motives of powerful agents of change such as religious-nationalistic movements (Islam, for example); and (4) to evaluate the likelihood of the emergence of prejudiced and racist movements or large-scale destructive mobilizations (various terrorist strategies as well as police repression and the revival of torture).²

This deepening of our knowledge and comprehension will make it possible to formulate either an objective or a strategy for modifying life-styles. The objective could take the form of a utopia, serving as a target towards which the vector containing tactics and action programmes would be aimed; in fact, utopian objectives are useful for motivating people and organizing activities along certain guidelines, and these action vectors may also be used for uniting activities, making them coherent and giving them a common content.

Thus, these strategies constitute sets of actions and programmes arranged along a vector aimed at an unattainable utopian objective

²It seems to me that the interaction between socio-economic factors and cultural factors is a better analytical tool than the schematic relationship of superstructures which depend upon infrastructures. Moreover, how can one deny that irrationality also plays a role in history?

in order to achieve, within a specific period, comparable results, partial, attainable targets and small but important steps forward.

Before Mr. Karl Popper takes offence, I hasten to state that I do not conceive of the utopian objective as a deterministic representation of the future, but rather as a mobilizing and classifying tool allowing strategies to be established and order and coherence given to activities relating to change, that is to say, to development.

Before determining the difficult strategies for changing life-styles, we should investigate whether the populations of our Latin American countries truly wish or desire to change them. It is not enough to note that things are going badly, that the consumerist style is depleting our resources and that the competition inherent in the system generates all sorts of violence. Clearly, the people desire change because things are not going well, but what type of change, in what direction and to achieve what objectives? I doubt that a sounding of public opinion would show that radical changes in the current mode and vector of growth are demanded. Public opinion may be irascible, but it is generally conservative; radical changes are dreaded, and there is a natural fear of the unknown.

Accordingly, while public expectations determine a set of expectations, and consequently correct and enrich the technical view, they generally offer a conservative view of the world. This fact illustrates the difficulties which must be overcome if we wish to implement a strategy of change: resistance will be generated among the very beneficiaries of such change.

We must understand the basic motives behind the expectations of modernity which people the dreams of Brazilians (and citizens of the other underdeveloped countries), making them apt to resist changes in style. In a recent study on the mean dwellings of the poor sectors of São Luís (Maranhão, Brazil), I noted that by way of decoration, families hung the following articles from their walls of adobe, mud and wood: the Sacred Heart of Jesus and calendar; the Virgin and Child and calendar; Pelé or some other soccer player; Sandra Bréa (cinema

and television actress), generally fully dressed; and a Volkswagen, a poster of which I saw in more than one house. Icons of modern life—religion, the magic of heroes, the televised message and the automobile, product and symbol of modernity—these are part of the semiotics of daily life worthy of an anthropological survey of such life. What is the *historical origin* of these expectations, this desire to possess modern products and to affirm the current consumer style? At the end of the last century, pressure from English enterprises in Brazil prevented isolated voices (such as that of the Baron of Mauá) from inducing the nation to choose another economic growth model, as in Japan. Perhaps in that country, the language and insular culture made it sufficiently isolated so that for a while, a separate path could be followed; there, the bourgeoisie formulated a project and had a clear picture of the benefits to be derived from the Meiji reform and the industrialization process. In Brazil, recently emerged from a slave-based régime (slavery was abolished only in 1888, and as recently as 1850 the slave trade was still flourishing), wealth and power were concentrated in an extremely small portion of the population: a rustic élite living on their haciendas and spending exorbitant sums in Paris. This élite did not have very clear class projects, so that during the second half of the nineteenth century, abolitionist estate owners, slave-exploiting industrialists, atheists defending religious instruction and monarchist democrats all coexisted, without anyone having a very clear idea of his position. Deodoro, who officially proclaimed the Republic (1890), burst in upon the then Minister of War to depose him ... “in the name of the Emperor”.

To this weakness of national or class objectives on the part of the middle class and landowners (exporters and bankers) was added the class weakness of the workers, among whom the Italian immigrant, necessarily individualistic in his desire to begin life anew and transcend his divided loyalties, was to be found alongside the ex-slave who for decades would identify work with a form of slavery.

This obviously simplistic picture reveals the existence and strength of the alternatives as

well as the conceptual weakness upon which the interests of exporters and English entrepreneurs played with gusto. The century of independence in Latin America was also the century in which the relations of economic dependency became more transparent.

In this situation, there was naturally little autonomy for choosing the path to be followed, necessarily and for that reason, instead of integrated and industrial growth aimed at expanding the domestic market through more democratic participation in the distribution of wealth, Brazil headed towards *growth through modernization*.

What were the characteristics of this style of growth? It consisted basically of the adoption of a comparative model, an industrialized country, whose *life-style* was to be copied. Once the extent of the distance separating both countries had been measured, an attempt was made to reduce it. It is a sisyphian situation, since the industrialized country continued its progress, perfects its equipment, reinvests and also grows.

In its longing to possess the equipment and services defining the model life-style, Brazil embarked upon a modernization process which to some extent was a positive transition for the entire society. Within this transition movement, however, some parts of society advanced more, concentrating the country's income more and more, despite occasional half-hearted efforts at redistribution by various governments.

Growth by modernization required the concentration of income; there was no way to ‘disperse’ the country's slim savings if, firstly, it was wished to import the consumer products already known to the élites which dominated political decision-making; second, if these imports were then to be replaced with local manufacture of the same products (industrialization by substitution), importing the necessary production machinery; and third, if industrial development was to remain eternally dependent on the technology which was being developed in the industrialized countries, absorbing savings in order to pay for the import of constant innovations.

The Brazilian élite came to form part of

what Sunkel has defined as the 'modern archipelago'. Consequently, although the result of eighty years of modernization was an output of one million automobiles per year, this growth was paid for by an enormous and intolerable *social debt* illustrated among other unpleasant indicators, by an illiteracy figure of 20 million and an infant mortality rate of 101 per thousand (1976). This price is high and inadmissible. The fondness for privilege and belief in a magical solution to the problems of growing debt, price inflation and growing technological dependency will be succeeded by the violence of despair if the path of modernization is not changed for the path of *development* (which implies an increase in jobs, improvement of the quality of life and, above all, greater social equity).

This change of style will also have its price, however. Changing the group of products made from consumer goods to wage goods will involve going against general expectations and the illusory hope that income will be redistributed to achieve a simple equity of 'everything for everyone'. A spare and spartan distribution of consumer goods, even if it is equitable and eliminates poverty, will be perceived by many people as an intolerable frustration, a regression.

Consequently, a change from growth by modernization to growth with development cannot for the present entail extremely brusque qualitative alterations in the life-style. It is difficult to image a 'Chinese' sort of development in Brazil, a country without physical or cultural 'walls', and strongly influenced by what is happening elsewhere.

Accordingly, in order to face up to and prepare for the change in style, the importance of *expectations* and *habits* in the generation of demands must be considered. Even in the style of growth through modernization, demand was preceded by the formation of cultural habits suited to the import of products; although these were the habits of a small dominant class, we know that they were sufficient for substantive decisions to be taken.

Today, patterns of consumption are generated in a more complex and efficient manner: the mass communication media are responsi-

ble for creating a global demand, a sort of psychological need to possess objects.

The tyranny of the things offered is sweet: enveloping, sensual, with background music, and generally in colours. There is an illusion of love in each commitment to buy.

And we must keep in mind that the effectiveness of the mass media will be greatly increased during the 1980's through technological advances which will cause the retransmission media (television, telephone and radio) and the processing media (computers) to be interchanged and fused and information transmitted worldwide by satellites. I believe that the importance telematics³ will have from the 1980s onwards has not yet been properly understood by planners or politicians, and I shall therefore quote some statistics in order merely to indicate the importance of telematics in the subject which concerns us: thus, in the last 15 years, the transmitting capacity of the Intelsat satellites has grown from 240 to 12 thousand circuits, whereas the cost per year of active life has dropped from US\$ 30 000 to US\$ 700. The transnational flow of information may entail the concentration of data banks in a few countries, thus increasing dependency to an incredible extent and jeopardizing sovereignty. Microchips will reduce the price and size of equipment, thus admitting the computer into daily life and making available a large number of useful (e.g., telephones providing weather information) and useless (e.g., telephones relating stories) services.

In its May 1980 issue, the journal *Dados e idéias* gives an outline of the international information networks currently operating as a result of the rapid integration of computers and telecommunications. The following types of network exist:

1. For private use (examples: CIA, IBM, HP);
2. Belonging to companies providing data processing services (e.g., G.E., *Control Data, Computer Sciences Corp.*);
3. For specific purposes (e.g., SITA - *Société Internationale de Télécommunications*

³Neologism denoting the combination of telecommunications with data processing.

Aéronautiques; SWIFT - Society for Worldwide Interbank Financial Telecommunications);

4. Public (e.g., Telenet, of G.T.A.), designed to supplement and compatibilize the services of local telephone companies;

5. Mixed (Tymshare Inc., which operates in 26 countries and links 200 computers).

The importance for our topic of the formation of these data banks and telematics networks lies in the fact that transnational corporations will soon possess much more efficient machinery for the generation of global demand, thereby expanding their marketing capacity, which is just as important as their financial and technological capacities.

I believe that if the countries of Latin America fail to regulate and control transmission channels and telematics operations, any significant change in their life-styles and styles of development will become highly unlikely, since demands will continue to be generated in accordance with the interests of the transnationals, who wish to preserve the modernization model.⁴ We must not be deceived by the neoliberalism aired in certain political sectors. According to U. Kekkonen, President of Finland, in a speech at a communications congress (May 1973): "... freedom of communications in a liberal sense is not a neutral concept in everyday circumstances, but a means through which an enterprise with many resources at its disposal has greater possibilities than a weaker competitor for having its hegemony accepted".

Despite the mistrust we may have of governmental bureaucratic domination in telematics, the truth is that in the Third World, only governments can speak with a force equalling that of transnational corporations. We must permit and encourage them to exercise that role, but we must simultaneously increase and perfect civilian society's control over governments.

Both the facts mentioned above and the historical origin of the current modernization

itself point to the possibility that substantive economic decisions and options may be generated on the basis of the cultural conditioning of demands and expectations.

Thus, in order to introduce strategies of change, not only the technological (transmission channels and establishment of relevant data banks), but also the human potential (quality and content of artistic and intellectual output) of the means of communications must be considered.

It was for this reason that in a recent discussion I drew attention, again by way of illustration, to the effectiveness of Brazilian television serials in connexion with the analysis of the *modus faciendi* of alternative development strategies. The real talent of the writers, directors and actors has transformed this product of mass entertainment into a cultural product of notable quality. The audience is extremely large: for example, around 36 million Brazilians have already spent five months watching the serial "Água Viva" for an hour every day,⁵ and despite the cheaply melodramatic structure of these serials (whose conflicts always end in idealized solutions confirming a redundant set of values), the topical themes stick in the minds of the viewers and constitute the topics of informal conversation the following day. According to the authors of these serials, the definition of these 'topical themes' is the first important argument in favour of the use of such serials as a tool of the strategy for changing life-styles. The other argument is that the viewers identify with the characters and actors, so if this identification can be used to sell products, why should it not be used for intelligent discussion, a profound social objective? The North American cinema made the Indian a wicked character, a villain, a 'baddie', but he could just as effectively have been made into a hero, a 'good guy'. The communications media lend themselves to any content and, aside from obvious political considerations, the decision is personal.

Accordingly, after establishing the utopian

⁴Brazil has encouraging experience in this regard, such as CAPRE (Coordenação das Atividades de Processamento Eletrônico) and the recent creation of the SEI (Special Informatics Office).

⁵Written by Gilberto Braga, directed by R. Talma and P. Ubiratan, and produced and broadcast by TV Globo, the largest of the 108 channels existing in Brazil.

objective which we are to pursue we must, in order to modify effectively the style of development, consider the means which will allow us to overcome the reluctance to abandon illusions of modernization in the form of conspicuous consumption. For this purpose, we must learn to act in the field of culture, habits and the communications media. To make the *desirability of changing the style of development* lucid and convincing is one of the most difficult challenges facing intellectuals and planners who sincerely desire to develop and introduce significant alternatives in Latin America.

I fear that if we do not take into account the

potential of culture and the communications media for mobilizing public opinion, in ten years we will again hear the economist Aníbal Pinto exclaim: its amazing! For so many years we have been formulating proposals for Latin American development, but we have neglected to propose forms, means, strategies and tactics for communicating these ideas to the users of the proposals and to devise the best means of mobilizing citizens in favour of the alternatives which require changes in life-styles. We wished to make a revolution *for* our fellowmen, instead of a revolution *with* them.