

CLUB OF ROME DOSSIERS 1965 - 1984

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Editorial preface

The papers of the Club of Rome, here called the “dossiers”, outline the launch and activity of the Club from 1965 to 1984. As originally agreed upon with Aurelio Peccei some key papers were collected for the Helsinki conference July, 1984 and distributed to the participants as a special issue of the Futura journal of the Finnish Society for Futures Studies. The edition in 1984 was well received and regarded as valuable information, notably even more so when Aurelio Peccei, the instigator of the Club and its first President, died suddenly just a couple of months before the Helsinki conference. The present “dossiers” collection is a re-edition of the 1984 issue with some additions to and omissions from the previous material as agreed upon with Alexander King, the co-founder of the Club.

The first dossier in the collection, ‘The Challenge of 1970s for the world of today’, is written by Aurelio Peccei and it stems from the times of pre-existence of the Club (1965); it triggered the original impetus that led Aurelio Peccei, Alexander King and Jermen Gvishiani to come together and start discussions about the predicament of humankind, from which the Club then emerged. The dossier, ‘The New Threshold’, is an “unofficial” document of the Club, i.e. a statement by the Executive Committee (1973). In the paper ‘A Case Study of Institutional Innovation’ Alexander King gives a glimpse of the early history of the Club up to 1978. These three articles are reprinted from the 1984 edition.

In 1972 the first report to the Club of Rome ‘The Limits to Growth’ was made public; it became most influential worldwide as a longterm futures appraisal, and its message of warnings and recommendations penetrated all social and economic strata and even the West-East or North-South ideological barriers in the world; the results, updated by the authors, are still vividly debated thirty years later. The ‘Commentary to The Limits to Growth’ by the Executive Committee (1972) is made available here as valuable information. Permission to reprint the Commentary chapter of the report has been kindly granted by Dennis Meadows.

Peccei’s death on March 14, 1984, just before the conference and after almost two years of preparations for it, was a shocking end to the pioneering epoch of the Club of Rome. The “dossiers” includes a reprint from the 1984 issue, ‘Agenda for the end of the century’, which Peccei wrote in the hospital only a few days before his passing away. The meeting in Helsinki became exceptionally significant for the future of the Club. The Executive Committee decided to continue activities with Alexander King as the new President. The paper ‘Reaffirmation of a mission’ is a statement by Alexander King (1984) as President of the Club following the Helsinki meeting, kindly submitted by him for this edition.

In the Annex there are two papers. In ‘The Launch of a Club’ Alexander King elaborated the Club’s activities and role while in office. The other paper, ‘A Rebellion against Ignorance’ by Pentti Malaska, is a commemoration of the life’s work of Aurelio Peccei reprinted from the 1984 edition.

We wish to express our thanks to Alexander King for the authorization to publish the “Dossiers” and for the documents he made available for it. We thank Dennis Meadows for his kind cooperation and permission to publish the material from the LG. The assistance in editorial work provided by Tapio S. Linna, member of the FinCoR, is also highly appreciated. We thank Thomas Schauer (European Support Centre of the Club of Rome) for the layout and production of this edition.

We hope that the “Dossiers” will serve as a piece of first hand information for understanding the Club of Rome. Any comments are welcome.

15th September, 2005

Pentti Malaska

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THE CHALLENGE OF 1970s FOR THE WORLD OF TODAY

From a lecture given at the National Military College, Buenos Aires,
Aurelio Peccei, 27th September, 1965.

1 The times in which we live are full of trouble and dangers. But we are so concerned with our personal affairs that we end up by losing all sense of the complex world that surrounds us. This encourages me to bring together a number of points regarding the situation and possible alternatives facing human society on the threshold of the '70s. It is difficult to find in history any other period in which whole peoples have looked to the future with such lively concern. Indeed it may mean going back to the Dark Ages when fear of the millennium seized the mind of medieval man.

In our own times the alternatives to which every continent is exposed are intensely dramatic, whether for better or for worse; in one because behind the most fantastic prospects looms the spectre of a nuclear holocaust, in another because hope of a more decent life, at least for the next generations, is submerged in inescapable misery.

To take the words of a study published by the Stanford Research Institute in "The World in 1975" which also provides other points during the course of my talk: "The modern scientific technology brings forces under control that rival those of nature itself: employing them, man can invent his own future. It is now in his power to create a world substantially without want, drudgery and disease. It is also possible to fashion a perfect tyranny or eliminate life completely. The direction taken depends on man's effectiveness in putting scientific and technical capacity in the control of reason, and directing it to good ends."

The intense uncertainty characteristic of contemporary society is the fruit of the pace and of the exceptional dimensions which technical and social phenomena have assumed today.

In the history of humanity it is possible to identify long phases of slow evolution broken by periods of intense change which can be compared to the mutations in the life of the species. When the discovery of the new technical methods made a community stronger, it invariably conquered and eliminated more backward neighbouring communities or races. Each one of these stages in progress, often separated one from another by thousands of years, has necessarily brought about a corresponding change in the social order.

The latest change was provoked by the industrial revolution which had its beginnings two centuries ago in Britain and then spread to a certain number of other countries which are referred today as "industrialized". The overwhelming factor which marked the advent of the modern era was the invention of powerful machines destined to multiply man's capacity for work. The consequence of this technological transformation can be measured by remarking how those countries not touched by the industrial miracle, the underdeveloped countries, have remained backward in every way: social structure, political system, economic standard and, above all, capacity for further progress.

Some of the most serious problems of our times have arisen just because this transformation has taken place in only part of human society. To appreciate the consequences it is enough to run through the "cahier de doléances" submitted last year at the United Nations Conference on Trade and Development (UNCTAD) by the underdeveloped countries. Since the wealthy industrialized nations are still going through a period of progress, while for the underdeveloped countries the centuries old phase of stagnation continues, the gap between them instead of narrowing is growing wider, so much as to give cause to fear that discontent will end in a cataclysmic explosion.

Personally I am convinced that stable world equilibrium cannot be attained unless we succeed in effectively generating an analogous transformation of underdeveloped communities. The task is an immense one and, while time passes, the results are very scarce indeed. Recently the Chairman of the International Industrial Conference addressed the following words to five hundred of the most notable industrial and financial personalities from more than sixty countries who met together in San Francisco to discuss industrial development and international co-operation: "The tangled issues which confronted our baffled society four years ago when we last met are no less tangled now. And,

may I add, our society is no less baffled. In this brief interval, changes which have profoundly affected the economic and political climate that surrounds us have occurred at a speed which appears almost incredible in retrospect." In the face of the worsening of situations which affect the future of everyone, it is indispensable for our generation to get conscious of the world's problems as a whole in this age of headlong progress and profound change and to fix, therefore, certain fundamental objectives and make certain basic choices, as we shall indicate later on. Unfortunately, whilst it is not yet possible to see how we can resolve the gigantic problems of underdevelopment caused by the unbalance which followed the first industrial revolution, there are signs that there is now maturing in the higher part of human society yet another change which is perhaps even more profound and may generate quite incalculable consequences.

The essential cause of this new change may be justly entitled the second industrial revolution. It is proceeding swiftly, thanks especially to electronics, which has permitted the creation of even more prodigious machines, destined to multiply, this time, the capacity of the human mind.

2 This is the subject. The discussion of it can be divided into three parts. First of all I shall summarize the changes which have taken place in the international scene during the first half of the 1960's. These involve a complex of fractures and centrifugal trends, evidencing the constant acceleration of world phenomena.

Secondly, I shall seek to trace the changes in preparation in North American society, because it is just there that the impact of the second industrial revolution is developing most fully. The consequence already apparent is the rise of a new type of community, superior to and different from that in other industrialized countries, and precursor of new disequilibria in the already precarious state of the world.

Lastly, in the third part, I shall indicate what are in my opinion the great objectives - development objectives, but at the same time objectives for survival - which civilized people must aim at for the '70s. The speed and the marvellous or terrible alternatives which we have ourselves created oblige us to look very far ahead, to plan in good time targets and ways; in other terms, to make those choices the soonest possible which can be decisive for our future and then to use intelligently all the means at our disposal to bring them about.

This last part is the most difficult. In practice everything I have to say is more than anything else an invitation to reflect on the destiny which modern man proposes for himself. This is a theme to which I try to make my small personal contribution, humbly but with conviction.

3 Only a few years after the end of the second world war, unleashed by the European powers - then perhaps the richest in the world - in defence of régimes and interests in fact destroyed in the conflict, many of the hopes for which tens of millions of men had died or had made unheard-of sacrifice were shown to be vain. Far from laying the foundations for a useful, well-ordered world community, the terrible test undergone by humanity not only failed to prevent the emergence of the cold war, but also gave new life to the profound tensions which lie between the industrialized and the underdeveloped countries. The latter came to be called, improperly, the third world, to distinguish them from the developed West, which implicitly denominated itself the first world, and from the countries having a communist régime which made up the second world.

When a historic atlas of the twentieth century comes to be published, the world map at the threshold of the 60s could indeed be presented divided into three areas of which we may examine certain characteristics and data. Then we shall outline the great internal fractures which in a short space of time have developed in each of them.

The first world is made up of some twenty countries defined by the United Nations as industrially advanced: they are those with a developed market economy, plus a few others which gravitate around them. The principal nucleus comprises the communities established in the privileged continental zones on either side of the North Atlantic and possessed of a homogenous cultural basis which has its roots in Greek philosophy, Roman law, in the Christian ethical-religious inspiration, in languages of Latin and Anglo-Saxon derivation. Also part of it are Japan, Australia, New Zealand and

South Africa, which in this study we shall leave on one side so as to simplify the picture. The first world has a population approaching 700 million inhabitants, little more than 20% of the world total, with a gross product exceeding 1,100 billion dollars, 60% of the world total, and of this two thirds are concentrated in the United States alone. It comprises the area having the greatest general wellbeing and includes the most prosperous parts of the world: it may suffice to note that it possesses 93% of the gold used as monetary reserves, 93% of the automobiles, 88% of the telephones, 67% of the radios and 87% of the television sets. It is a world of wealth such as has never been known by any other society in history, unquestionably progressing, proud, sure of itself.

The second world comprises the nations under socialist régimes in which the element of cohesion is of an ideological character. It has a billion inhabitants of which more than two thirds living in China, but the annual gross product is equal to barely 30 % of that of the first world; not much more than 300 billion dollars, of which more than two thirds are concentrated in the Soviet bloc. Following period marked by rates of growth higher than those in the West, its development is going through a phase of stagnation, giving rise to doubts as to the capacity of the present form of central planning to satisfy that diversified demand for consumer goods of better quality which is the concomitant of higher stages of development.

Lastly we come to the areas of great poverty, which make up the third world. It includes about a hundred large and small countries, old and new, with the most varied conditions imaginable ranging from the traditional community to nations passing through the difficult period of economic puberty. There are no true elements for cohesion between such countries. All they have in common is underdevelopment, obviously a negative factor. Their overall gross product is low, little more than 200 billion dollars a year, that is less than 15% of the world total, and what is more, it is constantly eroded by inflationary processes. In this area lives a kaleidoscope of peoples, almost a billion and a half persons multiplying at a very high rate. The average per capita income is not even as much as 5% of that of the United States. In some countries the demographic increase is even higher than that of the national product, so that the minimal level of life is tending to decline rather than increase.

This easy breakdown of humanity into three spheres seemed to be founded on bases so realist as to be considered stable. But the wind of change in our times has quickly upset it and further fractures have been opened in a world already so much divided. Let us take a look at those, which seem to have historic significance.

The first fracture concerns the communist world. At first it appeared to be less compact than initially believed; then it became obvious that its pace of development had become less buoyant; and eventually it was realized that its production potential was only a small fraction of that of the West, a reason for which, to reduce the gape, it would have been necessary to allot to investments a higher proportion of the national income. The consequence of such a marked disparity between the two worlds are only attenuated by the lack of co-ordination within the western world. In spite of this, we can objectively deduce that three things are practically impossible. Above all it is impossible that there be important continuous Soviet aid to China. The USSR must retain all its resources for itself and cannot redirect them to any significant extent to render economic assistance to China, just at the time when the latter has most need of it. This insuperable impossibility, aggravated by the withdrawal of Soviet technical assistance, is the essential underlying factor in the ideological schism between Russia and China, and is such as to make it incurable.

This is the first international fracture to have occurred in recent years. The other two impossibilities that I have mentioned also arise from the Soviet need to invest in its own development all that part of its national product not absorbed by consumption. In practice this makes an effective confrontation between the USSR and the West impossible. This must be borne in mind because it constitutes the natural premise for a disarmament agreement between the two blocs, and at the same time it prevents strong Soviet competition in the field of aid to third countries, another fortunate circumstance since it could open the way to joint action in favour of underdeveloped peoples.

Let us now pass to the third world where we see that movements and cracks continue to occur as in a stream of lava. The causes are manifold. The spirit of Bandung has had its day now that the anticolonialist coagulant has faded. With the decline of the cold war, the solidarity suggested by non-commitment is disappearing. The passage to self-government brings with it the harsh demand

of reality and obliges new countries to substitute for policies based on facts in which each in conclusion places himself first.

One fact of capital importance has, however, arisen, and it is of primary importance to the object of our theme. I refer to the progressive emergence of Latin America, where the realization that the key to the future lies in economic integration has produced growing regional cohesion and a parallel relaxation of ties with the Afro-Asians. The Inter-Latin-American fabric daily heightens the value of geographical-economic and historical-cultural individuality of that continent; and, even if the sceptical can point to the enormous difficulties still to be overcome, it remains an incontestable fact that Latin-America has practically cut itself off from other developing regions and has entered its candidature, as a homogeneous area, for a higher place in the world. We are talking here of an irreversible movement which tends to detach it increasingly from the true third world. There is here, therefore, a second fracture of great significance.

But besides these two fractures which have arisen in such a short space of time in the pattern of the second and third worlds, an event of even greater importance can be perceived, as we have said, in the first world: the gap which, has appeared between, and the possible separation of, the United States and Europe. The examination of this point brings us to the second part of the analysis.

4 The logic of this alarming prospect is the same as that underlying the trends towards an increasing distance between the industrialized and the underdeveloped countries. The causes, which determine the growing gap between various types or levels of society in the world today, are essentially technological progress and organizational efficiency. A third factor which has recently acquired importance is that of optimum size. It does not take much to realize that these factors reach their maximum values in the United States. Indeed, they are measured in relation to practice established there.

If we conduct a more detailed examination we realize that each factor acts as a multiplier of the other, with the result that their combination impresses on the North American Society an extraordinary dynamism, such as indeed to catapult it into an orbit of its own, different from that of any other country.

As for techno - scientific progress, it is well-known that it is in a State of continuous and growing acceleration, and that there is no way of foreseeing if and when its rising curve will reach a level of saturation. Since every discovery is based on the accumulation of previous knowledge, and an invention in any particular field generates progress in different fields which in their turn create stimuli for advance in yet other fields, it can be maintained that progress has become practically self-propelling. Its incredible acceleration over the centuries has been represented in graphic form by Louis Armand - to whom I would also acknowledge my debt for other ideas. Similar curves of acceleration can also be drawn for a great number of phenomena influenced by technology: from the production of energy to the world demographic explosion, from the greater speed reached by man to that of his capacity for destruction. For progress in general terms, Armand's curve shows that we are in a phase tending more and more to the vertical. Let us be quite clear: the real leaders in this effervescence are the United States, while the other countries have lesser roles, or else are no more than spectators.

Taking some representative figures, we see that the United States this year will devote to research and development, the basis of progress, over 20 billion dollars. About 70% of this sum will be spent by the Federal Government, in large part for military and space programs, which however will provoke a "fall out" of results to the advantage of all industrial sectors. It is estimated that this huge sum, more than a third of Italy's national income for example, will increase year by year, until at the end of the decade it will have reached nearly 30 billion dollars. It is also estimated that they have a force of 500 thousand scientists and research workers, a number constantly increasing partly because of the so-called brain drain, qualified men attracted from every part of the world to the United States in the wake of other Einsteins and Fermis.

Other figures, published by the Bulletin of the European Economic Community, show that the number of research workers in the United States is four times that in the Common Market, expenditures

seven times as much, and three and a half times as much as in the USSR, while per capita investment is six times as much as in the EEC and four times that in the USSR. There is no doubt that it is thanks to such a gigantic effort that such high points in scientific and technological progress are encountered in the United States, and that they have so many years advantage over other nations, none of which is in a position to compete within the foreseeable future.

To this statement must be added another of similar importance concerning the second factor, organizational capacity, in that it is possible to utilize effectively technological progress only in those countries which have a structure and organization capable of employing it to the fullest extent.

To quote again from the Stanford Research Institute's 10-year forecast: "Science and technology promise to be the most momentous forces for change in the coming decade. The mechanism by which scientific discoveries are translated into technology and thence into practical application will advance by giant steps during the period. Hence there is little question that advances will be made at an unprecedented and awesome speed."

These conclusions, however, are for the time being applied essentially to the United States. The majority of other industrialized nations - let alone those in course of development are neither endowed with the structure nor with the capacity to follow the advance of progress across the whole front and even less to give it full practical application. In other words, in the absence of the highly developed modern organization, comparable with that of the United States, they are in a position to dominate and profit from no more than a limited fraction of the technological progress of today.

As for the aspect of organization and efficiency, it is further more unanimously recognized that the United States possess undisputed superiority. We are accustomed to paying homage to yankee ingenuity, to the extraordinary capacity of United States' technicians for making every productive process simple and efficient, to their studies of functional company organization and their practical spirit in their application; and management in every country holds itself fortunate indeed when it goes to study organizational technique or management at Harvard, Columbia or Cornell.

But reality goes well beyond such common judgements, especially in new or complex sectors, such as electronic data processing, which are fundamental to progress. Here organization is the decisive factor in turning to profit the amazing capacity of increasingly refined machines and equipment. These go under the name "hardware" and in theory can be installed even in the most backward countries. But their immense potential can only be exploited by those nations which possess the skill, in contrast called "software", which is made up of evolved user techniques, knowledge of machine languages, advanced methodology, rich programme libraries, access to the crossfertilizing experiences of a vast network of users, plus a competent army of mathematicians, analysts and programmers.

I shall give two examples to underline how very different a society can be which is set up for the future. M.I.T. of Boston is studying a project for making the electronic computer a public service, like the distribution of energy: a large city or regional centre would be set up; each user would submit to it his problems using a simple typewriter and the telephone; he would obtain an immediate answer, just as today the light comes on at the turn of a switch. Another example is electronic industrial design, also under study: the designer will use a luminous pencil to draw what he wants on screen like that of television, and the computer will interpret the drawing; according to need it compares it with designs in the magnetic archives (or library), translates it into a drawing correct in every detail, at the same time it produces a tape containing in the greatest possible detail all the geometrical elements of the piece which is to be made; the tape is passed to the governor of the numerical control machine tool and guides it in the automatic production of the piece required.

These may seem dreams, but before many years they will be reality. Let us remember though: they will be the reality where there exist not only perfect company, but also perfect national organization, top-efficiency throughout the whole system. For all practical purposes the temporal advantage already mentioned acquired by the United States acquires a powerful multiplier in the nation's structure and organizational capacity.

In contrast, there can be no doubt that the cases of the USSR and of a great part of Europe are those of communities endowed with an organization not yet equal to the times, incapable of exploiting to

the full the ever greater opportunities offered by modern technology.

As far as the Soviet Union is concerned it is enough to recall the innumerable and even courageous charges of organizational inefficiency of its agricultural economy and of many industrial sectors made by the most responsible Russian leaders who are incessantly seeking new remedies to set matters right.

As for Europe, one example can suffice for all. Since the development of electronic data processing is tied to the availability and quality of telephone lines for the use of computers, Europe's advance will be seriously hampered because, in contrast to the United States, its networks are of insufficient quality and some of its many authorities deplorably backward.

Lastly, there is the size factor. Generally speaking it is understood to mean sufficient size. Today it has become an essential condition for the realization of an adequate organization in the vertiginous conditions of modern progress. These are aspects of human activity which can no longer be conceived but on a continental scale. When we say that the United States and the USSR are superpowers, we admit in effect that their very size is an indispensable condition for the realization of the concentrated effort required in certain fields.

It is wellknown that the problem of size has become an obsession in European industries. A very recent publication by the Union of Industries in the European Community (UNIEC) was entirely dedicated to this burning theme, and has brought to light the competitive advantages of American companies over European ones because of their greater size: higher profits, greater availability of internal capital, less burdensome access to capital market, superiority in research, opportunity of using costly, highly automated equipment for production, opportunities for adopting more advanced development programs and management techniques, and of organizing more efficient trading and servicing networks, etc.

Size must also be appropriate to modern times, and is thus itself a multiplier. In fact it is by now clear as the light of day that, not only as regards its productive efficiency, but in well nigh every field, a fragmented Europe, incredibly enough still divided into almost a score of States, is in no condition to stand besides the United States on adequate terms to compete or to co-operate in an open market.

We cannot go further into this subject. What has been said is sufficient evidence to show that in the near future the United States alone will be found at the crest of the wave of the extraordinary progress being enacted, and that they will inevitably rise far beyond all other nations, those of Europe included. The "technological gap" which increasingly separates them from Europe, and which is the subject for increasing concern, is the first visible expression of the second industrial revolution which has now exploded in the United States.

We hear something new almost every day of some of the electronic, nuclear or space marvels from the United States. The innovation which I believe, however, will have the greatest influence on the future of American life, contributing more than anything else to the marked differences between them and Europe, is the new relation between man and machine due to automation, because it concerns a greater number of people.

The productive process will be revolutionized by machines which man is limited to supervise only. The same will be the case with many administrative, governmental and banking activities, by means of the use of electronic systems in real time, that is by the elaboration of data giving a reply within a fraction of a second - on-line, real-time, time-sharing systems. New types of computers, known as heuristic computers, will adapt themselves according to the complex problems submitted to them by the man; they will make the optimum-choice needed between various alternatives, and can also serve to conceive generations of even more advanced computers. We must not be surprised if in this context one talks of "artificial intelligence", or that it is anticipated that by 1970 in the United States telephonic traffic for the transmission of data between machines exceeds that by viva voce, that is between persons.

The creation of a close interdependence between man and the machine will change him no less than it is changing machines, which before very long will bear little resemblance to those of today. It will profoundly affect not only his way of working but also his socio-cultural environment, his

relations with others, his view of himself, his philosophy of life. Part of the education of machine-age man, in particular his technical knowledge, will be imparted by means of programmed instruction, by teaching machines. The new forms of "potted instruction" and recycling programs will make it possible to continue his education throughout his life. His libraries will be made up of texts recorded on magnetic tape and available everywhere; it will be enough for him to ask the right machine in code for it to project the picture, no doubt, on a screen.

His spare time will continue to increase. Will this be an advantage in that it will facilitate the development of his human personality? Or will it rather be an attack on what he has hitherto been accustomed to consider his cardinal virtue, work? In any case his community will become increasingly wealthy. The progress of the machine will thus create new problems which other machines may have to be employed to resolve.

In conclusion, I am convinced that the American community will know how to absorb and utilize such a tremendous technological impact, solid and vital as collective discipline is, anchored to a number of basic principles from which it knows how to derive ever new strength; but as I have already said, the impact will be such as to bring about a break with the present - there will be sharp change in the kind of living making for a new type of society.

And then - just as it is difficult today an understanding between peoples having an industrialized civilization and those with a pre-industrial civilization - the dialogue between the United States and Europe will also become difficult, and the two continents will move further apart psychologically from one another; this because in spite of centuries of common background, a real mutation will arise between them.

In any case, assuming that this vision of a not distant future corresponds to reality, we must conclude that the history of man has entered a quite unprecedented explosive phase. If this theory is right, human society can be compared to a microcosm subject to forces similar to those which act on the expanding universe. It also follows that, unless adequate opposing forces are set to work, fragments of human society will become detached and the distance between them will continue to grow more and more.

5 This, as I see it, is the challenge with which the 70s face us. It is a challenge to our ability to understand where we are and where we are going. The question that must be set is that already indicated: are we capable of controlling our future, of parrying the threat that the world, even though becoming very small, literally falls to pieces? In the third part of this talk I shall venture to develop some of my views. It is to be understood that these are entirely personal ideas.

I believe that the highest quality that modern man must possess, especially when vested with high responsibilities, whether scientific, political or productive, is the capacity of synthesis. Indeed, the environment in which we live is becoming increasingly complex, the amount of our knowledge is growing dizzily (the quasi-law of redoubling every ten years). If we don't know how to size up our position, if we become slaves of our machines, if we do not succeed in ordering our ideas and our accomplishments, everything we have created will amount to a useless wealth, even a danger.

Techno-scientific progress itself, like the processes of living organisms, needs a regulator. Up to now a military stimulus (national defence or war preparedness) has acted as regulator, but since it contains an abnormal gene it has brought the whole system to the verge of apocalyptic selfdestruction.

So as not to lose control of the future, the first thing to be done is to find a substitute for this regulator which will furnish coherent development, conceived of in terms of modern man, this complex being that, from a spiritual and rational creature, has also become an economic subject. In other words the technological revolution must be guided in the attack on the real problems of the next decade: survival in the nuclear age, that is "pacem in terris", overpopulation, hunger in large parts of the world, education in the broadest sense, justice in liberty, better circulation and distribution of wealth produced inclusive of the technological patrimony itself, that is well-being.

This substitution is at the same time the prerequisite and consequence of a longer term global political approach, necessary for leading intelligently human activities during the seventies. The

responsibility for defining it obviously falls on the most developed nations. It is a responsibility of world leadership which calls for establishing in the stride of history an overall strategy for the defence and promotion of fundamental common interests.

In adopting this guiding philosophy I believe that the principal objective of a global policy by civilized nations must be that of enlarging and consolidating the area of prosperity, which exists today in the world. I employ the word prosperity not because wealth is the greater blessing, even if it is difficult that immaterial values prosper under poverty, but because we are accustomed to measuring it. By increase in prosperity must therefore be understood not only the increase in individual income but also the raising of the level of life in all its aspects, a complex operation requiring human sympathy, great educational efforts and technical intervention, no less than financial resources.

To accomplish such a vast design, as is that of extending in decade prosperity to other regional of the world, the leadership of the United States is paramount, but the full participation of Europe is indispensable. Therefore the attainment of an advanced degree of European unity constitutes an absolute prerequisite.

Europe remains the focal point of the world. This is not only because it holds the central place in the distribution of the land masses, but because it is virtually impossible for it to be supplanted in its role as a link between the America which lives in the future and those regions which live partly in the past.

Over the many centuries of give and take with the rest of the world, Europe has accumulated a mass of instructive errors and incomparable experiences. Under Labour, Socialist or Christian leadership today it demonstrates a singular social awareness. Since the last war it has launched important experiments in public sector promotion of economic development, state participation in productive activities and national planning. France, cultural leader and in the vanguard in such ideas, has charged the so called "1985 Group" to study in the light of facts bearing on the future the conditions which will apply in that period, so as to clarify the orientation of intermediate plans.

Consequently, the image of Europe is associated with the "idée-force" of planning, which in the seventies in one way or another will be one of the dominant elements in zones having a mixed economy. The question to be formulated therefore is whether there will be sufficient unification of Europe in time.

Not even the reverses of January '63 and June '65 can justify a negative reply. In the days of Telstar it is not possible that schemes dating from the Congress of Vienna should prevail in the end. History cannot stand still. The consolidation of Europe has reached the point of no return. Indeed, the prospects of a unified European market, with a development potential even greater than that of North America, constitutes such a strong attraction for innumerable private and collective interests that it cannot be long opposed.

The time lost has, it is true, caused very serious damage, but it is not irreparable. In a situation as mature as that of Europe today, it will only need some wise constructive steps to be adopted for there to be a chain reaction leading to unity.

In effect, I believe that by the end of this decade we shall be able to count on a nucleus of a united Europe which will permit it to participate actively in the development of a global policy: whether such a Europe will initially be made up of six, or six plus seven, or even ten or twelve countries is of only temporary importance and is not fundamental.

Taking these premises as a starting point, there are, as I see it, three principal lines of action to be developed for the attainment of the strategic objectives of the '70s. In a global plan leading to development and well-being in the next decade, the fundamental action to be given effect concerns the reinforcement of relations between the United States and Europe. Since the argument is controversial, I shall do my best to clarify it as briefly as possible. I shall then indicate the two complementary lines of action which concern the Soviet zone and that of Latin America.

Above all it is necessary to employ every means to present the technological and psychological gap developing between the United States and Europe from assuming impossible proportions. It is difficult to imagine what the very serious consequence would be if such a fracture were to become permanent, but it seems highly likely to me that the United States would end up by being entrenched in

friendless isolation, and that the rest of the world would be induced to consider them entirely alien; each would then follow different ways. It would then be difficult indeed that the forces for destruction should not prevail in human Society.

Therefore, according to my views, the milestone of global plan remains the North Atlantic partnership, tied to European unity. It is the only solution that can ensure a continuous flow of technology and of organizational and productive experiences between the two areas, such as to maintain their respective levels in reasonable equilibrium, and furthermore create, by way of the exchange of goods, capital and men, interests which will act as a bulwark against any recessive tendency; and lastly, permit over time the fusion of the communities on both shores of the Atlantic.

In speaking of "partnership" one must refer to the man who has done most to inspire modern young people, John Fitzgerald Kennedy. In his memorable speech of 4 July 1962 at Philadelphia, he said: "We believe that a united Europe will be capable of playing a greater role in the common defence, of responding more generously to the needs of poorer nations, of joining with the United States and others in lowering trade barriers, resolving problems of currency and commodities, and developing co-ordinated policies in all other economic, diplomatic and political areas. We see in such a Europe a partner with whom we could deal on a basis of full equality in all the great and burdensome tasks of building and defending a community of free nations."

In spite of the great Babel of tongues which has followed, favouring the predominance of the contingent over the permanent, the particular over the general, I hold that this message has not been lost by the wayside. It's meaning - first European unity, then Atlantic interdependence - stands, even if the time taken for European unity is protracted, even if, as a consequence, it is essential in the meantime to tighten the bonds between each European nation and the United States.

The essentiality of the picture and of the forces involved seems to me so evident as to make consideration of any other scheme of only ephemeral value.

In conclusion, although the way bristles with difficulties, and is beset with tribulations, the important thing is to be convinced of a double truth: that the objective is attainable, and that when we shall have a clearer vision of the affairs of the world it will be possible to attain it in a relatively small number of years.

As an industrial manager, when there is a problem, I believe in facing it and in trying to resolve it. If experience at company level can be significant, it teaches that, when the objective terms of the problem are confused, almost certainly one adopts mistaken solutions; but if on the contrary we have the terms clearly in our minds, it is relatively easy to take the right decisions.

However, to move towards partnership it is necessary, in the meantime, that the United States do not set out as the principal national objective the egocentric one of creating the "great Society", which would carry them too far forward; and that the most modern and open of European forces have the better of the residual nationalisms, which act as a brake on Europe. It is necessary that the latter be organized in a European sense over and above internal frontiers, at the level of industry, of organs of public opinion and of political parties, until such time as it also takes place at government level.

Once launched, the Euro-North American association will be in a position to unleash uncommon energy to direct it towards the fundamental objective of extending the area of prosperity to other zones on the complementary lines I have mentioned.

Coming to these, I have no doubt that, in the frame of realistic policy, the areas to be interested in development and in co-prosperity in the next decade are necessarily and only two: the Soviet area, comprising the USSR and Eastern Europe, and the Latin-American area.

The dialogue with them is not really so difficult, especially on the European side; not even with the USSR, so long as the internal political regime of each community is duly respected. The Political decisions seem more difficult, but perhaps they will be rather less so when it is understood that development on both sides is synonymous with the survival of each, and that within certain limits of disparity the implementation of aid so as to bring other peoples to our standard of well-being is commercially advantageous.

In so far as the Soviet area is concerned, simple coexistence with the West today is really too fragile and exposed to unforeseeable risks for us to be able to judge it sufficient. The road of co-operation must be followed. From the beginning of the '60s many strides have been made along this road. Even the highest moral authorities have begun to take up positions in this sense.

No community, remembering the terrible lesson of the '40s can be so obstinate in the defence of its own interests, of its conventional wisdom, of its own political philosophy as to refuse to follow this road the whole way, especially when it is obvious that today - in contrast to those times - any other alternative contains the mortal danger of atomic catastrophe for all, without distinction of colour, of creed or skin.

On this occasion we have no time even to rough out the argument on how a ten-year program of reciprocal co-operation should be developed with the Soviet bloc. I shall limit myself to pointing up two characteristic problems and the type of solution to be mulled over.

The first problem to be faced in the general interest - playing Mercury against Mars - concerns the increase in East-West trade which is today only about 2% of the world trade. The countries of the Soviet area appreciate that the prerequisite of their development is freer trade; but they also know that this comes into conflict with the rules of the present system of rigid planning and of bilateral trade agreements. Our headaches regarding international liquidity are as nothing compared with those of who is obliged to conduct his foreign trade practically on barter terms.

But for the countries of the Soviet area to attain the ability to export competitively their products in much greater quantities than at present - an indispensable condition for any sharp increase in Western exports - they must resolve a veritable avalanche of complicated problems which range from the quality and specifications of the products offered, to render them attractive to our sophisticated markets, to the need for greater autonomy in the processes of industrial production, from the study of modern marketing techniques, to the creation ex novo of commercial networks, from the adoption of multilateral exchange practices to the use of modern financial instruments.

This means a huge organizational revolution needing at least a decade and full co-operation from the West. In this interval - as the most perspicacious western managers are already aware - arrangements have got to be made, whereby purchases by the Soviet area in Europe and in the United States can be financed through co-ordinated programs of medium and long term credit on a scale adequate for three continents. The second problem also presupposes original solutions, because it concerns the very efficiency of the productive machine in the communist countries.

I have already referred to the agonizing reappraisal being made by their leaders in the sense that, in spite of the installation of a large number of new plants, they have to accept that their industrial economy as a whole, and even more their general administrative apparatus, are entirely inadequate for the requirements of modern organized society and call for profound reform.

Hence the forthcoming launching of great plans for modernization and mechanization in which the primary stimulus which over thirty years ago had as its slogan in the USSR "electrification", today will have that of cybernetics and automation. But even for these plans all out help is needed from the West: Europe could perhaps open the way, but in the end the inexhaustible organizational capacity of the United States will have to be brought in.

Think what an inspiring undertaking it would be to conceive of and put into effect such East-West co-operation which, besides meeting the deepest interests of its great protagonists, would undoubtedly change the destiny of mankind. The direct outcome of a ten-year program of co-operation between the United States, Europe and the Soviet area will be disarmament. An initial concerted reduction in annual expenditure on weapons does not seem far off, but solid results can only be won when a constructive common policy has been settled, such as can only be a policy of development permitting, among other things, the gradual conversion of industries for war into industries for peace. The immediate consequence will be that a part of today's enormous expenditures on armaments - let us not forget that they total a good 120 billion dollars a year - could then be destined to the organization and consolidation of a much larger area of well-being, commencing with just that region - the Soviet area - which if pushed in other directions could with its weight and power profoundly disturb half the world.

Let us now pass on to the last line of strategic action, that concerning Latin America. I believe it is not difficult to explain the reasons which militate in favour of the absolute priority to be given in this setting to Latin America rather than to other developing regions. As far as I am concerned, for then years I have made a modest but indefatigable contribution to the clarification of the singular place held by Latin America for the future of the West, to the study and development of its resources, to the preparation of a co-ordinated policy between the United States and Europe in that continent. Today I am convinced that, if the area of well-being cannot be extended to Latin America in the near future, it will never be possible in other underdeveloped regions.

With this preface, one may recall ad abundantiam other objective reasons, too which support this thesis. There are various allied factors which favour Latin America, not met at present in other as yet underdeveloped regions, such as: size and geographical position, which facilitate external intervention; a cultural base homogeneous with that of the West; about 150 years of independence, which give it the advantage of several decades of experience in forms of self-government; a serious, popular support, in many countries, for the concept of government by the people; three nations, the largest, close to take-off point, and capable of acting as poles of dissemination; the regional structures, already mentioned, which constitute the web of a more highly evolved integrated system; the existence of a class of executives and civil servants, not in great numbers, but capable of increase without great difficulty; in a dual sector economy, a broad de facto experience of economic activities based on pri-vate initiative. Latin America - and no other underdeveloped region - can and must therefore be the test-bench for the practicability of bringing a whole continent within the area of well-being.

We all know that the operation, if well planned, cannot but be successful. We have a few years to plan it and the decade from 1970 to accomplish it. What is needed - I repeat - is a broad vision of the problems facing us, and the political will to face them.

For Latin America, the prospects are not so very discouraging. Recent contacts at a high level have been very useful and could hasten appreciation of the situation on the part of the interested governments. But I should like to use the words of one of the most moving personalities of our times, Secretary General U Thant: "Since the dawn of history, the economic and social conditions of human life have been changing at an ever accelerating pace. The acceleration has now become so rapid that there is more change within a single life-time than in a long span of the past embracing centuries. We are running a race with time. The race cannot be won by governmental actions alone. It can be won with the active participation of millions of private individuals who can read the signs of our time."

6 Before closing this section, I wish to underline that Europe appears somewhat enlarged. It is not because of any nostalgic feeling for zones of influence that it has been drawn in this way. The reason is that, in my opinion, that is the natural extent of Europe in this age, since the Mediterranean cannot be considered extraneous and hence the peoples around its shores must be called upon to share in its development. In this case, the line we must take most seriously is not that of thinking up the most suitable forms of association or integration; these will certainly be duly settled. It is rather that of convincing over time the peoples and governments concerned - perhaps no less those who must learn how to receive than those who must learn above all how to give - that what is involved is in the long run to the advantage of everyone. Fortunately, the consolidation of Europe and its close relations with the United States will act as a powerful catalyser to these new ideas.

7 I have attempted to trace a picture of the world as it is today, to interpret its fluid dynamism if we do not plan for the future, and lastly to indicate the outlines of a general plan for the 170s which must be set off by the initiative of the more-advanced peoples. It may be observed that in this design there is no reference to Africa, Asia and China, more than half of mankind. I firmly believe - and that not solely for irrepressible demands of a moral kind - that now, as man has forced the secret of the atom and is applying himself to making other conquests of univer-sal importance, the destiny of all countries is henceforth indivisible and that human society can no longer tolerate long

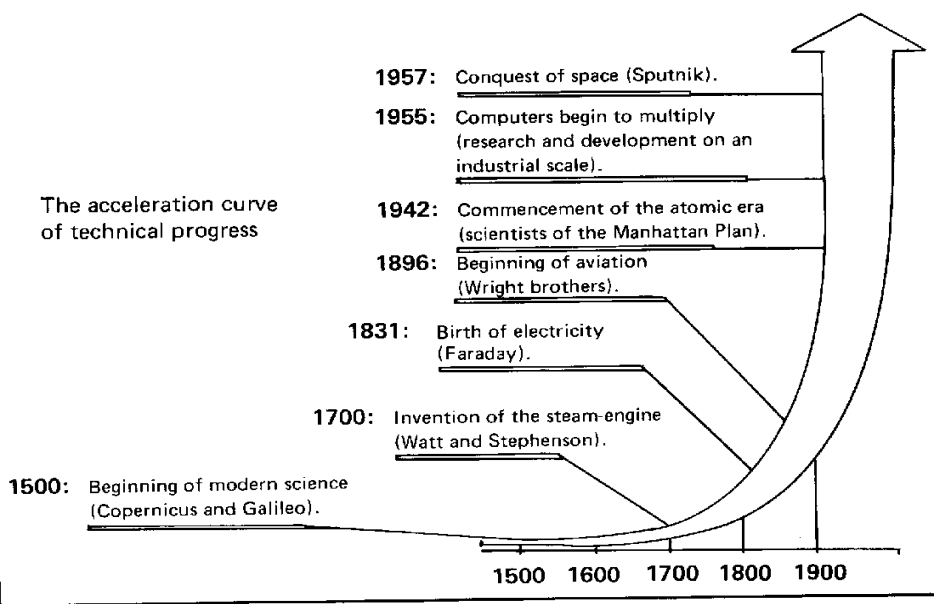
periods of profound injustice and uncivilized differences. I also believe that the wealthy nations must in the future help much more than in the past those people more derelict than any other. However, we should be culpable of unpardonable lack of realism if we were to imagine that by our aid, even if supplied in growing measure and better co-ordinated, they could change fundamentally their lot over the next ten or fifteen years, in the way we think will happen in Latin America.

It is known that if the total foreign aid added to domestic savings does not reach a certain "critical volume" over a sufficient period, there cannot be self-propulsion and the economy cannot maintain the level already attained. It would therefore be a serious error of global strategy not to have made in due time the right choice, to find ourselves thoroughly involved in their transformation into modern communities before they have sufficient human and material means for the purpose, a labour of Sisyphus that would prevent the completion of other objectives, of other useful stages. The transformation of Afro-Asian communities in the modern sense is clearly an objective for a second period, and not for that less essential. The prerequisite for facing up to it - just as is European unity for the objectives for the '70s - will be the consolidation of a large area of prosperity from Siberia to Patagonia, from the Nile delta to Alaska. Since we are talking here of the greatest enterprise ever faced by mankind, preparations must be laid as never seen before; then indeed all the resources that can be made available by the areas of well-being must be mobilized.

This then is an objective for the 180s, when the gross product of the area of well-being that we have here imagined will be in the order of 3,000 billion dollars a year.

8 In the meantime we must satisfy ourselves with fixing the objectives to be attained in the '70s. Those outlined are already enough to raise the pulse. In putting them forward, I hope to have given a start to a discussion. To conclude, I wish to warn once more that we must have no illusions. Only by a general vision of the problems and by making a great effort to understand the enormous forces let loose around us, and only on the condition that peoples and governments, especially those vested with the greatest responsibilities, give proof of maturity and firmness, can we look fearlessly onward to the end of this second millennium.

It is a horizon very near to us now. For the most part our sons will be living then, and with them six or seven billion other human beings. Since only very few will spin through space as professional cosmonauts, everyone else will have to find some way to live together on this old planet, with much less incomprehension and intolerance than today.



The Acceleration Curve of Technical Progress

COMMENTARY TO THE LIMITS TO GROWTH

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The Executive Committee of the Club of Rome, 1972

In inviting the MIT team to undertake this investigation, we had two immediate objectives in mind. One was to gain insights into the limits of our world system and the constraints it puts on human numbers and activity. Nowadays, more than ever before, man tends toward continual, often accelerated, growth - of population, land occupancy, production, consumption, waste, etc. - blindly assuming that his environment will permit such expansion, that other groups will yield, or that science and technology will remove the obstacles. We wanted to explore the degree to which this attitude toward growth is compatible with the dimensions of our finite planet and with the fundamental needs of our emerging world society - from the reduction of social and political tensions to improvement in the quality of life for all.

A second objective was to help identify and study the dominant elements, and their interactions, that influence the long-term behavior of world systems. Such knowledge, we believe, cannot be gathered by concentrating on national systems and short-run analyses, as is the current practice. The project was not intended as a piece of futurology. It was intended to be, and is, an analysis of current trends, of their influence on each other, and of their possible outcomes. Our goal was to provide warnings of potential world crisis if these trends are allowed to continue, and thus offer an opportunity to make changes in our political, economic, and social systems to ensure that these crises do not take place.

The report has served these purposes well. It represents a bold step toward a comprehensive and integrated analysis of the world situation, an approach that will now require years to refine, deepen, and extend.

Nevertheless, this report is only a first step. The limits to growth it examines are only the known uppermost physical limits imposed by the finiteness of the world system. In reality, these limits are further reduced by political, social, and institutional constraints, by inequitable distribution of population and resources, and by our inability to manage very large intricate systems. But the report serves further purposes. It advances tentative suggestions for the future state of the world and opens new perspectives for continual intellectual and practical endeavour to shape that future.

We have presented the findings of this report at two international meetings. Both were held in the summer of 1971, one in Moscow and the other in Rio de Janeiro. Although there were many questions and criticisms raised, there was no substantial disagreement with the perspectives described in this report. A preliminary draft of the report was also submitted to some forty individuals, most of them members of The Club of Rome, for their comments. It may be of interest to mention some of the main points of criticism:

1. Since models can accommodate only a limited number of variables, the interactions studied are only partial. It was pointed out that in a global model such as the one used in this study the degree of aggregation is necessarily high as well.

Nevertheless, it was generally recognized that, with a simple world model, it is possible to examine the effect of a change in basic assumptions or to stimulate the effect of a change in policy to see how such changes influence the behavior of the system over time. Similar experimentation the real world would be lengthy, costly, and in man's cases impossible.

2. It was suggested that insufficient weight had been given to the possibilities of scientific and technological advances in solving certain problems, such as the development of foolproof contraceptive methods, the production of protein from fossil fuels, the generation or harnessing of virtually limitless energy (including pollution-free solar energy), and its subsequent use for synthesizing food

from air and water and for extracting minerals from rocks.

It was agreed, however, that such developments would probably come too late to avert demographic or environmental disaster. In any case they probably would only delay rather than avoid crisis, for the problematique consists of issues that require more than technical solutions.

3. Others felt that the possibility of discovering stocks of raw materials in areas as yet insufficiently explored was much greater than the model assumed. But, again, such discoveries would only postpone shortage rather than eliminate it.

It must, however, be recognized that extension of resource availability by several decades might give man time to find remedies.

4. Some considered the model too "technocratic," observing that it did not include critical social factors, such as the effects of adoption of different value systems. The chairman of the Moscow meeting summed up this point when he said, "Man is no mere biocybernetic device." This criticism is readily admitted. The present model considers man only in his material system because valid social elements simply could not be devised and introduced in this first effort.

Yet, despite the model's material orientation, the conclusions of the study point to the need for fundamental change in the values of society.

Overall, a majority of those who read this report concurred with its position.

Furthermore, it is clear that, if the arguments submitted in the report (even after making allowance for justifiable criticism) are considered valid in principle, their significance can hardly be overestimated.

Many reviewers shared our belief that the essential significance of the project lies in its global concept, for it is through knowledge of wholes that we gain understanding of components, and not vice versa. The report presents in straightforward form the alternatives confronting not one nation or people but all nations and all peoples, thereby compelling a reader to raise his sights to the dimensions of the world problematique.

A drawback of this approach is of course that - given the heterogeneity of world society, national political structures, and levels of development - the conclusions of the study, although valid for our planet as a whole, do not apply in detail to any particular country or region.

It is true that in practice events take place in the world sporadically at points of stress - not generally or simultaneously throughout the planet. So, even if the consequences anticipated by the model were, through human inertia and political difficulties, allowed to occur, they would no doubt appear first in a series of local crises and disasters.

But it is probably no less true that these crises would have repercussions worldwide and that many nations and people, by taking hasty remedial action or retreating into isolationism and attempting self-sufficiency, would but aggravate the conditions operating in the system as a whole.

The interdependence of the various components of the world system would make such measures futile in the end. War, pestilence, a raw materials starvation of industrial economies, or a generalized economic decay would lead to contagious social disintegration.

Finally, the report was considered particularly valuable in pointing out the exponential nature of human growth within a closed system, a concept rarely mentioned or appreciated in practical politics in spite of its immense implications for the future of our finite planet. The MIT project gives a reasoned and systematic explanation of trends of which people are but dimly aware.

The pessimistic conclusions of the report have been and no doubt will continue to be a matter for debate. Many will believe that, in population growth, for instance, nature will take remedial action, and birth rates will decline before catastrophe threatens. Others may simply feel that the trends identified in the study are beyond human control; these people will wait for "something to turn up."

Still others will hope that minor corrections in present policies will lead to a gradual and satisfactory readjustment and possibly to equilibrium. And a great many others are apt to put their trust in technology, with its supposed cornucopia of cure-all solutions.

We welcome and encourage this debate. It is important, in our opinion, to ascertain the true scale of the crisis confronting mankind and the levels of severity it is likely to reach during the next decades.

From the response to the draft report we distributed, we believe this book will cause a growing number of people throughout the world to ask themselves in earnest whether the momentum of present growth may not overshoot the carrying capacity of this planet - and to consider the chilling alternatives such an overshoot implies for ourselves, our children, and our grandchildren.

How do we, the sponsors of this project, evaluate the report? We cannot speak definitively for all our colleagues in The Club of Rome, for there are differences of interest, emphasis, and judgment among them.

But, despite the preliminary nature of the report, the limits of some of its data, and the inherent complexity of the world system it attempts to describe, we are convinced of the importance of its main conclusions. We believe that it contains a message of much deeper significance than a mere comparison of dimensions, a message relevant to all aspects of the present human predicament.

Although we can here express only our preliminary views, recognizing that they still require a great deal of reflection and ordering, we are in agreement on the following points:

- 1.** We are convinced that realization of the quantitative restraints of the world environment and of the tragic consequences of an overshoot is essential to the initiation of new forms of thinking that will lead to a fundamental revision of human behavior and, by implication, of the entire fabric of present-day society. It is only now that, having begun to understand something of the interactions between demographic growth and economic growth, and having reached unprecedented levels in both, man is forced to take account of the limited dimensions of his planet and ceilings to his presence and activity on it. For the first time, it has become vital to inquire into the cost of 'unrestricted material growth and to consider alternatives to its continuation.

- 2.** We are further convinced that demographic pressure in the world has already attained such a high level, and is moreover so unequally distributed, that this alone must compel mankind to seek a state of equilibrium on our planet. Underpopulated areas still exist; but, considering the world as a whole, the critical point in population growth is approaching, if it has not already been reached. There is of course no unique optimum, long-term population level; rather, there are a series of balances between population levels, social and material standards, personal freedom, and other elements making up the quality of life. Given the finite and diminishing stock of non-renewable resources and the finite space of our globe, the principle must be generally accepted that growing numbers of people will eventually imply a lower standard of living - and a more complex problematique. On the other hand, no fundamental human value would be endangered by a levelling off of demographic growth.

- 3.** We recognize that world equilibrium can become a reality only if the lot of the so-called developing countries is substantially improved, both in absolute terms and relative to the economically developed nations, and we affirm that this improvement can be achieved only through a global strategy. Short of a world effort, today's already explosive gaps and inequalities will continue to grow larger. The outcome can only be disaster, whether due to the selfishness of individual countries, which continue to act purely in their own interests, or to a power struggle between the developing and developed nations. The world system is simply not ample enough, nor generous enough to accommodate much longer such egocentric and conflictive behavior by its inhabitants. The closer we come to the material limits to the planet, the more difficult this problem will be to tackle.

- 4.** We affirm that the global issue of development is, however, so closely interlinked with other global issues that an overall strategy must be evolved to attack all major problems, including in par-

ticular those of man's relationship with his environment. With world population doubling time a little more than 30 years, and decreasing, society will be hard put to meet the needs and expectations of so many more people in so short a period. We are likely to try to satisfy these demands by overexploiting our natural environment and further impairing the life-supporting capacity of the earth. Hence, on both sides of the man-environment equation, the situation will tend to worsen dangerously. We cannot expect technological solutions alone to get us out of this vicious circle. The strategy for dealing with the two key issues of development and environment must be conceived as a joint one.

5. We recognize that the complex world problematique is to a great extent composed of elements that cannot be expressed in measurable terms. Nevertheless, we believe that the predominantly quantitative approach used in this report is an indispensable tool for understanding the operation of the problematique. And we hope that such knowledge can lead to a mastery of its elements. Although all major world issues are fundamentally linked, no method has yet been discovered to tackle the whole effectively. The approach we have adopted can be extremely useful in reformulating our thinking about the entire human predicament. It permits us to define the balances that must exist within human society, and between human society and its habitat, and to perceive the consequences that may ensue when such balances are disrupted.

6. We are unanimously convinced that rapid, radical redressment of the present unbalanced and dangerously deteriorating world situation is the primary task facing humanity. Our present situation is so complex and is so much a reflection of man's multiple activities, however, that no combination of purely technical, economic, or legal measures and devices can bring substantial improvement. Entirely new approaches are required to redirect society toward goals of equilibrium rather than growth. Such reorganization will involve a supreme effort of understanding, imagination, and political and moral resolve. We believe that the effort is feasible and we hope that this publication will help to mobilize forces to make it possible.

7. This supreme effort is a challenge for our generation, it cannot be passed on to the next. The effort must be resolutely undertaken without delay, and significant redirection must be achieved during this decade. Although the effort may initially focus on the implications of growth, particularly of population growth, the totality of the world problematique will soon have to be addressed. We believe in fact that the need will quickly become evident for social innovation to match technical change, for radical reform of institutions and political processes at all levels, including the highest, that of world polity. We are confident that our generation will accept this challenge if we understand the tragic consequences that inaction may bring.

8. We have no doubt that if mankind is to embark on a new course, concerted international measures and joint long-term planning will be necessary on a scale and scope without precedent. Such an effort calls for joint endeavor by all peoples, whatever their culture, economic system, or level of development. But the major responsibility must rest with the more developed nations, not because they have more vision or humanity, but because, having propagated the growth syndrome, they are still at the fountainhead of the progress that sustains it. As greater insights into the condition and workings of the world system are developed, these nations will come to realize that, in a world that fundamentally needs stability, their high plateaus of development can be justified or tolerated only if they serve not as springboards to reach even higher, but as staging areas from which to organize more equitable distribution of wealth and income worldwide.

9. We unequivocally support the contention that a brake imposed on world demographic and economic growth spirals must not lead to a freezing of the status quo of economic development of the world's nations. If such a proposal were advanced by the rich nations, it would be taken as a final act of neo-colonialism. The achievement of a harmonious state of global economic, social, and eco-

logical equilibrium must be a joint venture based on joint conviction, with benefits for all. The greatest leadership will be demanded from the economically developed countries, for the first step toward such a goal would be for them to encourage a deceleration in the growth of their own material output while, at the same time, assisting the developing nations in their efforts to advance their economies more rapidly.

10. We affirm finally that any deliberate attempt to reach a rational and enduring state of equilibrium by planned measures, rather than by chance or catastrophe, must ultimately be founded on a basic change of values and goals at individual, national, and world levels. This change is perhaps already in the air, however faintly. But our tradition, education, current activities, and interests will make the transformation embattled and slow. Only real comprehension of the human condition at this turning point in history can provide sufficient motivation for people to accept the individual sacrifices and the changes in political and economic power structures required -to reach an equilibrium state.

The question remains of course whether the world situation is in fact as serious as this book, and our comments, would indicate. We firmly believe that the warnings this book contains are amply justified, and that the aims and actions of our present civilization can only aggravate the problems of tomorrow. But we would be only too happy if our tentative assessments should prove too gloomy. In any event, our posture is one of very grave concern, but not of despair. The report describes an alternative to unchecked and disastrous growth and puts forward some thoughts on the policy changes that could produce a stable equilibrium for mankind.

The report indicates that it may be within our reach to provide reasonably large populations with a good material life plus opportunities for limitless individual and social development. We are in substantial agreement with that view, although we are realistic enough not to be carried away by purely scientific or ethical speculations. The concept of a society in a steady state of economic and ecological equilibrium may appear easy to grasp, although the reality is as distant from our experience as to require a Copernican revolution of the mind. Translating the idea into deed, though, is a task filled with overwhelming difficulties and complexities. We can talk seriously about where to start only when the message of *The Limits to Growth*, and its sense of extreme urgency, is accepted by a large body of scientific, political, and popular opinion in many countries. The transition in any case is likely to be painful, and it will make extreme demands on human ingenuity and determination.

As we have mentioned, only the conviction that there is no other avenue to survival can liberate the moral, intellectual, and creative forces required to initiate this unprecedented human undertaking. But we wish to underscore the challenge rather than the difficulty of mapping out the road to a stable state society. We believe that an unexpectedly large number of men and women of all ages and conditions will readily respond to the challenge and will be eager to discuss not if but how we can create this new future. The Club of Rome plans to support such activity in many ways. The substantive research begun at MIT on world dynamics will be continued both at MIT and through studies conducted in Europe, Canada, Latin America, the Soviet Union, and Japan. And, since intellectual enlightenment is without effect if it is not also political, The Club of Rome also will encourage the creation of a world forum where statesmen, policymakers, and scientists can discuss the dangers and hopes for the future global system without the constraints of formal intergovernmental negotiation.

The last thought we wish to offer is that man must explore himself - his goals and values - as much as the world he seeks to change. The dedication to both tasks must be unending. The crux of the matter is not only whether the human species will survive, but even more whether it can survive without falling into a state of worthless existence.

The Executive Committee of The Club of Rome

*ALEXANDER KING, SABURO OKITA, AURELIO PECCEI,
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THE CLUB OF ROME - THE NEW THRESHOLD

The Executive Committee of The Club of Rome, 1973

The purpose of this note is to recapitulate the concern and convictions of the members of the Club with regard to the present state of world society, to assess the position reached by our initial efforts, to discuss the strengths and weaknesses inherent in the nature and concept of the Club and to enumerate some of the problem areas, which we feel demand urgent investigation.

The Predicament of Mankind

The initial impulse of the Club was a common concern regarding the deep crisis faced by humanity - a crisis which we feel is different in kind from those of the past and which the societies of today are ill-equipped to face with their present attitudes, values, policies and institutions.

Men everywhere are perplexed by a range of elusive problems - deterioration of the environment, the crisis of institutions, bureaucratisation, uncontrolled urban spread, insecurity of employment and loss of satisfaction in work, the alienation of youth, questioning of the values of society, violence and disregard of law and order, educational irrelevance, inflation and monetary disruption in the face of material prosperity, the unabridged gap between rich and poor within and between nations - to mention only a few.

These difficulties appear to be world-wide symptoms of a general but as yet little understood malaise. It is this cluster of intertwined problems which we term the Problematique. Their interactions have become so basic and are so critical that it is ever more difficult to isolate from the tangle of the problematique single major issues and to deal with them separately. To attempt to do so only seems to increase the difficulties in other and often unsuspected parts of the mass. For the same reason no nation, not even the biggest, can hope to solve all its own problems since these involve other nations and interact with the global system as a whole.

Interdependence is not, however, restricted to the political context; it also regards to energy resources, food and industrial raw materials, markets for products, transfer of new technology, even the explosion of violence. Beyond these material concerns, the problematique is all-pervasive, because human aspirations can no longer be bounded by a particular environment of culture.

What we term the Predicament of Mankind is our own limited perception of many individual symptoms of a profound illness of society for which we are unable to prescribe an effective remedy in the absence of a reliable diagnosis.

The Club of Rome and Its Functions

The Club of Rome, an informal association of some eighty-five individuals in more than thirty countries, crystallised around a mutual concern with the problematique and the need to delineate it and understand its nature.

The totality of the membership meets only occasionally, on average once a year, but most of the individual members are in frequent contact with their colleagues. The Club emerged, somewhat hesitantly, at the end of an exploratory meeting held at the Academia dei Lincei in Rome in 1968.

Most of the (then very few) members met again in Vienna in 1969 at the invitation of the Austrian Chancellor, while the full membership was convened to a meeting in Bern, Switzerland in 1970 as guests of the Swiss Confederation and in Montebello, Quebec in 1971 as the guests of Canada.

A full meeting of the Club took place at Jouy-en-Josas near Paris in January 1973, made possible by French industry, while a further meeting will be held in Tokyo in October 1973, preceded by a Technical Seminar, both supported by the Japanese members of the Club.

Chartered under the laws of Switzerland, with a membership at present limited to 100, the work of the Club is carried out by an Executive Committee, whose membership is at present: Frits Böttcher,

The Netherlands; Alexander King, OECD, Paris; Saburo Okita, Japan; Aurelio Peccei, Italy; Eduard Pestel, Federal Republic of Germany; Hugo Thiemann, Switzerland; Victor Urquidi, Mexico; Carroll Wilson, United States of America.

As an informal association, with a minimum secretariat and without any staff or formal budget, the functions of the Club were conceived as essentially catalytic.

It has the following main objectives:

- to stimulate research and encourage the development of methods to elucidate and delineate the elements and interactions within the problematique, to understand better the workings of the world as a finite system and to suggest alternative options for meeting critical needs;
- to provoke a dialogue with political decision-makers, industrialists, academics and many groups in many places, to arouse appreciation of the nature of the crisis and the need to consider new policies, attitudes and courses of action to ensure the continuity of mankind and to cultivate a new humanism conducive to world peace, social justice and individual self-fulfilment.

The Initial Phase

After an initial period of intense discussion among the few, original members of the Club, it was agreed that concern with the world problematique was its central feature.

A series of conversations was therefore begun with political and intellectual leaders in many parts of the world, but very soon it was realised that policy and institutional change could only result from a more precise understanding of its nature and interactions.

It was decided to attempt, by any appropriate methods which might exist or be developed, to quantify the scale and time dimensions of the world problematique and seek to identify the needs for revision of values and institutions which govern man's capability to adapt to change. It was understood that this would entail extensive research effort in what is virtually a new and unexplored field.

After prolonged search for methodology which would embody both the scale and time dimensions of the world problematique, it was decided to invite the Systems Dynamics Group at the Massachusetts Institute of Technology, under Professor Jay Forrester, to undertake the construction of a world dynamics model, and the Volkswagen Foundation of Germany agreed to provide the necessary financial support. An international team, led by Professor Dennis Meadows, was formed to carry out this work.

The findings of this first project are presented in a book, entitled *The Limits to Growth*, by Meadows and co-workers and containing a commentary by the members of the Executive Committee.

Initially published in the United States on 6th March, 1972, at the initiative of Potomac Associates, The Club of Rome has arranged for editions to appear in some twenty languages. As to date, the American, British, French, Italian, Dutch, German, Japanese, Danish, Norwegian, Swedish and Spanish editions have appeared and have been widely distributed, attracting exceptional press comment and generating much controversy.

A Technical Report, *Dynamics of Growth in a Finite World*, describing the work done at MIT, is now available. It contains full details of the assumptions made and an exposition of each of the inputs into the model.

Toward Global Equilibrium: Collected Papers is another volume of studies in depth of population, natural resource depletion and other key variables of the model. Both books can be obtained from Wright-Allen Press, 238 Main St., Cambridge, Mass., USA.

Important as the MIT report is as a pioneering entry into the new field of investigating the world problematique, it by no means represents the totality of the Club's concern and approach. Much new research into global, regional and national systems is required, as well as extension towards the consideration of broader social and value issues and a penetration into some of the deeper problems of the human future. *The Limits to Growth* is not a statement of The Club of Rome credo, but a first hesitant step towards a new understanding of our world.

Limits to Growth - Influence and Criticism

It is difficult at this stage to assess the significance of the report. Reactions to the book, both positive and negative, have been remarkable, both in the United States and Europe and indicate that despite criticisms of its scientific accuracy and even its basic validity, it confirms the qualitative and intuitive conclusions of many.

Many government departments and international organizations in different countries are discussing it and, in some cases, setting up models to test and extend it. Literally hundreds of conferences and seminars, round tables and public debates, television discussions and parliamentary questions have taken place on this subject.

In several countries it has become a matter of party political controversy. It has been discussed by the boards of multinational corporations. It has become a matter of controversy between members of the Commission of the European Communities. An important *rencontre internationale* was organized in Paris by the French Minister of Finance, Monsieur Valéry Giscard d'Estaing, with the participation of leading world personalities with, as a key theme, 'where does growth bring us?'

It has been discussed by the Parliamentary Assembly of the Council of Europe. A paper prepared at the request of the Council of Europe on *The Limits to Growth in Perspective* can be obtained by writing either to them or to The Club of Rome. In the paper a summary of the criticism is given in the form of 'point and counterpoint'.

An interesting visual presentation of the ideas of The Club of Rome has been arranged in Rotterdam, in three beautiful and centrally located pavilions made available by the municipality. This exhibition was opened by the Queen in the presence of the Prime Minister and many other high officials. A more permanent and extended exhibition is now being planned. Most of the serious press, as well as the radio and television of many countries, have carried features on the growth issue or have taken sides in the debate.

Criticism of the report has come mainly from the traditional economists, from people who expect solutions to all the problems of the world from the cornucopia of science and technology and those who maintain that growth is an inbuilt characteristic of our system and that without growth, stagnation, decay and finally death will result. The reactions of the economists have been most violent and at times highly emotional, but there are signs in several places that many of the younger economists look upon the whole issue quite differently. Positive comments have come primarily from environmentally-oriented groups, political and social observers, and many of the commentators in the press, as well as from members of the general public.

It may be useful to comment on the nature of the main lines of criticism. Some of these are in fact criticisms of what the study does not see out to do.

For example, both the work team and the Club stated clearly that it should not be regarded as a scenario for the future, but an analysis and projection of trends and their cross impacts to indicate the consequences of continuing with present attitudes and policies with the express purpose of inducing deliberate change in these attitudes and policies in order that the projected future shall never materialize. It is therefore a complete misunderstanding of the aims of the study to dismiss it on the grounds that projections of the future from the present are always falsified by time, by the appearance of new factors and discontinuities.

The MIT model hopes indeed to pave the way for the introduction of such discontinuities, rather than to rely on the haphazard intervention of external events or natural catastrophe.

Again, many berate the model for pretending to provide a basis for policy change, stressing as does the book itself that even, if current trends are true, they will never manifest themselves uniformly or simultaneously in the different environments of our heterogeneous world. This is true; the MIT model cannot in its present preliminary state provide a sure basis for policy change. It is, however, highly significant as a first attempt, crude and tentative as it may be, to look at the operation and interactions of a few of the more important and quantifiable variables of the world system.

With our growing appreciation of the interdependence of peoples, such an approach, subject to validation, extension and refinement, provides a perspective against which regional or national

systems can be studied and developed with a realism which can never emerge from approaches isolated from the current of global forces. We are, of course, fully aware of the need for studies of disaggregated projects within the world perspective.

We freely accept that there are many gaps and imperfections in *The Limits to Growth*, not at all surprising in a first pioneering attempt to probe into a new field of research.

However, the book seems to us to be outstandingly important for three reasons:

- it has been most timely and successful in focussing attention on essential problems which, irrespective of the validity of the detailed findings of the study, may determine the future of society, and in initiating a debate throughout the world on the dominant uncertainties of our times;
- it has opened up a new field of extension of human knowledge. namely understanding of the operation of the world system as a whole, and in the process will inevitably have a considerable influence on the science of economies, despite current protests: some of the new approaches are mentioned below;
- it gives a perspective and some base, albeit tentative, within which national efforts in science and technology can be reoriented towards the general well-being of our species.

Understanding the Problematique - the next phase

As already said, the MIT research, while a magnificent pioneering effort, is only the first step in this important task of understanding the problematique, on which so much depends. It has already stimulated much new work, a few items of which are mentioned below. Members of the Executive Committee receive many communications from colleagues in different parts of the world, whether proposals for new research or requests for advice concerning the desirability of new approaches. It may be useful to summarize briefly a number of areas where, in the view of the Executive Committee, new research is urgently required, with indication of existing initiatives.

1. Refining, Deepening and Extending the Present Model

There is an obvious need to reassess the validity and implications of the initial model, taking account of technical criticisms, new data and more accurate assumptions, as well as of adding new variables as and when these may become quantifiable. Professor Meadows, in his new location at Dartmouth, will no doubt be concerned with this. The Science Policy Unit of the University of Sussex, a British Government Department, the World Bank, a group of scientists at CERN and many others are attempting to repeat, modify or discredit the model. A Washington analyst, Michael Deutsch, is undertaking a thorough analysis of the MIT model and findings. We can only say that this will be an unending activity.

2. Disaggregations

It is evident that studies of a similar type, but confined to particular countries or regions, are required; and no doubt some of the above models will develop in this direction. A series of models of Japan as well as of world renewable resources are in construction and one of West Germany in the enlarged European Community is contemplated by German scientists with a side study of the relationship of Europe to three large developing areas beset by serious population growth problems. Professor Timman of the Technical University, Delft, also intends to work on a project concerning a large area of the European Community where further growth may determine unmanageable crises. Such disaggregated models may well enable social and other factors to be taken into consideration and will throw light on the dependence of the industrialised countries on raw materials from abroad and particularly from the less developed countries. It is probable that many such national or sectoral models will be developed in the next few years.

3. New Methodologies and Steps Towards Practical Action

Already many months before the appearance of the limits book, Professor M.D. Mesarovic of Case Western Reserve University in Cleveland, Ohio, and Professor E. Pestel of the Technological University of Hannover initiated a new research project entitled *Strategy for Survival* in order to

provide a systemic policy instrument as an aid for the formulation of adaptive social, political and economic policies to combat the multivariant crises which are to be faced in different parts of the world in the coming years and decades. The decision tools to be developed by this project will be in the form of a set of interactive computer models which crisis-analysts and policy-makers can use effectively. The thereby achieved provision for the heuristic uncertainty, unpredictability and variability of human responses and actions is essential for an adequate realistic modelling of the dynamics of mankind's present situation and future development. Hence, the construction of the model is based on the multilevel, hierarchical systems approach. In its present version the world model consists of seven interacting regions: (1) industrialized countries (free market), (2) industrialized socialist countries, (3) China, Mongolia, North-Korea, (4) Rest of Asia, (5) North Africa and Middle East oil countries, (6) Rest of Africa and (7) Latin America. Each of them is represented by a three-strata structure:

- the causal stratum containing all processes whose future evolution is fully determined by internal dynamics, present conditions and external impulses. In addition to physical and ecological processes the causal stratum contains other processes, for example, operational and short-term economic activities which through feedback-loops respond to immediate conditions and influences;
- the decision-making stratum (goal seeking) representing the response of society and its institutions to ever changing crisis situations in an adaptive manner;
- the norms-formulation stratum representing the values and needs which guide and constrain the goal-seeking processes.

In a recently completed Progress Report the feasibility of the project has already been demonstrated. Even without the decision-making and norms-formulation stratum, the regional computer models, having been integrated into a single regionalised global model, will yield a deeper insight into the evolution of the Predicament of Mankind than was achieved by the limits model since it will indicate in a more realistic manner the time and nature of the specific different crises to be expected in the seven regions, and thus will, even in this preliminary stage, provide scenario for realistic political, economic and technological alternatives in the various regions and their regional and global impact.

The first results of this study were demonstrated on the computer at the recent meeting at Jouy-en-Josas with particular reference to energy problems. Members of the Club were impressed by the real possibility which this approach provides of enabling policy analysts to dialogue with the computer, present policy makers with sets of options, and test the consequences of alternative decisions.

4. Problems of Development (and Economic Justice)

To some the MIT report appears to be a somewhat technocratic, defensive and even politically reactionary manifestation of the fears of over-industrialized his is far from the countries. This is far from the intention of its authors and of the Club of Rome, which takes no sectoral approach on behalf of the affluent, industrialized countries but is concerned with the world situation and the human condition in the total sense. The limits book, it is freely admitted makes all too clear the plight of the developing countries within our closed system but it does at least pose the problems in an inescapable manner. It is urgent, however, that in a more disaggregated approach to the world problematique particular attention be given to the problems of the less developed countries in the context of our finite planet. This is inherent in the Mesarovic/Pestel model. The scientists at CERN hope to follow separately the evolution of the rich and the poor parts of the world and find out whether the present world organization and wealth distribution confirms or worsens the predictions of the MIT model.

The need to study separately the economic and social pathos of highly industrialized and underdeveloped regions is all too obvious when one remembers (to quote Barbara Ward) that a child born in the United States is likely to consume 500 times more material resources than one in poor areas of Africa or India.

Following the seminar held by The Club of Rome at Rio de Janeiro in July 1971, a group of Latin American scientists decided to undertake a study of the world from the point of view of the developing countries. A Project was elaborated and is now in operation at the Fundaçiòn Bariloche

in Argentina. This study, known as The First Alternative World Model, is being undertaken by a team from a number of different Latin American countries, led by Dr. Amilcar O. Herrera.

The project will include a thorough analysis and criticism of the MIT model and its implications from the point of view of the less developed countries and will then proceed with the building of a new model. A basic feature of this will be the working out of a welfare index which should be a minimum reasonable and attainable birthright of every inhabitant of the earth.

Growth hypotheses will be developed to see how such a level could be achieved in 30-50 years, how the economic gap which separates developed from underdeveloped countries could be eliminated and to determine the extent to which these objectives are compatible with the limitations of the ecosystem.

5. The World Population Problems

Rapid increase in world population, especially in regions already ill-favoured, appears to us to be at the centre of gravity of the problematique and we feel that the establishment of wise policies for the stabilisation of population levels and the technical and educational measures which must accompany them are of top priority.

We particularly welcome the activities of the United Nations in this field, which will culminate in a World Population Conference in 1974.

Following discussion by representatives of the Club with Mr. Rafael Salas of the United Nations Population Fund, a grant has been authorized by the latter to El Colegio de México for a study of critical areas in the population field, in preparation for the debates which will take place during the United Nations Population Year. This study will be supervised directly by Victor Urquidi and be developed in co-operation with outstanding experts in various parts of the world.

However, while there may be reason to hope that as a result of wise policies, economic improvement and natural causes, the growth of world population will be slowing down by the end of the century, it is generally considered that a further doubling will be inevitable, probably within the next 30-40 years.

A special study is therefore being elaborated under the general guidance of Professor Jan Tinbergen. The project, called Population Doubling Problems, will be led by Professor Hans Linnemann of Amsterdam Free University. This study (not strictly a model) will investigate the ways and means required to accommodate the second wave of inhabitants of our planet and then to supply them adequately and decently with food, goods and services, without impairing the natural and human ecology.

Its objectives are thus rather similar to those of the Bariloche project. Since some parts of the world are already achieving population equilibrium, while others are in an explosive phase, this project will have to be disaggregated. While essentially economic in concept, it will include special studies, particularly with regard to food production and the possibilities of alternative, non-traditional food sources. The project will also attempt to identify various alternative 'solutions' and policy instruments.

Although the work will be based in the Netherlands, co-ordinated studies will be under-taken in other European countries, such as Sweden, Belgium, and elsewhere. It is hoped that a series of deep complementary studies of population trends, looking towards a global population strategy, will also be undertaken, concerned not only with total population increase but also its concentration in urban areas.

6. Another Kind of Growth

The research areas described above have already attracted scientific interest and work has begun. There are, however, a number of fields related to the problematique where, although many specialised studies are in progress, little comprehensive work is planned as yet. One of these is the growth process itself.

One of the most striking features of The Limits to Growth is the demonstration of the possibility of creating an equilibrium state for the world, which would depend on population stabilisation and an end to undirected economic growth as we conceive it today.

To many, this seems a bleak possibility. Economists tend to regard continuous growth as an essential concomitant to the operation of our present system, both market economy and Marxist.

It is abhorrent to the industrialized countries, which count on further growth to provide the resources for social development through education, health care, urban improvement, etc. It is equally menacing to the developing countries who see, in the suggestion that growth should be slowed, the end of development aid and prospects of continuing poverty and misery.

The whole question of the growth process requires urgent study as well as what might be the nature of a world equilibrium state. Following the March 1972 meeting at the Smithsonian Institution of Washington, the Woodrow Wilson International Center has started an important investigation into Aspects of Sustainable Growth taking into account many of the preoccupations of The Club of Rome.

It will pay serious attention to 'qualitative' elements of growth and endeavour to identify social as well as economic indices of welfare and to quantify diseconomies. Many other institutions and international organisations are, of course, also attempting to measure social as well as economic costs and benefits, and some progress can be expected in relation to the development of acceptable social indicators and national welfare indices to complement Gross National Product as a measure of growth.

The concept of an equilibrium state of no-growth is ill-defined and easily misunderstood.

The term is generally conceived as one of a static equilibrium which conjures up images of inertia, decay and boredom. On the other hand, various types of dynamic equilibrium can be postulated which would make possible social, cultural and quality developments, certainly no less rich than the material products of the quantitative growth of today.

There is great need of deep study of the nature of possible alternative systems in dynamic equilibrium, the development of growth indices which, unlike GNP, distinguish between the purely material aspects and the quality elements and even within the purely material aspects of economic growth itself, there are wide variants of possibility which might well permit desirable and sustained growth, tolerable within planetary limitations and free from the undesirable features of our present economy of consumption and waste.

The institution of new growth forms would, of course, necessitate radical changes in both government and industrial policy and would further have to be derived from new socio-economic theory. It is not inconceivable that a new school of quality entrepreneurs will arise as agents of such change. It is to be hoped that the work of The Club of Rome will stimulate serious studies on all these matters in the very near future.

7. The New Research Imperative

The findings of the initial project and the general approach of The Club of Rome have much significance for science policy and for the reorientation of research. As already stated, the present crisis in society cannot just be blamed on technology and on the science which gave it birth. It is rather man's wisdom which has been lacking his lack of sense of direction in his probing for new knowledge and the absence of control and management of technology.

The time has come for a fundamental reassessment of science and technology, their place in society and the promise which they offer for the future. At a meeting of Ministers of Science of the OECD member countries held at the end of 1971, there was unanimous agreement that scientific research and technological development held great promise for the future but that research programmes would have to be reoriented profoundly particularly in the direction of solving social problems.

It was agreed that science could no longer be regarded as an autonomous area of policy but as one, which would have to evolve in articulation with economic, social and other aspects of national and global policy. But herein lies the difficulty. It takes a period of upwards of ten years between the initial comprehension of a new scientific concept or of a new research discovery and the first appearance of its application as a product on the market or as a social innovation.

If this research is developed in relation to current social or economic policy, its results will always tend to come too late. We are likely to see this happen with regard to the impending energy crisis,

with petroleum products becoming scarce and costly, yet alternative sources, such as those from breeder reactors and nuclear fusion, still in the future, and research on coal gasification and the like, which has been relatively neglected in the years of oil supremacy, being resuscitated with crisis priority too late to provide a solution.

In the field of science and technology, therefore, the needs seem to be:

- a reassessment of technological potentialities vis-à-vis the problematique, reorientation of effort in many new directions apart from defence, national prestige and economic growth, which have been the main goals and money sources of research in recent years;
- the creation of more dynamic research structures and non-institutionalized methods, the serious cultivation of the multidisciplinary approach which the multivariant nature of the problematique demands, with corresponding changes in the educational system;
- the development of new methodologies of long-term scientific planning in an economic and social perspective;
- considerable effort to tackle problems in the social and service sectors and of the achievement of innovation in such areas where the incentives of the market play little part;
- the development of a range of technological software to attack problems of society and government;
- comprehensive work on the assessment of social and cultural as well as economic consequences of new technological processes and fields, to ensure that alternative paths of development are selected which can be socially acceptable;
- assessment of the energy requirements of the new processes which, through substitution, recycling of materials, etc, may provide alleviation and partial solutions;
- study of global problems, not only in terms of the models and approaches outlined above but in relation to the total use of resources, exploration of marine possibilities of a new energy sources, etc; also the establishment of a world conservation centre;
- the establishment of a world industrial bank to ensure that major new technological developments, which in the next generation are in any case likely to be beyond the possibilities of the individual firm and the individual country, are made possible for mankind as whole, avoiding wasteful duplication;
- in technology, special attention to the development of new approaches and systems appropriate to the needs of an equilibrium society, such as pollution-free processes and antipollution devices, efficient materials, recycling processes, work on lower grade materials, the evolving of efficient labour-intensive industries.

The Executive Committee has invited Professor Dennis Gabor, assisted by Professor Umberto Colombo and in co-operation with some of the scientific members of the Club, to explore the possibility of setting up a high-level scientific group to determine some of the scientific research priorities, problems requiring immediate attention and those of phased research planning, to attack some of the more vulnerable points of the problematique.

8. The Lemming Syndrome

Evidence seems to be accumulating that social unrest and individual dissatisfaction reach a crisis level in biological systems, including that of homo sapiens, well before food runs out and material arrangements begin to crumble.

This is already noticeable in some areas of exceptionally high population and industrial density. The great increase in world population to be expected in the next few decades, as well as the migration to cities, which will be speeded up as demands for food intensify and require a high capital intensive agriculture, will give rise to huge urban conglomerations which will multiply the psychological effects of overcrowding and proximity. We know little about this problem in depth; indeed it is not certain that it is a real phenomenon. It is, therefore, important to begin work on it in case, as is not improbable, it proves to be a major agent of disruption and chaos.

9. Social Problems - The Value System and Survival

We have already stressed the importance, within the problematique of social elements and social symptoms and have indicated how these were necessarily excluded in the initial world model of MIT. Indeed, until there is a more sure development of social indicators, the inclusion of such factors is extremely difficult. The importance of including social factors and consequences, however, cannot be overstressed.

It is naturally easier to include social variables within disaggregated models of particular countries or regions with a certain degree of cultural homogeneity than it is in the global approach. We are particularly glad, therefore, that our Japanese colleagues have already started work on a model of their society in which these factors will dominate and in which the significance of recent social events will be included. Interesting also is the new Dematel (decision making and trial evaluation laboratory) project of the Battelle Institute of Geneva which is conducting a survey by an intensive modification of the Delphi approach, of the relative gravity and interconnections of the various elements of the problematique as seen by decision makers in many parts of the world.

Many of the manifestations of the problematique are already causing people, and especially the young, to question the validity of our present socio-economic philosophy. Others, such as Dennis Gabor, remark that our present civilisation is based materially on the solid foundation of scientific technology and 'spiritually on practically nothing'. Over centuries, our society has ostensibly operated, albeit somewhat hypocritically, on the Christian ethic of 'love thy neighbour' and the hope of future salvation. This has been tempered, it is true, especially in the Protestant countries, by acceptance of the virtues of hard work and the respectability of success. Nevertheless, it constituted a *raison d'être* for the individual and society. More recently, socialism raised the standard for the creation of heaven on earth, of equity and human betterment - at times with the fervour of a true religion.

However, as affluence increased and the rationalism of science prevailed, faith in the traditional religions faded and social reform as a result of its own successes has less allure and indeed its cultural and institutional manifestations seem strangely dim. So we are left with our material successes gone sour on us and with little motivation or collective emotional drive towards worthwhile goals for our race. Our rational-material, neo-christian system of values including those of individual freedom and human dignity are questioned, with little in the way of an evolving replacement. Many of those who question our present values most bitterly are merely destructive in their approach.

The Tolstoy reaction of 'back to nature' becomes ever more unrealistic as population increases and technology dominates. For reasons already explained, the study on limits to growth was unable to include the values problem. However, the debate on the problematique may well generate a new search which the social scientists, including the behaviourists, have hardly dared to tackle. In the meantime, as the crisis mounts, we may have to adopt a supreme ethic of survival for the human race and in our decisions measure the possible effects of alternative actions in the light of their possible positive or negative influences of the probability of survival, and at the same time consider the extent to which the quest for quality of life can pave the way towards a new system of values.

10. Man and His Destiny

These comments on the need for a new value system lead to questioning of whether we are not indeed facing a deep and basically biological crisis of the human species. Until recently, the average man, fully occupied with his struggle upwards from subsistence, had little time to think.

He was tranquilised by the conventional religions, kept docile by 'bread and circuses' and, despite many not able exceptions, left the basic problems to priests and philosophers. Towards the end of the last century, with the rise of the physical sciences, a wave of materialism and rationalism intervened and began to question the traditional tenets.

Freud, Marx and a host of others deepened the questioning, but recognition of the Darwinist principle of natural selection seemed to provide some keys. Survival for the fittest, leading to the evolution or annihilation of species, gave a tangible, if vague, hope for the future. The secularisation of society and of its purpose has now spread, with education and affluences, until in

the rich industrialised countries it is now generalised and has become one of the causes of the contemporary questioning of our values.

It is also a cause of present-day violence and crime, of the alienation of individuals from their society and of general aimlessness. On the other hand, it leads the young to seek new forms of religious satisfaction, to experiment with mysticism, to seek new and heightened perception through drug-taking on the part of those who feel alienated and distrust rational scientific approaches.

Organic evolution in fact holds little promise for the further evolution of man; its processes are too slow in the face of man's potential for self-destruction. His societies will either disrupt or he will de-sign his own betterment long before nature can evolve a higher form for him. In the last 2000 years, man has developed his physical power and increased his information base to an incredible extent, but there is little sign that he has increased his wisdom or spiritual capacity during that period.

He is presumably the only planetary species aware of his own predicament and with the potentiality of self-development, yet the very forces in his nature which have raised him above the animals weigh against deliberate self-evolution. The struggle to survive has cultivated aggressive characteristics, vanity, greed, desire for power, etc., which are not the elements on which to build the wisdom he now requires.

On the other hand, men have learnt to co-operate with one another and live in societies, however fragile, accepting collective values and objectives. Our destiny is in our own hands: how can we learn to achieve it?

11. Institutions and Policy Making

We return now to more concrete matters. There is a growing awareness by many governments of the inadequacy of their structures and policy-making methods to face up to the problematique as well as a growing need to broaden and localise participation in decision making.

Most governments are organized through a vertical hierarchy devised to meet the needs of earlier simpler times and ill-suited to face the 'horizontal' nature of so many of the problems they face. The machinery of government gives little importance to the staff function found to be so important by the military and the large business corporations.

Most integrative decision is with the Prime Minister or Cabinet, although co-ordination and decision on a horizontal basis is ever more required at many levels. The increased span and scale of governmental responsibility have multiplied the size and power of the bureaucracy which even at its most intelligent has the function of ensuring stability and continuity, and hence is inevitably resistant to change.

Adjustment to rapidly changing events is thus inherently difficult. A further major difficulty arises from the four to five-year cycle of parliamentary elections in the democracies which, with the need for election or re-election, forces all political parties to concentrate on short-term issues which are the subject of public concern. This mattered little until recently when long-term problems ripened slowly.

With present rapid rates of change, and of public perception of change, political, economic, social and technological, the so-called long-term often becomes actualised in five to ten years that is in the next administration. This has the consequence of the recurrent emergency, of crisis management, and the ineffective handling, for example, of monetary problems, inflation, balance of payments difficulties, educational reform, etc., met all too often by instituting measures, which are superficial and merely palliative, while avoiding the fundamental causes which lie within the problematique.

These are but a few of the difficulties of governments in facing complexity. They are leading to structural experiment and innovation, to the creation of 'think tanks' and of centres for the study of alternative strategies and policies. There is need for much more intensive research on the policy-making process and for confrontation of experience if the problematique is to be coped with.

12. The Political Consequences

It is premature to discuss the political consequences of the type of situation, which may arise if the tendencies of the MIT report are even approximately true. Abandonment of growth as a main

objective and the evolution of new policies towards a dynamic equilibrium and quality of life runs counter to many of the principles inherent in both capitalism and Marxism.

Among other consequences, the slowing down of growth would greatly accentuate our present problems concerning the distribution of wealth and also the pasture and objectives of industry. Intrinsically, *The Limits to Growth* is a profoundly revolutionary document, not in the strict political sense, but through *la force des choses*. The Club of Rome is convinced that change is necessary and indeed inevitable but would not at this stage wish to take a political position. We do feel, however, that there is urgent need for all political parties and ideologies to analyse the political consequences of its message and for scholars to begin to consider the possible alternatives.

Reassessment of objectives

The recent meeting of the Club in France - the first to be held since the publication of the MIT report - provided a useful occasion for members to reconsider its objectives and methods as well as for review of current activities and discussion of problem areas concerned with the problematique which demand immediate attention.

The widespread public and political interest which the report has evoked, together with the extent of controversy has, quite naturally, identified The Club of Rome too exclusively with this first project. It is not generally recognised that 'Limits' is a report to the Club, of the first major research which it has sponsored. It is not a report of The Club of Rome. An erroneous image of the Club has, therefore, formed as a group advocating zero growth. Again, the possible consequences of unregulated growth of the industrialized societies and, still more, those which would arise if growth were abruptly brought to a halt, has disturbed some of the less developed countries where, we have already said, the report is all too easily seen as a selfish proposal from the developed world which would still further aggravate the difficulties of the great mass of underprivileged on our planet. Without in any way lowering our appreciation of the MIT team work, or our conviction of the reality and urgency of its warnings, the members of the Club recognised that it is a beginning and not an end and restated their concern for the wider aspects of the problematique.

In particular it was agreed that The Club of Rome is:

- Not a group of advocates of zero growth, although we feel strongly that the nature, tendencies, qualities and consequences of growth require deep and continued analysis and discussion;
- Not a club exclusively devoted to problems of industrialized societies, attempting to find solutions to the difficulties of affluence, but a group concerned with the world system as a whole and with the disparities which it includes;
- Not a group of futurologists, but of individuals who realise the necessity of attacking, now, longer-term and fundamental problems which are difficult to approach with our present methods of government and which could give rise to irreversible situations;
- Not a political organization, either of the right or of the left, but a free assembly of individuals seeking to find a more objective and comprehensive basis for policy making;
- Not a body devoted to public propaganda for change, although, should we succeed in better delineation of the elements of the problematique, we are convinced that our results should be made known universally through appropriate national and international organizations and media.

Having stated, therefore, what The Club of Rome is not, we reaffirm our role as a group of world citizens, sharing a common concern for the future of humanity and acting merely as a catalyst to stimulate public debate, to sponsor investigations and analyses of the problematique and to bring these to the attention of decision makers. To undertake such tasks, the Club must remain small, but not detached from public contact or become elitist. It should remain a club or non-organization if it is to be quickly effective; should resist attempts to organize more formally with all the bureaucratic rigidities and lack of tempo which this might entail; and remain free from political affiliation.

Thus the concept of the Club as a non-organization remains; its essentially catalytic function is its main asset which would be frittered away were it to accept continuing service or public relations functions which demand organization, budgets and a full-time staff.

At a recent meeting, the Executive Committee discussed whether the Club, having achieved its initial aims of generating the debate, securing some un-derstanding of the nature and magnitude of the problematique, and having helped to open the door to the investigation of the workings of the world system, should not now disappear.

We felt this to be premature, but we do think that it is a question, which we should raise from time to time. There is still a need for a concerned but politically uncommitted group to raise questions and stimulate new studies. How then should our role be developed?

We feel that our task is essentially that of questioning, of formulating and delineating problems and of preparing for decision makers elements of information and experience as well as alternatives which will help them in making their decisions. Our function is advisory and not executive; we should be prepared to establish relations with decision makers similar to those of operational research units, providing alternative bases for decision, but never aspiring to the decision-making process our-selves.

We may, of course, decide later to suggest alternative policies but not to indulge in political advocacy.

We do feel, however, that there is need for an equivalent of The Club of Rome at political level for senior ministers to meet from time to time - not to negotiate but to compare their experience with regard to future planning and their success and failure in facing up to the complex of problems with which the Club is concerned. This is the concept which we term The World Forum.

With its limited resources, particularly the time of its members, the Club is obviously unable to mount major campaigns of public debate and information on the problematique, although we regard it as important that this should be done. Our first project, having attracted so much attention in the press and on television, has ensured that this need is in fact being met spontaneously. Particularly encouraging has been the formation of national Club of Rome groups in Japan and the Netherlands. These groups, while in close touch with the Club itself, are completely autonomous and nationally based.

We hope to see the arising of similar movements in some other countries such as Sweden, Denmark and Belgium and we hope that there can be spontaneous meetings of members of the Club within particular countries to that end. It is particularly to be hoped that, around Club of Rome projects, groups in which non-members of the Club can participate actively will form and operate across national frontiers.

We are also on friendly relations with a number of national and international groups with objectives akin to our own, such as the International Federation of Institutes for Advanced Study (IFIAS), the European Cultural Foundation, the World Law Fund, l'institut de la Vie, le Groupe des Dix, and many others. A number of other associations - both national and international, are also in existence and pursuing aims similar to our own in a rational and purposeful manner.

We shall seek contact and complementarity in our work with theirs. And we hope that this paper will elicit interest, observations and suggestions from many more quarters.

THE CLUB OF ROME: A CASE STUDY OF INSTITUTIONAL INNOVATION

Alexander King, 1979

The Club of Rome had its origin in 1967 when Dr Aurelio Peccei, an Italian industrialist, met the present author, a British scientist. They agreed on what later became the central concern of the Club of Rome: to find solutions to the tangle of interacting problems, now facing all mankind. So far the Club's greatest impact on world opinion was the report it commissioned from The Massachusetts Institute of Technology, *Limits to Growth*. The interdisciplinary concept is predominant in this and the Club's five subsequent reports.

Regular meetings of Club members with Heads of States and other high officials is a further important activity. Like its small and local precursor, the Lunar Society of Birmingham, two hundred years ago, the international Club of Rome derives its strength from its eminent membership of private citizens, working together as a catalyst and a spur to the world's conscience without budget, organization or constitution. They desire no political power nor do they invoke any new ideology.

Catalyst without structure

The Club of Rome was deliberately fashioned to influence policy through the creation of a better understanding of the world situation. It seeks essentially to explore the complex tangle of contemporary global problems, to study their interactions, analyze world trends and to bring the results of its findings directly to the attention of decision-makers and of the public at large. It seeks influence only through the exposure of the nature of situations and trends and not by the promulgation of policy suggestions; it has, itself, no political ideology.

Its members come from some forty countries and represent a wide range of human experience. They include Marxists from Eastern Europe and western industrialists, all sharing a common concern for the future of humanity; its members include practising research scientists, philosophers, bankers, demographers, humanists, explorers, educators and social scientists. Individuals holding political office are not normally accepted as members, although several political figures have been accepted on requisitioning office.

The innovative feature of the Club is its conception of itself as essentially catalytic and hence as a non-organization. It is practically structureless, has no formal secretariat and no budget. Dr Aurelio Peccei, its President in fact, has never been formally elected to this position which does not formally exist.

The membership is kept to a maximum of 100 for the purely practical reason that this appears to be about the largest number which can be maintained as a coherent working group without having to become an organization with inevitable bureaucratic and formalistic tendencies. Its only committee is a small executive group of eight people who meet rather frequently and are the nucleus of its activities.

New members are invited by co-option by the executive committee, and this has led to some accusations of elitism. In practice no other approach seems practicable if the informal and effective nature of the Club is to be maintained.

Actually, to be a member or not is of very little importance. The executive committee is the centre of a network of people concerned with world problems, a network which extends through the membership of 100 and far beyond to many people, scholars and activists who collaborate with the Club.

Suggestions for new activities come from within the membership, but also from many beyond. In any group of busy people, however carefully selected, sustained interest and work cannot be assumed.

Early history

The concept of the Club of Rome arose from discussions between Dr Aurelio Peccei, the Italian industrialist and myself towards the end of 1967. I had never heard of Peccei until, one day a Soviet scientific colleague (Gvishiani), flipping through a magazine came across a speech made by Peccei at a conference of industrialists in Buenos Aires. Impressed by what he read, he had a copy of it sent to me at the Organization for Economic Co-operation and Development (OECD), with the terse comment 'this is what we should be thinking about'. He asked me to put him in touch with Peccei, which I did and, at the same time suggested to the latter that we should meet. A week or so later we had our first conversation.

Immediately we found that we were on the same wavelength. We discussed the problematique and how it should be approached in the context of the world system. We decided that the situation was so ominous that some action would have to be taken, especially in Europe where there was very little prospective thinking going on, contrasted with that of American think-tanks, such as the RAND Corporation.

We therefore determined to bring together some 20 European personalities to discuss the position of Europe within the world system and invited Erich Jantsch, who was at that time a consultant of mine at OECD, to prepare a background paper for the meeting. This he did under the title "A tentative framework for initiating system wide planning of world scope".

Peccei obtained financial means to support the meeting and we selected some 30 European scientists, industrialists, economists and planners who met in April 1968 at the Villa Farnesina in Rome, the headquarters, of the Academia Nazionale dei Lincei, the oldest scientific academy of the world. The meeting was a monumental flop.

There was the typical European conflict between the Cartesian and the pragmatic approach to life and hours were wasted in debating in a highly sophisticated way, the difference between the English word system and the cognate French word système.

During the two days of the meeting, peripheral, semantic and theological debates erupted and we disbanded without a vestige of consensus. However, the very fact of the discord and insensitivity of this meeting reinforced our conviction that some action was necessary and over dinner that evening in Peccei's apartment, a few of us decided that we should form a discussion group to consider whether we should undertake studies or political action of some sort. We called the group, the Club of Rome in commemoration of the location of our first encounter.

The name has proved somewhat ambiguous and some have associated it, or pretended to associate it with the Vatican, the Treaty of Rome which gave rise to the EEC, or even with some of the features of Imperial Rome.

Even amongst the initial six members, there were some disagreements at the second meeting; some felt that it would be impossibly theoretical, generally vague and idealistic to attempt to look at problems on a comprehensive global basis and that we should concentrate on a few specific problems such as urbanism. Others, and especially Peccei and myself, insisted on maintaining the holistic approach to the world problems and of exploring the tangle of the problematique. The latter position prevailed.

The residual four continued to meet frequently during the next 18 months, generally at the Batelle Institute of Geneva which was conveniently situated between Paris and Rome and whose director, Hugo Thiemann, was a member. We began to co-opt a few others into our discussions and notably Hasan Ozbekhan, a cyberneticist, philosopher and planner of Turkish origin who was at that time head of one of the Californian think-tanks.

He was immediately sympathetic to our concept of the problematique and had for some time already been concerned with the complexities of the world situation and how these might be refined and condensed into one intelligible global model. He had already been advocating that the most modern concepts and techniques of mathematical modelling should be turned towards this analysis, unravelling and integrating the world problematique, rather than, as was the case at the time, applying such an approach almost exclusively to military objectives.

The task was enormous. It coincided with our own intention to undertake a series of studies as elements in a project which we termed "The Predicament of Mankind". The various steps towards the creation of a world model were logically conceived, but could not be completely delineated, since this required the results of research, not yet initiated. Eventually Ozbekhan completed a refined and attractive statement of the problem, purpose and approach, intellectually appealing and with brilliant insights.

This was discussed for a number of months, but its very ambition and complexity, as well as the need to evolve the art of systems analysis sufficiently to provide the necessary tools, finally convinced us that it was unlikely to attract financial support. Neither would it yield practical results sufficiently quickly to meet the sense of urgency which we felt. Very reluctantly, therefore, the approach was relinquished.

During this period too, Aurelio Peccei, often accompanied by myself and some other colleagues, visited prime ministers, ministers, and intellectuals in many parts of the world - Moscow and Washington, Tokyo, many European capitals, Ottawa and several places in the Third World, to discuss our plans and to advocate a new approach to the world predicament.

Access to the decision-makers was not difficult and they usually listened politely and with interest. But there were no tangible results, despite much sympathy and even encouragement. Clearly we were considered as well-meaning and harmless; our ideas were platonically acceptable - provided they did not interfere with their interests, or questioned the politicians of the politicians.

Precedent of Lunar Society

A break came in September 1969 when Peccei and I went to the European Summer University at Alpbach in the Tyrol to support Ozbekhan and Jantsch who were conducting a seminar.

By chance, the then Chancellor of the Austrian Republic, Dr Josef Klaus, was present at our meeting and, in discussion after dinner, he indicated that there was much of interest in the ideas we had outlined; he invited a few of us to come to Vienna for further discussions with himself and his ministers.

We followed this up a few weeks later and this was the first organized meeting between the Club of Rome and political leaders. At Alpbach we also had conversations with Professor Eduard Pestel of Hanover, Detlev Bronk and the later Professor C.H. Waddington, all of whom were to play an important part later as members of the Club.

It was, indeed about this time that the Club began its expansion to its present size, to formulate its objectives and procedures and began to act. I had in my mind at the time, the precedent of the Lunar Society of Birmingham which, at the end of the 18th century, with its mix of outstanding scientists and entrepreneurs, its future orientation and holistic approach, triggered off the industrial revolution.

In selecting members we aimed at a maximum spread of both nationality and experience. The nature and complexity of the problematique are such that it is increasingly difficult for problems to be solved by the politician alone, or by economists, engineers or scientists in isolation. Thus, one of the prerequisites for effective policy formation in the future is the cultivation of interdisciplinary approaches. This is at the centre of the Club of Rome's constitution.

The hundred members of the Club have very different backgrounds and ideologies, but are united by a common concern about the human condition and a conviction that human well-being depends ultimately on how the world problematique can be mastered. Lacking ideological identification, the Club is not able to take sides in the controversial political issues of the day, nor can it speak with a single voice.

The reports of the work it sponsors express the findings and views of the scientific groups which produce them and should not be taken as representing the position of the amorphous Club. In practice, the Club is identified by the press with the findings of its reports. Publication of *The Limit to Growth*, for example, was generally taken to be a report by the Club of Rome rather than a report to it. We were instantly labelled as zero growth advocates.

In spite of our careful avoidance of all attempts to reach consensus, the Club is deeply political in the real sense of the word. It aims to analyze and clarify issues in the long-term interest of humanity, in order to help to provide a basis to permit those who have political responsibility to make sounder decisions.

The Club of Rome usually holds one plenary session per year. In the absence of a budget, it is necessary on each occasion to find a patron and this is no easy matter. The annual conferences were held since then in different places in the world.

Meetings with political leaders

Even in the earliest discussions of the Club, there was a feeling that it would eventually be necessary to stimulate the creation of a corresponding apolitical and informal grouping of past and present politicians, which we termed the World Forum.

This would have the object of providing conditions for informal and unreported discussion of the longer term world problems and of establishing understanding as to the nature of critical issues. This seemed, and, indeed still does, a very long way off. However, a couple of years ago we began to feel that our discussions with individual political leaders had gone sufficiently far to warrant an attempt at collective discussion. We decided on a bold, and some might say impudent initiative.

The members of the executive committee as citizens of so many countries invited a number of prime ministers or presidents of countries to meet them for a couple of days of informal discussions - unbriefed and unreported. Aurelio Peccei visited most of the individuals we decided to invite and, much to our surprise there was general acceptance.

In practice, however, it was not possible to collect them all together on any particular day, owing to other commitments. As is the way of the Club of Rome with its deliberate absence of budget, we had first to find a sponsor. The Chancellor of Austria, Bruno Kreisky agreed to do so and the meeting was held at Schloss Klessheim, outside Salzburg.

During the Salzburg meeting, President Echivarria invited the Club to hold a similar meeting in Mexico the following year. This was accepted, but it was felt that this was too soon for a second meeting at heads of state level. Instead we asked them to designate ministers to represent them. In the event ministers or high officials from 26 countries attended. A second meeting at prime ministerial level took place in 1977 sponsored by the Prime Minister of Sweden.

The National Associations for the Club of Rome

The small size and free-ranging nature of the Club of Rome and its determination to restrict its activities to catalytic functions has been the secret of its vitality, but has made it impossible for us to work in depth in any particular country. Nevertheless, in many countries our work has evoked considerable interest and a desire to follow up at the national level.

All of us are under constant pressure to aid national activities and have devoted perhaps too much time to speechmaking. However, quite a number of national associations for the Club of Rome have now sprung up, none of them stimulated by the main Club, but usually forming around national members.

The National Associations are in no way controlled by the Club, nor do they formally report to it. They vary greatly in form, objective and activity, but all share the central concerns of the main Club. The Japan Association has undertaken a number of important research projects, which complement our work.

That of Canada, given a good impetus by the Prime Minister, is now moving into a period of activity similar to the Australian. The United States Association, well financed, has made an excellent start and its work should contribute greatly to ours. Finland and Switzerland are concerned with the role which countries of their size can play in the new world.

Conclusions

It is difficult to state with certainty how deeply has the Club of Rome influenced policy. Undoubtedly it has been considerable, indeed, very considerable in comparison with most other non-governmental organizations.

However, little of this influence is to be seen in terms of actions arising as direct consequences of the Club's initiatives. Most of it is, and must remain, indirect and gradual through changes in public opinion. Its influence has also been exerted through changing attitudes on the part of political leaders. The views of the Club have been quoted repeatedly, by Western politicians.

The Club's views are treated with respect in many political circles. It has raised the question of the possibility and probable consequences of continued high levels of growth and put emphasis on quality. The Club's members, individually and in groups, have had innumerable discussions with leading industrial and banking groups in many countries. This is already a substantial record in its short life of just 10 years.

One of the characteristics of the Club is that it feels itself to be an essentially temporary non-organization. At most of the meetings of the executive committee the questions are posed - 'has the time come for us to disappear, or have we still a function in puncturing complacency?' So far the answer to the first has been negative. The lack of any urge for political power, for the creation of a new ideology or for self-perpetuation is our greatest strength.

I am convinced that the world action which a small group of private citizens has been able to mount through the Club of Rome, during the last decade, indicates the need and importance of informal groups lacking political ambition and dogma yet capable of swift action.

They are a natural complement and healthy irritant to the large governmental and intergovernmental organizations with their necessarily heavy bureaucracies and political constraints - a function particularly necessary in times of rapid change. It is a time for institutional experiment.

THE CLUB OF ROME: AGENDA FOR THE END OF THE CENTURY

Aurelio Peccei, 1984.

Aurelio Peccei dictated the last part of this 'Agenda' less than 12 hours before passing away on 14 March, 1984. The document is, unfortunately, unfinished, and he did not see this typed version.

1 Less than 6,000 days separate us from the year 2000, which represents not only the end of a century that has seen extraordinary scientific, technological, economic, social, political and military developments, but also the end of a millennium during which humankind emerged from the Dark Ages, set its domain all over the world and its skies, and became the basic factor of change in this corner of the Universe. What will happen in these 6,000 days will depend almost exclusively on what humans will do, and on how and when they will do it, and is likely to modify their condition more radically than anything, which occurred at any previous time. Momentous events and decisions are in fact maturing which are bound to change the course of human history.

Although the future cannot be prophesied, it is logical to expect that during these 6,000 days:

- A supplementary population, almost as large as that which had accumulated during all the preceding ages up to the beginning of this century, will be added to the present one and must be accommodated on Earth by the year 2000, while at the same time provisions must be made for settling many more people later on.
- The already strained relations between our species and its natural environment will continue to deteriorate and the situation must be drastically redressed before it reaches irreversible breakdown.
- Human society will grow increasingly in size, intricacy and internal connections, so that, although highly diversified, it will in reality become a tightly-woven, integrated and interdependent system spanning the entire world, requiring altogether new political philosophies, new institutions and new methods of global governance.
- New high technologies will be developed in such fields as microelectronics, genetic engineering, space, ocean depths and materials, giving humankind even more overweening power to be used for good or ill, and which will thus have a beneficial or a deleterious impact depending on whether or not human development manages to keep pace.
- Fateful decisions will be made on whether to continue or to stop the arms race, and thus the build-up of nuclear warheads will either grow until these weapons will practically start firing by themselves or else they will be cocooned and dismantled and the presently rampant culture of violence will begin to give way to a new culture of non-violence.

In the light of all these probable evolutions, it is perhaps not beyond reason to affirm that a whole era is now on the wane and a new one is dawning, confronting humankind with a new set of extreme alternatives. These can be cataclysmic if we who live at these hinges of history are unprepared for the change or rewarding beyond imagination if we understand the mutating realities and face up to them as the responsible protagonists of this novel phase in the human venture.

2 To be true to its vocation of trying to perceive what it takes for our generations to respond adequately to the challenges and opportunities of this age of great transitions, The Club of Rome should, in my view, focus essentially on the crucial issues, which are emerging and will affect the future of all peoples and nations. To do this, we must attempt to envision the overall human condition in an epochal perspective. The fact that nobody else has essayed to do this till now should not deter us, nor should the realization of the immensity and complexity of the facets and problems to be considered, even if we are just to explore them superficially or analyze only some of their main aspects.

However empirical and tentative, an assessment of these issues has become indispensable if we

want to prepare for a future which promises to be completely different from anything we have experienced, and try to make it worth living. This is why I am convinced that, even though the odds are great, The Club of Rome should do its best to bring these major issues dramatically to the attention of the public at large and, of course, of scholars, religious leaders and decision makers, too.

Only if all these sectors are sensitized to the obligation to devote all our capacities to confront the unprecedented perils and chances they embody, can our generations adequately play their role as worthy heirs of our forebears and responsible progenitors of future generations.

The Club of Rome and its regional or national association have a number of other enquiries or projects under way or under consideration. Some of these touch upon these great issues only indirectly or are devoted entirely to other fields, such as global poverty, complexity, the enterprise in flux, microprojects, bioengineering and society, and alternative futures (Forum Humanum, FH). All should of course be continued both for their own merits and because they may provide a valuable background for the study of the main global issues.

3 The analysis of these global issues should not be considered just as an exercise in theoretical speculation. It must have the positive connotation of a search and research on what humankind should accomplish during these 6,000 days to prepare and meet with reasonably good chances the extraordinary challenge of the new era. I would label as 'missions' the great enterprises of global scope our generations must set to themselves in order to survive the shocks, threats and constraints of the future and at the same time take advantage of the openings it presents for them to reach an unprecedented level of human fulfilment and quality of life.

Put in this way, the objectives of these missions should be recognized to be in everybody's interest, while no peoples or nations have enough power to attain them alone or to make them unduly serve their specific goals the detriment of the others'. All human groups therefore should be ready in principle to consider these missions and their objectives as matters for widebased co-operation.

I will now briefly deal with five of the key missions which the human community should undertake before the end of the century indicating also a few of the ideas, which I feel are representative of the thinking which should guide them. Although it is a truism, let me affirm first that this new phase of human history is predicated on the assumption that it will not be pre-empted by a nuclear war.

For this, the world must rely on the restraint and wisdom of the two superpowers, which may seem to be asking too much, since it is their power politics that have brought humankind to this extreme predicament, while a tragic human mistake or rash of folly, or an electronic circuit failure could well trigger off a holocaust. Such a drastic finish to our career looks anyway so unearthly that I propose that we discard it in our reasoning.

Let me recall that some 15 years ago the concept of 'limits to growth', unpopular as it was in that period of euphoria, was undauntedly advanced by The Club of Rome as a warning against the self-complacency of industrial society. Today, in a much more critical world situation, The Club of Rome should not waver over taking an equally determined stand, this time to shake society out of its inertia and resigned acceptance of things as they are.

Under the present circumstances, the fundamental concept to be fostered is that it is fully within our powers to reverse the current negative trends and set humankind on the ascent again. To do this is indeed our bounden duty, and we must brace up to accomplish it, while not to do it would render us wholly guilty because it would be tantamount to giving free sway to the worst alternatives of our future.

Now, I would like to submit that the essential role of the Club of Rome should try to play in the crucial period ahead should be that of contributing in all possible ways to the renaissance of the human spirit and the redress of human fortunes in a sane society, and that it should focus on the five following great issues I consider among the most decisive for the human future.

Human Settlements

To settle and provide a decent standard of living for the additional population expected on Earth without disrupting the environment irremediably is probably the largest real problem facing humankind during the next few decades. Here are some aspects of the problem:

- From the dawn of time till the year 1900, human population grew slowly to reach a total of 1.6 billion. Then it quickly jumped to 4.7 billion by 1983. This unexpected exponential growth caught the world unprepared, so much so that almost one fourth of the total population has to live near or below the poverty line, which is morally and politically intolerable.
- By the year 2000, a supplementary population of 1.5 billion is expected, while still another 1.5 billion will probably be added in the subsequent 20 years. Then the population will apparently continue to increase, but projections are not very reliable.
- These new waves of people are not going to accept a life of destitution. Yet the problem is that they must be settled in practically the same areas as those already occupied by the present population, since lands fit for human permanent habitation are limited and represent probably the most finite of our finite natural resources. Altogether, what may be considered as the 'human habitat' is only about one quarter of the Earth's ice-free land surface.
- Moreover, these same areas also contain the bulk of the agricultural soils, which should never be sacrificed, no matter how pressing the demand for space for other uses. Soil is our crucial life-support system, and must be protected at all costs against any kind of erosion, because when soil is lost it is practically lost forever. Suffice it to recall that, even with the best protection of a well balanced plant cover, Nature takes from 100 to 400 years, or more to generate 1 cm of topsoil.
- The rest of the planet too is indispensable for our existence, of course. The outlying masses, the seas and the oceans, the atmosphere and some superficial layers of the Earth crust are essential as providers of life-support and resources. But they cannot be the permanent home of man.
- The only possibility of accommodating in a fairly orderly way the six, seven or more billion who will soon have to share the Earth, and of doing this while maintaining in a passably good state the natural environment they and their successors will need for all the time to come, is to prepare in advance some kind of overall 'master plan' of global land occupancy.
- It is true that, since rather less than 10% of the new population will be born in the present developed countries, the question more directly concerns the Third World and especially some of the high population growth countries. But it is no less true that the entire world system may be disrupted if a sub-substantial part of it is thrown into chaos by unsettled overpopulation.
- This is why I have proposed a broad-line feasibility study of integral land use, management and conservation, region by region, for the world as a whole. Of course in such a study land must be considered with all its natural characters and appurtenances, such as the nature of the soil, water, climate and biophysical resources, as well as the human population and its artefacts.
- A land use plan, however, is not enough. Actually, to install these additional populations decently, what may be called a fully equipped 'second world' is needed. The physical infrastructure alone of this second world will require construction work comparable to that which humankind has carried out in the last 1000 years.

Just up to the year 2000, housing and facilities must be built for 15,000 cities each with a population of 100,000 (or 1.5 million villages with 1000 people), to say nothing of the need to upgrade the wretched dwellings which today are the abode of the most destitute of our fellow humans.

- An immense corollary problem is that all these people must then earn their living. It is estimated that before the end of the century upwards of a billion new jobs must be created or equivalent occupations found for a swelling workforce which will crowd the cities and the countryside, again mostly in the Third World.

These few observations are sufficient to outline the complexity and colossal dimensions of the tasks incumbent upon our generations; they may also suggest the amount of human suffering and the explosion of rebellion and pent-up violence which may be the consequence of not making timely provision for adequately accommodating the burgeoning human population. Though the problem is

rooted essentially in the poor countries, it cannot be attacked adequately if policies, strategies and means are not prepared in advance with the long-term, planned financial and organizational support of the world community. And in turn this will require an uncommon sense of brotherhood and entirely new measures of global solidarity and an enlightened vision of self-interest consonant with this day and age.

Conservation of Nature

Strictly connected with the preceding problem is the greatest danger for humankind, namely that, growing in numbers, power and appetite, our species will tend to live beyond the means offered by the global context of this small Earth of ours. This is something that is already occurring in some sectors and regions even today. The danger does not lie so much in the field of inanimate resources, because the Earth's crust after all is so thick that it can satisfy increasing human demands one way or another; though some shortages may be experienced in certain resources, substitutive materials and new energy sources can probably provide alternative solutions. Quite different, however, is the situation in the more vital realm of the life-support capacity of the world's ecosystems considered in their totality, both inside and outside what I call the human habitat. The state of the planet under these aspects is very little known; and the time has come to assess it with the utmost care before it is too late.

- The all-important place in the Universe is our biosphere, formed by the thin mantle of soil, air and water on the Earth's surface, because it is there where life, as we know it, exists. The human species is part and parcel of the pool of life which thrives there and so it should endeavour to keep it as healthy as possible.

- The biosphere had evolved for several billion years before homo sapiens appeared in its midst about one million years ago and then spread and imposed his presence and his mode of life over all other species.

- Pursuing his ends, humankind has increasingly transformed the natural environment, making many parts of it well suited for its evolving living styles, but at the same time displacing or eliminating plants and animals often so recklessly as to lay waste other areas once prosperous and now no longer productive or inhabitable.

- The result is that nowadays the texture of wildlife on the planet is seriously degraded, and this already affects our life, too. We are confronted with a quite dismaying picture: wilderness, the treasure chest of Nature, disappearing; deserts advancing; tropical forests in rapid decimation; boreal forests poisoned by air pollution and acid rains; coastal zones and estuaries ruined; vast numbers of animal and plant species in course of extinction, with even more massive hecatombs in sight; waters, soils and the very air we breathe contaminated with the dust, litter and chemicals of our civilization which change their character; natural cycles, climate and the ozone layer tampered with often irreversibly.

- Even the strategic biological systems on which humankind so heavily depends for its daily life are under stress; croplands are overharvested, pasturelands overgrazed and oceans overfished. Yet, the number of people who are hungry or malnourished is even larger than in the past; and human demands are steadily soaring. It is expected that the present generations will consume more natural resources during their lifetime than all past generations put together, and that henceforth consumption will increase even more quickly than population.

- As an example, food, the primary commodity, is a matter of concern for all the foreseeable future. The existence of a much vaunted theoretical world food potential which is still certainly fairly high, can provide us with little solace in the face of these trends and the disorder of the world markets, not least because of the very serious phenomenon of topsoil erosion caused by our malpractices both where traditional farming prevails and where modern agriculture has been adopted. While no reliable world estimate of the total loss of food productivity due to soil erosion has been made, the figures available give rise to much concern.

- Besides food, the production of foodstuffs, firewood, fiber and other plant and animal products also causes great worries since they are probably heading for an irreversible decline.

- Food security and the availability of these other natural wherewithals for human life, so important in themselves, are doubly important because they are also indispensable ingredients of peace. So, even if their deficit is rooted essentially in the less developed regions, the associated difficulties are bound to have an effect on the entire world system.

- Man, however, is related with Nature in thousands of other ways. He is in fact even more intimately integrated in and more fundamentally dependent on the world of life than may be suggested by any simple comparison with the economics of what we call 'resources'. His psycho-physical existence is the product of myriad interchanges and osmosis with the rest of life. He should therefore abstain from doing anything, which may weaken or modify the world biomass and its habitat. He must be quite sure that any changes resulting from his action do not adversely affect the regenerative capacity of Nature or impair his own balance therewith. More than that, he should engage in a systematic campaign to mitigate at least part of the damage he has inflicted on his natural environment during the past.

- Long-term Nature conservation plans and strategies are thus becoming imperative not only to let humankind obtain and retain the living resources it needs, but also to keep the planet healthy over the years as an obligation towards future generations. The objectives are many in number, for instance; the survival of non human species and protection of ecosystems even when they are not of immediate interest; the safeguarding of marginal ecological processes and life-support systems; and the preservation of the genetic diversity of the biomass which is an expression of the Earth's evolutionary capacity that, among other things, had produced our species and which we may well need again tomorrow.

The establishment of harmony between man and Nature not only responds to considerations of immediate interest and those regarding the existence of humankind in the foreseeable future; it is also a profound cultural value because homo sapiens cannot consider himself as the absolute master of the planet or live here in splendid isolation, and he cannot disinterest himself in the world of life without losing part of his own humanity which throughout the centuries has been nurtured by imageries, fables, myths, poetry and songs inspired by the other forms of life.

Harmony is indispensable too, not least because of the great overhanging danger that, in a not so distant future, when humankind may have built its splendid technological world and solved all its major economic, political, military and social problems, it will discover to its horror that in the process it has reduced the Earth to such a state that it is no longer capable biologically of supporting our formidable but improvident species.

Therefore, the 'carrying capacity' studies started in various places should be stepped up, and must be expanded to embrace all regions and co-ordinated at the world level.

Governance of the System

The greatest obstacle to embarking on the weighty missions humankind is called upon to perform in this period is the absolute ungovernability of society, as presently organized. In these circumstances, no great enterprise of global scope has the slightest chance of being carried out, or even designed, however essential it may be.

Despite the system-like nature of humankind's global body, no political philosophy or institutions have been evolved to ensure its governance. Human development has indeed been bewildering in its accumulation of scientific knowledge, technological proficiency and industrial efficiency, even though these are matters that often proceed more or less anarchically, deepening the divisions among the different societies; but this 'progress' has not been matched by a parallel development in social and political inventiveness, creativity and performance.

This mismatch and imbalance between man the inventor and man the administrator begin within the human being himself and spread to all levels of aggregation, creating societies which are thus incapable of effectively and rationally devising ways of controlling, harmonizing and directing to useful ends the immense means, knowledge and experience they collectively possess, with the result that the entire world remains in a state of disorder, instability and unruliness.

- One of the major reasons why the human system remains utterly ungovernable is at present East-West rivalry and tensions and North-South asymmetry and gaps.
- The system is anyhow almost ungovernable because of the fragmentation of the human community into some 160 states, big and small, old and new, powerful and weak, but all 'sovereign', namely self-righteous and self-concerned.
- Functionally, therefore, today's teeming and powerful human community limps ahead as an aggregation of disparate subsystems each trying to go its own way and each defending its own interests independently one from another, except when some of them form groups to oppose other groups.
- Then there is the fact that the levels of development of all these states are so wide apart that, even if they wanted to find common ground for co-operation, they would have great difficulties in so doing.
- Yet, as the global system becomes ever more interknit by cross-boundary trade and investment, by communication and transport networks, by tourism, by the worlds of sport, music and entertainment, and not least by atmospheric and oceanic pollution and by the threats deriving from the military build-ups, all its parts are inextricably drawn together willy-nilly into a heterogeneous but unified pool in which all of them are affected by what happens to the others, and so all will have a common destiny.
- Therefore, for better or for worse, overall development of the total system, and hence of all its parts, must be a matter of concern for every human group, whatever its present condition; and in the same way, as democracy, participation and the civic virtues of mutual respect and solidarity make for the strength of individual societies, the corresponding attitudes must be evolved in the international scene if the whole of the world is not to collapse one day or another.

The time when each nation could try to afford to go it alone, heedless of the others, will soon be over. Even small or weak human groups will be able to destabilize the entire system and therefore they must be given a hearing and to an increasing extent be given satisfaction. Thus, in everybody's self-interest, the sphere of active solidarity must be expanded from the national to the regional and the global realm, and ways and means found to translate this new posture into institutions, policies and strategies. The first move will probably have to be made by East and West. When they finally come to perceive that their armaments and scheming are cancelling each other out, they will be automatically induced to try to find ways of combining their power and capacity to steer the world in directions agreeable to them. This will be a great step forward, but only a step, because soon after they will discover also that the best way to fare ahead is not to try to impose their will, but to join with others too because only through the creative and responsible participation of all human groups can the state of both the planet and humankind really be improved.

For all this to happen, as I will explain in a moment, the triggering device cannot but be a profound cultural evolution that the CoR should show the way in promoting. It will have to face all kinds of difficulties and pitfalls, but as this is the right way, it will be helped in this by the force of things characterizing the new age.

Human Development

The most valuable assets humankind can count on to ensure the cultural, political and spiritual evolution required to stop its decline and prepare for the future are to be found in the still untapped resources of comprehension, vision and creativity as well as in the moral energies which are inherent in every human being as a part of his or her genetic endowment.

These resources can and must be developed as an indispensable precondition to make tomorrow's world liveable, and to ensure that there will in fact be a future for humankind. This is a new mission that humanity must set itself, a mission that will have no end. Its rationale is simple and complicated at the same time.

- The extraordinarily great progress made by our techno-scientific and industrial capacity has given us the knowledge and means to change practically everything on Earth more or less beyond

recognition, but it has not given us a clear vision of what we are doing, nor the wisdom to do it exclusively for the betterment of self and environment.

- Not understanding the import and impact of the mutations we bring about, we are increasingly lagging behind and at odds with the fast-changing real world. Now, with the advent of even higher technologies and the spread of industrial, super-industrial and post-industrial civilization, there is the risk of incongruities growing still further. People at large will find it difficult to adapt to things ever more artificial, whose logic and even language are so alien to human tradition that only a small 'elite' is likely to find itself at ease with them.

- Progress, as it is now understood, certainly cannot be stopped. Therefore, humankind's only recourse is to enhance the quality and qualities of its members all over the world so that, by learning how to ride the technological tigers they have unleashed, humans and not machines will be tomorrow's protagonists.

- Fortunately, as now widely recognized, the normal human being, even when living in deprivation and obscurity, is endowed with an innate brain capacity and a learning ability that can be stimulated and enhanced far beyond the current relatively modest world average level of utilization.

- A movement which is still incipient was started by a CoR sponsored project called 'Learning'. This shows that people at large have the capability of vastly improving their understanding of reality and their performance. Indeed, their potential is humankind's greatest resource, and one which is not only renewable but also expandable and ubiquitous.

- Many more reasons than those emerging from what has already been said make this human development most urgent. One reason is the radical change likely to occur in the relations between man and his work. As a consequence of rapidly progressing automation, robotization, informatics and telematics, there is the danger in the developed countries, too, of a sudden, unchecked mass structural unemployment that will affect particularly the young. The social impact will be enormous, unfathomable. The work ethics, the lofty place traditionally attributed to work in man's life and even the Marxist concept of the class structure of society will all be revolutionized.

- A few figures are sufficient to illustrate the situation abuilding. The average life expectancy in developing countries is upwards of 70 years, or 600,000 hours, of which two-thirds may be supposed to be absorbed by physiological requirements (growing, sleeping, resting, eating, etc.).

This leaves about 200,000 hours available for the 'cultural activities' which distinguish man from animal; and, as the average work hours during a lifetime will soon be reduced to 40/50,000 (or less), the non-work hours available for other activities will greatly outnumber the work hours.

This 'free' time may weigh on society as a curse, or become the magic key to its self-realization; but to pursue the second alternative, 'human development' is indispensable, while society itself must profoundly change some of its basic tenets, including probably profit as the mainstay of its system of reward.

- Another reason why human development is so imperative is that, to get out of its predicament, humankind must realize where it is at present, where it is going and where it could go instead.

The study of the options open to us for 'desirable' alternative futures, rather than the sombre one towards which we are rushing, is the objective of the Forum Humanum project, which represents just a first tentative step in this direction. In this time of accelerating events and extreme alternatives, however, a sense of direction and a high degree of concern for the long-term future must become standard features of a culture of survival and progress accepted by the majority of the world population.

Non-violent society

As already mentioned, a premise of future-oriented thinking is quite evidently the absence of a nuclear holocaust. This is a necessary but not entirely sufficient condition to bridge this transition period. To ensure the long-term development of the mighty humankind which will live in the new era, it is necessary to banish altogether war and with it military and non-military violence from the parameters of its evolution and culture.

- The primary mutation needed in our traditional outlook and values is that of freeing ourselves and our societies from the 'complex of violence' we inherited from our ancestors. For them, recourse to violent means was natural because, weaker than other creatures and still scantily endowed with experience and tools, they had to be permanently on the alert and the defensive.

- This is why violence is, though wrongly, considered part of the human nature still now, when the concept of non-violence must instead become one of our basic cultural values. I submit that this reality is progressively recognized, and that violence, erstwhile means of survival or ascent, is seen now as the main cause of our doom.

Violence and its ideology of whatever sort are in fact remnants of a past which is no more, cultural derangements and social pathologies as incompatible with the new era as slavery or human sacrifices would be for today's society.

- Peace is the primary factor in any equation in which development, quality of life and self-realization are the objectives to be pursued. And peace is to be understood in its universal depth and breadth of non-violence not only at all levels and sectors of human society, but also in the relationships between human society and Nature.

THE FORUM HUMANUM PROJECT

An international ongoing dialogue and network of young researchers is generating alternative visions and policies for a positive future. The Purpose of Forum Humanum: As its name implies, Forum Humanum (F.H.) is meant essentially to be a meeting point for the expression of ideas and the stimulation of a dialogue on the future of humanity. As such, it aims at fostering understanding of the root causes of the great issues of our times, both those existing now and those likely to appear through the 1980s and the 1990s. It intends to address itself to the new world realities which count most: those of global relevance and with longterm impact, those requiring transdisciplinary and transcultural approaches, and those calling for both thorough reflection and enlightened action. It stresses the need for an objective and, at the same time, positive and hopeful thrust in the search and research of alternative trends and futures, and how they can be formulated and implemented. It puts finally the accent on the younger generations because it is they who have a greater stake in the future.

THE CLUB OF ROME - REAFFIRMATION OF A MISSION

Alexander King, Sept. 17th , 1984.

THE ROLE OF THE CLUB

The vision of Aurelio Peccei will live on and The Club of Rome, dedicated to ensuring a promising future for humanity, will remain committed to the aims articulated when it was founded fifteen years ago. In May 1984, at its first full-fledged meeting since Peccei's death, the Executive Committee unanimously decided that it is imperative that the Club's momentum and fund of good will should not be allowed to dissipate. The world has undergone drastic changes since the Club was created in 1968. We face a host of new challenges as well as many promising new developments. This might be justification enough for continuing a Club such as that of Rome, with its loose association of 100 individuals from some 40 countries and five continents. They represent diverse ideologies and occupations and they try to influence decision-makers and the public by identifying problems and analysing global issues.

But is there a distinctive role for the Club to play? After all, there is now a far greater awareness of the multifarious problems facing humanity. Governments, institutions, political bodies, business and labour organizations, environmentalists, academics, religious groups, victims and visionaries of the Third World and concerned people everywhere are all trying to grapple with the same set of problems. Contributing to this level of awareness has been one of the greatest achievements of the Club. Is there an equally unique role for it to continue?

We believe that the answer is yes, for the role we must play is prompted by the slowness and inadequacy of governments and their institutions to respond to impending difficulties, constrained as they are by structures and policies designed for earlier, simpler times and, in some parts of the world, by relatively short electoral cycles.

This, coupled with the confrontational nature of much of public and international life, the stifling influence of expanding bureaucracies and the intensifying complexity of issues, suggests that the voice of independent and concerned people, lacking ambition for political power yet having access to corridors of influence around the world, has a valuable contribution to make towards increasing understanding and, at times, jolting the system into action.

The obligation of governments is to respond to their constituencies, but too often their constituents are not fully informed of the nature of the emerging problems and are not prepared to accept the degree of change required to confront them. Consequently, the main function of the Club is, through its activities, to foster among decision-makers and the public alike, a more profound understanding of the problems and a greater awareness of the long-term benefits of change.

THE CONCEPTUAL BASES

At its creation, the Club identified three major needs on which it based its action:

- To adopt a global perspective in examining issues and situations in the awareness that the increasing interdependence of nations, the emergence of world-wide problems and the future needs of all people posed predicaments beyond the capacity of individual countries to solve.
- To think holistically and to seek a deeper understanding of interactions within the tangle of contemporary problems -- political, social, economic, technological, environmental, psychological and cultural -- for which we coined the phrase "the world problematique".
- To focus studies on issues, whether of promise or difficulty, in a longer term perspective than is possible for governments preoccupied with a desire to stay in power.

We are convinced that all three needs persist and that it is critically important for the Club to continue addressing them, since governments, the private sector and academia are insufficiently adapted to coping with the contemporary predicament. The present trend is to propose highly

differentiated solutions towards individual problems with insufficient recognition of their interaction. Our earlier attempts to identify and analyze the world problematique convince us that we must, on the contrary, work towards comprehensive solutions that involve public participation and negotiation to overcome apathy and confrontation.

It is important to demonstrate the essentially global nature of the Club. Thus, there is at present need to extend its geographical and cultural diversity to incorporate sufficiently the feminine element into its membership and to include more young people.

Human beings throughout the world can have a promising future if, together, a sufficient number of individuals reach out for it. This was the belief and vision of Aurelio Peccei and we all share it. It is the overwhelming importance of that belief and that vision and of the need to generate the understanding, the wisdom and the skills to achieve it that makes it essential for the Club to continue and to intensify its work.

A BUSY FIFTEEN YEARS

The first report The Club of Rome commissioned and published was "The Limits to Growth", a report which achieved a world-wide impact. The report was taken by some, and especially by economists, as advocating zero economic growth. In fact, this has never been the Club's position. The report warned that if nothing were done to avert them, painful and immensely disruptive situations were likely to develop. The warning was presented in the form of various scenarios that incorporated a number of main world trends. The Club's intent in publishing the report was to precipitate a more acute recognition of the issues and of the dangers of doing nothing, in the hope that such recognition might lead to changes of policy. Thus it was concerned with the nature and consequences of exponential growth.

Looking back over the past 15 years, it becomes apparent how much ground we have covered, with dedication, if not always with success, while maintaining a firm commitment to respect the different view points of the members. Our work has been accomplished essentially through the twofold approach of convening international seminars and gatherings of specialists and of publishing and disseminating reports to The Club of Rome.

- In over thirty meetings held in Europe, North and South America, Japan, Algeria, USSR, Ko-rea, Cameroon and Kuwait, experts and government decision-makers, the business community, international and non-governmental organizations have established fruitful interpersonal reactions and illuminated many facets of the world problematique. Thanks to the informal procedures of The Club of Rome, a world-wide dialogue has been generated which would at best have been difficult through traditional channels.

- "The Limits to Growth" (over 5 million copies sold) inaugurated a series of reports to The Club of Rome, many of which were destined to affect profoundly the prevailing notions governing economic growth, development, the learning process, the consequences of new technologies and global thinking.

- The purpose of the studies which were conducted under the auspices of the Club was thus not to make an affirmation of certitude, but rather to provoke thought and debate on the fundamental issues affecting the human future.

- The Club has also fostered and stimulated the creation of new global institutions and regional bodies which address many crucial problems, including training for development and technological issues.

THE NEAR FUTURE

Currently there are several important projects under way. Several of the themes considered at the Helsinki conference represent studies which are well advanced and in preparation for publication. For instance there is a study on the future of enterprise, a timely subject in view of the changing nature of industry and its world-wide manifestations.

Also important are the discussions of the need to understand better the complexities of contemporary society and government and to generate new approaches to the management of change and complexity. The non-violent society -- peace and disarmament and the causes of war -- continues to be an area of crucial concern. This is perhaps the most dangerous and the most imminent of all the issues facing humanity. Ready to be launched is an important study of the costs to society, financial and otherwise, in tolerating the continuance of world poverty. Bertrand Schneider is approaching the conclusion of his valuable study of small scale development projects in Third World countries and Elizabeth Mann Borgese has completed a book on "The Future of the Oceans" which was commissioned for the Club by Aurelio Peccei and which we hope to see published soon.

What then, should be the activities of the Club in the near future?

Aurelio Peccei left us an important legacy in his paper, "The Club of Rome - Agenda for the End of the Century", which remained unfinished at the time of his death. It expresses brilliantly his views on major issues and priorities. He points out that less than 6000 days separate us from the end of the century and of the millennium. We must shake off the present "fin de siecle" mood of uncertainty, he says, and realize that within the intervening days, trends already visible throughout the global system will demand momentous decisions which are bound to change the course of history.

The global situation, whether seen in terms of geopolitics, demography or technological development, has already shifted dramatically since the creation of The Club of Rome. There is now a general awareness that we have entered a period of transition, leading to the evolution of a global society in which the destiny of each nation will depend in a crucial way on what is happening in the world beyond its boundaries.

It is highly probable that, during this transition, there will be massive changes in the distribution of international trade and industry as well as of power. Concepts of the interdependence of all countries and of the finiteness of the planet have been thoroughly discussed in recent years, but there is, as yet, little attempt to foresee the impact of these changes or to consider interdependence in policy terms.

THE FRAMEWORK OF THE PLAN OF ACTION

In its early years, The Club of Rome adopted as its central project "The Predicament of Mankind" as a comprehensive approach to the world problematique and as an expression of its humanistic objectives. This still remains our essential concern. However, changes in the world situation and experience gained through our studies and debates suggest that many changes of emphasis and of refinement of approach are necessary for the new phase of our work. In fact, the focus of Aurelio Peccei's "The Club of Rome - Agenda for the End of the Century" provides a basis for this. Furthermore, Ibrahim Abdel Rahman, responding at Helsinki to the expression of opinion of the membership, has provided a "Scenario for the next 6000 days" which summarizes the contemporary world problems and provides a frame of action for the next fifteen years, with priorities appropriate to the present situation. Accumulated experience suggests that we should be operating within a paradigm of organic growth and holistic development, meaning:

- systematic, interdependent development where no part grows at the expense of the others;
- multifaceted development that corresponds to needs and will necessarily differ in different parts of the world;
- harmonious coordination of goals to ensure world-wide compatibility;
- ability to absorb disturbing influences on the course of development;
- emphasis on quality of development as a recognition that its processes are essentially directed towards the well-being of the human individual who does not live "by bread alone"
- continuous renewal, whereby new goals emerge as old goals are re-perceived.

Within the period from now until the end of the century, during which increase in the world population will remain extremely high, it will become increasingly obvious that unless there is a considerable change in the values and their expression in the life styles and consumption patterns of the developed countries, it will be increasingly difficult for the poorer countries to develop, disparities will grow and world harmony will be ever more difficult to achieve. This throws an enormous responsibility on the shoulders of the present generation in the developed parts of the world. The Club of Rome can contribute by working out specific proposals in economic and political policies that would move the world in the direction of harmonious organic development.

In the continuation of its work, it is essential that the Club should maintain its concern for the longer term issues; it must continue with the tasks of identifying and exploring problems of a fundamental nature which are only now appearing on the horizon, of defining priorities amongst the conflicting issues facing human beings and of mobilizing the moral and intellectual and not only the socio-economic, psychological and physical resources to attack them within the paradigm of holistic development. It is equally important to realize that the Club will have to do all this in the midst of kaleidoscopic fluctuations within the world problematique that will surpass rates of fluctuation that we have so far seen.

SOME AREAS OF CONCERN

Comprehensive expressions such as "The Predicament of Mankind", "Scenario for the next 6000 Days" or, indeed, the "World Problematique", can be but framework indications of the objectives and intentions of the Club, within which it intends to conduct intensive studies. It is thus necessary to focus activity on particular elements within these concepts, giving due importance in each case to interactions with other facets of the problematique.

The Helsinki meeting expressed the view that the Club should concentrate, nevertheless, for the next few years on a single, major item, while allowing for some subsidiary studies. While some useful specific proposals for the major theme were made, it will require considerable survey and discussion before the major project can be identified, delineated and agreed. In the meantime the Executive Committee has selected a number of major areas of concern from which the main theme may emerge. These are briefly summarized below.

(1) The Non-Violent Society

As already stated, the threat of war and especially of nuclear war is the most dangerous and the most imminent of all the issues which face humanity. Future-oriented thinking must nevertheless be based on the assumption that there will be no nuclear holocaust.

However, since problems of war, peace and violence are such an essential part of the tangle of the problematique and react on many other of its strands, the Club cannot ignore it. The diversion of resources from constructive development as a consequence of the arms race is a simple example of the impact of this issue on the other elements of the problematique and there are innumerable others.

The Executive Committee has, on many occasions in the past, discussed whether the Club should take a stand on the issue of war, but has felt that with countless other bodies representing every possible ideology already issuing declarations and in view of the complex technical and political nature of disarmament, we felt that we had no new message to communicate and that our voice would not be heard in the Babel of advice and desperation.

More recently, however, with intensification of the danger we have felt that we can no longer remain silent and much discussion and expression of the views of individual members has taken place in the last eighteen months, some of which was reflected in the seminar on the subject at Helsinki. We have taken the position that war is a symptom of deeper causes and that the armaments race is a manifestation of that symptom.

Work on this issue should be continued even if it results merely in the publication of a series of essays and reflections by a number of the members on different aspects of the problem. Our concern

should be with analysis of the basic causes of this malaise of humanity, including those inherent in human nature itself. It is also open to the Club to consider the problems of non-military violence, its causes and means to control it without sacrificing political and intellectual freedom.

(2) The Consequences of World Population Increase

The very great increase in world population, which is taking place especially in the developing countries, will continue well into the next century and will have vast consequences in terms of pressures and migrations, shifts in the patterns of economic and political power, the creation of wealth and its distribution and in the redistribution of industry and labour.

During the last seventy years or so, human activity has increased tenfold, partly because of the larger numbers, partly through enormous increase in per capita consumption. This will continue to expand greatly with heavy demand increases for materials and energy and will exert massive pressures on the ecosystem.

Problems of employment will be greatly aggravated by population increase, especially in Third World countries where unemployment and underemployment are already rife and where upwards of a billion new jobs should be created before the end of the century, yet a new wave of technological development encouraging the automation of industry and the services is likely to spread rapidly in coming decades and will modify fundamentally the way we live, the nature and availability of employment and the distribution of wealth. This could all too easily increase still further disparities between the rich and the poor both within and between countries. The proposed project on the costs of poverty will certainly have to take the demographic aspects into serious consideration.

Problems of land utilization, which Aurelio Peccei stresses in his testament, will become more acute as population grows and there is a need for a study and analysis of the competitive uses of land which could lead to a feasibility study of the need for an integrated land use plan for the world as a whole.

A particular aspect of the population explosion is the growth of mammoth cities in the Third World, a phenomenon in the management of which no experience exists.

Victor Urquidi has formulated a project for the study of the consequences of the doubling of world population, which will take place at very different rates in different categories of countries, as a major comprehensive project for the Club to tackle in the next few years. It would be difficult to suggest a subject which suggests as clearly as this the interactions of so many aspects of the problematique.

(3) The Management of Society, Institutions and the Need for Innovation

A deep concern of the Club is that society is on the brink of ungovernability. We see it in rising levels of violence, in the archaic structure of governments and institutions which are unable to cope despite their huge bureaucracies; we see it in the inability to control pollution, desertification and unsuitable use of land, in the failures of the United Nations and in the fragility of the financial system. In the broader sense it is manifested in waste that flies in the face of starvation and of profligacy which mocks at poverty. There are many aspects of this complex of problems. We have already mentioned the inadequacy of governmental structures, designed a century ago to meet quite different situations, but remaining virtually unchanged except that they have swollen monstrously. Lack of mechanisms to tackle basic problems until they have reached crisis levels has led in many cases to emergency measures which merely attempt to remove symptoms without attacking the fundamental and often unformulated causes.

Vertical and sectoral isolation of policies and structures makes it extremely difficult to tackle difficulties which spread across the whole spectrum of governmental responsibility as was clearly seen during the energy crises of the past decade. Levels of decision-making are unsatisfactory, with the need, on the one hand, to bring decisions as near as possible to the people who enjoy or suffer the consequences and, on the other, the absence of effective international mechanisms to deal with the essentially global problems.

These and many other aspects require analysis and suggestions for institutional and social innovation in face of a creeping disillusion and loss of confidence in the political system with its internal confrontations. We know little and must quickly learn how to master the problems of complexity and rapid change which dominate the contemporary society; in face of change the cultivation of resiliency may be sounder than attempts to maintain stability.

Michael Kirby has made suggestions for a Club project on some of these matters and many other members are concerned and able to contribute, while approaches and offers of help have been received from non-members.

Allied to this and relevant to the issues of war and peace is the problem of national Sovereignty. The world is fractionated into some 180 nation states, all claiming a sacrosanct sovereignty which is increasingly illusory in face of the gradual emergence of a global system and the imperatives of interdependence. This is manifested and cultivated as self-righteousness, self-concern and a narrow chauvinism. This was one of the central concerns of Aurelio Peccei. Whether the Club can usefully contribute by an analysis of the extent to which "the vessel of Sovereignty is leaking" and in indicating dangers of maintaining the illusion is doubtful in view of the important power positions that would be assailed, but it must remain a constant concern.

Yet another area of concern in perspective is the increasingly seen inadequacy of the United Nations system, with the somewhat haphazard array of specialized agencies and programs and the relative weakness of its regional organs. Several members, including Hugo Thiemann and Jack Fobes, have suggested projects for a study of this situation possibly leading to a blueprint for reform and reorganization.

Whatever we may select as our central theme for the next years, it would seem essential that we do something in this vital area for the encouragement of institutional innovation, the redesign of structures and policies which can serve a global society intelligently.

(4) Human Resources

The central concern of The Club of Rome is with the future of humanity and this concern ranges far beyond the immediately economic -- the need to provide a level of modest prosperity to all the inhabitants of the planet -- to quality of life considerations such as the conditions which make possible the dignity of the human individual and the freedom necessary for individual development.

The inherent human qualities and particularly the capacity to adapt to changing circumstances and to learn through both experience and experiment have led to the evolution of the contemporary societies and to the accumulation of vast amounts of information on the basis of which giant strides towards the betterment of individual and collective life can arise.

Equally however, all the difficulties of the problematique arise from the human failure to generate the wisdom necessary to utilize the immense constructive possibilities of the race. Negative characteristics such as greed, egoism, desire for power, fear and suspicion in the individual and projected on the collective level in terms of national chauvinism and xenophobia, which have, no doubt been important in the process of human evolution, are amongst the fundamental causes of conflict, not only with regard to war and the threat of war, but in social and economic issues both within and between the nations.

It would thus be unthinkable and irresponsible if the Club, with its expressed ideals, were to neglect the problems inherent in the nature of human individuals. We have, of course, continually stressed the need for enhancement of human quality, but have so far avoided analysis of the deeper considerations.

What happens, or does not happen in the world, is generated in the minds of individual human beings. As such, psychological processes, including very importantly the unconscious ones, are crucial contributions to both problems and possibilities, to adaptability and to resistance to change.

This is especially relevant to the psychology of individual leaders and decision makers and how their unconscious drives and motivations can influence their actions. These processes have to be acknowledged and included as an important element of the problematique.

In "No Limits to Learning" we have made a start in our attempt to understand the learning process and to look at the new demands that change and uncertainty will make on the educational system. The Executive Committee at its Toronto meeting acknowledged that this was but a beginning but must be continued. Here too it is necessary to look deeply into the way individuals react. Facing up to and learning from uncertainty can be seen as a threat and as such the uncertainty may be denied or "wished away" on simplistic explanations.

There are several members of the Club interested and competent in this field and it may be important to put them to work.

In addition to any specific studies which may be generated on the subject of human reactions and motivations, it is necessary to bear in mind, in all our work, the human and individual element and the need to set free the as yet untapped resources of comprehension, vision and creativity latent in every human being. It is also necessary that the ethical dimensions of the Club's projects should be constantly in evidence.

(5) Social, Cultural and Political Consequences of the Utilization of Scientific Discoveries and Technological Inventions

Technological innovations have, from early times, molded the nature of society. Contemporary society derives in a major sense from the inventions which gave rise to the Industrial Revolution which provided new forms of energy to augment the puny force of men and animals on which society had hitherto depended. A new wave of innovation flowing from the sophisticated discoveries of modern science is now upon us and is one of the fundamental agents of change which are producing the present transformation of society. Indeed the new technologies are likely to produce societal changes even more profound than those that stemmed from the empirical inventions of a couple of centuries ago.

While it is not the function of The Club of Rome to indulge in scientific speculation or technological forecasting, it is certainly its duty to perceive the deep and complex consequences of technologies now emerging and to generate public and political awareness of them, before some of the impacts on society reach a critical level. The engineering disciplines have always provided mankind with enhanced possibilities for both good and evil and this is enormously more so today. Not only is it essential to point out consequences as such but to help to guide the decision makers in government and industry who through their policies control the rhythm and orientation of scientific research and technological development, so that the new developments may be stimulated in directions which serve better the needs of all humanity. On the whole technological advances tend to make the rich richer and the poor relatively poorer and the new wave of developments could all too easily increase the disparities between countries.

These, then, are some of the main areas of concern which preoccupy the Club. There exist equally zones of ignorance which are barriers to the growth of human wisdom to solve the problems which our ambitions, creativity and power urges have generated. In coming months the Executive Committee will endeavour to determine priorities for study in these main areas of concern.

A RENEWED MISSION

The choice is clear: the future can be bleak if we permit it to be bleak; it can be bright if we strive to make it bright. The sense of responsibility which motivates the Club of Rome is that, given the insights to make it possible, mankind could strive for a better and even brilliant future and could succeed in reaching it.

Amongst all peoples there are enormous untapped resources of understanding and vision of creation and moral energy which, in the pursuit of this future and in the cultural evolution that it will make possible are humanity's most valuable assets. Nevertheless it will take inspirational effort, ingenuity and candour, for the obstacles are many and there is no clear or easy route in the tortuous progression towards an era which will ensure peace, dignity and a modest prosperity, possibilities of individual fulfillment and social justice to all the in-habitants of our planet.

To that end, it is the function of The Club of Rome to identify with integrity and realism emerging global issues, problems, challenges and opportunities, to the understanding of these, to generate penetrating new insights and to present them for world-wide debate. In this way the Club hopes to provoke action and stimulate useful change.

We are ready and determined to continue our mission, operating in a collegial manner that respects the different ideologies of the Club's members. It demands insights, candour, a wide variety of skills and disciplines, and above all a concern for and a faith in the future of humanity. This we possess abundantly.

THE LAUNCH OF A CLUB

Alexander King

I first encountered Aurelio Peccei in 1967. At that time he was President ad interim of Olivetti, as a "crisis" manager following the death of the illustrious founder of that company. Peccei, a young and entrepreneurial manager in the Fiat Company in the 1930s, had been in the Italian underground movement during World War II and only just escaped assassination by the hands of Mussolini's agents.

At the end of the war the Allied Control Commission involved him in the reconstruction of the Fiat enterprise as part of the national recovery plan, a task he accomplished successfully and very quickly. When normal times returned, the Agnellis, the traditional owners of Fiat realised that he had reshaped the company very much according to his own ideas and were a bit nervous about his ambitions and what they saw as this too exuberant entrepreneurial zeal. He was then sent, or dare I say exiled to Buenos Aires to open up and manage Fiat activities in South America where, once again, with the independence that distance from his headquarters afforded, his exceptional energies were soon manifest. He avoided mere replication of the conservative structures of his Turin headquarters in building up automobile, agricultural and heavy industry branches and made Buenos Aires his home. However he maintained close contact with Turin and also with the consultancy consortium Italconsult for developments in the Mediterranean region, which he led. All these activities necessitated an enormous amount of travel. He was shocked, by the poverty, disparities and injustice that he found in Latin America, was alarmed by the explosive growth of population in the Third World countries and somewhat disenchanted by the influence of technology on societies at different levels. He perceived a number of fault lines in the world system and had a conviction that governments, immersed in day to day problems, were too little aware that a number of quite fundamental problems could be foreseen that demanded immediate attention.

In 1962, American senator, Javits and Vice-President Hubert Humphries seeking means to alleviate the appalling economic conditions in Latin America, took the initiative of persuading a number of prominent Americans including David Rockefeller to create a mechanism to make available industrial venture capital to innovative industrialists in the sub-continent. Peccei was obviously interested and cooperated with the new Investment Company ADELA Atlantic Development of Latin America. His, by now extensive knowledge of industry throughout Latin America was immensely useful to the American financiers. ADELA organised a meeting of Latin American bankers and businessmen in Buenos Ayres in September 1965 and invited Peccei to deliver the keynote speech that he was able to do in fluent Spanish. The speech, *The Challenge of the 1970s for the World of Today* was very far ranging and raised issues of population explosion, environmental degradation, the North/South divide, the importance of the "New Industrial Revolution" of electronics and the need for a long-term global perspective. Apparently a transcription in English was passed to the Department of State in Washington and reached the eyes of the Secretary, Dean Acheson who was impressed by it and is said to have remarked that it was much more useful by not having been presented by a Yanki. Some copies of the transcript were placed on the side tables on some United Nations occasions together with some other papers and pamphlets as is common practice. These include meetings of ECOSOC and ACAST (the Advisory Council of Applied Science and Technology). At the end of an ACAST the meeting, one of the participants, the Soviet delegate, Academician Jermen Gvishiani picked up a copy of this particular document and read it during his flight back to Moscow. Gvishiani was very excited by Peccei's ideas and determined to invite him to the Soviet Union for talks. But who and where was this Aurelio Peccei? The document itself gave no clue; it had no heading and concluded with "Aurelio Peccei, the Military Academy, Buenos Aires" and the date. How could such a forward-looking message have emerged from a Latin American military academy? Gvishiani therefore sent a copy of the paper to his American colleague of ACAST, my old friend Carrol Wilson, asking him to find out who this man Peccei was and put them in touch. Carol had not heard of Peccei either, so he sent the material on to me in Pads with a request that I should do my best to locate the Italian and put him in touch with Gvishiani. I too had no idea who Aurelio Peccei was, but I quickly found out and made the contact.

The invitation to visit Russia soon followed and it is interesting to note that the two men met at Akademgorsk near Novosibirsk, just about as far as possible from the political intrigues of Moscow and where it was relatively safe for Gvishiani to talk and listen. When I visited Akademgorsk nearly thirty years later I met a couple of scientists who still remembered Aurelio's visit and the excitement it caused. Their talks were very fruitful and led to Gvishiani's long association with the Club of Rome.

In writing to Peccei to make the connection I had mentioned that I also had read his paper and shared many of his anxieties concerning the way the world was heading; I suggested that, should he happen to be in Paris at any time, he might lunch with me to discuss the situation. Some ten days later my telephone rang. "This is Aurelio Peccei. I am in town today and may I join you at lunch." Aurelio was a handsome man of about my own age, highly charismatic, warm and friendly. He was extremely articulate in English, French, Spanish and Russian as well as in his own language. We talked excitingly and at length and quickly established a bond that lasted until his death in 1984.

It was an unlikely alliance. Aurelio an exuberant Latin industrialist with an economics background and I a quiet Scotsman; an international civil servant who had practiced in the natural sciences. A couple of weeks later I had to go to Rome when we dined together, thus initiating a series of intense if intermittent discussions over the next six months. We found that we had indeed many common concerns. We shared a vision of global dangers that could threaten mankind such as over-population, environmental degradation, worldwide poverty and misuse of technology.

The significance of these future problems, coming on top of the existing distortions of society, did not seem to us to be attracting sufficient recognition or study, nor did there seem to be any single body capable of analysing, let alone starting significant action against the global threats. Neither the United Nations, nor any other official international body seemed to be capable of quick response to demands for solution of existing problems, how then could they be expected to take significant action against the global threats that we perceived just rising above the horizon.

While our main concerns were global, we could not avoid discussing the specific problems of Europe, including its disparities with USA, a hot topic of the time. We felt that Europe was lagging behind with traditional and static policies that took little account of rapid change and with little inclination to look ahead at the probable consequences, economic and social, of the existing trends.

By this time we were ready to share and enrich our thinking by including others in the discussions. A convenient approach might be to invite a few eminent Europeans of broad outlook to meet with us and then extend the group gradually by bringing in others from different parts of the world. So we sat down in my office in OECD and drew up a list of personalities who might be invited. Aurelio thought that he could persuade the Agnelli Foundation to fund the meeting, while I would ask my consultant Erich Jantsch, a brilliant systems scientist to write a keynote paper to set the tone of the meeting. It took place in Rome in April 1968 in the beautiful Villa Farnesina in Rome, seat of the Academia dei Lincei, the oldest academy of sciences still extant, the academy of Gallileo. Some 30 distinguished personalities attended, including the futurists, Bertrand de Juvenel and Dennis Gabor (the Nobel Prize physicist), bankers Guido Carlo and Jean Saint-Geours, Pierre Massay, head of the French planning organisation, Conrad Waddington the biologist and Hugo Thiemann, Director of the Batelle institute of Geneva.

The meeting turned out to be a complete flop. The background paper by Jantsch was a scholarly plea for long term planning leading to proposals for action partly based on the methodology and recent experience of some of the Californian think-tanks. While his paper was academically exciting, it failed to secure the undivided interest of many of the invitees. It was too technical, too dense in the expression of ideas that were partly concealed in half-understood verbiage. The very title of the Jantsch paper, a tentative Framework for initiating systems-wide Planning on a world Scale was formidable enough to frighten off some of the participants from the outset. Discussion was distinctly irritable and often irrelevant. Many were deterred by the technical language of the paper and took issue with the use of words and terms; there was, for example an endless semantic fight between English and French-speakers on the meaning of the word systems. All this detracted from serious discussion of the approaching world issues that we had intended and even Aurelio's 5 charismatic appeal was quite unable to bring the meeting back to coherent discussion.

Then, there were political undertones. The Vietnam War was raging and a murmuring Anti-Americanism was noticeable in Europe. The Rand Corporation of Los Angeles, that was frequently held up in our meeting as a model of successful forward planning was best known as consultant to the US Department of Defense and that was enough to discredit prospective-advisory bodies in general in the eyes of some of the participants. He stated that it was unthinkable to have the Vienna Opera House and a Rand Corporation in the same continent. I angrily rejoined that was impossible to envisage a future Europe that did not have both. The meeting growled to a close and its members parted, not exactly in disorder, but with no sign of enlightenment. Aurelio and I were bitterly disappointed, but not utterly discouraged. Closing the ranks, Aurelio invited a few of us to dinner at his apartment for a post mortem. We agreed that we had been naive; we knew too little about international politics; our presentation had been too flamboyant and too technical.

However we were more than ever convinced of the need for an independent international exposure of the oncoming world problems. We were not yet able to undertake this role and we agreed that we should have to go through a phase of self-education before facing a sophisticated audience again.

This next morning our group of six - Peccei, King, Jantsch, Thiemann, Saint Geours and Max Konstamm (a close associate of Jean Monnet) met and quickly reaffirmed the views that had emerged at Aurelio's 5 convivial dinner the previous evening. There was unanimous agreement that we should continue to act, very modestly at first, but with long-term ambitions. We should not form an organisation; the term carried a smell of bureaucracy, but rather an informal Club. I proposed the name Club of Rome, with no other significance than indicating the place of our first meeting. I have often since regretted my hasty suggestion, as it has frequently been hinted, maliciously or otherwise that Rome indicates some hidden association with the Vatican, the Treaty of Rome, or even the mores of Imperial Rome. We then began to talk freely about what this Club should be and to design a framework for its functioning, before discussing the substance of its concerns. We all agreed that unless it could be independent and seen to be independent from all political and vested interest pressures, there would be little justification for its existence. It had to be free to criticize policies and actions of governments or institutions without external constraints.

This meant that we should not seek or accept any funding from governments or industrial corporations. We would have to rely on resources from Foundations or other bodies on the quality of our project proposals. Also we should not invite persons holding political appointments, to our membership. Should an existing member accept a political appointment, he would become a sleeping member while in office. The importance of stressing our independence was manifesting a couple of years later when the Club became widely known. A number of people questioned our integrity because of Aurelio's well-known connections with large industrial corporations. We were suspect of being a member of hidden Mafia of the multinationals. Throughout my long connection with the Club, I never saw any sign of attempt by a firm to influence our work or publications. Indeed after the publication of *Limits to Growth*, industry tended to regard us as disruptive.

As far as structure was concerned, we decided that the Club should have as little as possible and preferably none. All of us knew examples of non-official bodies whose work was slowed down or hindered by restrictive statutes or an excessive number of committees. We regarded the bureaucracy of governments and other large organisations as guardians of the status quo and hence the enemies of change. We were determined not to fetter ourselves with an internal structure and in a fit of impossible idealism decided to have no President, no secretariat and no budget.

A year or so later, the need to have a legal existence forced us, not unwillingly, to appoint Aurelio as President. By good fortune his office was in a position to function as secretariat. It was many years before we had anything approaching a budget. Our small group was, of course, determined to recruit like-minded colleagues from all the five continents, but in view of the absence of structure and resources, we decided to limit the membership to 100 as the maximum number we could cope with. We expected all members to be active, join in debates and develop a Club loyalty. We put no term on membership, but agreed that when individual members retired or became inactive owing to the pressure of other interests, they would be politely asked to withdraw to make room for new, active candidates.

At last we got down to discussion of the main thrusts of our work. We talked about the main threats to society and the planet, as we saw them and tried to draw up an order of their relative importance. We soon abandoned this approach, however, as we saw each as related to the others and agreed that our theme was intrinsically composite. We termed it the Predicament of Mankind. This sounded very general and a bit pretentious, so we decided to concentrate our concerns in three concepts within it.

These were:

We should tackle essentially the longer-term issues. The actions of Governments normally attempt to remedy short-term difficulties. They are chained to these by the exigencies of the electoral cycle. Citizens are naturally concerned with the problems immediately facing them and this means that in a democracy government must seek to resolve them. In view of impending problems not yet generally recognised and especially in periods of rapid change it is essential that independent groups such as our Club should inform the people and prod the governments to look ahead.

Our second point was the need to identify and explore problems that do not stop at national frontiers that are essentially planetary in scope. Examples of these world problems are the degradation of the ecosphere by man-generated macropollutants, international trade and finance, water resources, desertification and expansion of world population. These are problems that cannot be solved by individual countries in isolation.

The third concept is that of the *problematique*, a term that has become the leitmotiv of the Club of Rome. It denotes not just a single, specific problem, but a cluster of problems. Thus the World *Problematique* is a tangled complex of a huge number of problems such as how to maintain an environment propitious to human life, the population explosion, food growing capacity, just and effective trade, economic and financial systems, the maintenance of peace and a myriad of other factors that interact in unelucidated ways to maintain the dynamic equilibrium of the planet.

Problematique has certain normative and idealistic connotations. The policy of a government consists essentially of the sum of its sectoral policies for security, health, education, industry agriculture etc. Reform or change of policy of any of these sectors is generally considered exclusively within the confines of the sector itself. Yet these changes may have unforeseen influence, positive or negative, on the performance of other sectors. Thus the idea of the *problematique* suggests the need for a holistic approach in policy planning, or at least, serious considerations of cross-impacts before major policy changes are decided. Investigation of the many interactions within the *problematique* was to become the leading feature of the new club.

The proud phase The Predicament of Mankind soon faded from the Club's vocabulary; the predicament was seen as the failure of mankind to master the *problematique*. Without the concept of the *problematique* the Club would have appeared little different from the many existing political pressure groups. The term has slipped into the common parlance and is still a major insignia of our identity.

How then should we begin to attack the *problematique*? One of our members suggested that we should do a pilot exploration of the interactions of the major factors of management of a city, say Florence. Another felt that we should select a small country and look at the interactions within it. Aurelio, Jantsch and I thought that we should have the courage to tackle the world-*problematique* in its entirety, however primitive the first sketches might be; starting, perhaps by describing the main variables. The only realistic approach, we felt, was a top-down one, otherwise we would fall immediately into parochialism. Two of the group, Konstam and Saint-Geours found our proposal hopelessly unrealistic and ambitious and withdrew there and then. It is interesting that, after the publication of *The Limits to Growth* Konstam wrote a charming letter to Aurelio congratulating us and saying how wrong he had been to walk out at the beginning. Saint-Geours never actually resigned but had no further contact with us for two years, after which he crept back as if nothing had happened I looked for an historical precedent for the type of body we envisaged.

The sole case I found was that of the Lunar Society of England that was active in the late XVIII century. I have already mentioned it in Chapter XVIII. It was a small group of eminent scientists, industrialists and philosophers who met over dinner in Birmingham once a month when the moon

was full to lighten the safe return home in their carriages to various towns in the English Midlands. They soon became known as "the lunatics" and the poet William Blake wrote a lampoon, thus entitled, denouncing them. They were well known and esteemed members of society, independent but quite critical of the establishment, on rational rather than party political grounds; indeed they sided with the American colonists, enraging the Birmingham merchants who paid a mob to burn down Joseph Priestley's House during one of the Club dinners. Very voluminous records of their discussions survive. Their themes covered a wide range of issues from science, the economy, politics and philosophy to religion. They were particularly interested in the influence that new inventions and new concepts of science might have on social wellbeing. This is clear from their vision of how the improvement of the steam engine by one of their members, James Watt, might lead to the arising of great new industries and eventually to the abolition of poverty. They were in fact the Fathers of the Industrial Revolution. Independence, multidisciplinary, foresight, imagination, ambition to influence and not for power - these characteristics of the Lunar Society seemed fit the needs of the Club of Rome two centuries later

During the next two years we met frequently, usually as guests of Hugo Thiemann in Geneva, discussing mainly, possible methods of exploring the tangle of the problematique. During this period also, we recruited a few new members for the Club. The first of these was Hassan Ozbekhan, the Turko-American systems philosopher, mentioned already in chapter XXVII, who contributed greatly to deepening out considerations about the problematique.

Then a new approach to our work suddenly appeared on the screen. Every year a European "Summer University" took place in the village of Alpbach, a well-known conference center high up in the Austrian Alps. Ozbekhan and Jantsch had been invited to lead a seminar for which they had prepared a paper on long term forecasting and its possible application in decision-making. Aurelio and I traveled to Alpbach to support them. As it happened, the Chancellor of Austria, Josef Klaus had chosen that day to pay his annual visit to this European forum that is located on his national territory and he attended our seminar. We had dinner with him that evening in the Gasthof. Conversation was lively and wide-ranging. At the end Klaus said, "All these things you have talked about, should interest me but, we never discuss them. Why don't you come to Vienna, say one day next month and spend a morning talking to my cabinet? This we did accompanied by Thorkil Kristiansen who on retirement from OECD had become a member of the Club and Jermen Gvishiani who was a hidden member. The meeting was useful but there was no immediate follow up. We had a meeting with a group of Austrian industrialists that same afternoon - again much interest but no action.

A couple of months later, by chance Aurelio and I found ourselves in Canada on separate missions. I was fairly well acquainted with a couple of the federal minister and arranged an informal meeting with then in Ottawa to discuss the Club of Rome. Also at the meeting were three of the bright young boys of the new Prime Minister, Pierre Trudeau. At the Sunday morning meeting Aurelio was in his most expansive mood and his enthusiasm seemed to fire the Canadians. During the lunch break one of Trudeau's men telephoned the Prime Minister, summarising the drift of our discussion. Soon a message came through, inviting us to cocktails and dinner at the P.M.'s Residence the next evening. This we accepted and duly turned up at the Residence at 6p.m., leaving after midnight after hours of exciting conversation.

These Canadian and Austrian incidents demonstrated that it was relatively easy to make contact with top political personalities, for what it was worth. We felt that with our deepening perception of the complex of the problematique, we had something to say to political leaders that were necessary for their vision of planning. We decided that a sympathetic hearing from Heads of State had to be a suitable complement to our main task of alerting people generally of the dangers ahead. Consequently, in the years 1969-70, Aurelio and I, separately or together, had meetings with 17 senior political figures. Meanwhile our membership had climbed to 30; at Alpbach we had recruited Eduard Pestel, the Rector of Hanover University, Detlev Bronk, then President of the US Academy of Science and Paul Weiss. Another important addition was Saburo Okita, then head of the Plan Commission of Japan with whom I had become acquainted through my OECD work. So we held the first Club of Rome conference at Berne in May 1970. Two of the main actors at this meeting were Ozbekhan and Forrester whose altercations proved fertile for the direction of the Club's future.

A REBELLION AGAINST IGNORANCE

A commemoration of the life's work of Aurelio Peccei

Pentti Malaska, 1984

To be "human" in the fullest sense has always demanded special qualifications. Today these requirements are very different from those needed before and programmed into us during mankind's long struggle for survival against other creatures. This struggle has already become unnecessary, but the values and attitudes of selfishness, exploitation and violence that it created within us remained, and pose the greatest barriers and threats to the further development of mankind. The question is one of human quality, and how this can be improved.

The thoughts are of Aurelio Peccei, founder of the Club of Rome and its prime motor since 1968. He died suddenly of a heart attack on March 14th, aged 75. An era of the Club's existence and activity ended with him.

The last 16 years of his highly creative and industrious life Peccei had channelled into Club of Rome activities everywhere on the globe. For him the Club of Rome was far more than a world renowned society of learned colleagues. It was continuous world-wide occurrence which he took such an active part in creating; speaking for humanism - for the human quality - and acting to promote it. He was dedicated to this with, one could say, the idealism of his youth. The Club of Rome was not just a forum for his ideas. It was the child of his heart, as his longstanding close collaborator Anna Pignocchi expressed it.

An industrialist in the vanguard of humanism, source and soul of the Club of Rome. It is a paradoxical idea that is understandable only in the context of his unique and individual life. Aurelio Peccei was born in Turin, Italy in 1908. His parents belonged to the lower-middle class, but with a social and cultural awareness, and he himself rose to the summit of large multinational companies. Before having taken his doctorate in economics at Turin University in 1930 (his thesis was on Lenin's New Economic Policy), he had been already employed by Fiat for Soviet trade. From this he moved with his wife to China, handling Fiat production and business there until 1938.

The post-war years, achievements of Peccei were in reconstruction and managing of Fiat's factories and business operations in Europe and from 1949 onwards with great originality and success in Latin America. He established, built and then headed Fiat Argentine right up to 1973. His abilities as an industrialist - to invent creatively and execute effectively - were, however, also needed elsewhere. In 1964 he accepted the appointment - on his own conditions - as Managing Director of another Italian multinational, Olivetti in order to steer it out of serious difficulties. At Olivetti he created and rebuilt a style of management, at the same time innovative and inspiring, which quickly produced good results. Yet another business career of his was in Ital-consult which he headed for 20 years after its founding in 1957. During this period it became one of the largest engineering and consulting companies in Europe. Peccei's vision for it was his belief that certain social duties and responsibilities may have priority in business, and practice has shown that this was not impediment to the success of the firm, even when judged by conventional criteria.

As an industrialist and executive Peccei was also a social innovator, developing and implementing new ideas. His ideas about how to handle a modern corporation were perhaps a bit too advanced and unorthodox, as he himself put it. In his view a multinational company was not an adequate form of enterprise. He noted that multinationals are not really what their name says, but are in fact national in terms of the values and aims they emphasize - perhaps even more clearly and consciously so than other firms. They are in fact only multilocals - their nationality is always determined on the basis of the juridical incorporation and location of headquarters. Peccei believed that world economic development would also require enterprises that were independent of national interests.

Peccei got the opportunity to put this view into practice, when the finance and development organization ADELA was set up along the lines of his thinking in 1964. Under Peccei's leadership

ADELA (Atlantic Development of Latin America) became a great success, promoting hundreds of other enterprises and assisting in their development. In the process, hundreds of thousands of new jobs have been directly created. ADELA is multinational in the form of its ownership and functions, but free from national and other interests outside its own task to promote socio-economic progress profitably.

Returning from China to Italy on the eve of World War Two Peccei joined the anti-Fascist front and later the underground resistance movement. As a resistance member he was arrested and imprisoned for almost a year before escaping his executioners. Imprisonment obviously had a great effect on Peccei because 30 years later he wrote of it: "My 11 months of captivity were one of the most enriching periods of my life, and I regard myself truly fortunate that it all happened. Being strong as a bull, I resisted very rough treatment for many days. The most vivid lesson in dignity I ever learned was that given in such extreme strains by the humblest and simplest among us who had no friends outside the prison gates to help them, nothing to rely on but their own convictions and humanity. I began to be convinced that lying latent in man is a great force for good, which awaits liberation. I had a confirmation that one can remain a free man in jail; that people can be chained but that ideas cannot."

His difficult yet successful tasks in international business taught Peccei how, in his own words, the innovations and visions of creative thought can be transformed by skilled and inspired men and with the necessary resources into effective and productive action. But broad experience of both industrialised and underdeveloped countries had at the same time opened his eyes to see the superficiality of development and the limited vision of the North. Its result was a failure of the modern man to perceive the real plight of the world and his inability to see the ever-growing gap within mankind and between its different communities.

Humankind is crucified along two axes: one of the antagonisms between East and West, the other the fundamental imbalance between North and South. If these persist there will be no means to govern the world. Peccei did not regard these conflicts as matters of mere material development but as a sign of deep humanistic problems, which contain the seed of human destruction if unresolved.

There can be no economic progress without prior or parallel human development, he says. And a third axis of concern so essential to Peccei was his concern about devastation of nature and man's relation to it via technology. The solutions to these global problems is to be found only within man himself, in his cultural evolution - not in any optimistic dreams of the future nor in the fix that good will automatically and technologically always prevail. Here we are with his pessimism if we like to put it that way. The year 1965 was very significant for these thoughts and views. Peccei's lectures on the subject of the challenges of the 70's and the world analysis set in motion a far-ranging chain of events. It led Peccei to meet with Alexander King and Jermen Gvishiani. One result was the establishment in Austria in 1973 of the International Institute for Applied Systems Analysis. Since then IIASA has become the world's most significant institution for systems analysis of global and universal problems of nature. A second chain led with Erich Jantch, Hugo Thiemann, Eduard Pestel et al. to the emergence of the Club of Rome in 1968. Both institutions were very much of social innovations of Peccei and expressions of his humanist creativity.

In the 1970's the Club of Rome has become the leader of discussions of global concern and a worldwide phenomenon which, in its critical appraisal and assessment of the plight of mankind, transcended social and ideological barriers. Its message did not concern only the Club members or researchers who presented reports to the club, but all people arguing for or against it came to realise the existence of the world change and its problematique. Millions did so. From the very beginning studies on mankind's future made by international research groups have been in the foreground of Clubs activities. The number of related reports to the Club is already in double figures.

The Club has held a large international conference once a year, and there are local associations in very many countries. They, however, have no form of organisation of ties to the Club of Rome itself. The Club has no funds, no membership fees, no organisation, no official secretariat or other staff apart from an executive committee. It is a non-organisation whose principle in all matters has been action in personal capacity of its members. Peccei himself was always first to apply and, if

necessary, defend this principle. His own capacity and ability to innovate and act were far above many others. Equally characteristic of him were, however, modesty, and ability to inspire others to personal contribution, and his capacity to get the backing to implement projects. It is persons who count, more than deeds and ideas, for even these, without people, amount to nothing, he says.

These factors came to form the internal spirit and atmosphere of the Club of Rome. For that matter the Club of Rome has been, I believe, for many participants of personal significance and has become one of the most invaluable experiences in lifetime. I will end with quotations from Peccei: "I consider the Club of Rome first of all an exciting adventure of the spirit - the exploration and discovery of man's condition in this age of his global empire. At a time of ever-expanding knowledge when we know incredibly much about so many things, we know incredibly little about our own changed condition. If the Club of Rome may be credited with any merit, it is to have been the first to rebel against this well nigh suicidal ignorance. It is not, however, impossible to pursue the human revolution capable to change this course."

The Dossiers are a collection of documents from the early times of the Club of Rome. They illustrate its spirit and its activities and are a flashlight on a time when the fact that there are limits to growth of our planet was seen rather as an exotic view than as a matter of fact. The Dossiers have been selected by Pentti Malaska and Matti Vapaavuori who have been involved in the Club and its Finnish Association for a long time.

The Dossiers have been authorized by Alexander King.



Pentti Malaska has been a member of the Club of Rome since its early times. As a pioneer of scenario approach and visionary management and logics of futures thinking he developed futures research as a new scientific discipline.



Matti Vapaavuori has been participating in the work of the Club of Rome group in Finland for a long time. As the editor in chief of the Futura-magazine he co-edited the original version of the present publication for the 1984 Club of Rome conference in Helsinki.

