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CEPAL REVIEW
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The 'futures' debate in the United Nations

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In recent years the future of mankind has become the object of intense and lively controversy which has led to the construction of a number of 'scenarios of the unacceptable' and the proposition of various strategies for avoiding them. Of all the reports produced, *Limits to Growth* has had the widest circulation, notably contributing to the consolidation of the 'futures movement' by its dramatic emphasis on the perils threatening the 'carrying capacity of the planet'. But the United Nations too has had different scenarios and strategies of its own, which it has put forward in such resolutions as those on the International Development Strategy and the New International Economic Order, directed towards the creation of a better society.

Necessary though it is, the attempt to link up these various approaches has been hindered by the lack of an integrative theory to fill the gap left by the erosion of the major paradigms –the theory of general competitive equilibrium and the marxist view– which had been used for many decades to guide national development processes and international relations. The author maintains that a new scheme of global rationality could be constructed only on the basis of a 'voluntarist' approach reconciling the objectives that stem from moral and political values with the realism of empirical analysis and the necessity of an international consensus.

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Introduction

The 1970s may be remembered as the time when the 'Future' invaded the public debate and began to find its place in the cogitations of the technostructures. Think tanks and specialized periodicals dedicated to thinking about the future, as well as long-term model-building and other similar products of the age of the computer, can now be said to be part of our institutional system. The impact and the real meaning of this 'Futures Movement' are not as yet very clear. It is a proteiform phenomenon, often highly emotional, responding to strong and deep impulses as well as to rapidly changing fashions. But certain recognizable characteristics and trends are emerging, and may help in assessing, provisionally at least, a cultural force which does not appear to be a passing fad, but rather shows signs of spreading, and of assuming an encyclopedic dimension.

1. The scope and nature of the debate

Thinking about the Future is closely related to a new sense of 'globality' and world interdependence. These notions, whatever their emotional appeal and visionary message, are as yet far from heralding a 'manifest destiny' or delineating a clear path. Rather they must be seen as ambivalent and often divisive. The assertion of national identity is, for two-thirds of the world's peoples, experienced as the driving and mobilizing force in the difficult task of social and political integration. And whereas in the older nations nationalism may at times be seen as a crispation, a retarding factor in the progress toward a higher level of consciousness, it is also an expression of the problems increasingly encountered in the management of the

social order, even in the smaller units of organized community life. Whether it is regarded as a promise, a challenge, or a nuisance, world interdependence cannot be interpreted in a static context. It is an aspect of the process of transformation. As such it is and will continue to be either encouraged or resisted. Its course is not at this stage ordained by a unifying aspiration, but determined by the interplay of contrasting attitudes and often conflicting interests. The 'Futures Movement' would lose much of its relevance to the study of international relations and the promotion of a New World Order, if it failed to recognize at the outset a context of deep-seated tensions between the requirements of nationhood and the compelling vision of 'One World'.

This reminder of the obvious is necessary because the present 'Futures Movement' seems to have acquired its remarkable momentum from a very different dialectical approach to the 'problematique of mankind'. Although the sociological analysis of its origin and evolution remains to be made, there can be little doubt that it would not have emerged so forcefully, nor spread so rapidly within the dominant culture, were it not for the projected threats to the destiny of the human species. Scholars and officials had for some time been alert to the quickening pace of change and the novel characteristics of its manifestations. They were, however, mostly confident in the prevailing model of society and its adaptability to new circumstances, and in any case too absorbed in the complexities of controlling the short-term cycle to indulge more than episodically in interrogations about the longer term. Wherever agencies for central planning existed, they occasionally lengthened their time horizon, but usually not beyond a span of 15 to 20 years, and without seriously questioning the basic premises on which current trends had evolved.

Individuals and private organizations, however, not hamstrung by the same constraints or prejudices, were bolder. While some hypothesized the almost uninhibited extension of current trends –judged to be largely beneficial– others began to highlight some of the more gloomy aspects of the human predicament. They focussed, in particular, on the 'integrity of the environment', a notion somewhat new to western civilizations, presented at times as a constraint, too long disregarded, on development, but often also, and more ambitiously, as a concept providing a comprehensive framework within which previous findings of the social and economic disciplines would have to be re-examined and reformulated. The 'ecological' school of thought burgeoned in the early sixties. Backed by a body of serious academic work, it warned of a global threat to the 'carrying capacity of the planet'. Over and above its impact in stimulating anti-pollution measures, it served to focalize and epitomize the widespread malaise, the sense of alienation which gripped the dominant culture in the last years of the decade, paradoxically coming into the open towards the end of the most extraordinary quarter-century of expansion, innovation and confidence which history has recorded. Suddenly some of the singularities of that period, the price paid in terms of injustices, unbalanced development, wastage and vulgarity of consumption habits, seemed to loom larger than the unprecedented successes.

It was this loss of confidence, these disbeliefs and anxieties, rather than the optimistic extrapolations produced by

such well-established centres of long-term studies as the Hudson Institute, that captured public imagination, nourished the incipient 'Futures Movement' and gave it its original bias in the direction of the ecological school.

The Club of Rome, a private body of concerned citizens, had the flair to recognize this mood, and to produce in 1973 a 'scenario of the unacceptable' which had an extraordinary impact: an impact which, on the eve of the 500th anniversary of Copernicus' birth, could be viewed as setting in motion –at least within the dominant culture– a revolution in mental processes comparable to that historically associated with the work of the Polish astronomer.

Limits to Growth[1] was a worldwide event. Its message immediately took root in the well-prepared ground of a number of constituencies, in addition to the ecological movement. There is always an ambiguity, a subtle interplay, in any thinking about the 'Future', between the prescription and the prediction. Many were quite ready, on the basis of their value system and in the context of their particular type of alienation, to take the prescription regardless of the validity of the prediction: radicals of different obediences, discovering yet another proof that 'the system cannot work'; exponents of a 'population explosion', frequently interpreted in simple mechanistic terms; nostalgiacs of nature and the frugal life; moralists rejecting the 'Faustian pact' of man with knowledge and expecting retribution. These sectarian groups were themselves direct –even if dissident– products of the dominant culture in the industrial world.

[1] Dennis L. and Donella H. Meadows, *Limits to Growth*, Report to the Club of Rome, M.I.T., Cambridge, Mass., 1972.

But the impact of *Limits to Growth* did not remain confined to them. It has widened, deepened and endured, despite the increasing controversy and critical analysis surrounding most of its findings. The scholarly critique of the methodology has not diminished the relevancy of the questions so dramatically projected.

Two concomitant events seemed to validate, for a while at least, the basic thesis of *Limits to Growth:* droughts of unprecedented proportions covered for several consecutive years vast areas of the world around a large geographic arch, and in the winter of 1973, petroleum-exporting countries launched a new oil price strategy which could be seen as a 'discontinuity' in world economic trends. Both these events could be interpreted without recourse to the concept of 'finiteness': one was linked to climatic vagaries as yet ill-explained, while the other expressed a broad political design made possible by a newly-perceived market power. The somewhat hasty generalizations that related them to the 'carrying capacity of the planet' did at least testify to the degree of influence achieved over a short period by a school of thought of which *Limits to Growth* was the most conspicuous product. Statesmen and politicians soon recognized, if not a 'writing on the wall', at least the signal that some part of their conventional wisdom was being effectively challenged.

They were, however, chiefly embarrassed, and, so to say, caught off balance, inasmuch as the message did not clearly exhibit the ideologies of the Left or the Right, but rather seemed to cut across traditional party alignments. It suggested the possibility of a new and imperfectly understood political polarization at a time when ideological

frontiers were often becoming blurred and when positions on a number of problems made official party labels appear somewhat irrelevant. These ambivalent reactions to a new concept are evidenced in numerous public opinion polls. They were interestingly illustrated in 1973, during a public debate between Mr. Marchais, the Head of the French Communist Party, and Mr. Mansholt, at that time President of the Commission of the European Economic Community. The occasion was the referendum campaign in France for the admission of Great Britain to the Community. Mr. Marchais used a memorandum of Mr. Mansholt, largely espousing the thesis of the Club of Rome, as an argument against the further development of European integration. Yet, significantly, other Marxist authors have seen in the prospect of zero growth and a 'steady-state' economy, the opportunity for, indeed the inevitability of, the application of Socialist principles and the advent of centralized planning systems.

The United Nations, albeit the one political forum where discussion of the global predicament could be expected, was slow to come systematically to grips with the intellectual challenge embodied in *Limits to Growth*. Total insulation from it was impossible, particularly as the major elements of the 'problematique' included in the formal model —food, population, environment— were separately under active consideration and high on the agenda of the Organization. But no comprehensive programme was devised to sort out, check and analyse the major assumptions and results, so as to assist governments in defining their own position in a raging controversy. In the absence of any organized debate, the reactions observed were sporadic, random, intuitive and often angry. Motivations were suspect. Was the spectre of catastrophe raised by élitist groups in rich countries for the purpose of keeping under control the wave of aspirations and expectations which had hardly begun to be met? Although the report acknowledged the difficult circumstances of Third World development, its order of priorities and the arrangement of its various elements seemed wrong. The homogenized world, the uniform distribution of problems, which emerged as a result of the methodology adopted, the lack of attention to conflictual situations, to the rich-poor dialectic which, in the United Nations, was viewed as the principal element of world dynamics —all this seemed somewhat unreal, and it should come as no surprise that the fundamental purpose was questioned. Since Malthus was frequently evoked, it was tempting to point out that the English parson had really evolved his famous theory (to which *Limits to Growth* superficially bore some resemblance) as a defence of the interests of the landed aristocracy of his time.

Yet the United Nations too had its 'scenario of the unacceptable', and had done so for quite some time. The Organization is not a newcomer to reflexion on the future. The need for long-term projections was felt as soon as the problem of newly independent developing countries became the focal point of its preoccupations. Quantification and long-term projections were recognized as necessary to the discharge of a collective responsibility. World models were in fact produced as from the 1950s.[2] They were

[2] In the Food and Agriculture Organization, and in the Economic Commission for Latin America under Raúl Prebisch.

of a rather simple kind; however, they also used exponential curves, and at times, particularly with the assumption of a secular and inevitable deterioration of the terms of trade, they had something of the inexorable character which is found in the early Club of Rome approach. They centred on the calculation of two quantities crucial to development: the trade gap and the savings gap, which, when projected over the long term, revealed explosive situations, and the imperative need for concerted corrective action.

The premises here were different from those used as the point of departure for *Limits to Growth.* They were concerned with goals, with aspirations towards a better and more just society, not with the prevention of hypothetical catastrophes. The diagnosis emphasized defects in social organization which could be corrected by political will and concerted international effort – not physical limits threatening the survival of the planet. The models postulated growth as the very foundation of progress, and technology as the principal engine of growth, a primarily benevolent factor whose ambivalent position has not yet been perceived. They also viewed the respect of national sovereignty as imperative and the search for national identity as a positive factor in the task of nation-building and the process of change. They did not subsume the early emergence of a high degree of world central management, the demise of national sovereignties and their dissolution into supranational, problem-solving institutions, which seemed implicit in the management of a 'stationary state'.

The linkage between the growth of poor and rich countries was a cornerstone of the whole edifice of co-operation, and this must be kept in mind, as in the course of the 'Futures' debate it was often stated that the prescription of no-growth should apply only to the industrial countries which absorb such a disproportionate part of the world's resources and generate most of the pollution allegedly threatening human survival. Most developing countries are extraordinarily dependent on their exports to the industrial countries. It is a characteristic of their economies that they prosper or languish with the fortunes of the world markets, and it is easy to understand from the size of their import coefficients how vulnerable they would be to any drastic and durable reduction in the purchasing power of their rich partners. This would spell disasters far more readily visualized than the 'overshoot and collapse' processes described in *Limits to Growth.* In fact, the new vision of 'finiteness' does not easily fit into the conceptual framework for international relations as it has emerged from twenty-five years of United Nations deliberations, particularly as the implications of zero growth or the feasibility of alternative forms of international intercourse have not as yet been thoroughly explored and convincingly presented.

The *growth relationship* may not be the most desirable arrangement for development co-operation and world harmony –even in the absence of physical limits– but one should not underestimate the difficulties of promoting in the short run alternative models of interdependence. Within the existing growth relationship, the forms of corrective action agreed upon as necessary could remain comparatively minimal. They were the least disturbing to existing patterns and structures. They mainly centred on capital transfers –a very mild form of voluntary taxation levied on the

industrial nations– and some relief from protectionism in regard to the natural resource exports of poor countries. And yet these relatively light obligations were consistently more honoured in the breach than the observance, thereby causing the 'growth relationship' to play an even greater role in the promotion of progress. These features have endured in the successive attempts at formulating global designs in the United Nations system and throughout the continuing frustrations caused by lack of implementation in despite of conceptual agreement.

They are not, however, immutable. Indeed, current appraisals of the requirements of national consolidation more frequently highlight the priority objective of reducing –when necessary at the expense of growth– the extreme vulnerability of developing economies to the unsettling effects of external forces, resulting from the interplay of power positions on the markets.

Notwithstanding a language deprived of specificity in the interests of political compromise, the *New International Economic Order* is cast in terms suggestive of a more fundamental transformation than has been implicit in previous United Nations models, including the International Development Strategy. The emphasis is clearly on structural changes, on the redeployment of activities towards a substantially different division of labour. Growth relationship, trade policies and organized capital transfers are no longer viewed as sufficient for the desired changes. Some sort of more 'affirmative action' seems implied, linking national objectives and international co-operation in a different relationship.

This new vision, reflecting as it does a global balance of power which had just been significantly altered by the strategy of the OPEC countries and their support of Third World general objectives, also acknowledges, at least implicitly, some of the problems and constraints highlighted in the Club of Rome approach. The long-term perspective, if not very explicit, is inherent in a document which emphasizes a new geographic distribution of industrial activities; provision of adequate quantities of food and security of food supplies for a rapidly growing world population; avoidance of shortages in circumstances where the maturation of investments in natural resources as well as the lead time for the development of new technologies appears to be lengthening; and the preservation of essential ecological balances in a situation where the rapid industrialization of large parts of the world remains an imperative need. A long-term perspective defined within successive time horizons appears essential to the pursuance of such objectives. It is also important to the process of negotiations through which the concerting of international action would emerge, as areas of mutual advantages or joint gains for all are more likely to be discovered within such a perspective.

Five years and several world models after *Limits to Growth*, the sharp polarity which initially appeared to place in opposition two 'scenarios of the unacceptable' competing for the world's allegiance may be fading. The United Nations scenario, developed consistently over two decades, may not have had the instant dramatic impact of that produced by the first Club of Rome report. Yet it may prove the more durable, based as it is on compelling moral and political imperatives, rather than on controversial ecological hypotheses. It may also offer the more useful framework for the continuation of the debate

on the global predicament, particularly as the frightening time-span of the Meadows 'overshoot and collapse' recedes. Growth as an essential element in the management of social change seems to be making at least a qualified comeback from the assaults made on it by a vocal section of the Western intelligentsia. The interest may now be shifting from 'limits' to alternative models of world order and patterns of national development. Indeed the more recent reports sponsored by the Club of Rome deliberately focus on a New Order, and older ones are increasingly represented as contributions to the creation of a better society, rather than to the prevention of planetary disasters. Concurrently, the notion, ill-documented as it is, of a limited pool of resources finds its way into the rhetoric of the United Nations, either as an additional example of spoliation of Third World interests, or as a promise of progress for producers of raw materials.

2. The lack of an integrative theory

One should not begrudge the part of eclecticism which may be at the source of such rapid changes of emphasis. They may rather be seen as one aspect of the quandary in which the international community (and for that matter the 'Futures Movement') finds itself currently trapped. In the search for a scheme of *global rationality,* we are severely handicapped by the lack of an integrative theory –or of rival integrative theories– which would be accepted by wide sections of the intelligentsia and the centres of power, and which would explain the more significant aspects of the behaviour of society, provide a minimum capacity to predict, and afford a reliable basis for the formulation of rules and the development of institutions. The erosion, or disintegration, of the major paradigms which had been used to elucidate as well as guide national development and international relations is an important factor of our present uncertainties.

Firmly rooted in a substratum of values widely shared in the industrial societies, the theory of *general competitive equilibrium* offered a formalized structure for the development of a set of binding rules in the one area of international relations –the international exchange of goods and services– where regularities had once been observed and correlations identified. It had survived the emergence of new patterns of market behaviour, and made a place for oligopolistic practices as special cases –or aberrations– which did not generally destroy the validity of the paradigm. It also found support, and a much-needed new sophistication, in the approach of the 'functionalist' school, which exhibited a very similar value system in its projection of the 'managerial society' and of the more novel aspects of the technological syndrome. It is still invoked in powerful circles, at least as a loose orthodoxy, accommodating an ever-increasing number of deviations, for fear of the vacuum which would be left by its final demise.

The obsolescence of the theory is graphically illustrated in the widening range of practices developed in contravention of the rules derived from it, and, if not fully legitimized, at least regarded with a great deal of tolerance. Barter arrangements between socialist and market-economy countries have for some time been recognized as instruments to expand rather than restrict trade: transactions between petroleum consuming and producing countries in which prices and conditions are kept purposely obscure may be viewed as

assisting a difficult process of adjustment to new conditions; dubious pricing practices in the transfer of goods between various units of a transnational enterprise with a single decision-making centre are condoned on the grounds of the assumed improvement in general welfare brought about by international production; the proliferation of preferential agreements is justified in geopolitical terms, as a new centre of economic power emerges around the European Economic Community.

But perhaps even more important than these empirical transgressions is the loss of confidence in earlier values with which the paradigm was identified. This is particularly significant in developing countries. In the face of compelling demands for fundamental change, the value of trade as an instrument of improved domestic welfare, fuller employment and better income distribution is increasingly questioned. Even if it may have induced growth in one phase, it is subsequently found wanting, not only when adverse terms of trade persist over a long period, but even more surely when new policy objectives become paramount. Nor is the distrust of an open world economy confined to Third World idiosyncracies. Europeans have –repeatedly during the recent recession– blamed the open international system for the frustration of their efforts to control the business cycle. Professor Harry Johnson once suggested that certain 'political equations' are missing in the classical attitude toward international trade. In the present state of our knowledge about social mechanisms, they are not easy to introduce in a set of predictive hypotheses.

Political factors were always present in the Marxist paradigm. For this reason its diagnosis often appeared more relevant to situations of enduring inequalities, more aware of latent conflicts and more attuned to the understanding of a process of transformation. However, this other major paradigm is also labouring today in the pangs of *aggiornamento*, notably in the efforts of a fraction of the 'structuralist' school. It is not only that the evolution of societies as well as the more recent findings of sociology reveal a far more diversified social context, and a more complex set of causations, than those originally identified. More important, regardless of its value as an analytical tool, the paradigm when used as a guide to action is in danger of losing one of its inherent elements: the sense of historical sequences, which dictated that the right time and the appropriate set of circumstances must be discovered before radical action is undertaken. This was among the most lucid perceptions of Karl Marx. In political life, however, action is almost always a matter of urgency. It cannot be evaded, especially by the promoters of drastic transformations, irrespective of whether the time has come, or may have passed (for instance, if too many groups are linked to the political *status quo* through their present interests or their expectations). The outcome may then be a tragic backlash as the price paid for the misjudgement.

3. *The 'voluntarist' approach*

The major paradigms may have retained, and perhaps, in the case of Marxism, increased their following as an expression of general aspirations, or beliefs, but they have largely lost their capacity to explain, predict and guide.

The resulting conceptual vacuum has not made it easier to take charge of those new assumptions of the ecological school which were integrated in neither

of the major paradigms. In such circumstances a good deal of philosophical free-wheeling takes place: witness for instance the advocacy of 'triage', a notion resurrected from the most gruesome experiences of World War II, as a logical strategy for dealing with impending food shortages; or the invocation of 'neo-mercantilism' as a plausible principle for the management of the international economy.

Such positions may be for the time being dismissed as marginal. But the public debate on the 'Future' encounters, on more serious grounds, real difficulties, which it has not yet efficiently tackled. One of them is the role which 'value systems' come to play as a central parameter in the search for solutions to such problems as the possible exhaustion of resources or the threat of asphyxiation through pollution. A drastic change in ethical values is often assumed to be not only more desirable, but more easily achieved than technological innovations or adaptations. Yet not much attention is given to the social determinants of value systems, their built-in inertia, and the conditions under which they evolve. It is disturbing when new *Weltanschauungen*, accompanied by the inevitable 'manifestos', appear to spring up at the drop of a computer print-out. Nevertheless, this too is a manifestation of a widespread anxiety and revolt, and they are not unrelated to the ontological need for a reliable paradigm. In the absence of an integrative theory, there is naturally a temptation to advocate strategies developed mainly, if not exclusively, from moral imperatives. They are bound to be fragile. The immorality of present arrangements (if that is the word) of international intercourse is patent enough when it can be said that even the worst extravagance and waste in the rich countries have some beneficial effect on the situation of the poor, or perhaps more accurately, that the sudden interruption of these habits would play havoc with many situations which one would want to protect. But the correction of these anomalies requires more than the intuitive espousal of new rules of behaviour. One suspects that an ethic of frugality and conservation would find its rightful place in a scheme of global rationality. But it is in the nature of complex social systems that they are 'counter-intuitive' (to use the phrase of Jay W. Forrestor) until the implications of particular courses of action have been fully elucidated. Frugality and conservation may have widespread unintended effects on employment, investment, income and wealth distribution.

Given the present stage of our understanding of economic and social behaviour, a formalized integrative theory of national development and international relations is not likely to emerge very soon. It might even be imprudent to attempt it before the work of empirical investigation has progressed farther. This would suggest that for the time being the search for a scheme of global rationality can proceed only along a path which French authors describe as 'voluntarist', without the control and guidance which come from empirically tested hypotheses. In international relations, the broad consensus which must at all times be sought may be an insurance against expediency and arbitrary judgement, or the worship of false gods.

Indeed, global designs and plans of action developed in the United Nations are a first approximation to what can be achieved through a 'voluntarist' approach, combining moral and political imperatives with a good measure of empirical econo-

mic analysis. They also exemplify the limits of the approach. It is very congenial to the broad definition of ends, but often leaves us somewhat at a loss in regard to the means. Nor is it always successful in clarifying the conditions of consistency between different objectives specified. The existence of *multiple objectives*, even in the most primitive societies, is a characteristic of the contemporary world. The difficulties deriving from this factor cannot be eluded in the further development of global designs. Growth will never again, either in the developing or in the industrial world, stand as the sole *specified* objective, on the assumption that its achievement would automatically produce dividends in the areas of social welfare, equity or the quality of life. A serious effort must now be made to clarify trade-offs, options and inconsistencies. Bridging the welfare gap *within nations* will not, by itself, help in reducing the income gap *between nations*. Action oriented toward either of these goals does not necessarily coincide with a strategy of meeting *minimum needs* in the shortest possible span of time. Forecasting slower growth in the rich countries as a result of the natural maturation of their economies, or of policies required to control inflation or protect the environment, is one thing. But adopting deliberate policies of deceleration, as sometimes recommended, for the purpose of reducing international inequalities, is another matter, and may very well impair the fulfilment of the more immediate objectives of developing countries. Stabilizing, or valorizing, primary commodity prices may have worldwide distributional effects that run counter to one or more of the general goals. Specific targets, supposedly established as steps towards the attainment of the general goals in question –for instance, industrialization and food sufficiency targets– may find themselves in conflict with other investment policies pursued in the name of the same broad objectives.

Conflicts between objectives may be more manageable, and acceptable trade-offs or reconciliations more readily discovered, if successive time periods are explored. But other difficulties may arise when the political implications inherent in certain economic models are clearly specified and viewed in a perspective of long-term change. Institutional arrangements and forms of collective discipline, which are accepted under the pressure of necessity, may appear oppressive once the worst features of mass poverty have been eradicated. And yet a political apparatus may have been established which will tend to be self-perpetuating, even though it will become obsolete or undesirable once a new phase in the development process brings with it a new and different set of goals and aspirations.

In trying to sort out the interrelationships of goals and objectives we should also seek to learn more about the true aspirations of societies of different cultures. Too often statements on goals and aspirations express what a French economist[3] aptly calls 'vicarious desires', or the imputation to others of the author's own preferences. Moreover, the techniques of enquiry on this delicate subject often fail to pinpoint the dilemmas inevitably confronting civilizations in process of transformation, or of adequately clarifying the foreseeable consequences of different options, including their negative aspects and side-effects. Only when accurately-described alternatives are presented can goals and aspira-

[3] Serge Christophe Kolm.

tions be expressed in terms which may have an operational meaning.

The risks and pitfalls of 'voluntarism' call for a systematic effort to acquire a better empirical knowledge of the relations between political, social, and to an increasing extent, ecological factors. Even while we have relegated Adam Smith's 'Invisible Hand' to a more modest position in our intellectual universe, we suspect that there are in all social systems mechanisms of 'resilience', instrumental in adapting to fast-changing circumstances, absorbing shocks and discontinuities, and managing crises. Because we have a simplistic view of economic behaviour, we tend to drift toward self-defeating solutions of bureaucratic centralism where the encouragement of popular and local initiatives would be appropriate.

The success of the 'voluntarist' approach, as well as the progress of an 'integrative theory', may hinge upon the improvement of knowledge in regard to individual and group motivations. Thus a broadening of the economic discipline is required, to extend it beyond the successive refinements of the models which have dominated the last hundred years, perhaps even beyond what used to be called 'political economy', which is already enjoying a kind of revival. It is significant that some economists are exploring 'games theory' to analyse examples of coalition, and other types of relations between different actors in the market, and that others are invading —with considerable gusto— the field of psychosociology.

From time to time powerful and illuminating watchwords may assist our understanding of the forces at work. Not only are they symbols of deep-seated aspirations, but they may also suggest a methodology for the investigation of the means to fulfil their promise. *Self-reliance* today plays a pivotal role. It may cover a wide spectrum of scenarios of national development and their articulation with alternative views of world order. It may apply to models of accelerated industrialization taking maximum advantage of international trade and financial flows within an open and widening world market, or to a socialist pattern of organization, implying a significant degree of insulation from the external world and deliberate policies of 'de-linking' South from North. But it also suggests the will, common to all developing countries, to enhance and consolidate nationhood, to mitigate the impact of external circumstances and to develop the capacity and the instruments for autonomous decision-making. Because of this strong common denominator as well as because of the diversity of its application, self-reliance (with its 'extension' into Third World collective self-reliance) must be seen as a central concept in the 'voluntarist' approach to the restructuring of the world economy and the redefinition of the rules of the game. It cannot be locked into a purely economic interpretation. Long-term plans for restructuring international economic relations and redeploying industrial and other activities should take into account the political imperatives of self-reliance in Third World countries.

4. *Improving the institutional framework*

In a framework of theoretical uncertainties and acknowledged deviations from rules, one would hope for international institutions of a *quasi-judiciary* nature capable of investigating, interpreting and adjudicating. These may appear at some stage. In the meantime the United Nations institutional system,

which the international community has evolved over a period of 30 years, should be appreciated at its full value. The opportunities offered by its ubiquitous and continuous debate to sort out complex issues within a political context; its machinery for information and analysis; the redeeming influence of its 'adversary procedures and processes' (too often condemned as sterile confrontational tactics) in the search for a consensus; —all these are significant assets in the advancement of a New International Economic Order.

New analytical tools have become available which are useful and instrumental in the furtherance of our cognitive process, and in the improvement of planning. Computerized models have captured a lion's share of the attention of the 'Futures Movement'. They have a unique educational value. Their capacity to assemble and organize a formidable volume of information enables them to offer a useful *representation* of the interdependence of problems and of situations in complex systems, at least to the extent that measurable factors are involved. And the exploration of alternative 'scenarios' opens the door to the introduction of a variety of hypotheses, some of which may be adequately related to political action. Their ambitious complexity, which is sometimes viewed as the touchstone of their validity, may also be precisely their weakness, as the manipulation of so many parameters would seem to require a more solid data base than is at present available. In a way global model-making seems to have become indispensable before becoming entirely reliable, and its use for forecasting purposes or policy assessments, although not negligible, is still limited. Authors are generally very straightforward in recognizing this, but the media are less cautious and often project a misleading picture.

Because we are unable at this stage to construct a paradigm of global transformation, we should not give up the more limited objective of working out more *specific theoretical frameworks*, much needed to handle correctly the large quantities of empirical data which are already available or could be collected. This would assist decision-making in areas where any action must be pondered in a perspective of some duration: resources scarcities and substitutabilities, technology changes and technological choices, shifting patterns of consumption and their worldwide consequences. Such theoretical frameworks would also serve as building-blocks for the wider conceptualization.

It is particularly intriguing that as the debate on the 'Future' shifts from 'catastrophe' to 'a new society' —to use the words of the Bariloche report— the notion of physical limits seems to have been somewhat lost sight of, or diluted into the ethical and still ambiguous category of frugality. Yet the constraints dramatically presented in *Limits to Growth* should be taken very seriously. Both in the field of resources investment and in that of environment protection, they seem to be already influencing, marginally at least, public policies and investment decisions. 'Finiteness' is perhaps not a useful organizing principle in discussion on the predicament of mankind; the debate should focus rather on social and political change. But it cannot leave out the ecological factors which have only recently come to light and require thorough investigation.

The constraints are real in terms of cost, time and technologies, and the stakes are high. Most prominently, a smooth transition to a *new energy*

economy must be prepared; global or local shortages, even temporary ones, must be avoided, and a better distribution of the sources of energy production must be achieved to lighten the balance-of-payment difficulties of a great many countries and reduce their dependency on a few centres. Some incipient form of global management is called for in this field, at least in the form of systematic monitoring and information which would assist in appraising potential supplies, reserves and resources, and the state of the art in technological development. The true alternatives must be made apparent. They have been obscured for 25 years by an undue concentration of research and development on the nuclear option, on the basis of assumptions relative to costs and safety which are now being increasingly challenged. The international community and many national entities are visibly striving to limit the proliferation of nuclear facilities, even if a large part of the programmes which are now at different stages of planning and implementation cannot be cancelled. Yet present institutional arrangements governing research and development appear inadequate for the management of a difficult transition to new energy sources. During a Conference[4] held in the summer of 1976, on the Future Supply of Nature-Made Petroleum and Gas, these inadequacies were amply demonstrated. It became clear that engineers and scientists working in the disciplines related to some 20 new types of petroleum and gas resources had hardly any contact with one another, even within the confines of their own countries, let alone internationally. Legislation to prevent collusion, and the desire to protect the confidentiality of research efforts, condition the behaviour of public as well as private entities. This inevitably results in a costly multiplication of large expenditures (at a time when adequate funds for research and development are not assured), and undue delays in the perfection of new technologies and processes. A change in the existing rules or practices in the direction of a different mix of co-operation and competition seems required, as the situation, even to the true believers in the 'technology fix', is not altogether reassuring. Research and development should also assume a truly international dimension, as the countries which are best equipped with technical and financial means to develop useful technologies and new types of resources are not necessarily those which are in the most urgent need of them.

Although anxieties about resources depletion have recently occupied the front of the stage, concern about the environment was probably more instrumental in the early development of the idea of 'limits'. After the awakening of the last ten years, and the impulse of the 1972 Stockholm Conference on Environment, understanding of the interactions between environment and development has not proceeded at such a pace as to enable a methodology to emerge that could offer policy-makers useful guidance. The consensus in this difficult area has not widened as might have been hoped. In most cases it still emerges as the outcome of a contest between different pressure groups. It is true that, as a result of numerous studies and of the

[4] The Conference on The Future Supply of Nature-Made Petroleum and Gas, jointly organized by the United Nations Institute for Training and Research (UNITAR) and the International Institute for Applied Systems Analysis (IIASA), was held in Laxenburg (Austria), 5-16 July 1976.

experience acquired in the promotion of practical measures and policies, a certain confidence has been gained that the environment factor can be brought within manageable dimensions and need not upset the general equilibrium of development policies embodied in United Nations legislation, notwithstanding the drastic revisions and policy changes required in some areas. Such confidence may be justified in respect of the vast field where environment problems revolve around choices and trade-offs between various types of amenities and disamenities, and where the problem is one of evolving a more rational decision-making process.

Yet it is in the field of environment that some of the major and most intractable uncertainties, entailing grave risks, would continue to plague decision-makers: climate modification, genetic engineering, the nuclear syndrome. The test of statesmanship is here particularly exacting, as uncertainties are not going to yield to a Socratic dialogue, and international agreements would have to be sought on *policies of restraint* (the 'prudential' approach) which would not be based on the rationality imparted by scientific knowledge.

This in turn might be more easily accepted, and the anxieties pertaining to such situations might be alleviated, if the need to subject the development of new technology to some form of social control were to begin to be recognized.

In the dramatic unfolding of the controversy over 'ultimate limits', technology has figured at times as the Deus, at times as the Diabolus ex machina. But it is within the power of mature societies to subordinate it to fundamental social requirements. An example was recently set by the scientific community in the field of genetic engineering, when, for the first time, a decision was made that experimentation should be subject to a measure of self-policing. Further experience with technology forecasting and technology assessment, which have hardly as yet taken root in governmental and international institutions, will almost inevitably lead to similar approaches and to the recognition that some restrictions may have to be placed on the right of man to expand the frontiers of knowledge. Such a notion is today still new and somewhat forbidding. Tomorrow it could lead to the guidance of research and development toward a different hierarchy of objectives, one based on internationally and democratically agreed criteria of human needs.