THE FIRST GLOBAL REVOLUTION

A REPORT BY THE COUNCIL OF THE CLUB OF ROME

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Orient Longman

Contents

Ah lovel Could thou and I with fate conspire,
to grasp this sorry scheme of things entire,
would not we shatter it to bits and then,
remould it nearer to the heart's desire?

Edward FitzGerald
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Foreword

1968 was the year of the Great Divide. It marked the zenith as well as the end of the long post-war period of rapid economic growth in the industrialized countries. But it was also a year of social unrest with the eruption of student uprisings in many countries and other manifestations of alienation and counter-cultural protest. In addition, it was at that time that general and vocal public awareness of the problems of the environment began to emerge.

A number of individuals close to decision-making points became concerned about the apparent incapability of governments and the international organizations of foreseeing, or even attempting to foresee, the consequences of substantial material growth without sufficient thought as to the quality aspects of the life that unprecedented general affluence should make possible. It was felt that a group of independent thinkers concerned with the long-term and deeper issues would be useful in complementing the work of the bigger organizations.

The Club of Rome took shape that year from these considerations, and was founded by Aurelio Peccei and Alexander King at the Academia dei Lincei in Rome. It chose as its initial theme, 'The Predicament of Mankind.' Aurelio Peccei was its first president, a post he retained till his death in 1984. At present, the group comprises one hundred independent individuals from fifty-three countries. The Club has absolutely no political ambition. Its members represent a wide diversity of cultures, ideologies, professions and disciplines, and are united in a common concern for the future of humanity.

From the outset, the Club's thinking has been governed by three related conceptual guidelines:

—adopting a global approach to the vast and complex problems of a world, in which interdependence between nations within a single planetary system is constantly growing;
—focussing on issues, policies and options in a longer-term perspective than is possible for governments, which respond to the immediate concerns of an insufficiently informed constituency;
—seeking a deeper understanding of the interactions within the tangle of contemporary problems – political, economic, social, cultural, psychological, technological and environmental – for which the Club of Rome adopted the term 'the world problematique'.

The world problematique has become, as it were, the trademark of the Club. We define it as the massive and untidy mix of interrelated difficulties and problems that form the predicament in which humanity finds itself. For our present purposes we have coined a corresponding term, 'the world resolutique', which connotes a coherent, comprehensive and simultaneous attack to resolve as many as possible of the diverse elements of the problematique, or at least to point out ways to solutions and more effective strategies. By 'the resolutique', we do not suggest a grand attack on the totality of the problematique. Our proposal is rather a simultaneous attack on its main elements with, in every case, careful consideration of reciprocal impact from each of the others. In a world in which problem-solving initiatives are increasingly immobilized by bureaucracies, there is a growing role for flexible and informal groups such as the Club of Rome.

Our first publication, *The Limits to Growth*, appeared in 1972 as a report to (rather than *by*) the Club of Rome. The study, commissioned by the Club, was accomplished by an international team of professors and researchers at MIT using the system dynamics methodology of Jay Forrester. This was a pioneering attempt to project in interaction a number of quantifiable elements of the problematique. The report and the controversy it generated immediately gave the Club of Rome worldwide visibility or, as some would say, notoriety. It thereby achieved its main objective: the stimulation of a great debate on growth and society throughout the world and an increased awareness of the interactions that take place between the elements of the problematique. The report has sold some ten million copies in over thirty languages and has had considerable political impact. The Club was widely criticized for what was seen as advocacy of a zero growth economy. This was never our intention. We fully accepted the pressing need for material growth in the poor countries of the world, but warned readers about the consequences of an unthinking pursuit of growth by the industrialized countries, depletion of the world resource base, deterioration of the

environment, and the domination of material values in society.

Since 1972, the Club has published eighteen reports on a wide variety of issues (see Bibliography). The second among these, *Mankind at the Turning Point* by professors Pestel and Mesarovic, was a computerised growth model which also took regional situations into account. It included a strong warning of the high costs in terms of money and human suffering which would result from delays in taking action.

Two decades later, the contemporary problematique remains the same in its underlying causes as that of 1972, but differs in its mix of issues and its points of emphasis. Humanity will always have to live with the problems of its time, no matter how effective the resolutique has been in the past. Changing situations, notably those arising from the solution of past problems, give rise to new difficulties which, as always, interact. Furthermore, in times of rapid change such as the present, the mix of problems and the understanding of their relative importance is likely to change rapidly. This is partly because some of our perceptions have become clearer and partly because new knowledge has identified new dangers. Of course, the two most dominant elements are probably those of the population explosion in the South and of the only recently recognized macro-effects of man on his environment, which were exactly the two central preoccupations in *The Limits to Growth*. But new factors, such as changes in human behaviour, the emergence of seemingly irrational movements including terrorism, and the growth of individual and collective selfishness, thrown up by our materialistic society, have definitely become elements of today's problematique. Such matters are obviously relevant when considering the present situation.

The human being both creates the problematique and suffers its consequences. The problematique therefore demands a systematic analysis that pays due attention not only to what is regarded as rational behaviour, but also to instinctive and apparently irrational elements inherent in human nature that make for an uncertain world.

If the Club is to live up to its role, it is essential that we re-examine the problematique, attempt to elucidate more clearly some of its interactions, and issue warnings about the consequences and trends determined by the persistence of present economic systems and human behaviour. With the possible exception of the nuclear threat, the present dangers to humanity are probably greater and more imminent than those in 1972. We shall, no doubt, be accused as before of being harbingers of doom. This may well be our role and our glory. However, prophesying doom is by no means our sole or even main intention. It is but a necessary prelude to taking action so as to avoid the doom confronting the earth's inhabitants. *The Limits to Growth* was never

intended as a prophecy, but rather as a warning of what might happen if policies were not changed (in order to prove its extrapolations wrong.) A preventive approach such as this carries with it the responsibility of putting forward suggested remedies.

Ricardo Diez-Hochleitner
President, Club of Rome.

No generation has ever liked its prophets, least of all those who point out the consequences of bad judgement and lack of foresight.

The Club of Rome can take pride in the fact that it has been unpopular for the last twenty years. I hope it will continue for many years to come to spell out the unpalatable facts and to unsettle the conscience of the smug and the apathetic.

Prince Philip, Duke of Edinburgh
Message to the delegates at the
Twentieth Anniversary Conference of the Club of Rome,
Paris, 1988.

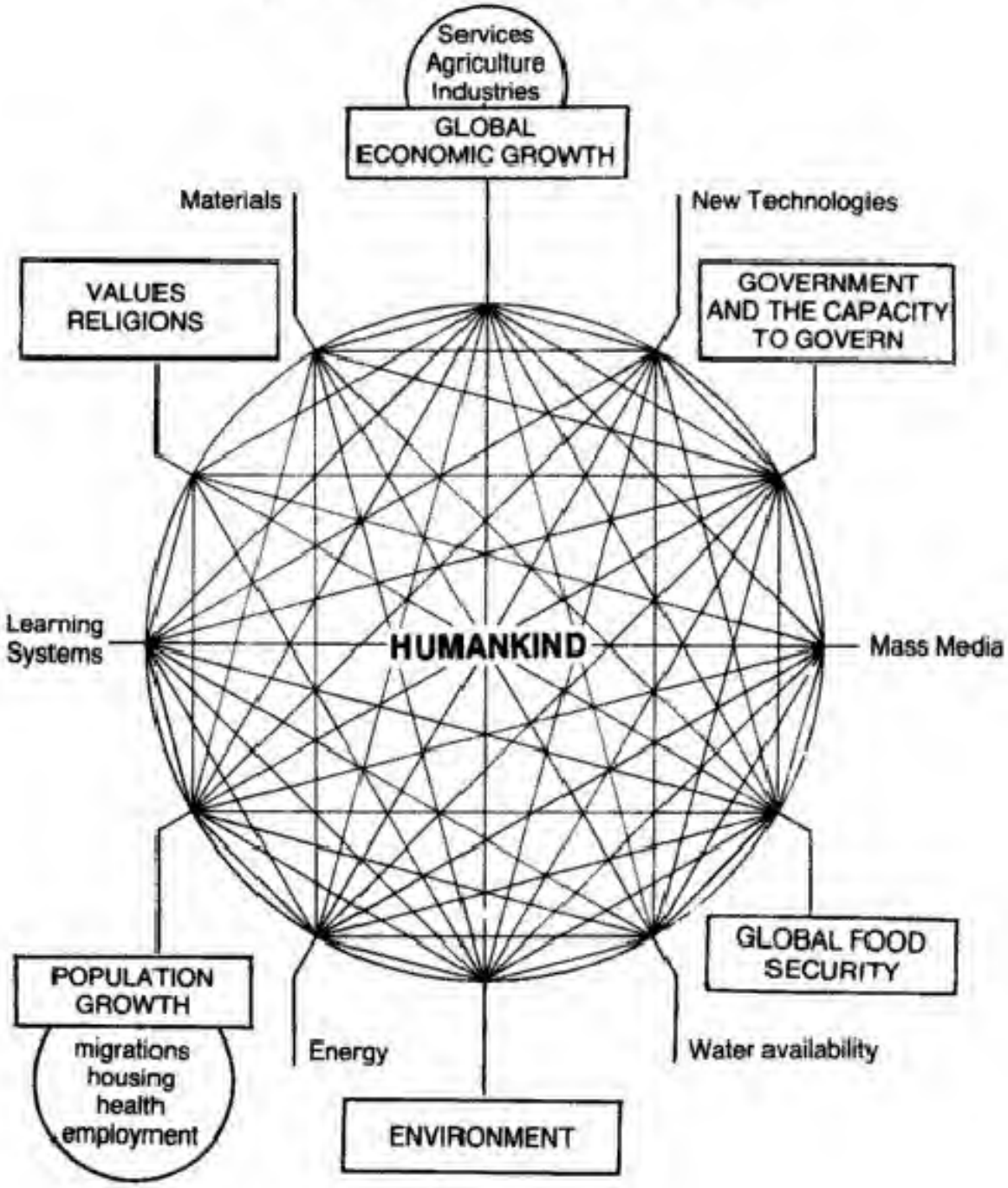
We would like to express our special gratitude and thanks to Club of Rome members Martin Lees *and* Donald Michael, *whose work with the Council has been a precious and indispensable contribution to the ideas and thoughts presented herein.*

We would equally like to thank Patrice Blank, Richard Carey *and* Alexander Pekham *for their sharp appraisal and enlightened counsel,* Soyo Graham-Stuart, Nicole Rosensohn *and* Marina Urquidi *for their criticism, advice, suggestions and strong support, as well as* Fabienne Bouton *for her unending patience during the composition of this book.*

Abbreviations

AIDS	acquired immuno-deficiency syndrome
ASEAN	Association of South East Asian Nations
CFC	chlorofluorocarbons
CGIAR	Consultative Group of Institutes of Agricultural Research
FAO	Food and Agriculture Organization (of UN)
FIT	Foundation for International Training
GATT	General Agreement on Tariffs and Trade
HIV	human immuno-deficiency virus
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organization
IMF	International Monetary Fund
IPI	International Partnership Initiative
MIT	Massachusetts Institute of Technology
NGO	non-governmental organization
NIC	newly industrialized country
ODA	official development aid
OECD	Organization for Economic Cooperation and Development
START	Strategic Arms Reduction Talks
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
Unesco	United Nations Educational, Scientific and Cultural Organization
Unicef	United Nations (International) Children's (Emergency) Funds.
Unido	United Nations Industrial Development Organization
WHO	World Health Organization

THE WHEEL OF HUMANKIND



Introduction

Humankind seems to be gripped by a *fin-de-siècle* attitude of uncertainty at the threshold of the new century, but the end of a millenium presents an even more complex situation with its widespread and rapid changes, and the uncertainty that these changes bring with them.

The topic of recent Club of Rome meetings has been 'The Great Transition': we are convinced that we are in the early stages of the formation of a new type of world society which will be as different from today's, as was that ushered in by the Industrial Revolution from the society of the long agrarian period that preceded it. The initial but by no means the only motor force of this change has been the emergence of a cluster of advanced technologies, especially those made possible by microelectronics and the new discoveries of molecular biology. These are creating what is variously called the information society, the post-industrial society, or the service society, in which employment, life-styles and prospects, material and otherwise, will be very different from those of today for every human being.

We only need to mention as examples of change the population explosion in the Southern countries, the probability of great changes and disturbance in world climate, the precarious nature of global food security, doubts on energy availability and the vast changes taking place in the geopolitical situation – all of which interact within the complex of the problematique. We are convinced that the magnitude of these changes amount to a major revolution on a worldwide scale.

1989 and 1990 were years when the course of history suddenly speeded up: communist regimes in eastern Europe collapsed, East and West Germany became a single nation again, the invasion of Kuwait by Iraq in 1990 provoked

a deadly crisis in the Gulf. Though these were by no means the only events of the period, they were by far the most spectacular, and despite their geographic dispersal, they were interconnected: the end of the cold war and of East-West tension blew the lid off the world pressure-cooker, as it were, and enabled latent conflicts to emerge in the open and long-repressed aspirations to express themselves forcefully.

In the coming years, it is very likely that other events will come to the forefront of world attention, while today's events will be pushed into the background. This book was written before the collapse of the Soviet Union, and the creation in its place of a loose confederation of independent republics. The changes still taking place there do not alter what follows. Indeed, they confirm our statement, made in early 1991, that the Gulf War is the first example of a series of phenomena that will most certainly affect the world profoundly in the coming decades.

The Gulf War was in many ways a warning signal and should lead to a new vision of international relations. It confirmed the existence of tension, which will continue to grow between the rich countries and the poor countries, between the North and the South, while the injustice and humiliation it breeds is found especially and increasingly unbearable by the Arab-Muslim countries. The war has also been a demonstration of a new attempt by the United States to reassert its hegemonic presence in a number of regions of the world, while putting its force at the service of right and legalism. The ambiguity of American policy, despite the fact that it has often shown proof of goodwill, is not going to make the international relations of the United States any easier in future.

The end of the cold war has led to the awakening of nationalism, that had been stifled under the lid of East-West tension, and will inevitably produce conflicts of varying degrees. However, it must be stressed that the process of disarmament that was undertaken between the United States and the Soviet Union is a positive element – but not sufficiently so. Disarmament in high-risk zones and a strict control by the United Nations of the sales of sophisticated arms have to be a priority if we expect to prevent other confrontations, as bloody and paradoxical as those in the Gulf War.

Will the budding democracy in Benin, as that in the East European and Latin American countries grow strong and spread, or will its failure to do so lead back to authoritarian governments? Will regimes that seem to be firmly established today be able to stand up to the pressure of population, the majority of the members of which are under twenty years of age and demanding a roof, a job and the means to survive? No one knows.

There is, however, one indisputable fact: the world economic

discrepancies, the flagrant inequalities, the existence of extreme poverty side-by-side with great wealth, cause all sorts of tensions and conflicts, showing up here and there in the most diverse geographic zones. These are the signs that mark this first global revolution and they indicate the uncertainty with which the future of the planet is confronted.

But why do we regard the contemporary threats and changes as the first global revolution? The change from the hunting and gathering phase to one of settled farming may have taken thousands of years to spread throughout the world. The Industrial Revolution that began in the United Kingdom about two centuries ago is as yet geographically incomplete. However, the present brutal changes are taking place everywhere simultaneously from causes which are likewise ubiquitous, thus causing the 'Sturm und Drang' of a universal revolution. The worldwide significance of this revolution becomes vastly greater if one considers that its mismanagement could endanger the whole human race.

The new society is emerging from the chrysalis of the often archaic and decadent old societies; its evolution is complex and uncertain and its manifestations are difficult to decipher, making the tasks of the decision-makers in both public and private sectors more difficult than ever, and inducing a permanent uncertainty in all thinking individuals. Elements or transitional facets of the new society are appearing here and there without obvious ties between them.

The global revolution has no ideological basis. It is being shaped by an unprecedented mixture of geostrategic upheavals caused by social, economic, technological, cultural and ethical factors. Combinations of these factors lead to unpredictable situations. In this transitional period, humanity is therefore facing a double challenge – having to grope its way towards an understanding of the new world with its many hidden facets and also, amidst the mists of uncertainty, to learn how to manage the new world and not be managed by it. Our aim must be essentially normative – to visualize the sort of world we would like to live in, to evaluate the material, human and moral resources available, to make our vision realistic and sustainable, and then to mobilize the human energy and political will to forge the new global society.

In matters of public concern, as in other areas of human interest, fashions prevail. Yesterday the nuclear problem was uppermost in people's minds; later the population explosion reached the headlines; today the environment is a la mode and concern with population has receded. The energy crisis was seldom mentioned publicly earlier, but the events in the Middle East have already made this the new preoccupation. The need is to consider all these as essential angles of illumination in the kaleidoscope of planetary change.

In this tangle of change it is important as never before to look beyond the pressing issues of the moment to the forces beyond the horizon. Forecasting is necessary, and will necessarily be a relative failure. Simple extrapolation of existing trends will not give us realistic answers. *The Limits to Growth*[1] had developed an interactive simulation model that produced a variety of scenarios which were especially useful for defining what was to be prevented. In some fields such as technology and industry, long-term forecasting is indispensable and efforts in that direction are being made by some of the most forward-looking corporations, which are struggling to invent new methodologies for planning in uncertainty.

> In the thirties, the American president Franklin D. Roosevelt commissioned his administration to undertake a vast study of the coming technologies. When the study was published it made a very big impression. Indeed, it was enthralling. There was just one problem: it had not predicted the coming of television, nor that of plastic, or jet planes, or organ transplants, or laser beams, not even of ball-points pens![2]
>
> Franz-Olivier Giesbert[2]

One aspect of the contemporary situation is an increasing awareness that the human race, in pursuit of material gain by the exploitation of nature, is racing towards the destruction of the planet and itself. The threat of nuclear destruction, although less imminent, is always with us, and the possibility of irreversible climatic change with only dimly foreseeable consequences is an imminent menace. Such ingredients of the present problematique are global in character and cannot be tackled by even the largest powers in isolation. Only if all the inhabitants of the planet realize that they are facing immediate and common dangers, can a universal political will be generated for united action to secure the survival of humanity. This is why we call for the creation of world solidarity.

The term 'solidarity' has been greatly misused and seriously devalued. Its application to circumstances in which motivations for common belief or action were too weak, have given it a somewhat utopian and insubstantial connotation. In the present circumstances, however, the extent of danger to the future well-being of all the inhabitants of the planet gives such enhanced force to the necessity for solidarity, that unity and stability must plainly be generated.

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1. This was the first Report to the Club of Rome (Meadows et al 1972).
2. Giesbert, 1990.

We have voluntarily presented a simplified version of things: many of the phenomena mentioned herein would have to be analysed both more deeply and more subtly. This would require numerous and weighty volumes.

Our option was different. Our wish was briefly – even if superficially and incompletely – to lay out elements that may already be known in order to show how they interact and through their entanglement, to state our outlook on the present world problematique as clearly as possible. We do not intend to draw up a blueprint of concrete actions for the salvation of the world. Nevertheless, our analysis of the situation encourages us to make a number of practical proposals, to suggest possible lines of action and to indicate necessary changes in attitude.

Never before has humanity possessed, as it does today, the knowledge and the skills, the resources and the cohesion to shape a better world. This should generate hope in all people. Yet there is widespread uneasiness and fear of impending changes which in impinging on the still incomplete changes of recent decades will add to the uncertainty. This very uncertainty, together with the removal of the traditional restrictions of the past and the new hopes for the future provides an enormous impetus for reshaping the world society. The tragedy of the human condition is that we have not yet reached a position to realize our potential. We see the world and its resources being grossly mismanaged, yet we are lulled by the complacency of our leaders and our own inertia and resistance to change. Time is running out. Some problems have already reached a magnitude which is beyond the point of successful control and the costs of delay are monstrously high. Unless we wake up and act quickly it could be too late.

This book is organized in two parts. The first deals with the problematique and purports to present the main changes of the last two decades, to describe the malaise which they have caused and to outline some of the most important issues and dangers which humanity has to face unitedly. The second part describes the resolutique and attempts to present a number of actions which, at this stage, seem especially necessary to pursue. Finally we return to the need to generate world solidarity.

The First Global Revolution is written for all those who have the spark of the explorer, the discoverer, the risk-taker – the learner. These are the people we shall have to count on to face the appalling issues described herein, to set the goals and try to reach them and to learn from their failures and successes, to go on trying – learning.

Finally, it is addressed to those who are concerned with the future of the planet and of humankind, and hopes to sharpen their concern. This book may also help to awaken concern in others. Above all, it is addressed to the young,

so they may assess more coherently the state of the world which they have inherited from earlier generations, and may be inspired to work for the construction of a new and sustainable society, capable of providing equality and modest prosperity for their children and generations to come.

This is the spirit in which we offer these ideas and proposals for action, for learning our way into the future.

Part I

The Problematique

1. A Whirlwind of Change

January, 1969: 21-year-old Jan Pallach sets himself on fire at Wenceslas Square in Prague to protest against the occupation of Czechoslovakia by Soviet tanks.

December, 1989: dissident writer Vaclav Havel is elected President of the Republic of Czechoslovakia.

September, 1973: democracy in Chile is swept away by a bloody military coup (10,000 dead in six months, 90,000 arrested and 163,000 forced into exile).

December, 1989: First democratic elections since September, 1970 put an end to the military regime in Chile.

The seeds of the coming global revolution have been germinating slowly over many years, during which complexity and uncertainty in conditions and rapid change are beginning to overwhelm the capacity of governments all over the world. Indeed, governments never like change. Wedded to the status quo, they react to symptoms of change , but seldom to the causes which tend to be regarded with suspicion as possibly being 'subversive' in nature. One of the most obvious aspects of human frailty is too much concentration on the immediate, with too little care for future consequences — an insistence on immediate gratification. This applies to institutions as well as to people. Governments operating under the tyranny of the next election focus on the present issues and avoid more distant but, frequently, more fundamental matters. Corporations, likewise, bow to the tyranny of next year's bottom line, although both governments and enterprises do try to look beyond the next election or annual report in much of what they do.

The Club of Rome was founded in the year 1968 when the economic growth mania was at its height. Soon after the publication of its first report, *The*

Limits to Growth [1] in 1972, the world was hit by the oil crisis. This had many repercussions on its economy and society; it had a strong impact on the world investment pattern and caused many policy modifications as, for example, in the attitude of the United States to the Middle East. The crisis was a clear warning to the industrialized countries about the dependence of their economies on the secure supply of raw materials and energy, which in turn was (and is) dependent on events in distant places which are largely beyond their control.

> In today's world all curves are exponential. It is only in mathematics that exponential curves grow to infinity. In real life they either break down catastrophically or they saturate gently. It is our duty as thinking people to strive towards a gentle saturation although this poses new and very difficult questions.
>
> Dennis Gabor[2]

The oil crisis brought home to most of the oil-importing developing countries the extent of their reliance on cheap fuels, with hardly any local energy alternative; it also led these countries into excessive external indebtedness, not so much to foster development, but to pay the oil bill. This crisis and other factors have led to a considerable lowering of economic growth rates from the high levels of the previous decades. However, achievement of economic growth still remains the main explicit goal of economic policy, with too little consideration of differential needs and quality aspects. How far the published growth figures reflect real increase in human welfare is open to question.

> If, for example, an economy grows at an annual rate of 5%, it would, by the end of the next century, reach a level of 500 times greater (or 50,000% higher) than the current level.
>
> Eduard Pestel[3]

Much of what is counted as growth is probably not growth at all. For example, in the United States of President Reagan, growth figures concealed overconsumption and public underinvestment, deterioration of the infrastructure, decay of the inner cities, and social degradation. Nor is there any evidence that growth in the North leads in time to development in the South.

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1. Meadows, 1972.
2. Nobel Prize winner, inventor of holography (Gabor, 1978).
3. Former Minister of Culture, Science and Technology of Lower Saxony, former member of the Executive Committee of the Club of Rome (Pestel, 1989).

In 1968, few could have foreseen the fundamental political changes we have recently witnessed. Already the political dominance of the two superpowers was beginning to dwindle, but the cold war not only ruled East-West relations, it also defined the whole international system, torn apart by ideological polarization. The recent events in USSR and Eastern Europe have therefore shaken not only the region, but the whole planet. The collapse of economic communism and the disintegration of the Warsaw Pact bloc of nations has aroused great hopes – and is invested with great dangers. The situation is extremely fluid, has few constraints, and the consolidation of present trends offers great opportunities for the structuring and renewal of a much wider region, and possibly of the world system as a whole.

History is unlikely to provide another opportunity as open and promising as today's, and it is essential for humanity to find the wisdom to exploit it. This unfreezing of the geopolitical rigidities of the last forty-five years is one, but only one of the elements shaping the global revolution. Entangled with many other forces of changes it has made the future shape of the world still more uncertain.

Throughout the period since 1968 the world has lived under the shadow of the nuclear bomb. However with East and West willing to put an end to the cold war, a new climate is now dawning in international affairs despite the setbacks recorded at the beginning of 1991. Although nuclear annihilation no longer seems imminent, the threat has certainly not been banished; indeed it may exist as long as the planet is peopled by humans. Great vigilance is essential, not only with regard to the intentions and behaviour of the present nuclear powers, but also to curtail nuclear proliferation and to ensure that small nations now developing nuclear devices are persuaded or prevented from using them in local wars against neighbouring states. This requires a new strategy on a global scale, quite different from the bipolar approach of the cold war period. Humanity will have to be forever on guard against the rise of insane leaders with great charisma, capable of hypnotizing whole nations, and willing to destroy the world rather than go down in defeat. Such was the case in January, 1991, with the Gulf War. Who can foretell the medium – to long – term consequences of the war on the environment as well as on the geopolitical balance in the Middle East?

Despite present difficulties and contradictions, there is still hope for continued progress in disarmament negotiations concerning conventional arms and chemical and biological weapons. Wars on the world scale must be avoided; the power and sophistication of modern weapons make winning out of the question and the high cost of their development and manufacture is a permanent burden, inhibiting economic and social development. Local wars

are likely to continue to occur until some measure of overall global harmony is established. In the period under review, some fifty such wars have raged and there has been a considerable buildup of arms in the less developed countries, to the detriment of their economic development.

The economies of the industrialized nations benefit greatly from the sale of arms. The business is highly competitive and contributes greatly to increasing the threat of war. Furthermore, the arms trade can easily boomerang and hit the nations supplying the arms, as has been the case in the Falklands and Gulf wars. The latter, in particular, has highlighted the need to control the arms industry, both that operated by the governments themselves and that operated by private contractors, in the interest of humanity as a whole.

It must be emphasized here that peace is not merely the absence of war, and that even without war conflicts will continue and will change in character; examples are trade wars, totalitarian regimes and economic colonialism. Inequitable distribution of resources is certainly one of the strongest and most insidious triggers of conflict.

Extensive disarmament—achieved or planned—should set free human and material resources, that can be used for more positive purposes, such as in restructuring the economies of eastern Europe, providing more investment in Africa and Latin America, and making possible environmental renewal. The process of disarmament, however, brings its own problems. For some countries, particularly the Soviet Union, the process is difficult on account of the need to rehouse large numbers of discharged soldiers and to absorb them in a precarious and changing economy. As for redistribution of the sums saved, these can all too easily become unidentifiable within the finances of the national treasury, or indirectly come under the control of narrow vested interests.

Economic change

Great changes have also taken place on the economic front and will be analysed in more detail in Chapter 3. After the period of rapid growth, recession set in simultaneously with the oil crisis. During the last two decades the economic centre of gravity has moved towards the Pacific region, with the amazing success of the Japanese industrial economy. Japan now accounts for about 38 per cent of the world's total financial activity. However, this is now falling rapidly with the decline in the Tokyo stock market and falling real estate prices. Japan has not yet learned how to exercise its strength, even if it has contributed funds to assist debtors in alleviating their burden under the Brady plan. Its political moves are cautious and tentative and, as yet, it is not as effective internationally as it should be.

One of the outstanding facts of these recent years has been the progressive

conversion to a market economy, which seems to be the common feature in most countries of the world. Open competition, sometimes brutal, on both the international and the national scale has convinced not only political leaders, but also consumers, voters, and the community at large that the vitality of it is irreplaceable. Private business is considered to be its motor, profit to be necessary for investment and the financial market to be the inevitable meeting-point between savings and investment.

The effectiveness of the market as a social institution for harnessing productive energies and meeting human needs is now universally acknowledged. But market mechanisms alone cannot cope with global problems that require a long-term strategic approach or involve distributional issues. They cannot by themselves solve problems related to energy, environment, fundamental research, or fairness. Only public intervention, based on political processes and often using market mechanisms as instruments of public policy, can deal with these problems.

Market forces can have dangerous side-effects because they are not founded on general interest. International financial speculation is a particularly eloquent example of the excesses caused by market forces, of people gripped by the madness of profit under any circumstances. Speculation has become a game that is unconnected with economic realities; it has escaped from the hands of men to be run by computer software and has reached new dimensions and velocity thanks to the information society.

Some efforts – still modest, for the task is tremendous – are leading a first attack on the underground trafficking of goods through its financial manifestations: the money-laundering for drug traffic or unauthorized arms sales, for instance, is being discovered by breaking the seal of secrecy on numbered bank accounts. Hopefully, such efforts will increase and lead to true international cooperation.

We also cannot ignore geostrategic change. The world is currently witnessing the emergence of three gigantic trading and industrial economic groups. The North American market, in which Canada has now joined the United States, and which Mexico is expected to join, will inevitably continue to be an industrial and post-industrial group of great power. However, its immediate future is clouded by the immense deficit which, amazingly, the United States has allowed itself to accumulate in recent years.

The development of the European Community, despite the years of hesitation, is now gaining momentum, as its members see tangible economic and political advantages in cooperation and devise new mechanisms for its operations. As 1993 approaches, bringing the completion of economic integration closer, the Community has begun discussions on political unity.

This has become especially urgent with the reunification of East and West Germany. A European Community embracing the whole of the Western Europe and later joined by its Eastern neighbours – whose transformed economies should make this possible – would constitute a second bloc of great strength. Despite present confusion, it is possible that the European republics of the Soviet Union will eventually follow the same road, thus unifying Europe 'from the Atlantic to the Ural Mountains', as expressed by Charles de Gaulle in 1960.[1]

The third bloc consists of Japan and the ASEAN[2] countries, including for example Thailand, Indonesia or Malaysia, which are growing rapidly. Perhaps Australia and New Zealand, which have strong trading links with the other Pacific countries, may later find themselves in this grouping. Even at this early stage of development, the existence of these three blocs signifies an utterly different world pattern of trade and industry.

These new blocs are not restrictive, on the whole, to other trading countries, although they do have certain non-tariff barriers and disguised protection. There is much trade between the groups. In any event, what should be emphasized is that there has been a very rapid development of technology and an increase in the speed of its application which has modified the relative strength of the different trade groups, especially that of the Japan/ASEAN group.

This prospect has caused great concern in the other regions of the world. Latin America, close to the United States, but with a different ethos, is particularly perplexed. While initiatives from its neighbour in the north are on the horizon, it is also stretching out towards Europe, with Spain playing a special role through its membership in the European Economic Community and other European multilateral agencies and councils. The Soviet Union, in disarray, is not yet in a position to deal with this situation. China, after the brutal events of 1989, remains an enigma, while impoverished Africa hardly appears on the world economic map.

The South Asian region, dominated by the huge geographical and demographic bulk of India, has made some progress, but it is still uncertain whether it will be able to make the sort of economic breakthrough that has occurred in South-East Asia. Here, population control is the key.

Great care will have to be taken in forging the links between the evolving economic blocs and the countries still outside. Some are already superciliously

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1. In a television interview during his visit to Paris in 1989, Mikhail Gorbachev quoted this statement by de Gaulle when referring to Europe.
2. Association of South East Asian Nations.

referring to the latter as the 'residual countries'. As these include most of the poorer countries, the new economic pattern necessitates a fundamentally different approach to the problem of overall development, including a conceptual switch from aid to partnership. The Gulf crisis may be a foretaste of many conflicts to come, not necessarily only in the form of North-South confrontation, but related to resources which will include energy and food availability, population pressures, and ethnic and religious animosities. In a pluralistic world with many cultural, ethnic and religious differences, acceptance of others is essential and will have to be manifested in both word and deed. It has to be appreciated that the Western rationalist view of world problems is difficult for many countries to accept and may at times be wrong. Indeed, the position in Iraq in 1991 represents a rejection of Western values, largely supported by the Arab-Muslim public opinion.

Conflicts in a world dominated by huge trade blocs are likely to be very different from those of today's world of nation states. Wars between countries within a bloc or between blocs are more likely to be economic than military. The role of the transnational corporations will probably become increasingly important, since their activities and concerns would permeate all the blocs.

The Interdependence of nations

A further feature of the geopolitical scene is a belated recognition of the essentially global nature of many contemporary problems, which cannot be solved or even approached realistically by individual countries in isolation. This has long been the case in the economic field. One has only to remember how quickly the effects of the Wall Street crash in 1929 spread to cause a world depression during the thirties, and how mass unemployment tends to appear simultaneously in many countries. This global nature of problems is no doubt the inevitable consequence of the great expansion of world trade which this century has witnessed. More recently, global problems of a different nature have arisen. These range from environmental issues to 'Law of the Sea' negotiations and international finance. Recognition of this new situation, awareness of which came very slowly, is illustrated by the mushrooming of intergovernmental conferences and those of specialized professional and scientific organizations during our period of review. It is doubtful if present international structures are sufficiently equipped to deal with this new situation. The United Nations and its specialized agencies, which were founded in the post-war euphoria, were designed to meet the needs of a much simpler world situation and are increasingly inappropriate for today's needs. The present less-than-ideal circumstances provide an opportunity as

well as point to the imperative need for restructuring the United Nations system, reallocating the functions of the various agencies and programmes, and providing a new focus. Current difficulties in revitalizing Unesco show how difficult this will be. We should also underline the increasingly important role and greater effectiveness of national and international NGOs (non-governmental organizations) in various fields.

Concern about the global environment is giving rise to a number of *ad hoc* enquiries at different levels, including that of Heads of Government. As yet such attempts are skirting the fundamental issues. It is hoped that common and universal action to combat such global problems will surmount inter-bloc rivalry.

This leads on to the consideration of the remarkable increase in the interdependence of nations which our period has seen. The rise of economic communities, the need for a common approach to global issues, the immense expansion of international communications, and the activities of the transnational corporations are some of the contributory factors. In addition, the spread of technology and its services throughout the world, the need for common standards, codes of agreed practice, distribution of radio wavelengths and a thousand other technical agreements represent in their totality, a spreading web of interdependence and a *de facto* erosion of national sovereignty, which governments have not yet fully realized.

> The cult of sovereignty has become mankind's major religion. Its God demands human sacrifice.
>
> Arnold Toynbee[1]

The very concept of sovereignty proclaimed as sacrosanct by all governments has been challenged, and only partly because of the development of regional communities. Indeed, many smaller countries already have very little control over their own affairs because of decisions taken outside their territories, such as the establishment of commodity prices or interest rates, or due to by economic policies modified to obtain IMF[2] funding. Erosion of sovereignty may be a positive move towards the new global system for most countries, in which the nation state will, in all probability, have diminishing significance. In the case of most of the sub-Saharan countries of Africa, however, the maintenance and even the reinforcement of sovereignty is essential in the present circumstances. These countries are intrinsically

1. British historian (1889-1979)
2. International Monetary Fund

artificial, derived through the process of decolonization from the arbitrary carving up of the continent by the former colonial powers.

Here it is necessary to distinguish between a nation and a state. The African state may consist of a number of tribes which are, in reality, nations. A country such as Chad is politically a state, but is not likely to ever become a nation. The situation is further complicated by the fact that important nation-tribes may be distributed between several states. Recognition of the sovereignty of such states may therefore be necessary to encourage coherence and common identity, but it should lead to regional organization. In Latin America the notion of sovereignty is still strongly defended as a juridical defence against the great powers.

A new concept has emerged as a consequence of artificially created states with nation-peoples dispersed among different states: 'the right to interfere (for humanitarian reasons)' was recently put into practice on a French initiative, and soon after with United Nations' blessings, by France, the United Kingdom and the United States. It consisted of a humanitarian operation in Iraq in favour of the Kurdish people. Such a concept, if it were to be accepted in the future, would represent a considerable evolution in international law, which for once would be more a reflection of humanitarian considerations than of constitutional rules and nationalist self-centredness.

The awakening of minorities and nationalism

This brings us to apparent paradox in world political trends. On the one hand there is a tendency to create larger units, as in the case of the economic communities. Also, the resolution of the global problems demands action on a global scale. On the other hand, there is a widespread public dislike of what is seen as excessive centralization. The dominance of large, faceless bureaucracies which appear to disregard the needs of individuals and of local communities is generally resented. The situation is particularly acute where such dominance impinges on the identity of ethnic minorities, and in an ever-increasing number of places ethnic groups are becoming vocal and active in their demands for autonomy or independence. In Europe, for example, the Catalans and the Scots are asserting their nationhood, while the Irish, Basques and Corsicans have resorted to violence. Yugoslavia, which is an uneasy federation of republics with different historical traditions and ethnic mixes, threatens to disintegrate.

China, too, has great ethnic diversity, but perhaps the most remarkable of all is the situation in the Soviet Union, the most ethnically heterogenous of all federations, where the arrival of *glasnost* and *perestroika* have led to separatist movements among a dozen or more republics. In America we are witnessing

the collective awakening of American Indians who now have recourse to action. Hispanic and other unrepresented minorities who have hitherto also been powerless, now have the means to take action.

These two apparently opposed trends are, in reality, compatible. The conflict arises from the difficulty of reconciling them within the existing political system which is rigidly based on the model of the nation state. What is needed is a reformulation of the appropriate levels of decision-making so as to bring the points of decision-making as near as possible to those who enjoy or suffer their consequences. There appears to be a common human need for ethnic identity, whose roots are deeply buried in the past of the human race. Equally, there appears to be a widespread tendency among people, even in ethnically homogeneous communities, to be identified with the affairs, prosperity and environment of their community. It is suggested that a greater number of points of decision-making are necessary, ranging from the strictly local to the international. This could ease the load on central governments and help to humanise the system.

Urban growth

Urban growth has been a prominent feature of the modern era and is likely to continue as such. According to United Nations estimates, approximately 60 per cent of the world population will be living in towns at the end of the century, and there will be about thirty cities in the world with more than five million inhabitants, with the largest, Mexico City, having 24-26 million inhabitants. While this is a worldwide phenomenon, it is particularly marked in the developing countries where cities have mushroomed both due to a high birth rate in the cities themselves and an influx of peasants who have left the land to exchange rural for urban poverty. It is interesting to note that in London, the first city to have a population of one million inhabitants, more people died than were born until 1840, increase coming essentially from rural emigration. In the developing countries today, we see a reverse trend with internal growth being the main factor of increase. This indicates how greatly sanitation and health have improved, despite the very difficult living conditions of the urban poor.

Management of the mammoth cities, such as Mexico, Sao Paulo, Lagos, Cairo or Calcutta, is extremely difficult, especially since a large proportion of the urban dwellers are 'unofficial', living in favelas or shantytowns, with little or no sanitation and more or less outside the control of the authorities. Provision of water, health services, education, employment, urban transportation, and control of pollution are some of the components of the complex of urban problems about which there is no previous experience on

the present scale.

All over the developing regions, patterns of settlement, and consequently lifestyles, are changing rapidly, and fairly large cities are springing up, often consisting mainly of a sprawl of shantytowns, completely lacking any adequate economic basis. In the Sahel region of Africa, for instance, towns such as Nouakchott, Bamako and Ouagadougou, until recently quiet administrative centres, have become vast urban slums with probably as many as a million inhabitants each, and with all the explosive economic and psychological tensions that such slums inevitably suffer from. The new patterns of settlement and excessively rapid urban expansion are partly the result also of high rates of population growth in the recent past.

Development

Throughout the period under review, great efforts have been made to speed up the development of the poorer countries, through massive programmes of aid, both bilateral and multilateral, capital and technical. A somewhat optimistic assessment of some aspects of these efforts was made by Mahbub Ul Haq[1]:

> Average life expectancy has increased by sixteen years, adult literacy by 40 per cent, per capita nutritional levels by over 20 per cent and child mortality rates have been halved during this period. In fact, developing countries have achieved in the last thirty years the kind of real human progress that it took industrial countries nearly a century to accomplish. While the income gap between North and South is still very large – with the average income in the South being 6 per cent of that in the North – the human gaps have been closing fast: average life expectancy in the South is by now 80 per cent of the Northern average level, adult literacy 66 per cent and nutritional level 85 per cent. It is true that the past record of the developing world is uneven, as between various regions and countries, and even within countries. It is also true that there is still a large unfinished agenda of human development—with one-fourth of the people in developing countries still deprived of basic human needs, a minimum income level and decent social services. But the overall policy conclusion is that the development process does work, that international development cooperation has made a significant difference, and that the remaining agenda of human development should be manageable in the 1990s if development priorities are properly chosen.

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1. Special Advisor to UNDP Administrator; personal communication, 1989.

Nevertheless, results have been uneven and often disappointing. Hunger, malnutrition, disease and poverty still afflict a large proportion of humanity and are aggravated by the population explosion, droughts and many local wars. The purchase of arms by many of the poorer countries from the industrialized nations not only represents a huge economic burden, but also encourages militarism. The arms trade, in effect, produces a considerable flow of wealth from the poor to the rich countries. A number of leading developing countries have also built up an increasingly important arms industry, partly for export purposes.

Scientific and technological advances in the industrialized countries tend to increase the economic disparities between the rich and the poor countries and to inhibit the latter from undertaking technological innovations. Thus the poor countries, lacking industrial, technological and scientific structures and trained managerial capacity, have been unable to assimilate much of the technology and know-how available to them. Technology transfer was assumed to be the obvious method of introducing new processes and new industries into the less developed countries, but it has often failed—sometimes as a result of selecting inappropriate processes or unsuitable industries and sometimes, with the transfer of state-of-the-art technology, because of insufficient preparation and absence of management, maintenance and marketing skills in the receiving country. Often new technologies have been introduced for import substitution which have not achieved the high standards which are necessary to ensure international competitiveness.

Too much importance has been given to large-scale and sometimes dramatic schemes, for example the building of large dams to provide hydroelectric power and make possible extensive irrigation facilities. All too often the dam reservoirs have silted up and the irrigation water has become saline, while there has been little complementary industrial development and no rural electrification networks to convey the power to consumers. Also, in the design of such schemes, too little attention has been given to social factors, including the displacement of large populations, the loss of acres of fertile soil flooded in the reservoir area, and the spread of bilharziasis via the irrigation channels. Particularly in Africa, the fragmentation of the continent into too many small and economically unviable countries, each possessing markets which are too small, has limited the value of large-scale projects.

In agriculture, the Green Revolution has registered considerable success, with the introduction of new and high-yielding varieties of wheat, maize and rice and the intensive use of nitrogenous fertilizers especially in India and other Asian countries and in Mexico where the new farm technology was applied. This has enabled India to move rapidly from a food-deficit situation to a

situation of marginal surplus. But here again there have been unfortunate social consequences. The system favours the medium and large-scale farmer and has thus led to the displacement of peasant-farmers and the migration from rural areas to the cities. The energy-intensive nature of Green Revolution agriculture may also cause financial difficulties for farmers as oil prices continue to rise.

In other parts of the world and, once again especially in many African countries and in Latin America, insufficient attention has been paid to agricultural development. Frequent droughts, growing numbers of human beings and animals, and local wars or internal conflicts have led to the erosion of the resource base and marginalized large numbers of the rural poor. This again has deprived many people of their land and caused the rapid growth of the cities. It is in urban areas that discontent and insurrection flare up so easily and hence governments have yielded to the temptation of according priority to the allocation of scarce resources to projects of visible benefit to city-dwellers. As a result of the low priority given to agriculture in many African and Latin American countries, these continents are likely to continue facing a considerable food deficit for many years to come.

A further myth of development lore is that the benefits of economic development trickle down from the rich to the poor. This is also a questionable theory. In India, for example, while the Green Revolution has provided food in plenty, there is little evidence of a commensurate diminution of hunger, malnutrition and poverty in rural areas.

It has been customary in recent decades to classify the countries of the world into three categories—the First World of the industrialized market economy countries, the Second World of the state economy Marxist world and the Third World of the less developed countries. With the virtual collapse of the state-controlled economies, this category now has little relevance and needs to be cast away, while the concept of the Third World has already become almost meaningless because of the great diversity of economic conditions[1] and potentialities that the term embraces. To bunch together Saudi Arabia and Singapore, or Brazil, Botswana and Bangladesh is absurd, in that generalized statements of Third World problems have little or

1. A similar situation is found in the so-called NICs (Newly Industrialized Countries). The term NICs has been used essentially to describe the spectacular developments in Hong Kong, Singapore, South Korea and Taiwan. Now other countries such as Indonesia, Malaysia and Thailand are also following the same path. Larger developing countries including Brazil, India and Mexico with an industrial base created years ago are also progressing rapidly in the use of new technologies but are in quite different categories. Thus we have a spectrum of different stages of industrialization.

no relevance to individual cases. It is now more popular to refer to the developed countries as the North and the underdeveloped countries as the South. Despite the geographical anomaly of including Australia in the North, this nomenclature makes more sense. The North-South separation, however, hampers the new efforts to regard the problems of development in the regional as well as in the global context of the rapidly changing world economic system.

Recent years have seen the growth of indebtedness in a number of countries. In the cases of Argentina, Brazil and Mexico this has reached dangerous proportions and while many lending agencies have written off their bad debts, and elsewhere some rescheduling has taken place, the debt situation remains grave, both for the development possibilities of the debtor countries and for the stability of the world financial system. In Africa, while indebtedness is much lower in absolute terms than in Latin America, the debt-servicing burden is crippling. At a time when capital flow has turned to meet the needs of the East European countries, less developed debtor countries see little hope of an alleviation of their difficult situation. Most extraordinary of all is the fact that the United States has allowed itself to acquire an internal debt of US$ 3.2 trillion (1989), greater than that of any other country in the world. This remains a dark stormcloud on the economic horizon.

The grave problems of world poverty, aggravated by population growth, could well give rise to great disharmony on a world scale, from which the industrial countries cannot hope to escape. It is in their own self-interest that the rich countries must take a new, powerful and radically different approach to the problems of world development. With the metamorphosis of East Europe triggering the great demand for capital and for managerial and technological inflows, there is a real fear that the needs of the poor countries will be forgotten or relegated a still lower priority than at present. This would be dangerous not only for the poor countries, but for the world as a whole.

The population explosion

The problems of most of the developing countries are greatly exacerbated by the population explosion. World population, now just over 5 billion (from 1.8 billion in 1900) is expected to reach 6.2 billion in the year 2000, and over 8.5 billion in 2025, according to median UN projections. India's population, for example, would increase from 819 million now, to 1446 million, Nigeria's from 105 to 301 million, and Mexico's from 85 to 150 million. By far the greater part of population growth will take place in the less developed regions of the world. Indeed, in the industrialized regions demographic growth is very slow

and in some cases even negative, posing to these countries a wholly different sort of difficulties associated with ageing populations.

The world's aggregate population is increasing at present by one million persons every four to five days (the reference here is to net growth, that is births minus deaths). Although fertility rates are beginning to fall in some regions, because of the very low median age of their populations, the daily increase in absolute terms will be greater in the year 2000 than it is today because of the population explosion. In these circumstances it is difficult to see how the necessary food, housing, health care and educational facilities can be provided.

Population growth is outstripping food production. In the years preceding the recent drought, grain production in sub-Saharan Africa was increasing by about 1.6 per cent per annum with population growing by 3.1 per cent, while in some countries which have the worst food shortages, per capita production has fallen by about 2 per cent per annum over the last decade. Furthermore, population growth is providing an increasingly large workforce mainly in underdeveloped places where there is already acute unemployment, poverty, and extensive underemployment. The creation of millions of new jobs is indeed one of the most formidable tasks resulting from the population explosion.

Environment

April 26, 1986 – Chernobyl, USSR : an accident at the nuclear power station at Chernobyl destroys the reactor and projects 5 tons of fuel (or 50 million curies of radiation) into the atmosphere. A radioactive cloud hangs over Europe, especially affecting Ukraine and Byelorussia (USSR), Finland, Scandinavia, Poland, Germany, and France. Immediate consequences: 32 persons officially declared dead (29 from radiation), 150,000 people evacuated, 119 villages permanently abandoned, 499 people seriously wounded, 600,000 people exposed to radiation of whom 12 have become permanent invalids, and 7,000 to 25,000 people expected to develop cancer in the coming years. Food crops and animals are exposed to radiation for several years all over Europe. In 1990, approximately 3 million persons are still under medical supervision, with reports of at least two persons dying every day as a consequence of the nuclear accident.

March 24, 1989 – Prince William Bay, Alaska: American oil tanker S.S. Exxon *Valdez* runs aground, spilling 40,000 tons of oil and polluting over 1744 kilometres of the coast, killing 980 otters and 33,126 birds. US$ 1.9 billion are spent to clean up the spill and to pay compensation to fishing villages for the damage caused.

December 3, 1989—Bhopal, India: a leak at the Union Carbide pesticide factory poisons the air with methyl isocyanate killing 3600 people and wounding 100,000, of whom 50,000 remain permanently disabled.

A striking feature of the period under review is widespread alarm at the deterioration of both the rural and the urban environment. Environmental pollution was a consequence of the Industrial Revolution and was well documented in nineteenth century literature, with Blake's 'dark Satanic mills' of industrial England, the pea-soup fogs and the dirty rivers. A degree of pollution control was gradually established in most countries through legislation, but heavy pollution of this sort persists in eastern Europe as the heritage of the Marxist economy.

By 1968, however, a new concern had surfaced. Industry had become much more sophisticated. Its output had diversified enormously, with its products, by-products, and wastes, in many cases toxic and non-biodegradable, dispersed everywhere in the biosphere. In addition, the increase in world population and its concentration in huge cities, as well as the massive consumption of goods and materials, was making it more and more difficult to dispose of sewage and solid wastes. It had been assumed until recently that benevolent Nature would forever absorb and neutralize the waste products of society spewed into the air and deposited in the soil, the rivers and the oceans. This assumption no longer holds good; we appear to have crossed a critical threshold, beyond which the human impact on the environment threatens to be destructive and possibly irreversible.

Public concern was aroused by the publication of popular books such as Rachel Carsons' *Silent Spring*[1] and Schumacher's *Small is Beautiful*[2]. By 1968, reactions became vocal with conservationist movements appearing everywhere[3]. As public pressures grew in the industrialized countries, governments took action. Environmental policies and environmental ministries mushroomed and, since pollution is no respecter of political boundaries, environmental issues reached the forums of international conferences. This resulted in much improvement; many of the grosser kinds of pollution have been eliminated as a result of legislative action. The adoption of principles such as 'the polluter pays' has forced industry to accept a new social responsibility; rivers have been cleaned up and air pollution reduced, while everywhere local groups are vigilant with regard to

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1. Carsons, 1963.
2. Schumacher, 1973.
3. The United Nations Conference on the Human Environment in Stockholm in in 1977 was a landmark event.

developments which might threaten the environment, sometimes advising people with useful foresight and common sense, and at other times acting with fanaticism.

An interesting development has been the way in which concerned public groups have come together to take direct political action. The rise of the green parties has been useful in forcing the traditional parties to take the environmental issues seriously, although it is difficult to foresee a lasting role for them, or for that matter for any single issue party. The 'green movement', useful as it is, may be inadvertently diverting public attention from the long-term and more serious environmental issues, which we shall discuss later, by impressing the man in the street with proof of easily appreciated, immediately visible, but strictly local damage.

> Annihilating all that's made to a green thought in a green shade.
>
> Andrew Marvell[1]

Until recently most forms of environmental deterioration have been essentially local and could be eliminated by local and national action, at a cost certainly, but one which could be borne. However, environmental threats of a new magnitude have now been identified, which demand quite a different approach. These have to do with a number of macro-pollution phenomena which are global in scope and beyond the capacity of individual countries to eliminate. At present there are four prominent sorts of macro-pollution.

Diffusion of toxic substances into the environment. These toxic substances consist both of non-biodegradable chemicals and radioactive wastes. Initial concern was aroused by the discovery of the widespread diffusion of DDT, which was detected even in penguin eggs in Antarctica. This suggested that the DDT molecule might find its way into the human food chain and accumulate to a threshold of danger. Subsequently, many other toxic materials which are widely diffused have been identified and it has been pointed out that virulently toxic materials may penetrate into the main aquifers of the world within a few decades.

Accumulation of toxic wastes, difficult to dispose of locally, have induced a number of industrialized countries to export their 'cargoes of poison' to poor countries in Africa which are willing to sell discharge rights. This is an immoral trade, and its continuation will be to the

1. Seventeenth century Caroline poet.

detriment not only of the receiving country, but it will also adversely affect the whole world. As yet, there is no satisfactory solution for the disposal of radioactive wastes, which, because of the very long half-life of many radio-isotopes, demand extremely long containment.

Acidification of lakes and the destruction of forests caused by effluents, from the chimneys of coal-burning power stations, steel mills, and so on. This danger has been recognized for some time now and has resulted in international complaints. For example, the lakes and forests of eastern Canada suffer from the smoke of industries in Pittsburg, and those of Scandinavia from the acid gases of the factories in the English Midlands and the Ruhr. Much can be done here on a local basis (for international as well as local results) by scrubbing flue gases, using low-sulphur oils and coals, and other means, but it is a costly and difficult business. The process of acidification has not yet been fully understood, and there may be other agencies at work in addition to contamination by effluents.

Macro-pollution in the upper atmosphere caused by CFCs (*chlorofluorohydrocarbons*). These substances are chosen for their extreme stability under normal terrestial conditions and used as aerosol propellants and in refrigerators. Unfortunately, when they ascend to the upper atmosphere they decompose under the influence of high-intensity ultraviolet radiation and release chlorine which attacks the stratospheric zone. The discovery, a few years ago, of large holes in the protective ozone layer above Antarctica caused alarm that this layer was being depleted of ozone and that this might cause increased ultraviolet radiation at the earth's surface, which would greatly increase the risk of skin cancer and other diseases. The CFCs were soon detected as the culprits.

International action was obviously necessary to prevent further damage to the ozone layer, and subsequent efforts to achieve this suggest the type of international negotiation that will be necessary in other and more complicated cases in future. The situation is essentially quite simple, since the number of chemical plants producing CFCs in the world is quite small. The Montreal Conference of 1989 succeeded in producing a general agreement on the nature of the problem and on its solution, namely the development and use of alternative propellants that are ozone-friendly. As a result, the use of CFCs may soon cease in the industrialized countries, and research and development to this end is being actively pursued. The difficulty is that some of the poorer countries, such as India and China, have recently started up CFC manufacture in response to the national need for

extending refrigeration rights. It is difficult to expect such countries to abandon recent investment and start again without external compensation, and this problem has thus not yet been solved.

Most menacing macro-pollution by far: the so-called 'greenhouse effect'[1] which is increasing the temperature on the earth's surface. This effect concerns the extent to which certain constituents of the atmosphere restrict the reflection of solar radiations from the surface of the earth into outer space, thus trapping the heat. The proportions of the main constituent gases of air, oxygen and nitrogen, seem to have remained constant during the past millenia, and all present life processes are regulated by this. However, other gases which exist in much smaller concentrations and were formerly referred to as 'trace gases' control the greenhouse effect. Since the Industrial Revolution, the proportion of these gases in the atmosphere has increased. The most important of these, carbon dioxide, has increased by 25 per cent, oxides of nitrogen by 19 per cent, and methane by 100 per cent. Other gases in the atmosphere, such as our notorious man-made CFCs, also add to the effect, as does terrestial ozone. Concern about the consequences of changes brought about by the greenhouse effect arose from observation of the increase in carbon dioxide concentration. The influence of the other trace gases was realized quite recently. It was noticed that the proportion of carbon dioxide in the atmosphere has increased more since the Industrial Revolution than in the previous sixteen thousand years, due to the combustion of fossil fuels such as oil and coal which are the basis of industrialization. This increase is also the result of a reduction in Nature's capacity to absorb the gas through photosynthesis, because of the extensive elimination of the tropical forests.

A number of different and highly sophisticated global climatic models indicate that a doubling of the previous equilibrium concentration of carbon dioxide would result in an average increase in the surface temperature of the planet of between 1.5°C and 4.5°C. It is extremely difficult for the world public to appreciate that this invisible and apparently harmless gas which bubbles up from our whisky and soda or Coca Cola, and which we ourselves exhale, is a potential eliminator of our prosperity and lifestyles. Assuming that the present industrial practice of burning fossil fuels continues, saturation point might be reached in forty to forty-five years. Increasing proportions of

1. Although the 'greenhouse effect' is still a controversial subject and absolute certainty about its existence will not be possible for another ten years, if it is confirmed by that time, which is very likely, it will be too late to do anything about it.

the other greenhouse gases make the problem still more complicated.

Great uncertainty still exists with regard to this problem, especially the role of the oceans in absorbing carbon dioxide, and to the possible existence of other 'sinks' for the gas. However, circumstantial evidence is now so strong that the probability has to be taken seriously. The probable consequences of earth-warming will be discussed in the next chapter, but suffice it to say here that they are many and serious. If nations avoid taking action until the consequences of the greenhouse effect become obvious, it may be too late to reverse the process, with disastrous results. On the other hand, if action is taken now and the onset is slower than predicted, enormous costs will have been incurred. This becomes, therefore, a classic case of the need to develop methods of management and decision-making in uncertainty.

We must return briefly to the question of the elimination of tropical forests, which, in addition to its contribution to the greenhouse effect, is to be decried for many other reasons. It generates local and regional climatic changes, causes soil erosion and downstream flooding, and frequently leaves soils which are unable to sustain agriculture. In the case of the Amazon Basin, especially, it involves the extinction of innumerable plant and animal species at a time when the preservation of genetic diversity is of immense importance. In addition, it causes great human suffering and cultural loss as forest peoples are displaced or die out due to their inability to adjust to a new way of life.

We must also mention the problem of the increasing scarcity of fuelwood in many countries in Africa, Asia and elsewhere. The burning of wood and charcoal still remains the main domestic energy source for a high proportion of the rural population. The gathering of fuel is generally a woman's task. With demographic growth, accessible wood has become increasingly scarce and in some cases, a daily task which formerly took a couple of hours now demands six. Shortage of wood encourages rural populations to burn animal dung as fuel, thus leading to the lack of this natural fertilizer for crops and thereby to the deterioration of the soil. In many tropical cities, fuel-wood has become exorbitant and households have turned to using kerosene for their domestic needs. This necessitates the expenditure of scarce foreign currency, as do changing food habits. As Lester Brown, the president of the Worldwatch Institute, USA, puts it, many cities in the poorer countries are literally 'living from ship to mouth'.

The advance of high technologies

Our present society is built materially on highly successful technological development. Ever since the onset of the Industrial Revolution, with its replacement of human and animal power first by the steam engine and later

by electricity, productivity has increased. Despite early fears, this has led to the growth of markets, increased employment, and the spread of prosperity. At first, these developments were mainly based on empirical invention. With the emergence of chemical and electrical industries, however, the main impulse to development has come from the discoveries in the scientific laboratories. The success of technological development and the role of the application of scientific methods in determining the outcome of the Second World War led post-war governments and their industries to give massive resource support to scientific research and the application of its discoveries in technology. The lead time from scientific discovery, through applied research and technical development, to production is long. Hence during the first part of the period under review we saw mainly improvements and novelties of a relatively traditional kind. Later, breakthroughs occurred and completely new types of technology appeared, especially from the discoveries made in solid-state physics and molecular biology.

The applications of the new, advanced technologies are now so widespread that we can only present a very superficial indication of their significance. The ubiquitous application of microelectronics is now obvious in factories, offices and shops. The silicon chip microprocessor with its low cost and extreme miniaturization, makes it possible to provide a brain and a memory to any piece of equipment devised by man. Furthermore, microelectronic techniques work well with many other types of advanced technology such as holography, satellite use, liquid crystal technology, and glass-fibre optics. The results appear in an enormous variety of microelectronic devices and gadgets of ever-increasing sophistication. Computers, when first developed during the World War II occupied whole rooms with bulky equipment. These are now miniaturized, much faster, more reliable, cheap and widely available.

Microelectronics has penetrated deeply into industry at every stage, from design to packaging. Automation and robotization are modifying industrial processes and structures, and are eliminating dangerous, dirty and repetitive tasks, creating the need for new skills and challenging educational and training traditions. And this is only a beginning: new generations of 'smart robots' are appearing which can see and feel; emphasis is shifting from improvements in line-production towards integrated systems of manufacture; new types of equipment are being devised through *mechatronics*, a combined approach which brings together electronic and advanced mechanical techniques. These advances are rapidly penetrating all sectors of the economy and constitute the basis of the post-industrial society. Whether these advances will be fully responsible for change or not depends on the evolution of many of the other changes we have described.

Automatic banking and the cashless society are already here, while automated stock exchanges and financial transfer systems operate all too quickly sometimes; the computer has invaded every type of research activity from history to aircraft design.

Nowhere has the impact of electronics been more marked than in communications. Telephone systems have improved immeasurably. The use of telefax has spread at an extraordinary rate, electronic mail systems have proliferated and video-conferencing is now possible. Most dramatic of all has been the steadily advancing influence of television. This powerful arm of the media has extended worldwide during the present period; it is employed in the conditioning of populations to make them accept the acts of dictators, and used for educational purposes, for the broadcasting of news and opinions (often characterized by distortion and trivialization) and, above all, for entertainment. Its influence on the political system is now enormous. Electorates are now swayed by projections on television of the charisma of the candidates or by the absence of such publicity. On the other hand, live transmission of parliamentary proceedings has, in a number of countries, exposed the triviality of debate and the banality of political personalities. This has contributed to the present loss of public confidence in the operation of the democratic system, by demonstrating that so-called parliamentary debates merely consist of the contrived confrontation of vote-seeking political parties.

A word must be added here, concerning the significance of the other advancing main line of technology, namely biology, which has been transformed by the understanding of the functions of DNA, the unravelling of the genetic code, and the other discoveries of molecular biology. These developments are much less visible to the public than those in microelectronics, but are equally profound and important for the future of the human race. Many difficult ethical questions have surfaced, especially with regard to the potential manipulation of human genes. Already genetic engineering has produced many important advances in medicine, and many more are expected. Great advances have been made in the modification of plant and animal species in the area of protection against diseases and changes of climate, as well as in increasing agricultural production and modifying the products. Unfortunately, these dramatic genetic modifications are likely to produce considerable improvement in regions where they are least required; for instance, increases in milk yields, initially at least, will occur in places where there are already abundant reserves of milk. It is somewhat troubling to note that recent judgements make it possible to obtain patent rights for new genetically produced species.

World finance

The economic transformation of the East European countries, including the USSR, requires quick action if economic collapse is to be avoided. Rejection of the Marxist system and conversion to a market economy is not easy. Not only must new structures be created, but entirely changed attitudes on the part of the workforce and management are necessary for adaptation to a competitive system. Guaranteed employment in the old system inevitably meant low productivity, while lack of incentive inhibited all innovation. Consequently these countries now find themselves burdened with debts, highly polluting factories with obsolete equipment, a shortage of capital, and a lack of modern management skills. Social and psychological adjustment will be necessary, for example, in facing the unfamiliar situation of massive unemployment. Considerable external help will be needed, not only in the provision of capital, but also in the form of technical and managerial assistance and many other aspects of free market development. In the case of unified Germany, the Federal Republic will be able to furnish East Germany with capital, managerial know-how and training, but it is unlikely that the transformation of East Germany will be achieved without a great deal of individual and social hardship.

Hopes have been raised in eastern Europe about the prosperity that will flow from the adoption of the market economy. While these hopes are largely justified, at least in the long run, it is important that market forces should not be regarded as the only agents in the acquisition of a better life, and that their limits should be understood well, as mentioned earlier. Ideals should not be cast out indiscriminately; it is necessary to retain some of the more positive aspects of socialism. Otherwise there could be a backlash against capitalism.

Political power in the modern world is no longer controlled mainly by the power and relative sophistication of armaments, but is increasingly determined by financial power. Indeed, in recent history, excessive expenditure on armaments has proved ruinous to the two superpowers, while the two countries prevented from rearming after defeat in the Second World War are those with the largest surpluses. In addition, it is detrimental for the big powers that their industries depend only on the state market and do not therefore benefit from the normal free trading conditions that exist in other countries.

In the mid-to-late 1980s, financial frenzy gripped the world markets. Financial and currency-exchange speculation, aided by computerized communications, became a game completely divorced from economic reality. Mergers between firms mushroomed, aimed at immediate gains and

unrelated to long-term efficiency. Insider trading and other forms of corruption flourished in places hitherto regarded as ethically reliable. Economic gain was conceived of in terms of financial transactions rather than innovative and competitive development, often in isolation from the physical reality underlying finance (for example, oil price was determined by the cartels rather than by the availability of oil, ease of extraction, etc.) The consequences of such practices gave rise to fears of a stock market collapse; they also represented a flight from real industry to financial folly. Financial instability is still a source of serious turbulence within the problematique.

The loss of values

There appears to be a general loss of the values which had previously ensured the coherence of society and the conformance of individuals to its norms. In some places this has been the result of a loss of faith in religion and the ethical values that all religions promulgate. In other cases it stems from a loss of confidence in the political system and those who operate it. Yet again, the welfare state, despite all the social advantages and security it confers, seems to have reduced the sense of responsibility and self-reliance of many individuals. All this has led to an increasing rejection of the decisions of the majority by minorities, often aggravated by a sense of social injustice or exploitation. However, there are a number of caring organizations which look after those who need help. These signs of the existence of traditional values still remain modest.

These and many other causes have led to the social indiscipline, vandalism and violence that have become a trademark of our age. In cases of real or imagined political persecution or of racial discrimination, violence can breed terrorism, which attracts malcontents and fanatics. Such people have taken great advantage of technology that provides them with new and effective explosives, accurate delayed-timing explosive devices and remote triggering. In some cases training in terrorism and sabotage, and equipment may have been provided by rogue countries. These are all manifestations of the general malaise of contemporary society that can, in fact, be dealt with as such, in cases where a widespread sense of deep injustice is the cause.

The new plagues

A different category is that of crime, violence and coercion organized for monetary gain or political power. The classic case is that of the Mafia. Still more dangerous has been the emergence in recent years of the well-organized drug trade, carried on by the Mafia and other similar bodies, which has gained enormous power and attacked whole governments with terrorist

tactics. It is said that the total earnings from the drug trade exceed even that of the oil industry. The drug network, from the cultivator through the drug barons who operate chemical plants for refining drugs, to the couriers and distributors, is all-pervasive and at times seems invulnerable. The human misery and disintegration caused by drugs is enormous and, as we are about to indicate, it spreads lethal diseases. The growth of this evil, which shows no sign of slowing down, has become a matter of deep concern, but there is great uncertainty as to how to attack it. The final solution would be to reduce demand through treatment and education, but this is very difficult in view of the wide dispersion of drug-takers. So attempts are being made to eliminate the power centres of the industry and to compensate the cultivators by allowing them to produce food crops.

Finally we must point out the existence of the recently discovered deadly disease known as AIDS (acquired immuno-deficiency syndrome). Triggered by the HIV virus, it is a sexually transmitted disease which is also passed on by drug-users through contaminated needles. Furthermore, infected pregnant women have a very high chance of giving birth to babies who will carry and probably develop the virus. In the early stages of its history, the virus was transmitted to receivers of blood transfusions in which the donated blood had not been checked for the virus. An infected person may carry the virus for a number of years without any ill-effects, but it then usually develops into AIDS, which attacks the immune system and causes death through one of many diseases which the patient, with a damaged immune system, is unable to fight. At present, progress has been made towards a cure and new treatments aimed at alleviation of suffering or extension of life are being tested with encouraging results.

AIDS appears to have already reached pandemic proportions in some African countries and its global spread is greatly feared. Apart from the mortality rate and terrible human suffering involved, the cost of treatment and of education campaigns is a great burden to these countries where it monopolizes hospital accommodation and diverts attention and effort from the cure or control of malaria, bilharzia and other debilitating diseases.

At a time when medicine has made such extraordinary progress both in its therapeutic and preventive capacities, AIDS reminds us that in spite of all this progress, man remains vulnerable in the area of both physical and mental health. This deadly disease, against which vaccination is ineffective because of the mutation of certain viruses, demonstrates that at least for the time being, the permanent struggle for health, despite some wishful thinking, is as unavoidable as death.

2. Some Areas of Acute Concern

From our survey of recent global changes, it is clear that there is considerable interaction between the various elements of the problematique. Population growth in a poor country, for instance, means that more food has to be grown, which in turn will put pressure on soil and water resources. If the food has to be imported, it means the diversion of scarce hard currency reserves from other areas of development. Again, a large population will have an impact on the environment, leading perhaps to the excessive cutting down of trees for fuel, with the social consequences that we have described.

This chapter will deal with some of the most urgent material problems which now appear to be threatening humanity, and especially that part of the problematique, consisting of the intertwining factors of population, environment, food and, energy.

The growth of human activity

A central feature of the global situation is the enormous increase in the totality of human activity during the present century, which has necessarily led to a huge rise in the demand for raw materials and energy. Much of this increase is due, of course, to the spectacular growth of the world population during this period, whose numbers will be added to in the years to come by cohort after cohort of new inhabitants. Some people[1] argue that fertility has begun to decrease in all parts of the world. According to United Nations estimates, the level of fertility has gone down from an average of 6.1 children per woman in 1965-1970 to 3.9 in 1985. The cultural obstacles to demographic

1. Chesnais, 1987

change are considerable and they can delay the expected changes by one or two decades, but they can do no more in the end than slow down an inevitable trend which is largely attributable to modernization. The issue is not whether fertility will go down, but when and at what rate.

All the same, even if fertility were to slow down drastically, the demographic thrust contained in the age-pyramid is such that population growth will continue on its present course for many decades to come and this will require some audacious innovations in development strategies.

There is an even more powerful factor responsible for the growth of human activity, namely the increased per capita consumption that economic growth has made possible and which has reciprocally been the stimulus for that growth. As demonstrated by the proliferation of mass-produced goods coming from the factories of the industrialized world, we live in a consumer society. In Europe, before the Industrial Revolution, per capita consumption was little different from that of many of the less developed countries today. Now the average per capita consumption of materials and energy is about forty times greater in the North than in the less developed countries of the South. At its extreme, the disparity may be more than 100:1. This is not only a reflection of social injustice, but an indication of the increase in our exploitation of Nature.

Compounding population numbers with average per capita consumption gives a rough indication of the totality of human activity. We estimate that this may have increased forty-fold during this century. Until now, consumption in the rich countries has been the main component of this burgeoning activity, but in the coming decades, the demographic component will become increasingly important.

In this picture of resource consumption, we must point out the criminally wasteful use of human, material and energy resources used for military purposes, especially where such activities are a source of profit in some developed countries. It is difficult to understand how the people of the world have been willing to tolerate such waste in the face of hunger, poverty, disease and underdevelopment, which themselves breed war and violence. It is not easy to be precise as to the magnitude of resource consumption for military purposes. National financial expenditures on defence do, however, give some indication. The recent world total appears to have been about US $1 trillion in real terms, a four-fold increase since the end of the Second World War and a twenty-five-fold escalation since the beginning of the century. Figures alone do not convey the magnitude of waste, so some comparisons may be useful. It has been pointed out, for instance, that for many years, the military expenditure of the world has been comparable with the combined

GNPs of all the countries of Latin America and Africa together. The annual budget of Unicef[1] is equivalent to what the world spends on defence in four hours. The elimination of smallpox under WHO[2] guidance took ten years to achieve and cost under US $100 million, less than the cost of developing a small air-to-air missile. We can only hope that this wastage of resources will now be reduced considerably as a result of extensive disarmament—and that the savings will be put to constructive use, such as satisfying the essential needs of the underprivileged.

Consideration of resource consumption and its disparities brings us to the concept of sustainable development which was so clearly and optimistically expounded in the Brundtland Report[3] on environment and sustainable development. It is doubtful that a sustainable global development can be achieved with the growth rate in the industrized countries increasing at the rate suggested in the report. A 'sustainable' society implies that the society is based on a long-term vision, in that it must foresee the consequences of its diverse activities, and must ensure that they do not break the cycles of renewal; it has to be a society of conservation. It must avoid the adoption of mutually irreconcilable objectives. Equally it must be a society of social justice, because great disparities of wealth or privilege will breed destructive disharmony. In other words, the concept is utopian, but one that is well worth striving for. A sustainable society would never arise within a world economy which relied *exclusively* on the operation of the market forces, important as these may be for the maintenance of vitality and creative innovation. As we mentioned earlier, market forces respond uniquely to very short-term signals and are no sure guide to long-term considerations.

Having accepted the concept of sustainability, there remains the question of the general level of material affluence that can be sustained, and the disparities between the rich and the poor—both within and between countries—which can be tolerated, taking into account social justice as well as practical realities. This is no plea for egalitarianism; indeed collective values in recent years have preached a pseudo-egalitarianism which has inevitably clashed with the realities of human nature.

In seeking a normative approach to future world development in the present times of turbulence and change, it is vital to discover whether the present levels of material prosperity in the industrialized countries are compatible with global sustainability, or, more importantly, whether a world economy driven by stimulated consumer demand can continue for long. This

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1. United Nations (International) Children's (Emergency) Fund.
2. World Health Organization.
3. World Commission on Environment and Development, 1987.

is particularly pertinent in face of population and environmental constraints. It is of course a controversial question which few, if any, governments would have the courage to face. But it is the vital question of the present, and will eventually be forced on the politicians by the people. We believe that consumerism in its present form cannot persist, not only because of constraints but for deeper reasons of human values. The shallow satisfactions of consumerism—'keeping up with the Joneses'; 'I am what I own'—are incompatible with a decent human life which needs a deep sense of self-respect. It leads through greed to the present 'human malaise' the manifestations of which we will describe later.

We must stress that we are not advocating zero economic growth. Indeed we are convinced of the need to stimulate growth in the underdeveloped South. But in the industrialized North, with the evolution of the post-industrial society, there seems to be a need for the growth of quality.

Global Warming and its implications

In the present state of our knowledge of the complex interactions within the planetary system, the greenhouse effect appears to be the most imminent constraint on the extension, or perhaps even on the survival of an economic system which has served the richer countries well for a long time. The consequences of the heating up of the earth's surface cannot yet be predicted with any degree of precision, but there seems to be agreement as to the general trends.

> We've always thought of climate as an act of God. It requires an enormous shift in the way we think of the world and our place in it to understand that we have already moved into an era in which we are actually responsible for managing climatic parameters. Finally, after years of mistakes, we are coming to recognize that continued economic prosperity is tied to ecological stewardship. There is responsible profit to be made in caring for the planet.
>
> Robert Redford [2]
> in *Greenhouse Glasnost* [3]

The rise in temperature caused by the doubling of the atmospheric carbon dioxide is estimated to be considerably greater than cyclical changes in temperature which have occurred in historical times. The greenhouse effect

1. See Chapter VI.
2. Founder, Institute for Resource Management.
3. The Sundance Summit on Global Climate Change (Sundance, Utah, 1989)

will not be uniform over the surface of the earth, but will be less at the equator and much greater at high latitudes. This will alter the thermal gradients of the planet and is expected to considerably change the pattern of precipitation, modifying the various climatic zones and hence their viability for agriculture. It is expected, for example, that major food-producing areas such as the bread bowls of the American Middle West and the Ukraine will become arid, while other areas to the North will become fertile. Transitions may or may not be gradual, but in either case world food security is threatened. It is also expected that there will be more changes in climatic conditions than in the past, with greater extremes in temperature and an increase in the frequency of hurricanes. Indeed, one of the greatest sources of uncertainty in predicting local and global climate change is the effect that global warming will have on cloud coverage. The monsoon cloud system of the tropics, for example, is a main factor of world climate regulation and it is known that it reacts significantly to small changes in ocean temperature.

A further consequence of the heating of the earth would be a rise in sea level, caused by the thermal expansion of the sea waters, and run-off from land-borne ice caps. This might mean a general rise in the sea level of as much as one metre, leading to the submersion of low-lying regions and exposure of larger areas to the danger of flooding during spring tides and storms. The sea-level rise would, of course, take place gradually over the years, so there should be time for adjustment. The effect would virtually eliminate some groups of islands and greatly erode many important river deltas such as those of the Nile and the Ganga, with the displacement of large populations. It is interesting to note that during the past hundred years, the global sea level has risen by 10-20 centimetres, while the mean surface air temperature has increased by about 0.5° Celsius.

There are, of course, many measures which can be taken to delay and buffer earth-heating and eventually to bring it to a halt. The fundamental step is the reduction of carbon dioxide emission by a massive reduction in the use of fossil fuels. The 1988 Toronto Conference of scientists suggested that it would be necessary to reduce carbon dioxide emission by approximately 20 per cent by the year 2005. A few valuable years of grace could be won through a worldwide campaign of energy conservation and efficiency. Some argue persuasively that an intensive attack on energy efficiency could itself solve the problem. However, even if this accomplished, the long lead time in the development of the new efficient processes makes it unlikely that exclusive reliance on such a policy would enable control of the warming quickly enough. Increasing energy efficiency and the conservation as well as the development of sources of soft energy, such as solar, wind, tidal and

geothermal energy, must be our immediate task, if the disruption of industrial production and individual hardship are to be avoided.

What then are our energy prospects? While there is a present glut of oil, we are nearing the end of the long period during which this non-renewable resource has been cheap and plentiful. Quite apart, then, from the need to reduce its use as primary fuel because of the greenhouse effect, measures should be gradually instituted to conserve this vital resource as a feed-stock for the petrochemical industry which will be required indefinitely for the production of plastics, pharmaceuticals, dyestuffs and a host of other products now assumed to be essential. Coal is still available in plenty, but it seems as if it is becoming too dangerous to use because of earth warming, unless the technological progress currently taking place makes it possible to considerably limit its negative effects. Soft energy alternatives can no doubt be provided, but at the present rates of development they are unlikely to be available in sufficient quantities in time to supplement the reduced supply of fossil fuels. Present estimates suggest that soft energy sources may provide some 8-10 per cent of world energy needs at the end of the century. There appear to be good prospects for improvement in the efficiency of photo-voltaic cells, but the prospect of their covering vast areas of land, which would then be unusable for other activities, is hardly attractive.

The promise of nuclear fusion has been held out for many years as the eventual solution to all our energy problems, being virtually inexhaustible. This may prove to be true, but its abundant availability seems to be as far off as when the idea was first propounded. We certainly cannot rely on fusion to fill the gap if and when earth-warming forces us to reduce the use of fossil fuels.

It appears that we may have to prepare for a critical situation to arise a few decades ahead, when we are compelled by the dangers of earth-warming to drastically reduce our use of fossil fuels and have no alternative sources of energy in sight. In such circumstances, nuclear fission could be the only possible way of partially alleviating the situation. Many of us have been unhappy for a long time about the proliferation of nuclear power stations with their obvious dangers, as well as those of the disposal of nuclear waste, but we now reluctantly admit that the use of coal and oil is probably more dangerous to society than nuclear energy, because of the carbon dioxide it produces. There are, therefore, strong arguments for keeping the nuclear option open and for the development of fast breeder reactors. We must warn, however, that the adoption of this option could only partly provide a solution. It would be almost impossible to make available the capital and the effort necessary for the construction of sufficient nuclear power stations in time to match the demand for energy caused by the reduction in the use of carbon-dioxide-

producing fuels that may become mandatory.

The impact of global warming could be particularly difficult for the poorer countries. Development demands energy for industry and agriculture as well as for the domestic requirements of increasing populations. The type of situation which might arise is illustrated dramatically by the plans for the industrialization of China, the most populous country of the world. These are based on the use of coal, of which the country has large reserves, and would eventually make China one of the leading offenders amongst the countries of the world in terms of carbon dioxide pollution, at a time when industries in the rest of the world would be striving to drastically reduce its emission. To force China or, for that matter, any developing country to halt its industrialization without compensation would be morally wrong, politically disastrous, and practically impossible. The Chinese experts are well aware of this problem, but the dilemma is not easy to resolve.

Global food security

Production of sufficient food to meet the needs of a rapidly increasing world population is obviously a matter of primary concern. In the early 1970s when the significance of the population explosion first received general attention, authoritative voices assured us that it should be possible to grow food for a world population as large as 20 billion. This is probably technically possible, if agriculture is considered in isolation. In the real world, however, it has to be considered in the context of the problematique, because of constraints due to other factors. For example, in the long-term estimates of food production possibilities, it was assumed that water shortages could be overcome by desalination of brackish water or of sea water through technological innovations, which the pressure of demand would conjure up. This took no account of the enormous energy requirements which would be needed for such processes, nor of the availability of that energy.

Nevertheless, the increase in agricultural production since the end of the Second World War has been phenomenal and has led to a situation of considerable world surplus despite demographic growth. In 1987, it was estimated that world food production was sufficient to provide some 19 per cent more calories than were necessary to provide a reasonable diet for every person on earth. Yet hunger and malnutrition persist in vast areas, worsened by drought, famine and warfare. It seems, therefore, that the production of enough food has little relevance to the persistence of hunger in the world. The success of the Green Revolution in India in transforming the food situation from deficit to surplus, does not seem to have eliminated hunger in that country, as mentioned earlier. The hungry are the poor, unable to buy the

food that exists, so that hunger in large areas of the world is but a symptom of the basic problem of poverty. It is true that more people are being fed adequately today than in our base year of 1968. Nevertheless, in absolute terms, hunger continues to grow.

The coexistence of glut and famine seems intolerable and gives rise to problems in countries which have surplus food as well as in the food-deficit countries. In the former, difficulties related to surpluses, subsidies and the needs of the farmers are formidable. The largest food reserves available for export exist in North America, with the food-deficit countries depending on the success of harvests in that country. Given the continuation of the present patterns of agricultural production, the main deficit areas at the end of the century will be the Middle East and North Africa, and sub-Saharan Africa (where a shortfall of sixty million tons of cereals per annum is estimated.)

But will the present patterns persist? The droughts of 1988 sent shock waves through the world food system. The drought in the United States appears to have been the most severe ever recorded, with grain production falling below domestic requirements for the first time. Food production in the US fell by 31 per cent and in Canada by 27 per cent. The deficits were made good by drawing from accumulated stocks, from which the terms of export contracts with about a hundred countries, that depend on food imports from North America, were also satisfied. This led to a dramatic fall in the total world food reserves. The question thus arises as to what would happen if similar droughts were to occur frequently. It is premature to attribute the 1988 drought, which also affected many other parts of the world, to global warming, but the event was a clear warning of the vulnerability of food production to changes in climate.

Until about 1950, increase in agricultural production came mainly from the extension of land under cultivation. Thereafter, a massive increase was achieved by the use of chemical fertilizers. Thus agriculture no longer depends solely on the availability of current solar energy, but now relies considerably on fossil fuels – the stored solar energy of past aeons. It takes approximately a ton of oil or its equivalent in natural gas to produce a ton of nitrogenous fertilizer. Petroleum is also necessary for the manufacture of weed killers and pesticides which are used extensively in modern agriculture, as well as for tillage and the operation of irrigation pumps. During the period 1950-86, the average per capita consumption of fertilizers, rose from 5 kilograms to 26 kilograms while at the same time the area per capita devoted to the cultivation of cereals dropped from 0.24 hectare to 0.15 hectare. Thus, in a crude sense, the great increase in world food production represents the conversion of oil into edible cereals via the photosynthetic process.

Today, agriculture in the traditional sense hardly exists in many parts of the world. It has become a sector of industry, relying on technological innovation and modern management methods like any other industrial sector. Likewise, agriculture, as both user and producer of energy, has to be considered as an element of the world energy system. Future scarcity of oil, or the high cost of it, or constraints on its use forced by global warming would inhibit the production of food and greatly raise food prices at a time when the continuing growth of world population will result in the demand for more and more food. It is certainly desirable to reduce the energy inputs in agriculture, and much hard thinking is necessary to ascertain the extent to which 'organic farming' could satisfy the food requirements of present and future populations.

> In Mexico, according to information provided by the Xochicalli Foundation, 19,000 kcal have to be used in order to put 2,200 kcal of food on the table. From another angle, the amount of energy consumed in transporting foodstuffs in Mexico is almost equal to the total energy required by the primary sector for food production. The fact that such situations are considered to be positive is, undoubtedly, a conceptual aberration.
>
> Manfred Max-Neef
> In 'Human Scale for Development'
> CEPAUR-Dag Hammarskjold Foundation

Another potential danger to agricultural sustainability is the widespread degradation and erosion of soil. Soil erosion is a natural process, but when its rate exceeds that of new soil formation, there is a decline in the fertility of the land. It is estimated that this is the situation in approximately 35 per cent of the world's croplands. In drought-stricken areas, overpopulated regions and in many regions such as the Sahel in Africa, recent years have witnessed marginal arable land turning into arid rangeland and then to desert. In the case of the North American 'bread basket', unsuitable soils have been forced into production and good soils 'mined' to meet the ever-increasing demand for food from outside. Enormous amounts of fertile topsoil are washed away into the rivers by rain every year all over the world.

Intensive agricultural practices, such as those of the Green Revolution, demand a much greater use of water than do the traditional methods. As a result, ground water levels are falling in many areas, causing doubt as to the long-term sustainability of these practices. Improved irrigation facilities have provided water in many arid places, often with spectacular results. But irrigation has often led to the salination of soils with the destruction of their

fertility. This is, however, only one element in the approaching crisis in global water availability. Domestic demand for water increases rapidly as economic growth is achieved. In addition, many industrial technologies require vast amounts of water. Acute water problems are caused by the growth of the cities, especially those built in arid regions, unsuitable for large urban populations. Finally we must stress again the imminent danger of the contamination of aquifers by the diffusion of toxic and radioactive wastes.

Special mention should be made of some of the distortions caused by the infiltration of Western lifestyles and needs into some of the developing countries. In many places, and especially in the African cities, food habits have changed completely, partly because of the availability of famine-relief food supplies or low priced food imports from Western countries. Thus bread has become popular in areas which are unsuitable for wheat farming, and rice is greatly in favour despite the high water-needs for its cultivation. This tendency is much to the detriment of traditional food crops and has reduced the incentive for local farmers to increase their production of these crops. While the production of plantation crops in continuation of the practices of colonial times is useful in earning foreign exchange, it is obviously unwise if carried to excess in countries with insufficient food for domestic consumption. This is especially the case where large areas are devoted to the growing of cattle feeds for use in the food-saturated West.

The population backlash

The long-term consequences of demographic change are inextricably linked with future world development and harmony. The industrialized countries with their ageing populations should go some way towards maintaining living standards with a reduced work force, because of automation and the considerable increase in productivity that it will generate. However, the substantial increase in the number of elderly people will be a great burden on the pension funds and on the health and welfare systems. Some of these countries are turning to pro-natalist policies, but, as yet, have met with little success. Considerable structural adjustments will have to be made in these countries because of the shrinking numbers in the educational institutions and the need for the extension of health and welfare services for the elderly, the latter expense compensated for partly by reduced expenditure on child health care. Although only a small proportion of the population will be within the formal learning system, great efforts will have to be made to improve its quality: success in the post-industrial society will depend critically on the quality of human resource development. Flexible and selective means will have to be found for late retirement so as to make

available the skills of older people still capable of contributing significantly to society. The 'age-imbalance' problem can be regarded as a sign of success in family planning. It is a temporary phenomenon and can be planned for in advance. In Sweden, where these problems were first recognized, the situation is now in control.

For the less developed countries, the problems are quite the reverse. In most instances, the growth of the economy and the elimination of poverty will have to be the main objectives of developing economies. This means a type of growth that respects and is built on the traditional culture rather than being a slavish imitation of the materialist growth of the North, which would inevitably induce the same malaise from which the industrialized countries now suffer. Too great an increase in the population can be a fatal constraint on development. In many cases already, development plans are unrealistic because of insufficient attention being given to this factor.

Here, however, we are more concerned about the progression of the North-South demographic disparities. By the middle of the next century, inhabitants of the presently industrialized countries will constitute well under 20 per cent of the world population. Is it feasible that in the future, the world will consist of a ghetto of rich nations, armed with sophisticated weapons, protecting themselves against the vast multitudes of hungry, uneducated, unemployed and angry people outside? Such a scenario, which is a supposition based on present trends, is unlikely. World events which are unforeseeable now will surely intervene. For example, by that time, several less developed countries will no doubt possess their own nuclear weapons.

It is more likely that population pressures, the lack of opportunities and conditions of tyranny and oppression will have generated waves of migration to the North and the West, which will be impossible to contain. Our successors are likely to see mass migrations on an unprecedented scale. Such movements have already begun, with the 'boat-people' migrating from the Far East, Mexicans slipping over the border into the United States, and Asians and Africans migrating to Europe. It is not difficult to imagine at a future date, innumerable hungry and desperate immigrants landing in their boats on the northern shores of the Mediterranean. Similarly, massive migration from Latin America to the United States is to be expected, while population pressure in China may cause spillovers into empty Siberia. As we have already suggested, the rising of the sea level as a result of the greenhouse effect could greatly increase migration pressures, for example in Bangladesh and Egypt.

It is therefore urgently required that the economic conditions in the poor countries are improved, and that at the same time effective means of population control are introduced. We would like to stress that reductions in

economic disparity and aid to development of a wise and cooperative character, rather than a mere humanitarian gesture should be of fundamental importance to the rich countries in their own interest. This is hardly understood by the general public in the industrialized countries and, until it is, the politicians are unlikely to act. Nevertheless, it is clear that no measures will effectively stop the migration trends. This could induce a sharp rise in defensive racism in the receiving countries and encourage the emergence of a series of right-wing dictators swept in by popular vote. Such situations must not be allowed to develop. It is therefore very important, to prepare the populations of the rich countries to accept this reality.

The Information Society

The emergence of the Information or Post-Industrial Society has been one of the main agents of planetary change. If it is wisely guided and it's problems are tackled in time, this development can make possible many improvements in the human condition. We have already described the development of microelectronics and how its applications are penetrating every aspect of domestic and industrial life. Here we are concerned with its economic, social and political consequences.

The information society is based on developments which took place mainly in the scientific and industrial laboratories of the countries of the North; inevitably the revolutionary applications of microelectronics have flooded the markets of the industrialized countries. Our discussion of the consequences, therefore, has a strongly 'Northern' flavour. Microelectronics have not yet made much of an impact in the developing countries. Nevertheless, these innovations are of great significance for the development of the South.

The rapid development of microelectronics brought about by the invention of the silicon chip, which can contain millions of integrated circuits, took place mainly in the United States and in Japan. In the former country, most of the research and development was undertaken in the laboratories of relatively small, sophisticated firms (Silicon Valley) under contracts from the US defence department and space agency. In Japan, it was made possible by cooperation between the large electrical enterprises and the government as part of an imaginative long-term strategy. The Europeans entered the field at a later stage and are making great, but possibly insufficient efforts to catch up. Competition in this area is particularly fierce.

It must be stressed at the outset that the coming of the post-industrial society does not mean that products in daily use, including those of heavy industry, will become less necessary in future, as some facile public statements seem to imply. Those engaged in handling information in the

future will still require housing, knives and forks and plates, as well as food on their plates. There will probably be less people commuting, as much of the work will be done at home on computers. They will probably aspire to the independence given by the automobile, but, even should cars be scarce and fuel expensive, public transport will necessitate the manufacture of buses, trains and ships. In the information society, industry will still flourish, but its products will be provided by a much smaller proportion of the workforce than in the heyday of the industrial era. The majority will be in the information-handling industries and the service sector, a trend that is already well established.

Technological development has had a strong influence on the nature and behaviour of society ever since the shaping of the first flint or bone tools. The type of society we are living in today is the result of the Industrial Revolution, and the advanced technologies, which are already modifying lifestyles and creating new occupations, may have an even greater effect. The central promise of the information society through the widespread use of microelectronic devices in industry and the service sector, is increased manpower productivity. It should become possible to provide all the requirements of a country—including those of industrial production, agriculture, defence, health, education and welfare—and an acceptable standard of living for everyone with only a fraction of the physical effort expended today. No country will be able to ignore these developments or slow down their actualization. To do so would mean forgoing their potential benefits, as well as risking economic losses in international trade. But the extent, depth and unforeseeable social consequences of these developments make it necessary to look well beyond the present decade in an attempt to ensure their exploitation for the maximum benefit to all. If this is not done and developments are planned merely on the basis of medium-term gains and narrow vested interest, governments will try to absorb social and other consequences by marginal adjustments of existing social models and policies in an attempt to eliminate crisis situations when they become acute. It would be irresponsible to leave such developments, which may be of fundamental importance to the health of society, exclusively to the operation of the market forces with their inevitably short-term signals.

It is not possible at this stage to predict the consequences of these technological innovations with any accuracy, but some trends are already visible. In the information society, interdependence between countries will increase through the immediate visibility of information. It will lead to a greater complexity of institutions and societies. It could enable the acquisition of a high degree of power and assist in the decision-making process, but it

could equally well help unscrupulous leaders to consolidate power for themselves. There will be the means, far more effective than the best efforts of secret police, for the electronic control of everyone's activities by 'Big Brother' dictators and societies.

Technological developments tend to increase the vulnerability of society and this is particularly so in the case of electronic devices. Power stations, oil refineries, nuclear reactors, communication centres, banking networks and data banks all have nerve centres which are of relatively easy access to those with the intent of sabotage or political terrorism; these activities are themselves becoming more dangerous as more sophisticated techniques become available. A computer 'virus' can spread rapidly through large systems and totally disrupt their operations. An expert electronic saboteur could penetrate and hopelessly disrupt the whole international banking network.

The deeper social and psychological consequences of the information society are still more difficult to discern. In a strongly technology-based culture, there will always be a dichotomy between those who understand its workings and those who merely press the buttons. It is, of course, not necessary to understand electronic theory in order to enjoy television. But when the use of the microprocessor spreads to make 'black boxes' out of nearly all the equipment and artefacts of life, the sophisticated know-how of the few, who invent and design the new machines and create the software, will have soared beyond the comprehension of the majority. Then we may be faced with a sharp distinction between the minority who know and the majority who do not know. The emergence of a priesthood of scientists, technologists and technocrats is hardly desirable, and its prevention must be one of the objectives of educational reform.

We come now to the area of controversy that dominates the discussion of the information society, namely the problem of employment[1]. The attainment of full employment is still seen as a major economic and social goal, but in its consideration, the influence of automation and technological change is seldom given much weight.

There are those who argue that the future course of information technology and the automation it makes possible will follow the trends set by earlier innovations in creating new products, new industries, new markets and hence generating economic growth. This will provide replacement employment for those laid off by industries with shrinking labour requirements. Others feel that the situation is inherently different from earlier technological developments and that we are likely to see economic growth

1. See Schaff and Friedrichs, 1982.

without substantial job creation.

This question must be considered, not only with regard to possible job redundancies, but also to the general malaise of industrial societies. In the industrialized countries, innumerable individuals find little satisfaction in their work, even though they have been liberated from the crude struggle for existence by the bounties of the welfare state. These people often give in to a sense of worthlessness—a feeling of being useless to society and to themselves. Dignity, self-respect and a sense of purpose are basic psychological needs which are difficult to provide in the industrial and urban milieu and this malaise would spread if large-scale unemployment were to arise.

It is evident that extensive automation in the manufacturing industry is bound to cause many redundancies, especially of unskilled manual workers. It is equally clear that as the new technologies spread, new industries will appear, providing new jobs, many of which will demand new skills. The balance between these two movements is the critical question. Over a long period it does seem certain, however, that the labour force required for the efficient operation of industry will be greatly reduced in size unless new markets can be found. Markets for many goods in the affluent parts of the world are approaching saturation levels, so substantial expansion can only be expected if the population of the developing regions can provide a mass market for capital and consumer goods. This, unfortunately, seems improbable in the near future.

One argument in favour of automation holds that the massive numbers of redundant workers from manufacturing industries would be mopped up by an expanding service sector. The analogy here is with the decline in the proportion of the active workforce engaged in agriculture in the advanced countries to as low as 4 per cent over the last two centuries. This was the result of a decrease in manpower employed on farms due to mechanization. But migration from the land did not cause unemployment as the growing industrial sector was able to absorb the rural unemployed. Historical analogies can be misleading when the circumstances are not exact parallels and that is the case with the present transition, because industrial and service sectors are undergoing automation simultaneously. It is very improbable that the labour force laid off by industry can be absorbed by the service sector as it exists today. Rather, as the information society evolves, we must expect to see a gradual coming together of productive and service functions and a combination of these in the future occupations of the average individual.

Concepts of employment, unemployment, underemployment and leisure are heavy with moral and historical values involving the work ethic, and some of these words are used pejoratively. When large numbers of people are no

longer required by industry, not as a consequence of cyclical fluctuations, but because society demands and technology makes possible very high levels of manpower productivity, then these moral and historical values lose their traditional meanings. It is suggested that, in the future, the chief concern of the individual may be less *unemployment* as we have understood it in the past, but *occupation* in the larger sense. It will certainly include time spent in participating in the economic activities of society, for which each individual will be adequately paid, but will also consist of activities, self-chosen, which will provide personal fulfillment. Thus the occupation of the individual will have to be seen as including only a small proportion of intellectual or productive employment in the traditional sense. Presumably this main occupation will take up a much smaller part of life (later entry into the work force, shorter working hours, earlier retirement, periods off for further education and reorientation,) and together with one or several subsidiary occupations or crafts—educational, social, artistic or sporting—should provide individuals with enough work to interest them and enough leisure for relaxation.

Such a situation will not develop on its own. If thousands of workers, especially thousands of young people, find themselves unemployed and burdened with a seemingly endless leisure, they will be doomed to frustration. Their free time will be taken up at best with television viewing and playing football. More often the 'pollution of leisure' will be expressed in alcoholism, drug addiction, hooliganism and delinquency. A new approach will have to be created by society itself and will involve extensive changes in the educational system and in the distribution of wealth.

The above scenario is not as improbable or as exaggerated as it may seem at first sight. If automation in offices and factories does indeed create intractable problems of unemployment, and if the labour unions accept that they cannot reject the progress of automation in the face of international competition, negotiations will follow, resulting in an equitable distribution of work with shorter hours, and the provision of other means of occupation. Measures will have to be taken to provide socially desirable occupations on a voluntary basis. This will make the increasing extent of free time both creative and satisfying, and transform the information society into the occupational society. Thus the industrialized world would be entering the golden age in which machines will work for us rather than dominate us.

This rosy picture of what could happen in the North is far from realization in the South. The developing countries are, indeed, beginning to benefit from the recent spread of the applications of microelectronics. Electronic communications, including those that use satellite links, are already

connecting the main centres of the developing countries with those of the industrialized countries, although internal communication networks are in most cases rudimentary as a consequence of poverty.

Likewise, computers are gradually filtering in, not only as a part of the global network, as in the case of airline bookings, but also in the offices of governments and enterprises. However, although the advanced technologies are beginning to appear in the industries of countries such as India, Brazil and Mexico, they hardly exist in the poorer developing countries. This is indeed a classic example of how technological innovations inevitably favour those countries that are already advanced to the relative detriment of those at an earlier stage. In the absence of a substantial industrial infrastructure and facilities for using science and technology, penetration of the advanced technologies is necessarily very slow.

It has been suggested that rapid development in the South might be achieved by leap-frogging over the traditional stage of industrialization by saturating the developing countries with computers. We feel that such an approach is undesirable. Unemployment and underemployment are rife in these countries. The advanced technologies are not labour-intensive and would create few jobs. They are, instead, capital-intensive and capital is a scarce commodity in the South. Further, as these technologies are owned by the corporations of the North, such a scheme would induce a deep-seated technological colonialism. Nevertheless, partnership between the industrialized and the developing countries must be greatly encouraged to make sure that the latter are not forced to industrialize, leading to the establishment of obsolete and uncompetitive economies.

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The problems of environment, energy, population, food availability and development form an interpenetrating complex within the problematique which is the source of present uncertainty about our future. The importance of the interactions is such that it would make little sense to tackle each of these elements separately. It is, however, beyond the capabilities of the nation state to do otherwise. Thus what is needed is a simultaneous attack on all the elements within a coordinated world strategy. The success or failure of the first global revolution depends essentially on this. The conflicts of the coming years will arise out of this complex of issues. Some of these have already been mentioned. We shall only add one other example in relation to increasing scarcity of water. Some UNEP (United Nations Environmental Programme) officials foresee the possibility of internal disputes with regard to the use of water of eighteen different rivers. An acute case is that of the domination by

Turkey of the headwaters of the Euphrates on which all of Syria and a part of Iraq depend. Conflicts over these waters could very easily add one more dangerous complication to the Middle East situation.

These matters are being discussed separately and severally everywhere. Conferences on earth-warming and on environmental issues in general are common. Heads of state discuss ozone layer depletion and the greenhouse effect, but as yet no political leader has had the courage to clearly outline the consequences, nor is there any expressed acknowledgement of the interaction of environmental issues and the need for a comprehensive attack. Political action is likely to follow only from the impassioned demands of an informed public.

3. The International Mismanagement of the World Economy

Among the main areas of concern, the rapid changes in the world economy deserve special attention. This chapter provides a brief and selective overview of the main issues affecting the world economy today, focussed on key countries and groups of countries: USA, Japan, the European Community, the developing countries, and eastern and central Europe.

THE UNITED STATES OF AMERICA

There are radically different views about the state of the US economy, influenced by the relative importance given to different aspects of a complex situation. This explains in part why it has been so difficult for them to achieve action on problems, even those which are widely accepted to be serious ones such as the budget deficit.

At first, there appear to be many positive elements: the US economy[1] has been growing steadily for seven years, now at an annual rate of around 2.9 per cent. Millions of jobs have been created, and unemployment (5.2 per cent) and inflation (4.5 per cent) are low. GNP per capita is around US$ 20,000, and the economy is running near capacity, at the rate of $ 4.13 trillion per year. From an electoral point of view, this is almost an ideal situation.

However, there is deep concern throughout the world — and in the United States itself — about the conditions under which this situation has been achieved , and about whether it can be sustained. For our purposes, these concerns can be grouped around the following four main issues:

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1. The following figures for the United States and Japan are official 1990 figures.

Domestic Indebtedness. In spite of repeated efforts and international commitments, the annual US budget deficit continues at about $ 140 billion. The cumulative effect of this annual deficit is now a national debt approaching $ 3 trillion, having risen from approximately $ 900 billion in 1981. Interest payments on this debt are now a major item in the budget, and these are, of course, affected by increases in interest rates. In parallel with the growth of national debt, indebtedness has also increased in other sectors of the economy—households, business and banking. Business debt is some 30 per cent higher than normal in relation to GNP, while major banks are seriously affected, partly through leveraged buyouts and Third World loans.

International Indebtedness. Over the span of a few years, the United States has ceased to be the world's largest creditor, and become the world's largest debtor. The deficit on current account is approximately $ 120 billion per year, and the accumulated external debt is over $ 500 billion and rising steadily. The IMF expects that the current account deficit will worsen again next year, to around $ 140 billion. The dollar has weakened in the last few years, and the US internal deficit, coupled with the trade deficit, contributes to that process. The United States pays its 'external debt' in US dollars, which essentially means that it forces creditors to accept a currency that is steadily weakening. This may be good for US exports, but is damaging to holders of US assets, and is also damaging to countries that earn a large proportion of their foreign exchange from exports of goods and services to the US. In addition, for the first time since 1958, the second quarter of 1988 showed a deficit on trade in services, thus adding to the payments needed to service this international debt.

Such imbalances are a fact of international economic life, but the scale and rate of growth of the US current account deficit is unprecedented. A substantial reorientation of the US economy will be necessary to correct it, and, ultimately, to create a level of surplus needed to service its accumulated international obligations which could exceed $ 1 trillion.

Thus the trade deficit is in fact a very serious problem. However, it is important to recognize that it is itself a symptom of other problems. Its prime causes are the subject of heated debates. For some time, it was considered to be primarily the result of a strong dollar. However, after the Plaza agreement and the decline of the dollar, its primary cause was considered to be an 'unlevel playing field', or unfair practices by US trading partners, particularly the Japanese. It is now increasingly recognized that the trade deficit is mainly the result of excess consumption in USA, financed by foreign borrowings, and a decline in the competitiveness of American goods and services.

Education, and Social and Physical Infrastructure. There is a growing realization in the United States that the economic growth which made Americans feel good about themselves, has been accompanied by the accumulation of serious social and physical problems. While the drug problem is the focus of public concern, there is a substantial agenda of problems yet to be solved. Some of these, which will require attention and expenditure in due course are improving education to meet the needs of a competitive economy, problems of urban poverty and growing racial tension, health care, a decaying physical infrastructure and environmental problems, toxic and nuclear pollution, and so on.

The Security Trap. One of the main elements which determines the balancing of the US budget is defence expenditure, which stands at around US$ 300 billion per year, or 7 per cent of the US GNP. A substantial part of this expenditure serves to support the strategic objectives of the United States and its allies throughout the world. Now that USA is facing economic difficulties, and competing head-on with countries whose security it guarantees, three major questions have arisen.

First, can USA afford to devote such enormous financial and human resources to its own military security at a time when urgent economic and social problems threaten its future? Second, why should USA continue to expend resources to improve the security of western Europe and Japan (which spends only slightly more than 1 per cent of its GNP on defence) now that they are in a position to afford more substantial defence expenditures themselves? Third, the forty-year confrontation with the Soviet Union has virtually ended. Is this not an opportunity to reduce defence expenditure and use the resources thus set free to strengthen the competitive base of the US economy and tackle accumulated social and environmental problems?

There are no easy answers to these questions. They demonstrate the degree to which economic and security issues are interlinked. A serious debate is now in progress, especially after the Gulf War, focussed on the underlying question of what constitutes real security for the United States in the modern world. It is no longer simply a matter of military power: it must surely consist of the need to maintain the economic and technological strength of the country, its political influence in the world, and the health of its relations with its allies. In the longer term, considerations of global energy, environment, population and development are also components of real US security.

Thus, the most powerful and wealthy economy in the world is confronting serious problems today, with the prospect of further substantial and

inescapable demands on its resources in the future. In the absence of new policies, the deficits will remain high, and the accumulation of debt will continue. Such a situation, through protectionism and trade wars, volatility of exchange rates and loss of confidence, will threaten world trade and the monetary systems on which economic growth depends. It will become more and more difficult to generate discretionary resources, even for priority purposes such as the war on drugs, the improvement of education, or the stimulation of research, development and investment. The primary causes of the problems will therefore remain unresolved.

Whatever proposals may be made for the international management of the world economy in the future, it should be a prior condition that the budget deficit and trade imbalances which confront the US economy today must be corrected. Otherwise, these will be a constant source of instability and tension, and a threat to world trade and monetary systems. They will also limit the effectiveness of the United States in world affairs at a time when its full participation will be badly needed.

JAPAN

The most significant shift in the balance of world economic power in recent years has been the emergence of Japan as an economic superpower. The scale and speed of this change is sometimes hard to comprehend. From 1985 to 1987, Japan's total national assets rose from US$ 19.6 trillion to $ 43.7 trillion. During this same three-year period, the total national assets of the United States climbed from US$ 30.6 trillion to $ 36.2 trillion.

OECD[1] estimates that the Japanese surplus will be $ 38 billion in 1990, $ 37 billion in 1991, and $ 36 billion in 1992. In comparison, the US deficit is estimated to come down from $ 110 billion in 1989 to $ 60 billion in 1992. The international assets of Japan may well reach $ 1 trillion in the mid-nineties. The Bank of Japan is now responsible for the world's largest cash reserves, of approximately US$ 80 billion. As an actor in the world economic system, it is estimated that between January 1986 and June 1987 the Bank of Japan spent $ 57 billion to force the decline of the dollar. Further, Japan is now the largest provider of development assistance, at $ 10 billion annually, and is the second largest contributor to multilateral institutions such as the World Bank and the International Monetary Fund.

Japan has been providing a large part of the funds required each month to finance the US budget deficit through the purchase of Treasury bonds at the rate of about $ 10 billion per month. In addition, Japanese corporations are

1. Organization for European Cooperation and Development

investing in USA – for example Sony recently purchased Columbia Pictures Entertainment for $ 3.4 billion. In 1988, Japanese interests bought real estate worth $ 16.5 billion, and invested nearly $ 13 billion in various companies. In all, Japan accounted for almost 19 per cent of US capital inflow in 1987.

The long-term interest rates have risen sharply in Japan, from 4.8 per cent in 1988 to a forecast 7.9 per cent in 1991 and 1992, while US rates have remained broadly stable at around 8.7 per cent and are now lower in real terms than in Japan. One reason is the determination of the Bank of Japan to wind back the wild inflation of asset prices while were supporting the expansion of bank lending.

Japan has consistently emphasized research and development, applied mainly to manufacturing in the civilian sector. The proportion of Japan's GNP applied to R and D has almost doubled in ten years, from 2 per cent in 1980, to about 3.5 per cent today. As an example of its vigorous technology, Japan introduces each year as many industrial robots as the rest of the world combined.

The political and economic system of Japan has twice demonstrated its ability to agree on new objectives and to reorient the whole economy in a very short time: first in response to the oil shock of 1973, and more recently, in an effort to reduce its trade surpluses under the pressure of its trading partners. Japan has begun to reorient its economy so as to increase domestic consumption.

This ability to reach a consensus, and to achieve actual change in the orientation of the economy is an enormous asset for Japan in adapting to the increasing pace of change in the international economy. Financial institutions, corporations, unions, the education and research systems, and the government itself – all seem to be able to orchestrate their efforts to achieve broad national goals. This capacity to adapt, coupled with their present vast financial resources, a dynamic research and development system, and a high quality education system would seem to guarantee an even stronger economic standing for Japan in the coming years.

However, in spite of this tremendous strength, there are reasons for concern, not merely the fragility of trading relations and the changing structure of the Japanese population (which by the year 2020 will have 24 per cent of its population over the age of 65) but also a gradual shift in attitudes to work and new expectations for improvement in the conditions of daily life, especially true of the younger generation. These trends will gradually affect the dynamics of the Japanese economy but they are unlikely to make a substantial change in its overall performance. In the fields of money, trade, debt and development, and in its relations with trading partners, Japan's

traditional attitudes, policies and procedures will have to adapt to meet its new responsibilities as a major international power.

THE EUROPEAN COMMUNITY

In the early eighties, while the economies of the United States and Japan enjoyed rapid expansion, it was fashionable to refer to 'Eurosclerosis', which afflicted Europe with high unemployment and slow growth. In recent years however, this situation has changed dramatically, because of three main reasons.

First, increasing world trade, particularly that resulting from US economic expansion, has provided a stimulus to the growth of European economies. Second, the new domestic economic policies adopted in most European countries have helped to improve economic performance. And third, the decision to establish a unified European market by 1993 has already provided a substantial economic and psychological boost to Europe. It is now the Europeans who 'feel good about themselves'. They are engaged in the process of European *perestroika*, unthinkable only a few years ago, which is taking place at a rapid pace and with far-reaching results.

How has this change come about, and what are its implications? Perhaps the most important single cause of this change was the feeling that unless Europe took some major initiatives to improve its economic and technological performance, it was doomed to fall not only further behind the United States, but also, and more particularly, behind Japan.

Europe is now on the move towards a unified market of over 320 million consumers in which there will be the relatively free movement of capital, labour, goods and services. This process is already under way, and most major corporations and banks are positioning themselves to take advantage of the new situation through investments, mergers and takeovers. Also, there has been a surge of investment in Europe by countries outside the community, particularly by Japan and the United States, so as to ensure that they are not subject to discrimination as outsiders to the European Community.

This integration among the nations of Europe is not a mere economic or technocratic matter. It has both historical and political significance. As the process of economic integration progresses, important political decisions will be taken which will determine the future shape of the European Community, its institutions, and its internal and external policies. However, many of the most difficult issues still remain unresolved and the final outcome of this integration is by no means clear.

The twelve member countries of the European Monetary Union have reached a broad agreement on the first phase of the Delors plan to work

towards a monetary and economic union, and this process moved forward decisively at the Madrid Conference. Apart from the United Kingdom, there is, at least provisionally, an agreement to work together to define a process for an eventual single currency.

The rapid changes taking place in eastern Europe are so profound that their future role in shaping the European Community after 1992 cannot be ignored. Among other influences, that of German reunification will transform the nature of Europe and its role in the future. Whether the world economy will return to and maintain a higher rate of growth will depend to a considerable extent on the leadership, the policies, and the cooperation of the main economic powers—the European Community, Japan and the United States. New patterns of cooperation should be developed to meet the global challenges of the coming decades.

THE DEVELOPING COUNTRIES

From the point of view of the management of the world economy, the term 'developing countries' is inappropriate for operational purposes. This broad grouping now covers such a wide range of countries that a more precise term is needed. It is useful to analyse a number of key issues which will clarify the role of these countries in the international economic set-up of the future. Three such issues are debt, poverty and development, and participation in the world economy. Many other approaches are possible, but the analysis of these issues does lead to insights into the future course of action.

Debt: The debt problem is no longer a threat to the international economic system given the provisions now made by the major banks and their reorientation away from lending to developing countries (and in fact, the greatest risks for banks today are related to their domestic real estate lending). But debt remains a major domestic problem for the developing countries themselves, especially in Latin America and Africa. In the last two years the Western leaders have finally recognized that there exists the problem of overindebtedness. Consequently, they have agreed to allow easier debt terms for the poorer developing countries which are making efforts to improve their economic management (the so-called 'Toronto terms' agreed on in 1988). Secondly, they have put in operation a scheme (the Brady Plan) to reduce the debt burdens of the larger debtors such as Mexico and Brazil. These are major steps forward, but they clearly need to be pursued with greater urgency and will need more resources than are currently provided.

The growth of the world economy as a whole was nearly 4 per cent in 1988, but that of Latin America was only six-tenths of 1 per cent. During that year, Latin American debt actually fell slightly, from US$ 441 billion to $ 426 billion.

as a result mainly of debt-to-equity conversion. However, over the next twelve months till March 1989, the debt-service burden grew by $ 10 billion, simply as a result of a 3 per cent rise in international interest rates. The cost of debt service each year is influenced by interest rates and the value of the dollar, and, as is evident, both these are beyond the control of the countries concerned.

This dangerously unstable situation does not seem to elicit the close attention which it urgently deserves. The problem, if unattended, may well undermine the future prospects of the world economy for several reasons. First, a number of major US banks, although they have reduced their lending to developing countries are still carrying substantial amounts of developing-country loans in relation to their capital. Second, since 1984, the developing countries have been transferring money to the developed countries, a 'net negative transfer' of repayments in excess of new lending. The amount of this transfer was over US$ 50 billion in 1988. Compounding this problem, the total flow of direct foreign investment to developing countries has fallen from $ 25 billion in 1982 to $ 13 billion in 1987.

Thus, at a time when the developing countries urgently need resources, there is a substantial net flow of these from poor to rich countries and, in effect, the developed debtor countries, particularly the United States, are competing for resources with the developing countries. This is inequitable, and represents a tremendous waste of human and economic potential. Indeed, the abrupt decline of the economies of Latin America boomeranged and resulted in a substantial decline in exports and employment in USA.

On its own, the indebtedness of the developing countries constitutes a serious and growing threat to the economic and political stability of the world, but the debt problem must be seen in the context of the other serious trade and financial imbalances in the developed countries. In this perspective, the present international management of the world economy seems very inadequate, and the hopeful and reassuring prospects of steady economic growth seem doubtful.

New resources will also be needed on a substantial scale to stimulate development at a time when there are new competing claims, for example from eastern Europe and from the countries directly affected by the Gulf crisis. It is also essential that the access of the debtor countries to the markets of the North be maintained and expanded. If protectionism increases in the North, this will greatly aggravate the debt problem, as it has in the past. Developing a viable approach to the debt and development problem will require a far more coherent linkage of policies and institutions concerned with financial management (IMF), with investment and development (the World

Bank), and trade (UNCTAD[1], GATT[2]). This will be a challenge to the world community, demanding imaginative cooperative efforts by the United States, Europe and Japan. In spite of institutional reluctance, policy objectives and action in such interlinked fields as finance, debt management, investment, development policy, human resource development, trade, and environment, must be made more coherent.

Poverty and development: Another issue, even more threatening to the world in the long term than debt, is that of population growth, poverty and a decline in the level of development in many countries of the South such as Bangladesh, Burkina Faso and Haiti.

Perhaps inevitably, the attention of politicians, business leaders, intellectuals and the public in the developed countries is focussed on issues that immediately affect their welfare. The long-term implications of the present trend in the world economy—increasingly divided and polarized between a small percentage of the rich (perhaps 20 per cent in 2025) and a much larger percentage of poor and underprivileged people—seem too far away to worry about, but they are not. Apart from ethical considerations, which seem to have a very limited motivational force, two implications are likely to become evident fairly soon.

In a number of poor countries, governments will begin to respond to the intense pressure exerted on them by their populations, especially by the frustrated youth, which will increasingly be concentrated in vast cities. There is no reason to expect that they will act in accordance with the norms of behaviour established predominantly by Westerners when they laid the foundations of the international system forty years ago. After scores of United Nations resolutions, North-South dialogues and conferences, with few positive results, they may well decide to move towards confrontation. That this may be illogical or costly would be irrelevant to the political realities at work. History offers many such examples.

In these conditions, the comfortable assumptions of international studies would no longer apply. At best, only the delicate network of international travel, health and security controls, diplomatic courtesies, business, and scientific contacts, and so on would be threatened. At worst, terrorism and conflict—with ensuing migration flows—would drastically increase, which would certainly attract the attention of the North.

The pressure of a rapidly growing population on the world environment is already becoming all too evident. But the solution to this vexed question

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1. United Nations Conference on Trade and Development.
2. General Agreement on Tariffs and Trade.

cannot be found in the environmental area alone. Generally, the cause of environmental problems is a complex mixture of human needs, economic pressures, technological options and political interests. Knowledge, resources, sensitivity and commitment are needed to resolve them. There is now wide public awareness that the Earth is a single delicate system, that the destruction of the environment in the South threatens the North, and vice versa. In the environmental area, there are now the preconditions for international action.

Participation in the world economy: The outline of the developed economies presented earlier in this chapter demonstrates the enormous potential of new technologies, management practices and public policies to promote a new surge of growth. But at the same time, the demand in these powerful economies for the products of the developing countries is likely to diminish as a result of technological progress, automation, and their changing demographic structure. The shift from natural to synthetic products and new materials has continued, moreover, to weaken the markets for most basic products which still are the main exports and the source of earnings in foreign exchange for most developing countries.

A number of developing countries, such as South Korea, Singapore, Malaysia, Brazil, and more recently Mexico, which are able to compete successfully, attract investment, and generate a modern economic base, may effectively become full participants in the developed part of the world economy. In other countries, the modern part of a dual economy may develop strong links to the northern economies, unconnected to the rest of the country which continues with its traditional economic practices. In any case, most developing countries are in need of access to modern technology and enhanced scientific and technological cooperation.

For many poorer countries, and for the poorer parts of dual economies, the economic opportunities will be limited. Demand for their primary products from the North is unlikely to increase significantly, and they will probably be unable to develop a significant manufacturing base. Further, the advantage of cheap labour will diminish as automation in the North reduces labour content, and the potential of the 'knowledge revolution', of information and computer technology, telecommunications, etc., is likely to remain unrealized. This is because the trained and educated manpower, the systems, and the infrastructure, on which such a revolution must be based, are lacking.

Another critical aspect will be the growing competition for resources of all kinds—particularly energy, water and suitable land for living—as world population grows and environmental problems increase. The orderly

distribution of such resources through the market price mechanism, or by government allocation, will come under increasing pressure as demands become more desperate. This issue will require urgent attention at the international level. It will be one of the necessary functions in future, on both practical and ethical grounds.

In the absence of a significant new strategy for world development, the world economy is likely to become even more polarized and divided between the rich and the poor. Already, about 1.3 billion people, more than 20 per cent of world population, are seriously sick or malnourished, according to the World Health Organization. With this perspective, it is alarming to note that the aid performance of the developed countries may be deteriorating. Since 1970, their provision of aid has expanded broadly in line with their economic growth, i.e. at about 3 per cent per annum. While the aid growth fluctuates from year to year, the average for the past four years has been less than 2 per cent. In 1989 the amount was US$ 46.7, about 0.33 per cent of the GNP of the dveloped countries, down from an average of 0.35 per cent of the last twenty years (the UN target is set at 0.75 per cent). Within this average, some countries have consistently maintained an aid level of around 1 per cent, while others remain well below the average. An increase in ODA (Official Development Aid) is particularly important for the poorest countries as they have very limited options available to promote their development.

The improvement in relations between East and West now raises the possibility of a truly global effort. Over US$ 1 trillion is now spent worldwide on armaments each year, including $ 200 billion spent by developing countries. Therefore, substantial human and monetary resources could gradually be released for development through the reduction of expenditure on arms throughout the world.

New thinking is badly needed; to ignore the issue will lead to disaster. Besides, simply promoting 'growth' throughout the developing world along the lines followed by the Western economies is not a viable strategy on environmental and other grounds. This must not become an excuse for stagnation; it is a reason for examining new approaches to development.

THE SOVIET UNION AND EASTERN EUROPE

Until quite recently, the Soviet Union and the countries of eastern Europe did not play a substantial role in the world economy. Now the situation is rapidly changing and their role will become increasingly important for the following main reasons.

The success of *perestroika* in the Soviet Union, and in those East European countries engaged in reform, depends to a certain extent on trade and

technological cooperation with the West. As reform continues, the intensity of such cooperation will increase, and this will be of particular importance to western Europe, especially to the Federal Republic of Germany. Thus, the leaders of the seven western industrial countries, at their meeting in Paris, assigned a coordinating role to the European Commission in this area.

The Soviet Union and the East European countries, particularly Poland, are facing enormous budgetary and financial difficulties. The budget deficit of the USSR for 1988 amounted to 120 billion rubles, or about US$ 190 billion at the official rate. There is a vast collection of problems to be solved and the benefits anticipated from *perestroika* have not yet begun to appear. From the consumer's point of view, the situation is in fact worse than before.

In these circumstances, finance and investment from the West are of great importance. Although it has entered into loan agreements, particularly with German banks, the Soviet Union seems reluctant to take up the credit now available. Poland, however, is urgently seeking resources for immediate use. Two important issues arise. First, until the management of the economy in the USSR improves, will the additional financial resources from the West be effectively utilized? Second, until it is clear that reform will suceed, and that a reformed Soviet Union will not revert to its past policy of confrontation with the West, should the West provide support?

This second issue is proving to be a divisive force in the West. West European countries emphasize the opportunity and need to encourage positive change, while some in the United States emphasize the risk, and need for caution. If USSR should decide to move much faster, even incurring substantial debts to accelerate economic growth through cooperation with the West, this problem will become acute.

Relations with Japan: One of the certainties of international relations since the Second World War was that relations between USSR and Japan would not significantly improve for two reasons. Japan's friendly relations with the United States had precluded good relations with the Soviet Union, during the period of East-West tensions. Secondly, the vehement disagreement between Japan and USSR over the Kurile Islands prevented any rapprochement.

Both these considerations may no longer be important. At a time when East-West tensions have lessened, and because of an increasingly strained relationship with the United States, Japan may feel more inclined to improve its relations with the Soviet Union, and the Soviet Union in turn may wish to strengthen its ties with Japan in order to benefit from its financial and technological resources. Such a development would have major repercussions on the structure of the world economy, and on international relations in

general.

Beyond these specific instances, it must be noted that the policies and prospects of the Soviet Union and its allies are of immense importance to the future of the world. For more than forty years, the rivalry and tension between East and West have soured international relations and obstructed growth and progress throughout the world. Whether this situation is already irreversible, and *perestroika* will fail to fulfil expectations and this failure will result in a return to confrontation is beyond the scope of this report. But one conclusion is inescapable. Every effort must be made to consolidate the progress which has already been made, away from East-West confrontation, and towards a reduction in armaments. This will produce positive results throughout the world, for two reasons: first, and most evident, it will help to reduce tensions, and thereby reduce the resources expended on armaments. These resources will then become available for investment, and for the provision of desperately needed social services.

Secondly, the reduction of tension, conflict, and the threat of war will provide an important moral and psychological boost to world morale. This should not be underestimated. It could create the conditions for constructive new initiatives in which East and West could cooperate for the first time, mobilizing their energies to face global problems. This is perhaps the greatest single opportunity available at the present time to consolidate the progress which has been made by mankind and to open new ways for future global cooperation.

4. Intimations of Solidarity

In a declaration made by the Club of Rome in 1985 we said, 'there could be a bright and fulfilling future awaiting humanity if it has the wisdom to reach out and grasp the difficulties ahead, or a slow and painful decline if it neglects to do so.' This is still our credo, but time is now running out. In the previous chapters we have outlined some of the negative and dangerous trends in contemporary society. However, there are many positive aspects which give hope that humanity is aware of its problems and that the human race has the urge, the creativity and the adaptability to manage its uncertain future. In this chapter we shall mention a few of these signs of hope as an encouragement to the reader.

> There are three possibilities facing mankind. The first is that there will be a nuclear war, after which there will be nothing to worry about. The second is that it will be willing to take a thousand small, wise decisions and pull gradually out of the mess. The third and most probable is that it will do nothing and that the situation will deteriorate so that the poor will inherit the earth and live in misery for ever after.
>
> (paraphrased from Harrison Brown's speech[1])

For the last forty-five years, ideological polarization between the two superpowers has held the world hypnotized by the apprehension of a nuclear disaster. The erosion of the influence of the superpowers, and now the

1. 'Personal Communication', 1978. (Harrison Brown was at that time Professor at the California Institute of Technology)

sudden collapse of the state-controlled economies has neutralized the tensions, presenting us with an entirely new *mise en scene*. Agreements on arms reduction are achievements far beyond anything that could have been imagined a decade ago and there is the expectation of much more to come. This clears the way for more serious attention to the other problems which in conjunction make up the 'predicament of mankind'.[1]

The new spirit of cooperation between the United States and the Soviet Union has made possible a high degree of solidarity between the nations against aggression, as proved by the agreement of the UN Security Council and General Assembly to impose a world blockade on Iraq following its occupation of Kuwait in 1990.

Cooperative efforts have led to progress in other areas, such as the Law of the Seas Conference where delegates, after lengthy negotiations, agreed on many important issues and novel institutional measures. They endorsed the concept of the oceans as the 'common heritage of mankind'. This precedent has also been applied to Antarctica, the last and extremely fragile unexploited area of the planet, which otherwise would have been pillaged by the industrial nations in their greed for new resources, leading to ecological disaster.

There have been in recent years, encouraging signs of an increase in public awareness of the dangers which face us, due initially to the reports by groups such as the Club of Rome which were then promoted by the media. Worldwide public debate, the pressure of green lobbies, calamities such as the Chernobyl and Bhopal disasters have forced politicians to recognize the importance of a whole series of new issues, and compelled industry to adopt at least a semblance of social and environmental responsibility. As a consequence of awakened awareness, new signs of responsibility and solidarity have appeared among the general public in the form of citizens' groups, cooperatives and NGOs with a vast variety of aims and methods, concerned with local, national and world problems.

Particularly impressive has been the response of many private and volunteer agencies to disasters in places which are far from their bases. Their contributions have been outstanding in a number of earthquake relief operations. During the acute famines in Ethiopia and the Sahel, NGOs appear to have been more effective than governments and the international agencies in promptly reaching food supplies to the starving populations. In general, non-governmental activity has achieved a new order of importance and bids

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1. *The Predicament of Mankind* was the title of the original and very first research project of the Club of Rome.

fair to have a growing and constructive influence on national and international policies.

Despite the relative failure of development and aid policies, some countries have achieved spectacular successes. India, one of the most populous countries, has become a major industrial power in addition to its agricultural achievements through the Green Revolution. The Asian Dragons, otherwise known as the NICs (the newly industrialized countries of South East Asia — Taiwan, Singapore, Hong Kong and South Korea,) have achieved great prosperity which is based to a large extent on exploitation of the new technologies. There is a lesson here for other struggling nations. The Dragons, following the example of Japan, founded their development on the generalization and upgrading of education and the creation of sound scientific infrastructures. Some of the poorer countries are also showing the results of creative initiative—for example, the recent progress in Botswana and consistent development in Zimbabwe.

A significant event has been the exercise of 'people's power', supported by world public opinion, leading to the downfall of oppressive governments in eastern Europe. These are manifestations of change which ten years earlier would have been suppressed by military intervention. This type of bloodless revolution is a rare event in world history, and contrasts with the brutal crushing of popular will a few months earlier in China and the tragic events in Romania. Changes in Chile have been positive and there is a trend towards democracy in many other places. The recent ideological volte-face by the leader of Ethiopia is amazing and hopes now arise for settlements in Central America and even for the disappearance of apartheid in South Africa, despite the danger of civil war in that country. In many African countries, which have been ruled by dictators and single party politics since independence, public unrest is beginning to win concessions. Thus, as we come to the last decade of this millenium, we find that democracy has emerged as the triumphant and preferred ideology of the whole world, while dictatorial ideologies both of the left and of the right have fallen into disrepute. One can only hope this will be an irreversible trend.

A new kind of relationship can now be observed between heads of state and ministers. Through numerous multilateral or bilateral conferences, meetings and telephone calls, personal relationships are being established which enable a better understanding among the human beings behind the official masks. This is creating a new network of rapid communication at the highest level, even if it does not always lead to greater understanding or common action.

Enormous benefits have flowed from advances in the medical sciences and

in the improvement of hygiene the world over. In the North, the scourge of tuberculosis has gone; life expectancy has increased, and cures or alleviations found for many illnesses. Smallpox has been eliminated by a well-planned international effort and hopes exist for the eradiction of several other diseases which plague the tropical countries. Perhaps even more important is the significant reduction of infant mortality in the developing countries, partly through improved hygiene, but to a greater extent because of the introduction of a simple method of curing infantile diarrhoea and more recently by immunization against measles, a major killer of children in tropical and equatorial climates. All in all, 'death control' has been more successful than birth control in the developing world.

World recognition of the importance of human rights has been a positive feature in recent years and should continue to be so. Amnesty International and other such bodies have been successful in exposing abuses everywhere without political bias. Nevertheless, the fashionable appeal to human rights has served as a manipulative alibi to cover up unseemly practices in many countries. Here we must stress the conviction of the Club that the maintenance of human rights must be complemented by an equivalent acceptance of social responsibility. This applies equally at the individual, national and international levels.

An example of a prompt approach to the solution of a global problem by international action has been the (at present partial) agreement for the elimination of the CFCs already referred to. We have also mentioned the trend in industry to minimize dangerous, dirty and repetitive work by the use of robots. Interesting attempts are also being made to replace line assembly by new methods of group working which give the members of a team a variety of tasks to do and allow for individual involvement which makes it possible for workers to have pride in their work and craftsmanship.

This century has witnessed great advances in the position of women in the Western countries, first in gaining the right to vote, later being accepted in employment outside, and now edging towards pay equal to that earned by men. In many cultures women have been exploited by men, restricted to the family and given a secondary place in society. Of course, throughout the ages, intelligent women have exercised a great influence on society, either themselves or through their men. Today women work side by side with men, sit in parliament, become business leaders and prime ministers, although they are still in rather modest numbers in the higher posts. This is good news, but it is still not enough. The aggressive feminism of the seventies and eighties somehow missed the point. In demanding an artificial equality with men, rather than a role which is essentially complementary, women found

they had no other choice but to reproduce the sterile male logic which has led the world into its present state of malaise. In the process, many of the most successful of them became, as it were, male-hearted women instead of developing the virtues of the female mind which society so badly needs.

This phase, happily, seems to be passing. There is increasing recognition among both men and women of the significance of female qualities and values. Women are at last accepting the fact that they can and must behave as women rather than attempt to beat men at their own games. Equally men, and the managerial, economic and political systems they have created, are beginning to recognize the importance of women's skills as managers of both people and resources, as communicators and, above all, that their versatility is vital for the development of a healthy and balanced society. This recognition by both sexes is a crucially important step forward, and this opportunity to enable and encourage women to contribute fully to the running of society must not be wasted. The battle is not yet fully won. Male chauvinism persists, but it will pass with the generations.

Two elements are of paramount importance if women are to contribute actively and constructively to social development. Firstly, society must both listen to and place confidence in women. In the male-dominated and seemingly rational world of today, female intuition, versatility and innate common sense are too often ignored — often at a heavy cost. Secondly, women will have to be given both financial and moral support by society. Such support needs to be flexible and sensitive to allow women to play a positive role in the shaping of society, without compromising their place at the heart of the family. In the West, this means flexible work patterns, comprehensive child care and equal opportunities. In the developing world this means extensive legal rights as well as political and financial support. In some countries, availability of credit for women for the first time has unleashed a wealth of initiative and creative activity.

However, above all, women must listen to themselves and support each other. They must develop confidence in their abilities and stop an inexplicable tendency to denigrate themselves while judging themselves against male criteria.

It is thus clear that we are mutually responsible for the future of our world. We have to call for an increased jointly responsible action.

5. The Vacuum

Order in society is determined by the cohesion of its members. Until the middle of our century this was normally ensured by a natural patriotism and a sense of belonging to the community, and reinforced by moral discipline exerted by religion and by respect for the state and its leaders, however remote they might be from the people. Generalized religious faith has now evaporated in many countries; respect for the political process has also faded, leaving behind indifference, if not hostility. This is partly due to the influence of the media, and partly to the inadequacy of the political parties in facing real problems. Minorities are increasingly unwilling to respect the decisions of the majority. Thus a vacuum has been created, in which both the order and objectives in society are being eroded.

Today's approach to social life is superficial, based on current events and crisis government which attempts to eliminate symptoms without diagnosing the causes of problems. This is the way we are setting the scene for the destruction of our planet.

We look in vain for wisdom. The opposition of the two political ideologies which have dominated this century no longer exists, leaving nothing but a crass materialism. Nothing within the governmental system and its decision-making process seems capable of opposing or modifying these trends, which raises questions about our common future and indeed about the very survival of the race.

We must ask whether these are signs of an individual and collective resignation in the face of the vastness of the task facing humanity and the urgent need for action, or is it a sign of a lack of imagination and an

incapacity to invent new ways and new means which will measure up to the global magnitude of the problems? The task is indeed formidable, but if we show no sign of accepting its challenge, it is likely people may panic, lose faith in their leaders, give in to fear, and offer support to extremists who know how to turn fear to their own advantage with incendiary speeches.

It is a law of Nature that any vacuum will be filled and therefore eliminated, unless this is physically prevented. 'Nature', as the saying goes, 'abhors a vacuum'. Like the black holes of space which suck in everything that approaches, the vacuum of society seems to attract the best and the worst at random. We can but hope that the semi-chaos which is now taking over will eventually provide the material for a self-organized system with new possibilities. The present system is not yet useless, but human wisdom must be marshalled quickly if we are to survive.

'How simple things were with Brezhnev,' a European leader confided, half-seriously and half-ironically. The collapse of communism in the East European countries and the Soviet Union will be a major unsettling factor during the coming turn of the century. The new hands that are to be dealt in the card game of politics are unlikely to be assessed at their true value, nor are their potential consequences likely to be evaluated until at least two or three decades have gone by.

The implosion of the Communist ideology that had dominated the greater part of the twentieth century was certainly spectacular, but it was by no means an isolated event. It coincided with the end of the 'American dream', which lost its credibility with the painful Vietnam war that deeply scarred the collective American conscience. The failure of the *Challenger*, Hispanic migration, the phenomenon of poverty within plenty, drugs, violence and AIDS, and the fact that the 'melting pot' no longer worked were other potent factors in its demise. Having lost its position of unique leadership in the world – a leadership composed of a generosity laced with Puritan values, and a cynicism worthy of the conquerors of the Far West – the American nation is plunged into doubt and is facing the often-resisted temptation of withdrawing into itself, an escape that is no longer possible in the present global environment.

Most of the poor countries are gradually relinquishing their Marxist and socialist beliefs in favour of more concrete and immediate preoccupations, such as economic development and the stabilization of their economies. Capitalist and free-market economies have found it necessary to make adjustments so as to survive, while socialist systems also made adjustments belatedly but did not survive. The political and economic theories which motivated the actions of some and aroused the opposition of others for the

greater part of this century appear to have run their course. Only materialism remains today as a strong all-pervasive force.

It is not easy to stimulate a universal debate on ideas, but the lack of attempts to do so further deepens the void. There is a pressing need for such a debate, and the frequency of international conferences and meetings, with their cross-cultural discussions, should initiate new and more global thinking.

This period of absence of thought and lack of a common vision – not of what the world of tomorrow will be, but of what we want it to be so that we can shape it – is a source of discouragement and even despair. How simple it was, or should have been, for France, Great Britain and their allies to mobilize against their common Nazi enemy. And was it not obvious during the period of the cold war, that the Western nations should accomplish a diplomatic, economic and technological mobilization against the Soviet Union and its satellite countries? Again, freedom fighters, despite tribal and ideological differences, were able to find unity and strengthened patriotism in the struggle for independence their common enemy, the colonial powers. It would seem that men and women need a common motivation, namely a common adversary against whom they can organize themselves and act together. In the vacuum such motivations seem to have ceased to exist – or have yet to be found.

The need for enemies seems to be a common historical factor. Some states have striven to overcome domestic failure and internal contradictions by blaming external enemies. The ploy of finding a scapegoat is as old as mankind itself – when things become too difficult at home, divert attention to adventure abroad. Bring the divided nation together to face an outside enemy, either a real one, or else one invented for the purpose. With the disappearance of the traditional enemy, the temptation is to use religious or ethnic minorities as scapegoats, especially those whose differences from the majority are disturbing.

Can we live without enemies? Every state has been so used to classifying its neighbours as friend or foe, that the sudden absence of traditional adversaries has left governments and public opinion with a great void to fill. New enemies have to be identified, new strategies imagined, and new weapons devised. The new enemies are different in their nature and location, but they are no less real. They threaten the whole human race, and their names are pollution, water shortage, famine, malnutrition, illiteracy, and unemployment. However, it appears that awareness of the new enemies is, as yet, insufficient for bringing about world cohesion and solidarity for the fight. Also the failure of many ideologies has removed some of the necessary points of reference.

Two axes of reference have made possible the political evolution that has

shaken the world these last years and led to the downfall of many dictatorships. These are human rights and democracy. We shall now analyse their strengths and limitations.

During the past decade, the concept of human rights has been a mobilizing factor which became effective through its dissemination by the media and by word of mouth in the countries where such rights were disregarded or denied. When freedom was widely enjoyed in other countries, how could the people of some countries be deprived of it indefinitely? This is especially the case in countries such as Poland or Brazil where the Catholic Church, an ardent protagonist and supporter of human rights, has a strong influence.

In some of the most totalitarian of countries, aspirations for freedom have been fulfilled in such a way that it seemed as if the pressure of values had reached critical point and exploded, overthrowing the oppressors. Through various processes and despite the painful cost of civil struggle, death and imprisonment, this thirst for freedom was expressed by Martin Luther King, Lech Walesa, Vaclav Havel, Don Helder Camara, and Nelson Mandela, just as in earlier years Mahatma Gandhi had paved the way.

But freedom alone cannot reorganize a state, write a constitution, create a market and establish economic growth, rebuild industry and agriculture, or build a new social structure. It is a necessary and noble inspirational force, but is far from being an operating manual for a new government. This is why the concept of human rights simply initiates but cannot implement the process of democratization.

This is where the question must be raised—what sort of democracy is required today and for what purpose?

The old democracies have functioned reasonably well over the last two hundred years, but they appear now to be in a phase of complacent stagnation with little evidence of real leadership and innovation. It is hoped, with the new-found enthusiasm for democracy in the recently liberated countries, that people will not reproduce slavish copies of existing models that are unable to meet contemporary needs.

The limits of democracy

Democracy is not a panacea. It cannot organize everything and it is unaware of its own limits. These facts must be faced squarely, sacrilegious though this may sound. In its present form, democracy is no longer well-suited for the tasks ahead. The complexity and the technical nature of many of today's problems do not always allow elected representatives to make competent decisions at the right time. Few politicians in office are sufficiently aware of the global nature of the problems facing them and little, if any, awareness of

the interactions between the problems. Generally speaking, informed disucssion on the main political, economic and social issues take place on radio and television rather than in Parliament, to the detriment of the latter. The activities of political parties are so intensely focussed on election deadlines and party rivalries that they end up weakening the democracy they are supposed to serve. This confrontational approach gives an impression that party needs come before national interest. Strategies and tactics seem more important than objectives and often a constituency is neglected as soon as it is gained. With the current mode of operation, Western democracies are seeing their formal role decline and public opinion drifting away from elected representatives. However, the crisis in the contemporary democratic system must not be allowed to serve as an excuse for rejecting democracy.

In the countries now opening up to freedom, democracy is being introduced in a situation which demands greatly changed attitudes and patterns of behaviour from citizens. These inevitable problems of phasing in democracy are difficult to solve. But there is another, still more serious question. Democracy does not necessarily build the bridge between a colonial or neo-colonial economy or a centralized bureaucratic economy, and a market economy based on competition and capable of producing growth. Attitudes, market relations and managerial styles simply do not exist in a country experiencing a transitional situation such as the present, which because of sudden and unforeseen changes has been neither planned nor prepared for the necessary structures. If such a situation is allowed to continue for too long, it is probable that democracy will be made to seem responsible for the lagging economy, the scarcities and uncertainties. The very concept of democracy could then be questioned and allow for the seizure of power by extremists of one sort or the other.

Winston Churchill was right when he quipped, 'Democracy is the worst of all systems, except for the rest.' Yet we must be aware of its erosion, its fragility and its limitations. When persons say 'It is obvious what must be done to improve our situation,' they seldom ask 'Why isn't it done then?' And if they do ask, they will have to answer, 'It is because we lack the (political) will or because of our habits, or because of shortsightedness, or politics and so on...' Our inability to indicate how to overcome these sources of inertia and resistance makes it clear that we are not at all sure about what must be done. We overlook (psychologically speaking, we deny) our ignorance and instead say, that we lack the political will. The crucial need is to revitalize democracy and give it a breadth of perspective that will enable it to cope with the evolving global situation.

The real question is, is this new world we find ourselves in governable?

The answer is: with the existing structures and attitudes, probably not. Have we gathered the necessary means and wisdom to make decisions on the scale required for the world problematique, taking into account the exigencies of time? There is an increasingly evident contradiction between the urgency of taking some decisions and the democratic process founded on procedures such as parliamentary debate, public debate, and negotiations with trade unions or professional organizations. The obvious advantage of these procedures is the achievement of a consensus; the disadvantage lies in the time they take, especially at the international level. For indeed the difficulty is not only in the taking of decisions, but also in their implementation and evaluation. Time in these matters has acquired a deep ethical value. The costs of delay are monstrous in terms of human life and hardship as well as waste of resources. The slowness of decision-taking in a democratic system is particularly damaging at the international level. When dictators attack and international policing is required, delays in taking decisions can mortally affect the lives of thousands of people.

The problem then is to invent instruments of governance capable of coping with change without resorting to violence and maintaining the kind of peace which provides security, justice and fulfilling growth for individuals and societies alike. Not only have we to find better means of governance at national and international levels, but we also have to determine the characteristics of the capacity to govern. Global 'governance' in our vocabulary does not imply a global 'government', but rather the institutions set up for cooperation, coordination, and common action between durable sovereign states. The good and, for our purposes, encouraging news is that:

—people and nations are beginning to agree to take the 'next steps' together. (However, they are carefully avoiding to agree on *why* they are agreeing.);

—they are reaching a consensus by practical procedures rather than by the formal voting of governmental representatives;

—many international functions, especially those requiring the most foresight and operational flexibility, can be carried out through non-governmental arrangements;

—in many fields governments have come to realize that the effective deployment of their most cherished right, their sovereignty, requires that it be *pooled* with the sovereignty of other nations, in order to do things that none of them can do alone. In this sense, cooperation does not mean relinquishing sovereignty, but rather exerting it through joint action—instead of losing it or just not using it.

Whether on the international level, the national level, or the level of the corporation, the problem of governance presents itself in new terms. The growing complexity of the world and of its problems makes it necessary to have a complete grasp on tremendous amounts of information before coming to a decision. This immediately calls into question the quality of information, for it is in constant danger of rapid obsolescence and possible inaccuracy, or of being used for outright propaganda. A second impediment to governance is caused by the increasing size and inertia of large bureaucracies that spread their tentacles around the centres of power and slow down or paralyze both decision-making and implementation. Other crucial impediments consist of the lack of education for competent citizenship and inadequate intergenerational understanding.

Yet another difficulty arises from the lack of cooperation within the administration and its sectoral structures. If the different power centres do not learn to cooperate, and instead insist on acting in ignorance of or in opposition to one another, the resulting administrative sluggishness can provoke delays that can lead to inefficiency, wrong decisions and confrontation.

So far, governance has operated by treating problems separately and in a vertical mode, i.e. field by field. Today the interaction between problems is monopoly of governments and their departments, working in a vacuum. outside of the framework of the problematique. This in turn demands leaders of a new kind, capable of treating problems in both a horizontal and vertical mode. In the world that is emerging, decision-making can no longer be the monopoly of governments and their departments, working in a vacuum. There is the need to bring many partners into the process—business and industrial organizations, research institutions, scientists, NGOs and private organizations—so that the widest possible experience and skill is made available. And, of course, enlightened public support, where the public is aware of the new needs and the possible consequences of decisions, would be essential. A dynamic world needs an effective nervous system at the grassroots level, not only to ensure the widest range of inputs, but also to make the identification of every citizen with the common process of governance possible.

In the present situation in the world, the lack of identification of the people with the processes of decision-making is expressed in the form of indifference, scepticism, or outright rejection of governments and political parties, which are seen as having little control over the problems of our times. These attitudes are clearly indicated by a decreasing rate of participation in elections.

The common enemy of humanity is Man

In searching for a common enemy against whom we can unite, we came up with the idea that pollution, the threat of global warming, water shortages, famine and the like, would fit the bill. In their totality and their interactions these phenomena do constitute a common threat which must be confronted by everyone together. But in designating these dangers as the enemy, we fall into the trap, which we have already warned readers about, namely mistaking symptoms for causes. All these dangers are caused by human intervention in natural processes, and it is only through changed attitudes and behaviour that they can be overcome. The real enemy then is humanity itself.

6. The Human Malaise

The shock waves produced by the drastic changes of the great transition are thus sparing no region, no society. This upheaval has broken up a system of relationships and beliefs inherited from the past, without leaving humanity any guidelines for the future. There are so many reasons for doubt and despair: the disappearance of values and established points of reference, the increasing complexity and uncertainty of the world and the difficulty of understanding the new emerging global society, unsolved problems such as continuing environmental deterioration, and extreme poverty and underdevelopment in the southern countries; the impact of mass media often operating as a magnifying glass for a depressing reality and highlighting the misery of people.

Let us mention, without attempting an in-depth analysis, a list of various symptoms, which although differing from each other in their nature and their consequences, together share the quality of being global symptoms: the waves of violence, particularly in big cities, the permanence of international terrorism, the activities of mafias (that are also rapidly becoming international networks), the rise of drug addiction and drug-related crime, the aggressive sexual exhibitionism and deviant behaviour exploited by the press, the other mass media, and the advertising industry.

All these phenomena are setting the stage, on many different levels, for a new upsetting environment, where deviant behaviour is in general given so much and such repeated coverage that it is perceived as being commonplace.

Parents and teachers, the point of reference in most societies, have not been prepared by their education to adjust to the new situation imposed upon them today. As the late American sociologist Margaret Mead remarked, 'Young

people are the native population of this new world in which we adults are immigrants'. Some of us would even go along with her observation that 'nowhere in the world do there exist adults who know what their children know, however remote or simple the societies in which those children live. In the past, there were always some elders who knew more—had more experience or practice of a system in which they had grown up—than any child. Today there are no longer any.'

Everywhere, teachers are facing difficulties with their pupils, for they too are unprepared for teaching young people who are much more independent than they were at the same age and considerably better informed (and misinformed) because of the mass media. All sorts of institutions, such as the political parties or trade unions, are discovering how difficult it is to relate to their constituencies in the old-fashioned way. This crisis of relationships is a crisis of dialogue. And absence of dialogue leads to confrontation.

This does not merely mean that parents and teachers have ceased to be guides; it means that there are no longer any guides in the old sense of the term whether one looks for them in one's own country, in China, in India, in Africa, in America or in Europe. Thanks to modern information technology, young people are being exposed rapidly to more and more facts that give them reason to believe that their elders lack responsibility and are unaware of enormous dangerous such as a nuclear holocaust, pollution and the violent destruction of environment. Furthermore, a shower of reports on unrelated disasters and violence in the news everyday are like a series of shocks that lead to the feeling of generalized disorder.

Within this disturbing pattern, what happens to the life of the individual? Children watch television and learn about all aspects of human life. They learn to be persons with individual choices, inclinations and freedom. The conflict between inherited and acquired values is such that if a young person wants to think and act for himself, he must have lots of courage or he will break down. Not having been given the means to distinguish the fundamental meaning in traditions and values, from what is merely their formal expression, the younger generation is rejecting traditions and values as a whole and is sketching out new trends: today, adolescents are the ones who know about and contribute to the major transnational trends, and try to stand firm against dangers. Their parents now have to seek their consent and negotiate their own formerly unquestioned authority.

How do parents and teachers react to this reversal, where the exercise of authority is disputed and the 'master' is no longer acknowledged? Some of them, still mentally adolescent or emotionally immature, adopt the young people's fads and imitate the way they dress and speak. Those who lose all

authority over their children are usually themselves unsure of their own identity and values, and transmit their own malaise to the young.

For these disturbed parents of disturbed young people, there is only one way out, which is not to mime, but truly listen to and learn from their children, even if the theories the children profess at first seem unacceptable to them, or unworkable and impossible to put into practice. There is a need, now more than ever, to establish a fruitful inter-generational dialogue.

In almost all cultures, the family is regarded as a fundamental social unit. It will probably continue as such, but in new circumstances – disjointed and shattered by urban life, rural exodus, emigration and conflicts, modified by control over reproduction – with the human couple now joined in an uncertain bond, functioning according to a new pattern of relationships that has replaced the hitherto uncontested parental authority; a family within which the upholders of tradition are increasingly in conflict with those of an American-style modernity.

'In India,' explains Mrs. Parthaswarathi, the principal of a girls' school in New Delhi, 'the crisis has already arrived. The young are living a perilous existence, torn between the traditional and the new values and subjected to contradictory pressures. They must continually make up their minds and take decisions in a context where the family used to decide collectively, with the last word belonging to the patriarch.'

> Indeed, man is in distress! Except for those who believe and do good deeds, and command the law among themselves and command patient endurance among themselves.
>
> *Koran: Verse 103*

The present malaise is affecting societies, and individuals are confused by their brutal break with the past with no new coherent vision of the future to fortify them. 'Who am I; where am I going; why?' Although these are traditionally the eternal questions, they are now felt more acutely than ever and even now cannot be answered satisfactorily. The turmoil, which is especially – but not exclusively – affecting young people, is expressed in a number of ways which are identifiable as symptoms of this *mal de vivre*.

> Il est interdit d'interdire.
> (Forbidding is forbidden.)
>
> One of the slogans of the student revolt in Paris, 1968.

Signs of discord have gradually appeared in the global society, inducing fear and bringing young people together despite differences of class, culture and country. Rock music, gadgets and cola drinks have forged a new, parallel and temporary (as long as youth lasts) society and created what the African historian Joseph Ki-Zerbo calls 'homo coca-colens'. These new tribes constitute a global phenomenon. They are strongly attracted by consumerism without, for the most part, having financial access to it. Furthermore, their own future seems to offer nothing but an uncertain fight for survival in an inhospitable global society marked by gloomy perspectives such as brutal competition or the threat of unemployment.

As for their elders, many of them are inclined to return to their traditional cultural and religious roots, convinced, at least for the time being, that this will provide the only way out of a life of misery and despair. In fact, another aspect of this great transition is the felt need to go back to the ancient spiritual principles such as those of Islam or Catholicism, or to find solace in cults and pseudo-religions. This is essentially a manifestation of the deep quest for the absolute, which is shared by so many human beings.

However in many cases, this need develops into fundamentalism and fanaticism, which is usually an expression of the immense disappointment felt *vis-a-vis* the Western model of modernization, consumption, economic growth and social progress, which has not kept its promise in most developing countries, and has brought dehumanization in the industrialized regions.

Moreover, nationalism, which has always existed in various forms and degrees in all parts of the world, has now acquired more vigorous dimensions. In the East European countries, for instance, the nationalist resurgence has been the driving force in the disintegration of Communist states, just as earlier, it was the most powerful lever in the anticolonial fights. But nationalism is a double-edged sword; based on the old concept of the nation-state, it can all too easily become a source of intolerance, conflict and exaggerated racism.

The traditional concept of nation is partly disappearing in the wave of internationalization—for instance, the dependence of some countries on others for raw materials and energy, or for food, investments, technology transfer and training—which is creating new solidarities that are not always accepted or understood.

The rebirth and reinforcement of xenophobia and racism can of course be explained by the millions of immigrants and refugees in Asia, Africa, America and Europe, who are seen as a menace to the social equilibrium of a country and a serious threat to its cultural identity just when this identity is being questioned by its own adepts. This phenomenon is all the more manifest in

that it is induced by the confusion in each individual who is facing the brutal emergence of the global dimensions of today's issues, and by the building of regional and inter-regional organizations such as the European Community, where people fear they will lose their soul.

These two opposing trends – the revival of specific cultural identities and the formation of vast, regional units – are in reality compatible. The apparent conflict arises from the difficulty of reconciling them within the existing political systems rigidly set within the model of the nation-state, which cannot be adapted to the present situation and needs to be replaced by a solid cultural world community. This is something very few are aware of.

This picture is rather grim, but we can point out some positive signs that are emerging. Young people are good at starting revolutions, no matter how soon they are re-integrated into the mainstream. It would be difficult to forget their role in Algeria, Africa, Chile, China, Romania and the Soviet Union, to mention just a few countries where regimes have been overturned by popular protest.

The human malaise appears to be a normal stage in this great transition. Rebirth cannot take place immediately or without pain. We cannot disregard the diversity of societies and cultures, discount the burden of tradition, or forget that words and concepts do not always have the same meaning in different contexts and languages. A quest such as this, for a new and more harmonious society, must not give in to the temptation of seeking unanimity by ignoring disagreements, or admit to defeat before the battle begins on seeing the perils of such an ambitious and difficult undertaking. However, the human malaise is also a reflection of the present dangerous march towards a schizophrenic world.

Towards a schizophrenic world

How can we speak of a global society when so many contradictory forces are exercising their power on societies and individuals, tossed about in a hurricane of events? We already have one foot in a two-world system which has replaced the three worlds we have spoken about so facilely in our speeches, articles and reports. The three worlds – the industrialized one, the second one mainly constituted by the Communist countries of eastern Europe and the underdeveloped Third World – are no more.

The second world as such is disappearing. The term 'Third World' has little relevance. Since Bandung and the beginning of the movement of non-aligned countries in 1955, is anything much left in common between the Asian Dragons and Bangladesh... and Haiti? Between Morocco and Burkina Faso? And in Brazil, between the wealthy industrialized regions of Rio de Janeiro and Sao

Paulo and the north-east of the country where people are suffering from starvation and malnutrition?

Diversities of interests are, of course, as obvious within countries and regions as on the international scene which concerns us here. Deep dichotomies existing in almost all countries, multiple standards of behaviour, and hypocritical actions are much the same within and among nations. Reconciliation of interests on the national scale would have to be sought as part of the global harmonization process.

In view of this we should note some of the more distressing disparities and unresolved areas of conflict which are relevant to the world scene:

— the disparity between the rich and the poor with an increasing number of people living below the line of absolute poverty, (less than US$ 370 per year for one billion people in 1990);

— the growing disparity between those who have access to knowledge and information and those who do not;

— the discrimination not only against religious or ethnic minorities, but also in so many countries, against old people;

— the absence of equal dispensation of social justice;

— lack of equal rights and duties, of equal privilege and responsibility;

— the lack of balance between discipline and license;

— the disparity between economic growth and the quality of life;

— the caring community versus the impersonal welfare state;

— the lack of balance between material and spiritual needs.

In addition, we should mention various gaps that are contributing to the human malaise, for example, the lack of understanding between the elite and the masses, the separation between science and culture, and the conflict between rationality and intuition.

There are a vast number of differences between human beings and these have hitherto been regarded as being irreconcilable. Differences in values and in ethical interpretation are present throughout the fabric of world society. Once again, we reach the conclusion that only through the unquestioning acceptance all over the world of a common code of ethics, directed towards the survival of the race and the living planet, can divergent interests be harmonized or, at least, mutual tolerance be achieved.

Most of the facets of this malaise are not new. What makes them part of this first global revolution is the worldwide dimension that characterizes them.

even if they exist in varying degrees in different places. There is no doubt that the present trends and threats we are contending with are induced by a state of mind influenced by both the globality of these contemporary situations, and the fears and aggressiveness of our fellow humans.

The Challenge

Never in the course of history has humanity been faced with so many threats and dangers – catapulted unprepared into a world where time and distance have been abolished, and where man is sucked into a global cyclone of confusion, swirling with seemingly unrelated factors, the causes and the consequences of which form an inextricable maze. We have, in the preceding chapters, set out a number of causal factors, the most important of which are inequitable economic growth, deterioration in governance and the capacity to govern, uncertain global food security and water availability, environmental damage and energy shortages, population growth and migrations, and the upheaval of world geostrategic facts. All these factors are interdependent, interactive and constitute what has been called the world problematique by the Club of Rome.

Though the public has acquired a relatively better grasp of these facts, awareness of some of them is all too often coupled with the ignorance of other facts, which are no less important ones, as well as of the true breadth of each of them and the interaction between them. We must also note that the elements of the new problematique do not strike all people in the same way. Some, such as the dangers threatening our environment, affect mankind as a whole. Others, such as the population explosion in the countries of the South, appear to be of more narrow concern, but have repercussions of varying degrees of intensity on every country in the world without exception.

Finally, at the coming turn of the century, mankind is overwhelmed by the range of the difficulties confronting it from all sides; overwhelmed – and the word is not too strong – because the traditional structures, governments and institutions can no longer manage the problems in their present dimensions. To make things worse, the archaic and unsuitable structures are themselves in

the midst of a true moral crisis. The disappearance of value systems, the questioning of traditions, the collapse of ideologies, the absence of a global vision, the limits of the current practices of democracy – all contribute to the void confronting societies. Individuals feel helpless, caught, as it were, between the rise of previously unknown perils on the one hand, and an incapacity to resolve the complex issues in time and attack the roots of evil, not just its consequences, on the other hand.

States with constitutional laws and rights violate international law whenever the matter is solely one of national interest. This is not really new but the magnitude of the consequences in an interdependent world is totally new and globally visible. Religions often serve as an excuse for fratricidal strife. Christians massacre other Christians in Ireland or Lebanon in the name of religious beliefs without this having anything whatsoever to do with faith in the God of the Beatitudes. How can we not be concerned, along with many Arabs and Muslims, about the holy wars conducted in the name of Allah, which cast no more than a thin veil over the ambitions of war-chiefs who little heed the teachings of the Koran? How can we not wonder, along with many Israelis, about the confusion of the religious mission of the people of Israel described in the Bible with the offensive annexation policy of a government which is shamelessly violating the United Nations laws to which they have subscribed, at least in writing?

The law of the jungle may have been on the decline, but its recent resurgence shows just how fragile world balance has remained. Such fragility lies also in the hearts and the minds of men, the oft-impotent citizens of helpless nations. What we observe today is a general malaise which strikes men with stupor, paralysis and unnamed fears. Will we let ourselves be crushed by a problematique that seems to demand superhuman efforts, when we ourselves are at its root? Will we let ourselves be turned away from the real stakes and take refuge in a life on the margin of society or in a quest for personal success, ignore our individual social responsibility? Must we abandon ourselves to a sort of fatalism that would consider the slow decline of humankind as inevitable or insurmountable?

This is the formidable challenge we are facing today. We shall now try to examine the possible responses to this challenge. A global challenge requires a global approach.

> Times flies, our lives run out, and yet we are unable to overcome our insatiable urge for acquiring more and more wordly possessions.
>
> Adi Shankaracharya
> 8th century Hindu philosopher and saint

Part II

The Resolutique

Introduction

> We must no longer wait for tomorrow, it has to be invented.
>
> Gaston Berger[1]

What constitutes our ability to take effective action? Official vocabulary does not always suffice to define new situations and new technologies. We sometimes have no choice but to invent new words which express new concepts or new methodologies.

Such was the case of the 'world problematique' a term suggested by the Club of Rome when it was founded in 1968, and the force of facts has made it universal. Since then, progressively increasing awareness of a number of elements of the problematique has led to an unprecedented international phenomenon; increasing numbers of conferences, seminars and symposiums in the private as well as the public sector have been primarily devoted to the discussion of the development of poor countries. It would not be correct to say that such meetings have had no results and no beneficial effects. The figures published in an official report of the Canton of Geneva are as follows:

> In 1977, 52,000 experts took part in 1,020 meetings on the Third World, representing 14,000 work sessions. The *ad hoc* meetings can be added to the regular day-to-day work of the 20,000 international civil servants of the 110 international organizations that have their headquarters in Geneva.

1. Contemporary French philosopher

We must also include the thousands of meetings held in the United Nations headquarters in New York, at the World Bank in Washington, by the European Community in Brussels, in the FAO[1] in Rome and in countless regional and subregional agencies in the developing countries. In thirteen years, there has been a runaway increase in the number of meetings of this sort and no one has ever totalled the budgets thus sunk into plane fares, luxury hotels and the publication and distribution of sundry reports and recommendations. Not only has little progress been observed in the field, but we must also acknowledge that poverty, famine and malnutrition have continued to increase in a great many countries in the South. An analogous phenomenon has been observed more recently where environmental problems are concerned, involving an incredible multiplication factor.

Without being totally exempt from criticism in this context itself, the Club of Rome noticed that there was no progress from one meeting to the next, with some meetings yielding often debatable and sometimes even mediocre results. It was thus felt that it was no longer acceptable, at least as far as the Club was concerned, to speak of the problematique without formulating plans and procedures that would solve the problems set forth and analysed. The global approach to problems as required by the problematique implies a need for a corresponding approach with a global perspective at every level of society to interactive solutions destined to solve the problems. Therefore, a new methodology or a new and purposeful analysis intended to be an answer to the world problematique is exactly what the Club of Rome means to adopt and call the *world resolutique*.

Providing concrete solutions to the complex problems of the great transition we are undergoing may be well beyond our capacities but it is our duty, at least unto ourselves, to search for solutions and strategies which lead to efficiency and equity. We must take the initiative in overcoming situations that are blocked by international and national bureaucracies, and by conventional and negative attitudes to change. Our task is also to encourage social and human innovation which, when compared to its cousin, technological innovation, has definitely been treated as a poor relation of the family. We would like to emphasize once again that by the term 'resolutique', we are not suggesting a method of attacking all the elements of the problematique at the same time in all their diversity. This in any case would be impossible. Our proposal is rather a simultaneous attack on its main elements with a careful consideration in each case of reciprocal impacts from each of the others.

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1. Food and Agriculture Organization (of UN)

What are the values and goals on which action must be based? The world resolutique includes the need for adopting certain values founded on the *collective values* of humanity, that are sketchily emerging as a moral code for action and behaviour. Such codes and values have to constitute the basis of international relations and the source of inspiration for decisions made by the main actors on this planet, with due regard for cultural diversity and pluralism. The resolutique also stresses the absolute necessity to seek concrete results in priority areas of the problematique, keeping in mind that the time factor is becoming essential. Any problem that remains unsolved produces in due course irreversible situations, some of which cannot be solved even in a global framework.

The Club of Rome and its individual members have always felt that apart from their research work they also had to take the initiative or become associated with others. For instance, the Club members are involved in the International Institute for Applied Systems Analysis (IIASA), the Foundation for International Training (FIT) and more recently, in the International Partnership Initiative (IPI). We must also mention the Sahel Operation against desertification and in favour of development, with the involvement of the local populations, which was designed and launched at the request of a number of African leaders during the Club of Rome meeting at Yaounde, Cameroon in 1986.

The use of the resolutique applies to urgent action on priorities and immediacies. This does not exclude other types of action, which though not immediately necessary, can aim for long-term results. In the shifting situations of the present, there is a paramount need to develop methods of decision-making in conditions of uncertainty.

7. The Three Immediacies

The myriad strands of change which together are constituting the world revolution have to be understood, related, opposed, encouraged, diverted to other channels, or assimilated. There can be no simple solution or package of solutions to the tangle of problems. Hence we introduce the concept of the resolutique, an approach which consists of a simultaneous and comprehensive attack on the main problems *at every level*. It is coherent in that it attempts to look at the consequences of possible solutions to particular elements of difficulty on all levels, or as many levels as possible. No comprehensive methodology exists for such an approach; it runs counter to traditional methods of planning, and existing institutional structures are singularly inappropriate for it. Yet there is no alternative. To tackle the global problematique problem by problem and on a country-by-country basis can only worsen the situation. The task that faces us is, therefore, to grasp a thousand nettles at once.

It is true that much thought has been given in recent years to the management of complexity, and some elements of a suitable approach have emerged. In particular, Jay Forrester's studies of large systems, described in his books, *Urban Dynamics*[1] and *Industrial Dynamics*[2] (which led to *The Limits to Growth*) have much to offer, as also *Les Systèmes du Destin*[3] by Jacques Lesourne.

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1. Forrester, 1969.
2. Forrester, 1961.
3. Lesourne, 1975.

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became more and more capital intensive and required fewer workers.

Thus, even the partial liquidation of the arms industry brings many problems, and quick conversion of plants and of whole industries to the production of consumer and other civilian goods has to be considered urgently. In the USSR and China, large-scale demobilization and conversion efforts have been initiated as a matter of national policy and directed, as expected, by the centre. In both these countries there was an enormous scarcity of consumer goods, agricultural machinery, medical equipment, machine tools, and the like, so that conversion from arms production to the production of such goods was seen as highly desirable. Such endeavours have taken place in conditions of minimal public accountability and economic chaos, giving little useful experience to countries with a market economy. It is certain, however, that the retraining of soldiers and armament workers to provide them with new skills and new attitudes is difficult and insufficient.

In contrast, in the Western market-economy countries, only Sweden has developed an active policy of conversion; most of the others have adopted a wait-and-see attitude. Nevertheless the conversion issue is being discussed actively in most European countries, except in France despite the fact that much of its weapons manufacturing capacity, mostly state-owned, is already lying idle.

Conversion of arms plants to constructive civil uses is thus the currently accepted remedy, but in the industrialized countries this presents many difficulties. Existing *laissez-faire* attitudes assume that the market forces will take care of the transition. This may be so, but the major consequence is likely to be a lot of waste — resulting from abandoned and unwanted plants and extensive unemployment. State-owned manufacturing facilities and contractors that have served the needs of the military for long are often incapable of handling new manufactures in a market environment. Grassroots action on the part of employees, trade unions, local communities, and so on, holds out some hope in a few countries, but is unlikely to secure sufficient institutional backing in the absence of clear governmental policies. Direct intervention by the state is unlikely and would in any case be impractical because of bureaucratic rigidity. However, the state must play an active role, in view of the serious nature of the priority changes involved. The success of any comprehensive conversion scheme will depend heavily on the availability of extensive retraining facilities which only governments can provide. It may well be that governments will be forced into taking action by the pressure of public opinion and grassroots agitation. This is another example of the need for people's power.

The question must now be raised as to what the products of the converted

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into a bewildering technological nightmare, impenetrable even to the decision-making politicians. These scientists are isolated behind walls of secrecy. They live and work outside the international scientific community. Although they must include many of the best brains, their names are largely unknown. Unlike other scientists, their rewards and prestige do not come from sense of achievement and the respect of their peers in the international scientific community, but from competitive success within their restricted circle.

What then will happen to these people in a situation of disarmament? Will they be converted and join the ranks of academic and industrial scientists, or will they remain at their work, devising still more deadly weapons, hopefully never to be used. It is too early to say, but till now the latter seems to be the most likely outcome, probably coupled with decreasing employment and resources. The 1990 yearbook of SIPRI (the authoritative Stockholm International Peace Research Institute) asserts that there is no evidence that there will be a slower pace of technological development in the military area. This key element of armament manufacture is largely outside public scrutiny and concern. Since it withdraws so many of the best scientific and engineering brains from fully constructive activity, it is important that this matter is discussed and the situation made known to all.

In conclusion on this theme, we summarize some suggestions for action.

Fear of nuclear war between the superpowers has receded, but the limited use of chemical, biological and nuclear weapons in local wars remains an alarming possibility. It is widely believed that several countries already possess a hidden nuclear capacity. We suggest therefore that a new appeal be made for *adherence to the non-proliferation treaty*, and for willingness on the part of the signatories to accept international inspection. We also plead for a speeding up of negotiations aimed at destroying research on chemical and biological weapons.

In view of recent agreements on disarmament and the prospect of further progress in this area, we appeal to all governments with sizeable but declining arms industries to institute *active policies for the reconversion* of these. Can we hope that this reconversion will be to the manufacture of products that will contribute to the health and welfare of their people? Such policies should be evolved and implemented with the advice of bodies which include progressive industrialists (and not only those from armament manufacture) together with workers' representatives and government officials. The conversion policies should be shaped in recognition of the changing nature of industry and with due regard to the constraints imposed by

earth-warming and other environmental hazards. In all such schemes an essential element should be the setting up of retraining schemes to provide workers with the necessary new skills.

In considering the *redeployment of financial and other resources* set free by diminished military expenditure, governments should give priority to the improvement of the social structure. In particular, great efforts are required to improve the quality of education, in order to provide citizens with the knowledge and skills necessary for achieving fulfillment in work and leisure in the new world which is emerging. In striving for world harmony, part of the resources should be used to augment existing assistance to development and for the alleviation of world poverty.

The present historically significant situation of *detente* should be used to reveal and curtail the evils of the arms trade. In 1986, the president of the Club of Rome, on the basis of a memorandum sent by Eduard Pestel to President Reagan and General Secretary Gorbachev, put forward a proposal for the joint action of the two superpowers in limiting the sale of arms to the poorer countries. While there was only a formal acknowledgement from the White House, a personal and constructive reply was sent by Mr. Gorbachev, followed by a memorandum of further reflections on the suggestion. The correspondence was given full coverage by the press and television in USSR and East Europe, but was hardly noticed by the press in the West. It seems to us that the time is ripe for the revival of this proposal, not only in the USA and USSR, but also in other major arms-exporting countries. Recent events demonstrate the futility of the evil trade and how it can have a lethal backlash when the turn of events gives rise to unforeseen conflicts. One has only to cite the success of the French manufactured Exocet missiles in sinking British battleships during the Falklands war, or the situation of the troops of Western and Arab countries in Saudi Arabia, facing Iraq's sophisticated weapons sold to them by the Russians, the French and the British among others. To sell guns for immediate monetary gain to buyers who may intend to kill the seller seems to be the ultimate insanity.

In the long run, if the security of the planet is to be assured, the manufacture of arms for the economic gain of individuals or countries will have to be controlled. Residual needs for world policing will have to be provided under the supervision of the United Nations. This may not be required for tomorrow, but there is nevertheless a need for an early review of the whole problem, all the more so since the confrontations in the Persian Gulf will have long-term consequences.

Towards an environment for survival

Most of the successful activity in recent years for the protection of the

environment has been in reducing or eliminating pollution and other forms of deterioration; it has been curative rather than preventive. While this must continue, the main emphasis in the future must be in preventing the development of the macro-pollution which we have described earlier, to the level at which its effects are irreversible. By far the most urgent of these is global warming which threatens the world's economic and social system.

Prevention of global warming represents one of the greatest challenges which humanity has faced, and demands an international effort. Four lines of attack are required:

— reduction of the global emission of carbon dioxide, which will mean a reduction in the use of fossil fuels;

— afforestation, especially in the tropics;

— development of alternative sources of energy;

— conservation of energy and the development of greater efficiency in its use.

We shall base our discussion of the carbon dioxide situation on the Toronto changing atmosphere' target of reducing emission of this gas by 20 per cent by the year 2005. However, in view of the urgent need of the developing countries to provide energy for their citizens, and for agriculture and industries, the industrialized countries will have to make even larger reductions in their use of fossil fuels — let us say 30 per cent. Moreover, recent estimates indicate that this is a very conservative figure.

Initially, the highest priority must be given to energy conservation and efficiency in the transmission and use of energy in every sector of the economy. There are very large potential savings to be made which would, in any case, be economically useful and strategically necessary in view of the vulnerability of the industrial countries to the cutting-off of oil supplies. In general, the market forces should be helpful here, but at present, incentives are insufficient and will have to be increased. There are also many non-market barriers to energy conservation. In the domestic sector, for example, the per capita consumption of energy in USA and Canada is approximately double that of the West European countries with an approximately equivalent standard of living. To achieve the necessary savings here will require fundamental changes in the habits of millions of individuals, a question to which we shall return later.

The immediate need, therefore, is for the launching of a massive worldwide campaign to promote energy conservation and efficiency in its

use. This alone can give us some breathing space before we face the more intractable problems of industrial adjustment. To be successful it will need a clearly expressed political will on the part of governments and strong public support.

Switching from oil and coal to other fuels has also been suggested, but apart from natural gas there are few alternatives which could be brought into use quickly. Natural gas has the advantage that in combustion the methane molecule produces less carbon dioxide per unit of energy generated as compared to the longer chain hydrocarbons of oil and coal. Conversion to natural gas is relatively simple, so this may be a useful measure, although great care would have to be taken to prevent leakage, since methane is itself a greenhouse gas, being much more active molecule by molecule than carbon dioxide.

These are, however, only palliatives or delaying measures. The fundamental issue is how to achieve a massive reduction in fossil fuel combustion in industry. It is frequently stated that the transition to the post-industrial society will lead to considerable energy saving. It is true that the microelectronic technologies are not energy-intensive, and that their main applications are in the growing, important information sector, rather than in heavy industry where, however, through control techniques they can contribute greatly to energy efficiency. We have to remember, after all, that in an information-dominated society we shall still need heavy machinery, chemicals and other traditional manufactures, just as agricultural products were still needed after the Industrial Revolution had taken over.

Reduction in the use of fossil fuel by industry, at least in the short and medium term, requires either considerable technological innovation, both in manufacturing methods and in the energy efficiency of those in present use, or else a drastic reduction in industrial activity. This last would necessitate a radical reorientation of the economy taking into account the intricate relationships of economic activity, ecology and technology. This is not a task which governments can be expected to perform effectively: it calls for new forms of government-industry cooperation. Here the Japanese model may have something to teach the West.

A number of European countries, notably Norway, Sweden and the Netherlands, are already discussing these problems seriously and determining targets for their national contributions towards the reduction of the global carbon dioxide. Sweden, for example, has undertaken to maintain carbon dioxide emissions at the 1988 level, while retaining its policy of phasing out nuclear power. How these targets can be achieved is another matter. These initiatives are indeed a useful start and similar exercises are needed in other

countries. Coordinated efforts also exist at the international level and are already being studied by the EEC. The social and economic consequences of a drastic cutting back of industrial activity are alarming and will be taken up later.

The influence of the developing countries on the environment will increase rapidly with demographic and industrial growth, and they will have to share the burden of stabilizing the global climate. Development in these countries will inevitably increase the demand for energy and much of this can only be provided by fossil fuels. The increased use of biomass through new biotechnologies is hoped for, but we must remember that this too generates carbon dioxide. Again increased numbers will mean greater use of wood for domestic purposes, and the burning of wood has a greater greenhouse effect than that of coal. Energy efficiency is thus of primary importance in the developing countries too. So far, industrialization in these countries has been modelled on the pattern established by the industrialized countries of the North. If things continue in this way, the results will be disastrous for the countries in question and for the world as a whole. It is therefore important that the improved cleaner technologies that the industrialized countries are striving for are made accessible to the developing world, incentives given for their adoption, and aid offered in their implementation.

So far we have concentrated on carbon dioxide, the classic greenhouse gas, but a whole range of other minor components of the atmosphere contribute about an equal extent to the greenhouse effect. Methane is one of the most important among these, and its origin requires much more research. Oxides of nitrogen are also critical. Their main source is from agriculture, especially from the present excessive use of fertilizers. This also raises the question of energy use in agriculture, which has increased greatly in recent decades. There is a pressing need for the agricultural authorities to take up the question of making their industry much less energy-intensive and of reverting to more organic systems. This is also desirable because oil prices, and hence the price of nitrogenous fertilizers, are likely to be much higher in the coming years.

> Whatever I dig from thee, Earth, may that have quick growth again. O purifier, may we not injure thy vitals or thy heart.
>
> 'Hymn to the Earth', *Atharva Veda*, 3000 B.C.

We have already stressed the need to halt deforestation as the another means of carbon dioxide reduction. It is estimated that for the world as a whole, a quarter of the emitted carbon dioxide remains due to deforestation; within the developing countries taken as a whole, it is one-half and in Latin

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measuring, for example, the capacity of countries for supporting human and animal populations, or the viability of human and other systems. The belief that monetary management or even manipulation can lead to a proper accounting and evaluation of growth and development needs to be eradicated.

Energy, on the other hand, is the driving force in an economy; money is simply its surrogate. There is surely a strong argument at this stage of human development for devising a new economic theory based on the flow of energy. We hear many proposals for energy taxation which are prompted by present difficulties. These demand consideration. Interesting proposals have also been made for energy to be used as the basis for general taxation, both national and local. Many possibilities are opening up in this new field, and the Club of Rome has proposed a study on the various suggestions for energy taxation for the purpose of controlling the energy consumption in the North and ensuring that in the South development should be on the basis of clean energy.

In conclusion on this theme, we summarize some suggestions for action.

It is urgent that a worldwide campaign for energy conservation and efficiency in its use be launched. To be successful, this will require that world leaders strongly express their conviction that this is necessary and show the political will to implement it. It would be appropriate that the scheme be launched by the United Nations in association with the United Nations Environment Programme (UNEP), the World Meterological Organization and Unesco. A corollary would be the setting up in each country of an Energy Efficiency Council to supervise the operation on the national scale.

The global nature as well as the seriousness of the environmental crisis, especially that of earth-warming, indicates the need for a coherent and comprehensive attack at the international level and at the level of the United Nations. We require much more information about the complexities of the natural system and specifically on the detailed mechanism of the greenhouse and ozone depletion effects. Equally, an estimate of the probable impact of these and other phenomena on the future climate of particular regions is urgently necessary. We are not convinced, however, that these requirements for research, development and monitoring argue for the creation of yet another UN Agency. The need could be met by strengthening the existing agencies, especially those mentioned above, and by giving them a mandate to enable them to cooperate in a jointly planned, comprehensive programme of research.

Even more urgent is the need to create a competent high-level body to

consider in depth and over a long time-frame, the impact of the macro-pollution phenomena on the economy, the society and the individual. In view of the nature of the many facets of this problem and the complexity of the interactions between them, it is hard to see how this could be accomplished effectively in the conventional manner, by a group of political personalities sitting in New York. We suggest, therefore, that the opportunity should be taken to break with tradition in creating a group of outstanding persons — political figures, yes, but reinforced by individuals from the fields of industry, economy and science. It is not sufficient that a group consisting exclusively of politicians should be charged with this task, that is so vital for the future of humanity, no matter how well briefed they might be, by scientists and others in their various countries. It is necessary for independent experts to sit with them around the conference table. Churchill did not get it quite right when he said that 'scientists should be on tap but not on top.'

Security is no longer exclusively a matter of prevention of war. Irreversible environmental destruction is becoming a threat to world security in the same magnitude. To meet the needs expressed above, we therefore reiterate the recommendation in the Club of Rome declaration of 1989 that a world conference on the common environmental imperatives be held, aimed at the creation of a UN Environmental Security Council, parallel to the existing Security Council for military matters. This body would not be restricted to the members of the existing Security Council, but would have a strong representation from the developing countries as well as the non-political members suggested earlier who would take an active part in the discussions, but would not, however, be voting members. If not constituted earlier, this could be a major outcome of the United Nations Conference on Environment and Development to be held in Brazil in 1992.

In addition, we propose the organization, possibly under the auspices of the Environmental Security Council, of regular meetings of industrial leaders, bankers and government officials from the five continents. These Global Development Rounds, envisaged as being somewhat similar to the Tariff Rounds of GATT, would discuss the need to harmonize competition and cooperation in the light of environmental constraints.

The problems of adjustment to the lessened use of fossil fuels necessitates the drawing up of national strategies in order to ascertain the fixed contribution of each country to global carbon dioxide. This will also involve consideration of how to design modified processes and equipment, and the stimulation of research and development programmes for clean energy systems. We propose therefore the creation, particularly in the industrialized countries, of National Centres for Clean Technology. These might well be

organized in association with the national energy efficiency councils proposed above.

The urgent need for an intensive effort to develop alternative energy sources to partially replace fossil fuels demands an immediate and massive world effort. We recommend, therefore, that the United Nations, either directly or through a group of its agencies and programmes, should convene an inter-governmental scientific meeting to plan a comprehensive Alternative Energy World Project. This would entail considerable financial expenditure, with the various elements of an internationally agreed programme being carried out by the most appropriate 'centres of excellence' in the world, irrespective of the country in which they are situated. The matter is so important to the world, and the need to employ the best brains and equipment so essential, that all principles of a national quid pro quo between contributions and benefits would have to be excluded. A network connecting the existing centres of excellence is highly recommended as opposed to the construction of a single international centre with its inevitable rigidities and bureaucracies. The nuclear fission option should be kept open as an emergency measure to meet energy requirements during the transitional phase.

The FAO should be invited in association with the Consultative Group of Institutes of Agricultural Research (CGIAR) to undertake a study on energy used in agriculture, with a view to recommending means of reducing energy inputs in agriculture and, at the same time, of lessening the share of agriculture in the emission of greenhouse gases.

All these measures or any other equivalent actions cannot be implemented unless the public is well informed and understands the consequences of inaction. It is necessary, therefore, that concepts of global development, including the issues of industrialization, be integrated into educational programmes which will include instruction on environmental protection, energy and resource saving, the preservation of cultural values, and many other aspects. We therefore call on Unesco, Ministers of Education, parents' associations, television authorities, and others to undertake this essential task.

Development versus underdevelopment

The third immediacy is a crucial element in the first global revolution. A number of countries of the South are in a constant state of deterioration for a number of causes which we will analyse later. According to World Bank estimates (1990), one billion human beings in those countries are presently living below the poverty line — with an income of less than US$ 370 a year — as opposed to 500 million in the early eighties. It is very likely that the

aggravation of the problems of underdevelopment, poverty, famine and malnutrition will persist in the coming years, despite the building up of zones of exceptional development.

Here it is important to keep in mind the different economic levels from which these countries started out, since, as has been stressed in this book, it is no longer correct to treat the so-called Third World as homogeneous.

In particular, we are concerned about the least developed nations, most of which are in Africa, and many of which gained their independence from the colonial powers only in the post-World War II period. These countries either had to start from scratch, or attempt to convert a colonial economic structure into one which had to be oriented more clearly to domestic needs and national interests. This entailed diversifying both exports and sources of financial support.

The NICs (Newly Industrialized Countries) of Asia have had a different experience, based on a separate strategy, and have been remarkably successful in adapting to the world economy and in raising their own living standards. Other countries, particularly India and China, have quite different characteristics from the least developed countries and the dynamic market economies of the Pacific Rim. The Latin American countries with a long history of independence are nevertheless highly dependent on trade in basic commodities. At the same time, in several major cases, they are undergoing rapid industrialization. Among the Latin American countries, a few notably weak economies are similar to the least developed countries of the world. This is also true of the small island states of the Carribean.

Inadequacies of development policies in the past twenty years. Many of the least developed economies were encouraged to start out by investing in huge industrial and infrastructural projects involving high construction costs based on the capital-intensive Western model. They thereby seriously neglected basic rural and small industry development that could have brought immediate benefit to large sections of the population, instead of to only a small minority of industrialists. Many of those large investments have failed in their objectives of development. Policies adopted from the Western industrial countries have often clashed with local customs and structures, and have been rejected by the very people they were supposed to benefit. People-oriented development was set aside, in favour of projects that only rich countries could afford. Not only was this the result of the desire of leaders to achieve extremely rapid transformation of their economies and societies, but it was aided, abetted and often proposed by international agencies and bilateral North-South programmes.

Such policies have resulted in a series of projects of long durations which, among other things, have plunged many countries into debt and financial disorder, with little solid benefit. Outstanding among these have been the large dams, of which Aswan in Egypt is a leading example, and many more examples could be pointed out in Africa, Asia and Latin America. There has been a catalogue of disasters, with past lessons being neither learned nor understood, hundreds of thousands of people displaced and left homeless, water-borne epidemic diseases disseminated, and local environment disrupted. The ecological and human disasters which have frequently resulted from these large projects have caused unprecedented financial waste. Macro-projects such as Itaipu in Brazil and the Narmada project in India are also telling examples. Iron and steel industries, petrochemical and shipbuilding installations, have mainly proved uneconomical and have come in for much criticism. Most of these projects have also given too little consideration to probable environmental damage, to the effects of population displacement, manpower needs, maintenance, and so on.

In many cases, even in the semi-industrialized countries, industrial development based on import-substitution policies requiring extremely high tariff and non-tariff protection, has produced great disparities between the modern sectors and the traditionally poor rural sectors. As a result, populations have drifted to the big cities to provide cheap labour, joining the already vast numbers of marginalized labourers also originally from rural areas living in subhuman conditions.

> Hunger is ashamed of no one and does not fear God. Only organized and conscious work can make it retreat.
>
> a farmer in Burkina Faso

The people of the slums, the favelas and the bidonvilles. The urban population of developing countries rose from ninety million in 1900 to nearly one billion in 1985 and has since been rising at a rate of over forty million per year.

Two-thirds of the population of Latin America is concentrated in urban areas while urbanization in Africa increased from a rate of 5 per cent in 1900 to 25 per cent in 1985. 61 per cent of the world's total urban population lives in Asia, where the evolution of the rate of urbanization is comparable to that of developed countries. According to the latest United Nations estimates, the number of city-dwellers will be about two billion by the year 2000, with a 109 per cent increase in Africa, a 50 per cent increase in Latin America and a 65 per cent increase in Asia. There are a number of reasons for this.

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Rural depopulation is constantly bringing streams of people into the outskirts of the large cities, driven from their land by poverty and the impossibility of survival, and sometimes as a result of local wars (some twenty in Africa alone) or large infrastructural projects causing the displacement of the population, and so on. It is important to accept, however, that although rural depopulation can be slowed down, it certainly cannot be stopped. One reason is that cities exercise a powerful attraction on the younger section of the rural population who wish to flee an unbearable poverty; for these youngsters, cities with their relative modernity represent hope. Another reason is that any progress in the area of agricultural production deprives a growing percentage of young people of their work. As it happened in Western countries, they go to the cities in the hope of finding a new kind of work, even if it is only small trades.

The true fascination exercised by the big cities on people, young and not-so-young, is based on a set of rational and irrational human motivations. As Mattei Dogan and John D. Kasarda wrote in *A World of Giant Cities*[1]:

> The cities act like a gigantic Las Vegas in the sense that the bulk of their populations are gamblers, though the games are different. Instead of roulette or blackjack, their names are job security, individual social mobility, better access to education for the children and hospitals for the sick. Wonderful stories circulate about the happy few who made it in a big way.

However, confrontation, whether expressed in a quiet or a violent way, is growing between the poor and the rich in developing countries. The Western model is denounced, yet at the same time is envied and hated because of the impossibility of attaining it. The hatred felt by poor countries for the rich is aimed mainly at the West, especially at its most blatant form in the image of the wealth and waste of American society often seen on television. But it is also directed against the ostentation, arrogance and easy life-styles of local elites.

City governments have so far been unable to control the inflow of migrant workers and to provide adequate integration structures, and health and education services for a new underclass that is vulnerable to all kinds of diseases and can take to all sorts of marginal behaviour such as prostitution and drug-dealing.

The need for population policies. We turn again to the central issue of the

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1. Dogan and Kasarda, 1988.

population explosion which must have its place in the resolutique. As already stated, in many countries there is a grim race between population growth and development. So much economic improvement, achieved at the expense of so much human effort is consumed and lost by the impact of increasing numbers. In hindsight, one can only muse about how prosperous countries such as India, so well endowed by nature, would be today had they been able to maintain their early twentieth-century populations.

There is undoubtedly an urgent need for these countries to adopt sensible humanitarian policies of population regulation, and to encourage family-planning measures which would complement the death-control achievements ushered in by improved medicine and better hygiene. One of the surest means of attaining lower fertility rates is through the spontaneous processes that follow economic improvement, but in many places this is a far-off hope, made even more distant by the high rate of population growth, thus creating a vicious circle.

A scientific breakthrough in contraceptive technology is also overdue, especially in producing cheap and widely available oral or other contraceptives which would facilitate population control. Also the direct correlation between fertility and female illiteracy needs urgent attention and research.

Population control, necessary as it is, must be planned in terms of human well-being. It is of paramount importance that all countries striving for development should pay close attention to the design of their population policies. These policies have to be based on a detailed exploration of the demographic growth prospects in relation to resource availability and development aims, including the standard of living which each country hopes to achieve. Only through an informed assessment of such prospects can development planning be realistic. If the public is to respond to population control needs, it must be given sufficient information to understand the dangers of overpopulation for every individual, and the benefits that would flow from restraints on population growth. Such conditions are necessary if population planning is to be implemented in a humanitarian way.

The need for new strategies of development. It is thus clearly necessary to rethink development policies and practices. Much greater priority has to be given to the needs of the marginalized and forgotten millions of rural poor in all parts of the underdeveloped world. It is necessary also to go back to first base and question the underlying assumption of most development policies, namely that the economic success of the presently industrialized countries, achieved through the systematic pursuit of a technology-based economic growth, is the inevitable path that must be followed by all countries and all cultures. The

newer generations in many countries, while by no means rejecting the need for modernization and material improvement, insist on the need to draw on their own traditions and skills in creating their own patterns of development. Imitation is not enough. It is more important for such countries to develop their own capacities for scientific research and technological transfer. In a period of rapid scientific and technological change in the industrialized countries, the importation of traditional methods of manufacture can lead to obsolescence. It is remarkable that in many countries that boast of modern industry and services, malnutrition and illiteracy are widely prevalent, with a large percentage of the population living in conditions of extreme poverty.

Some of these cases have been near-catastrophic with inequality and poverty actually worsening. It is clear that global development cannot continue along these lines. A reversal of these trends, however, also implies radical change in the political systems, stability, elimination of corruption, a setting of priorities based on the needs of future generations, and strong limitations imposed on the uncontrolled spread of corrupt bureaucracies.

In the semi-industrialized countries, especially in those that became heavily indebted during the seventies and eighties, the adjustments that have had to be made to maintain the service of their external debt and to reduce inflation and waste, have forced them to cancel large projects, to redesign their strategies, and, particularly, to reduce the scope of the public sector and provide strong incentives instead to domestic private entrepreneurs. An important role can be played by direct foreign investment in this process. Many of these countries have had no alternative but to create conditions under which their industries must become internationally competitive, following to some extent the experience of the Pacific Rim countries. This process has sometimes been going on at the expense of the domestic market and with great sacrifice in terms of loss of employment and regular salaried incomes.

We cannot ignore the fact that in many countries, especially in Africa south of the Sahara, too low a priority has been given to agricultural improvement. This is due partly to inflated hopes of what might be achieved by industrialization and partly due to the fact that industries arise mainly in or near cities and thus attract immediate attention. In unstable political situations, danger to the authorities is generated mainly in the urban environment. Disturbance and insurrection can easily be incited among the masses of the insufficiently employed poor. Rural opposition, on the other hand, is widely dispersed over the countryside and is thus difficult to organize. The temptation, therefore, is to invest in development projects that promise employment and stability in the urban areas. The consequence of insufficient

agricultural investment has been a main obstacle in the race between food production and population growth. Rural development remains an unquestionable priority because the whole population, rural and urban, has to be fed, and countries must aim to become self-sufficient in the production of food.

It must be strongly emphasized that the problem of the organization of the international market for raw materials has yet to be solved. It is of prime importance to find a way to ensure that the price of raw materials is not fixed by international markets to the benefit of industrialized countries but to the detriment of developing ones.

Local initiatives. Both in the North and in the South, in spite of great handicaps of many sorts, it is remarkable that the willpower of small groups of men and women has managed to start the move towards bringing about improvements for the lower income strata based on their own efforts, with appropriate assistance from central and local governments, international agencies, domestic and foreign non-governmental organizations, and new bilateral programmes.

The Club of Rome undertook a large survey on the role of local initiatives in the rural areas[1]. We focus on this field knowing that parallel initiatives in handicrafts and small manufactures in the urban outskirts are also very effective and should be encouraged. Large numbers of small development projects in agriculture, health and education have sprung up in the poorest parts of Latin America, Africa and Asia, initiated by NGOs, independent organizations, farmers' groups, and village communities. According to estimates made in 1985, over one hundred million farmers were involved in development projects headed by one or several NGOs. The movement is growing rapidly.

Today, NGOs in the South exist by the thousands in India, the Philippines and South America, and by the hundreds in Africa, Indonesia and Thailand. And although their histories are different, they are all participating in a common effort, with only a few resources and some backing from NGOs in the North, to meet needs that are the same everywhere: the basic needs of food, clean water and hygiene. They are also helping village dwellers to realize what their problems are and to participate in a situation where they can take responsibility for their own development. This means getting the villagers organized and trained, and getting everyone involved, including women, outcastes and the disabled. It means making progress by digging

1. *The Barefoot Revolution* (1988), a report by Schneider.

wells or building tanks to collect rainwater for irrigation, improving the quality of seeds and livestock, planting trees, building latrines, educating children and encouraging savings. Local savings, mostly made by women, are a fundamental investment for the future that should particularly be developed. Throughout all this, we can never overestimate the essential, irreplaceable role that women are playing in development all over the world.

NGOs and volunteer agencies have made a decisive and vital contribution, especially in the poorer regions of the world. There is no doubt that these actions will spread, for word about the villages that have come back to life gets around very quickly, reaching even the most distant villages in the desert, jungle or mountain. And villagers who were thought to be inert, fatalistic and resigned — when in fact they usually had no hope left and were too hungry to work — are beginning to believe that it can work for them too and are finding the will to improve their own lot and build a better future for their children. Priority must therefore be given in many places to small-scale projects, properly integrated into a global strategy.

In addition, to avoid financial waste and the unwanted consequences of the large-scale projects we mentioned earlier, and to make the best of the lessons learnt from previous experience, it seems necessary to reverse the process that has been engaged in so far and start favouring small-scale projects needing far less investment and resulting in progress that is beneficial to the majority of people.

At a time when financial resources are becoming even scarcer, the current situation demands that NGOs in the North, and the international agencies and financial institution in particular, review the policies they have applied so far. Part of the investments planned for large-scale projects should be transferred to finance small-scale projects. The advantage of the latter is that they train the local men and women and set up the structures – village communities, farmers' associations – to launch a development based on the people's own needs and options, implemented with their active involvement and under their supervision. The replicability of the projects from village to village is starting to have a multiplying effect on the progress of development of groups of villages, then of regions.

Beyond a certain stage of this kind of development, medium-scale works like roads, markets, small hospitals, and schools become indispensable. Thus villages and NGOs have no choice – even though it may seem difficult – but to pursue action on these matters in a concerted movement on government policies. In the same way, home industries, small business firms or handicraft enterprises can be set up and give access to new productions and therefore new modest incomes.

The role of governments. This global vision of rural development based on new perspectives and priorities requires full recognition by governments of the role of local initiatives and NGOs. In fact, if a government decides to implement a rural development policy, this assumes that it has made essential political choices that must in many instances include land reform, population policy and development of small-scale health facilities. However, the recognition of the effectiveness of NGOs by governments has often remained rather theoretical.

Again and again it has been observed how the results of small-scale projects are compromised by the application of practices and even policies that are in contradiction to the type of development they stood for. Purchase prices for farm products do not sufficiently remunerate the farmers for their labour and discourage instead of encourage them to increase production. Similarly, direct and indirect taxes on the national level are bitterly felt in rural areas, where income is generally very low. Government taxation with its resulting financial burden could well slow down or put a stop to all small-scale project efforts, however much external financial aid there is. When governments have decided to support this approach to rural development, they must then modify their political and financial options and adopt a policy of higher buying prices for village products, as well as relieve them of some of the tax pressure.

Rural development based on small-scale projects also demands that governments implement national planning policies favouring road-construction and the development of intermediate settlements between villages and big towns. The absence of roads excludes a large number of village communities from normal trading and makes them live in a 'closed circuit'. Some of them have built roads or bridges themselves, but they are not equipped for such tasks, which should be planned on a national level and carried out on the systematic basis of a policy. Similar problems arise in the area of primary and secondary school education, hospitals, higher-level training, and leisure activities for the young.

Moreover, corruption must be fought at every level of the administration, and this implies, among other measures, the training of lower-level civil servants in order to motivate and involve them in a development policy that should be well understood as a national priority.

We shall argue later that a major need in the development of the South is the creation of an indigenous capacity in each country for research and development. However, scientific careers have remarkably little prestige in many Southern countries. In such societies the more gifted individuals are recruited into fields other than these undervalued scientific careers. A number of them are doing research abroad, usually in Western countries. A

major consideration in any national science policy has to be the establishment of the basic conditions and facilities to attract this reservoir of talent back to the region and retain those already there by more consideration and better salaries.

A last word should be said on the flight of capital which in some developing countries represents such an amount of money that it is almost equivalent to their total external debt. Such a paradoxical situation should certainly be changed by governmental decisions and regulations.

The growing awareness of all these facts amongst the population will certainly play an essential role in pushing governments to give more attention to them, as has already been the case in some African, Asian and Latin American countries.

The role of international institutions. In the past years, international financial institutions such as the World Bank, the European Economic Community and Japanese Official Development Aid have become aware of the problems of rural development. The regional development banks in Latin America, Africa and Asia, as well as those in the Middle East, should increasingly emphasize this type of operation. There is a new trend, as yet quite modest, of the direct provision of financial means to small-scale projects without going through the government. This increases the probability that the money will reach its destination without being diverted on the way, as was often the case in the past. But there is a certain structural incompatibility between large bureaucratic administrations and small NGOs. The innovative enthusiasm of the latter as well as the daily urgency of their field work, leaves little time to deal with the bureaucratic requirements and administrative details expected of them.

To promote and accelerate this type of rural development, we think these institutions should devote a greater part of their budget to local initiatives and small-scale projects. This would strengthen their efficiency and encourage the growth of small-scale industries. They should also establish an advisory committee made up of representatives of Southern NGOs and organizations such as the Club of Rome, to extend their knowledge of the field, to guide them in their selection of cases deserving of financial support, as well as to contribute to the evaluation of the results of such aid.

The most immediate responsibility of the international institutions, however, has to do with the debt problem in developing countries. It is fitting to emphasize the positive moves that have taken place in the last few years, which began with the agreement signed between the International Monetary Fund (IMF) and Mexico in 1986, establishing a link, for the first time, between

the level of growth of a country and the level of its debt payments. The evolution of thought with regard to the solution of the debt problem today can be observed as much in the debtor countries as in the lender institutions.

In the debtor countries, the debt crisis has begun to induce a revision of development strategies and the implementation of policies aimed at reducing budgetary imbalances, fighting inflation, engaging in economic and financial recovery programmes, and establishing control over economic policies. Lender institutions, the IMF in particular, now view the demand for re-adjustment with a keener awareness of the social consequences of unnecessarily harsh terms. It has become clearer that the debt problem can only be solved in the long term and only if — as is acknowledged in the plan proposed by the US Secretary of Treasury, James Baker — growth resumes, both in the countries of the North and in the those of the South.

Very recently there appears to have been a reorientation in the thinking of the leaders of the international financial organizations. For example, Enrique V. Iglesias[1], the president of the Inter-American Development Bank, while discussing the transfer of real resources to developing countries, states:

> Among the areas of activity targeted by the Bank, a few stand out for the high priority they have been assigned, namely: the promotion of economic investments in key sectors of the economy such as energy, transport, communications, agricultural and industrial development; the alleviation of the social debt in the region (e.g., assistance to the low-income segments of the population, cooperation for urban and agricultural development, promotion of small producers, enhancing women's participation in development); the support for the modernization of the private sector (e.g., loans and equity investments by the Inter-American Investment Corporation, and loans and technical cooperation from the Bank in the areas of trading systems modernization, export capacity development, financial sector modernization, cofinancing, and support to microentrepreneurs); the promotion of human resources development, particularly in the scientific and technological areas; and, finally, the promotion of environmental management and conservation of natural resources.

One important task for the Club of Rome is to convince policy-makers that it is possible for North and South to work together so that development no longer demands such a high price of the regional and global environment.

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1. Address on September 24, 1990, to the joint Committee of the Boards of Governors of the Bank and the Fund on the transfer of real resources to developing countries.

Development planning can rely on already available advanced energy-efficient and materials-efficient technologies. It can encourage efforts to build up indigenous capabilities for scientific and technological research in the developing countries. It must emphasize the use of local resources and renewable energies to lead to a decentralized and balanced pattern of development. At first sight, the financial burden involved may seem too onerous for developing countries. It need not be, if aid-to-development policies can be designed to ensure that adequate use is made of the technological advances achieved so far. Seen in a historical perspective, developing countries now have a great advantage: they are building up their capital stock at a time when new technological options are becoming available. We have to ensure that these options do not remain the privileged possessions of the North, but can be accessed by the South on affordable terms. This would be possible if, for example, a part of aid-to-development funds were to be used to give compensation to the enterprises in the private sector for sharing their technological know-how.

Moreover, we have to ask whether current conditions allow us to envisage successful international cooperation on the necessary scale. Two potential obstacles might bar the way. The first is political obstacles. Relaxation of tensions between East and West has pointed to the emergence of a new international climate and this process may continue, despite worrying signs of reactionary tendencies within the Soviet administration. This might slow down the democratization process or even take advantage of the present economic fiasco to re-emerge as a political force. The new climate raises expectations about East-West relations, but not necessarily about North-South relations. Indeed, confrontation between East and West in the past often led to competition in offering assistance to developing countries for political or trade-related advantages. However, an attitude verging on impatience has now become apparent among many economists and policy-makers in the industrialized world of the North. They seem to feel that while restructuring the former Eastern bloc is a practical proposition, development of the South remains an intractable problem. Furthermore, the Gulf War has given rise to increasing tension between North and South. The growth of fundamentalism in the Islamic world threatens not only the objective analysis of economic interest, but also what has been a long tradition in much of the Arab world of tolerance for non-Muslim beliefs.

The Club of Rome can make its own contribution here. Measures to find a policeable mechanism which will permit development to take place without unduly expanding total world resource use, and other measures to condition market forces to take into account long-term, hitherto unquantifiable

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8. Governance and the Capacity to Govern

The complex of problems that we have described leads to the question as to how they are to be mastered through policies that take full account of their mutual impact. Are the traditional political, institutional and administrative systems capable of facing such a situation? Knowing how to make the right decisions in full knowledge of the facts and then implementing them in time is no easy matter; yet it is a fundamental element of the problematique. The deficiencies of governance are at the root of many of the strands of the problematique and hence improved governance is an essential aspect of the resolutique.

In this chapter, we shall examine the origins of some of the problems of governance, its new dimensions, and the adequacy of its present responses. We shall also make some suggestions for changes which might contribute to the resolutique.

We use the term 'governance' to denote the command-mechanism of a social system (and its actions), that endeavours to provide security, prosperity, coherence, order and continuity to the system. It necessarily embraces the ideology of the system, which may (democratic) or may not (authoritarian) define means for the effective consideration of public will and the accountability of those in authority. It also includes the structure of the government of the system, its policies and procedures. Some might even say that governance is the means to provide a stable equilibrium between the various centres of power. Seen in a broad sense, the concept of governance should not be restricted to the national and international systems but should be applied to regional, provincial and local governments as well as to other social systems such as those of education and the military, to private

enterprises, and even to the microcosm of the family. Governance attempts to apply at least a semblance of rationality to the irrational, subjective, and often contradictory behaviour of politicians, economists and the rest of us.

It is unwise to overgeneralize on the concepts of governance; different countries have different approaches as well as different problems. Nevertheless, predominantly Western ideas have stimulated economic growth and material progress in a large part of the world and have brought with them Western structures and concepts, now generally accepted, although with many variations and diverse interpretations. The idea of governance is not new; its core components go back at least five thousand years, or probably much longer than that.

We have already underscored the mismanagement of the world, evidence of which is all around us – oceans of misery and poverty, the arms trade, crippling indebtedness in the developing world, huge annual deficits in the United States with a national debt of some US$ 3 trillion, rampant speculation, corruption, and violence. Are we to conclude that the world is impossible to govern? Are our governors incompetent or ill-chosen? These are doubts which public opinion is raising and citizens are discussing – much more incisively than the politicians themselves. We have to ask ourselves three basic questions:

(1) Do we, at the end of this century, properly understand our world, or are our concepts and approaches no longer suited for the complex and dangerous situation we face?
(2) Why, in spite of growing concern over several decades and innumerable international debates and many constructive proposals, have action and practical results been so limited?
(3) What suggestions can now be made for steps to improve the effectiveness of the processes which should convert widespread concern into practical action?

The dangers of ineffective governance are present at different levels; at the level of the individual and the family (which we have discussed in 'The Human Malaise'), at the levels of the national and the international political systems.

New dimensions of the problem of governance

Since the end of the Second World War, the activities of governments have increased enormously and, at the same time, many areas under their jurisdiction demand highly specialized technical understanding. We must therefore stress how much the complexity of national and international

systems has grown. As André Danzin[1] puts it,'this sudden rise in complexity has thrown us out of a social system that was accessible to logic and thrust us into a social organization dominated by cybernetic reactions.' In a very complex environment with instabilities and imbalances, as is the situation of humankind today, the feedback systems are so numerous and so intertwined that it is difficult to design them within a comprehensive model. It is even less possible to grasp such systems through common sense and intuition, or even to draw up an approximate mental image of them. The solution of problems within this complex system is therefore difficult, made all the more so because in many cases public acceptance of solutions is unlikely.

What gives rise to this growth of complexity? We mention here a few of the factors operating on both the national and the international levels:

(1) the increased speed of technical, economic and demographic changes;

(2) the increase in the number of actors in the systems to be governed, whether a big city, a country, the vast areas of the South, or humanity as a whole;

(3) the increase in the number of sovereign states playing an active role in any given international system;

(4) the extent of interdependence between national societies over a wide range of matters such as transfer of knowledge, periodic or permanent migratory flows, cultural influences and economic exchange;

(5) the coming into contact of heterogenous societies, differing in their cultures, values, political traditions, and standards of living;

(6) the erosion of national sovereignty. According to Mr. Soedjatmoko[2], 'In the process of interdependence, we have all become vulnerable. Our societies are permeable to decisions taken elsewhere in the world. The dynamics of interdependence might be better understood if we think of the globe not in terms of a map of nations but as a meteorological map, where weather systems swirl independently of any national boundaries and low and high fronts create new climatic conditions far ahead of them';

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1. Former general manager of Thomson CSF, member of the Club of Rome.
2. A former president of the United Nations University and a former member of the Club of Rome, Mr. Soedjakmoto, now deceased, wrote this statement in a paper contributed to the Club of Rome annual conference of 1985 held in Santander, Spain on the topic of 'Governability of a World in Transition'.

(7) the enormous volume of information, the speed of communication and the importance of the media as amplifier, selector, filter, and distorter of what passes as information – despite the fact that in the South access to information is still very limited;

(8) the emergence of a new world technical system based on microelectronics;

(9) the appearance of problems demanding management on a global scale of mankind's common heritage in areas such as climate, environment, the exploitation of the oceans and architectural monuments;

(10) the simultaneous consequences of technical development and the fragmentation of political power on the security of national societies;

(11) the dilemma of swollen bureaucracies. The nature and diversity of the problems to be solved and the systems (health, welfare, etc.) to be managed, encourage the growth of large bureaucracies, which are considerably more resistant to change;

(12) in some national societies, changing individual attitudes have led to increasing demands for services from the government. Citizens find it hard to believe that governments are unable to find solutions which will not cause them hardship or inconvenience. Simultaneously, there is a decline in respect for authority and a lessening trust in and support for institutions.

Although far from exhaustive, this list suggests that the effects of most of these factors will be felt with increasing intensity during the next twenty to thirty years. These new dimensions of governance place an entirely new historical situation in front of humanity. We must, therefore, not be surprised by the inadequacy of many of the solutions currently proposed for the contemporary problems.

The inadequacy of the responses to current problems

It is necessary to stress once more that the existence of tragic situations, such as military conflict, threats to peace, violation of human rights, environmental damage, and the intolerable persistence of widespread poverty and hunger in the world, demonstrate the malfunctioning of the world system. Demographic, economic, political and environmental trends of global dimensions, have combined in recent years to create a qualitatively distinct category of practical problems that were virtually unknown to traditional diplomacy. They are beyond the reach of individual national governments, cannot be fitted into accepted theories of competitive interstate behaviour and

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> overlap of the confusing mass of specialized units. As was inevitable, many of the agencies gradually began to cultivate their vested interests. Staff was recruited less on quality, than on assuring through quotas an equitable distribution of posts to each member country. At the same time the effectiveness of some of the main agencies was diminished by bureaucratization and politicization.

Attack on the complexity of the contemporary problems entails a double risk – that of excluding public opinion and elected representatives from the knowledge necessary for the understanding of a situation, as well as that of strengthening the influence of specialists and experts whose arcane knowledge is difficult for the decision-makers to appraise and check.

The complexity of the problems has been compounded by the number and complexity of the actors: political parties, trade unions, corporations, non-governmental organizations, pressure groups of all kinds including informal groups which may be short-lived but nevertheless intense and effective in their mobilization on a particular issue. These various groups contribute to governance through their proposals and protests. Governance is no longer the monopoly of governments and inter-governmental bodies, and its effectiveness will depend on the capacity of leaders to selectively include in their decision-making process these new actors, who are in fact their partners in governance.

The structures, policies and procedures of governments

Increasing obsolescence is thus a major characteristic of governance today. Its structures are basic, designed more than a century ago to meet the needs of much simpler societies than the present ones. Some important innovations have certainly taken place in the meantime, such as the emergence of universal suffrage, the evolution of the welfare state, and a recognition of human rights, but by and large change has been incremental or by way of an improvement of the already existing structures. As the range of governmental intervention has increased, it has been accompanied by high costs, swollen bureaucracies and inefficiency. Here we shall mention only a few of the areas where major innovations in structure and attitudes are most urgently required.

One such area is the need for better mechanisms for the integration of sectoral policies in order to deal with the interaction of the problematique. In general, government structures consist essentially of a series of vertical ministries for sectors such as agriculture, industry, education, health, defence and foreign affairs, together with the central financial and economic mechanisms. This system has hitherto worked moderately well, but today

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However, experience showed that the barriers between sections of a department could be as impenetrable as those between the former separate ministries.

A second area of difficulty concerns the conflict between long-term and short-term issues. This is a major endemic problem. The normal parliamentary cycle of four or five years between elections is a feature of democratic governance. The power game of party politics ensures that both administrations and opposition parties have to respond quickly to issues which are of immediate concern to the electorate, if they wish to retain or to win power at the next election. Thus governments, like individuals, tend to ignore problems that can be put off till tomorrow – in this case until after the next election. This has probably mattered little in the past, but in periods of rapid change such as the present, what formerly appeared as long-term tends to race into the period just five to ten years ahead i.e. into the period of the next administration. As a consequence, the new government inherits a legacy of neglect; untackled problems come home to roost, become compounded and there is a descent into crisis government, a staggering from one emergency to the next – which range from dealing with monetary and social problems, balance of payments crises, unemployment, inflation, and so on. Each crisis is usually resolved by pasting paper over the cracks; remedial measures seldom reach the roots of the difficulty. Fundamental causes of difficulties, being long-term in their operation, are too easily ignored or go unidentified in favour of cosmetic measures of ephemeral effectiveness.

A further critical area is that of the appropriate levels of decision-making. The current situation is somewhat a paradox. The complexity and highly technical nature of problems encourages the centralization of administration for their analysis and solution, since this would be difficult for regional and provincial bodies to organize. Also the global coverage of so many problems which demand attention on the world scale, would seem to require centralized national decisions. At the same time there is an increasing clamour for decentralization, regional autonomy and greater participation of the individual citizen in decisions which affect him closely. This tendency is being strongly reinforced at present by the demands for independence or autonomy of innumerable ethnic groups, as illustrated by the situation in Yugoslavia and the incredible secessionist tendencies in the Soviet Union.

These two approaches are indeed two sides of the same coin, perhaps growing pains in the transition of the nation state towards some new kind of global system. In the medium term, the main issue is how to establish, in a manner aiming at harmonious governance, a system in which there will be several layers of decision-making, in which the basic principle will be to

ensure that debate takes place and decisions are made at the closest possible levels to those who will enjoy or suffer the results. For the global problems we need a global forum and, at the other extreme, local matters call for a town or community meeting rather than edicts emanating from a remote and seemingly uncaring central government.

Finally, a few words about the bureaucracy. In many countries there is general public criticism of the size and power of the bureaucracy which seems to enjoy inventing petty restrictions to freedom and unnecessarily complicating the life of citizens. It is felt to be remote, unresponsive and unfeeling, made up of people with tenured jobs who revel in exercising their petty powers. No matter how intelligent and objective the Civil Service may be—and in many countries this is uncontroversial—it is a fact that its members are selected to provide stability and continuity as political administrations come and go. Hence they are seen to stand for the status quo, to be the apotheosis of inertia and resistance to change, especially radical change. In some instances it is felt that the faceless Civil Service is out of the control of its political masters and thus not accountable to the people. It is certainly very difficult for a minister to master all the details of his departmental activities, of which he has probably had no prior experience, while his officials, very efficient and well-informed, 'know all the answers'.

There is undoubtedly some truth in such criticism, but sometimes there may be a great deal of benefit for an inexperienced minister in the informed cautious advice of the official. The considerable extension of government responsibility in recent years, in so many aspects of life has inevitably led to an increase in the size of the bureaucracy, and in some instances such as defence, to the perpetuation of power and unsuitable policies. Internal policies may thus at times be responsible for creating dangerous and partly concealed vested interests.

SOME IMPORTANT ISSUES

Having outlined some general thoughts on governance, we feel it necessary to discuss some aspects in more detail.

Resistance to change

Governments seldom generate innovation. They react to pressure for change which arises from popular demands, either through the democratic process of elections or in the aftermath of a successful revolution. However, in reacting to demands for new approaches, the natural conservatism of administrations (and not merely its civil service component) is often able to put the brakes on change. Their approaches are essentially linear and are based on either rigid

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friction' in management-labour relations was justified in the context of the continuous improvement of the condition of the workers, while in politics it has done a good deal to prevent excessive complacency and stagnation. However, it has also gone too far sometimes, for example when party interests have been placed above the national good. While in no way arguing against party politics as such, there are strong reasons for attempting, in both political and industrial relations, to inculcate a change of attitude in the direction of consensus-building. In face of the gravity of the decisions that will have to be taken in the near future, artificially stimulated party rivalries, motivated by attempts to win popular votes at the next election and often not even based on real ideological differences, could lead to disaster. There is an overwhelming need to establish a consensus between political parties claiming to be custodians of the national good, if we are to weather the many storms ahead. To this end it would be useful to bring together representatives of different parties in a non-political forum such as might be provided by the Club of Rome and similar bodies, for the discussion of specific issues.

Government and the forces of the market

In East Europe, abandonment of state-planned economies in favour of democracy and free-market economies has inevitably indicated the need for economic efficiency based on competition and incentive, i.e. to accept and operate the forces of the market. This has led to widespread euphoria in these countries which have assumed that this is the panacea for their economic ills. While we fully agree that these countries need to operate their economies on the basis of the market forces, we have already warned of the danger of relying exclusively on these forces. It is thus necessary to discuss briefly the relationship between governments and the markets.

The market is ill-adapted to deal with long-term effects, inter-generational responsibilities and common property resources. It responds essentially to short-term signals and thus its indications can be gravely misleading if applied to long-term needs. The system of the market economy is based on competition and is motivated by self-interest and ultimately by greed. In the absence of all restraints, the operation of the market forces could lead to exploitation, neglect of social needs, environmental destruction, and the unchecked consumption of resources essential for the future. However, society demands and industry and commerce accept that there has to be an agreed system of ethics, within which the market is operated; the system is thus self-regulating to some extent.

The market system thus certainly has flaws. Nevertheless, competition and incentive are undoubtedly effective in the current allocation of resources, in

developing new technologies, and in the generation of the material prosperity which the industrialized countries enjoy today.

Even those governments that are most devoted to the concepts of private enterprise, recognize the need to define the boundaries within which the market can function. In the general public interest, governments have to provide a firm framework of regulations for the private sector and to effectively establish mechanisms for the correction of abuses. At the same time governmental policies are necessary for the establishment of an economic climate conducive to the efficient functioning of the market within the country and for ensuring that its products are competitive in the international market. Government strategies should also provide incentives for long-term development, for example fiscal and other incentives, and should encourage industry to invest in scientific research and technological development aimed at long-term sustainability. Japan has been particularly successful in developing a system combining business initiative and government incentive. Close collaboration between the public and the private sectors has been established as a basis for long-term technological development, particularly through publicly financed research programmes, with the wide participation of private enterprise.

It is particularly important at the moment, that those countries which are now moving vigorously from centrally planned to market-oriented economies, should recognize the limitations as well as the benefits of the market economy.

Humanity in Politics

There is a need to introduce a new strain of humanity into politics. Recent years have seen a marked loss of confidence in political parties and personalities, contempt for bureaucracy, voter abstention, and a general alienation from the establishment and society. This may be due partly to overcentralization, which depersonalizes the system, and partly to bureaucratic oppression. It is a symptom of deep malaise. Leaders and bureaucrats seem to have forgotten that politics (as economics) is concerned with people and is meant to serve people. Until humanity and compassion permeate politics and politicians go beyond merely kissing babies during election campaigns, alienation will persist.

The International Dimension

We have already touched upon several difficulties of international governance, at which level many of the national problems tend to accumulate and become compounded. The trend towards globality and the recognition

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certain problem areas as necessitating a combined approach from several of the specialized bodies. Programmes could then be set up in which the agencies could take part by contributing both finance and expertise, with some support from the centre where appropriate. Such a scheme would mean greater influence of the UN centre in the work of the specialist bodies, but this might not be a bad thing if it could be done with minimum bureaucratic interference and if the programmes were genuinely autonomous.

New approaches are also needed in the working of some of the individual agencies. Inter-governmental organizations, just as governmental agencies on the national scale, are not the ideal locations for conducting research on this. They can stimulate research, formulate problems, and provide for useful international discussions, but the lack of sufficient funds prevents them from undertaking research in depth. Their work is essentially catalytic.

The vast number of topics which an organization such as Unesco has to examine makes it impossible to have a competent staff, expert in all the details of the subjects covered. Furthermore, areas of particular concern necessarily change, so that many matters that are in focus are only temporarily on the agenda, with the new points of attack requiring quite a different set of skills. This problem is dealt with by the use of consultants in most agencies, but it seems more efficient to adopt a policy of delegating responsibility for particular studies to the most competent institutes in the world for each subject undertaken.

Selection of competent individuals should be essentially on the basis of quality and there should be no question of applying the principle of the 'juste retour'. With such a system, the headquarters will have a staff consisting of the best-trained individuals with most wide-ranging interests, and contacts could be kept quite small.

Finally we must mention the question of leadership, with especial reference to the high qualities looked for in the person who is the Secretary-General. This subject has been usefully discussed in a recent report of the Dag Hammarskjold Foundation. The UN Charter described the holder of the post of Secretary-General as essentially the chief administrative officer of the organization, but it soon became obvious that important political mediation and leadership functions were inevitable. In the reformed and active United Nations of the future, the image of the Secretary-General is vitally important. For millions of people throughout the world he personalizes what would otherwise be seen as yet another vast bureaucratic machine. This individual is required to possess almost superhuman qualities. He or she (there has not yet been a feminine candidate) must be brave and at the same time cautious, as well as highly intelligent, diplomatic and innovative, have an outstanding

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in a way which encourages them to identify with it;
— the capacity to relegate strategy and tactics to their proper place as the means and not as ends;
— willingness to set up systems through which they can listen in to the needs of the citizens, their fears, demands, and suggestions.

These then are some of the desiderata. What about the present realities? At present, even in those countries where corruption in government is not rampant, the rewards of leadership, which in theory are those of serving society and the satisfaction of doing a good job, are in practice all too often enjoyment of power. Hence, those who present themselves for election, tend to be individuals with more than the average vanity and urge for power over others. These are hardly the criteria for the selection of the wisest people to guide the world through the difficulties of the revolution. As things are now, many people of high quality who have the potential to become national or world leaders avoid entering the political arena with all its vulgarity and back-biting and the paucity of its rewards to those for whom power is not the primary consideration.

Much attention is therefore required in the selection of our leaders. At present, this is done by a survival-of-the-fittest process which tends to select persons who are overtly self-seeking and at times even willing to sacrifice the common good for their personal or party ambitions. The qualities which are essential for the attainment of high office are thus frequently the very attributes which make the individual unfit for it. Charisma is an extremely important asset for a leader, but it is not the only requirement and is very often associated with other less desirable qualities. Yet, thanks to television, charisma is probably the most important ingredient in winning elections. It is difficult to see how this can be changed; it will certainly not happen from within the system, and there is therefore a need for wise individuals without political ambition to point out these problems to the public.

Political decisions are seldom based on rational thinking. They are normally based, in each individual case, on a complex mixture of intuition, experience, personal and often unconscious motivations, and constraints of political dogma and expediency. This is unlikely to change, but the process can be improved; better and more thoroughly analysed information can be made available, motivations can be more consciously recognized and thus modified, and expediency can be replaced if the system permits long-term considerations.

In the changing circumstances we have mentioned throughout, it is essential that forward-looking governments at all levels develop some measure of policy entrepreneurship, and not merely maintain stability and harmony

amid the whirl of confusing events. It is necessary that the ship of state should not only be kept afloat, but that it should be steered, surely and deliberately, toward a desired destination. Thus to a degree, future governments must learn to become social architects. For this purpose, a much deeper and continuing discussion of issues is required within the framework of national and world trends. The staff function becomes even more important and the whole art and science of policy advice comes into question. Policy advisers should not all be officials, but should include individuals from many disciplines and without political party affiliations. The subject of policy analysts is open for discussion and much thought must be given as to how this aspect of the staff function can be utilized.

9. Agents of the Resolutique

Adjustment to change is the fundamental challenge that underlies all the constituent elements of the problematique analysed in the first part of this book, a challenge addressed to all the people of our planet, whatever their culture, training traditions, religion or philosophical outlook. The primary agents of the resolutique are those that will allow individuals and societies to learn how to adapt to the changes that are constantly modifying the face of the planet.

Any change, for the better or for worse, involves learning, self-examination, and one's relationship to others and to the environment. Inner questioning demands effort and will inevitably be difficult. Having been brought up to take a firm stand on their certitudes — values, profession, faith, and so on — human beings are now facing not one change, but an uninterrupted chain of changes that affect the very orientation of their lives. To make things more difficult, changes are succeeding one another with unprecedented speed. The challenge is therefore not to adapt once and for all to a new situation, but to get into a permanent state of adaptation in order to be able to face uncertainty, the new dimensions of complexity and insidious or brutal changes, and avail of potential opportunities affecting our world as a whole and each human being in his or her immediate environment.

A mutant situation such as this does not mean that the human being should passively allow himself to be altered by changes or suffer them without a reaction. Neither does it imply that he must live under permanent stress because of not knowing how to understand or adapt to the unprecedented phenomena. What instruments can he use to understand the changes and safeguard his freedom? How can he become, not an isolated spectator

wallowing in his own pessimism, but an actor, organized and capable of contributing through his spirit of innovation and his will-power to the building of the kind of society he deeply desires.

The individual has three agents of the resolutique at his disposal to help him through this transitional period. There is nothing very new about them, but the resolutique approach gives them the proper dimensions. They are: the learning challenge of education, the contribution of science and the new technologies, and the role of mass media.

In all the preceding chapters, we have used different terms to refer to the same imperative: to learn, to understand, to communicate, to inform, to adapt, to manage. These words have rung insistently throughout because, in fact, the problem of education constantly appears as a leitmotif— learning in and from life and not just what is taught in school, understanding the changeable world in which we live, adjusting to new technologies, engaging in interdisciplinary communication of the global dimension into which we have been projected, acting with a sense of responsibility. Education is all this, even if the term may seem worn out from overuse. Indeed, the educational systems of most countries are undergoing a crisis and seldom satisfy existing needs. We now have to define other objectives and other priorities for education, as we are increasingly aware that the educational systems, the schools, the universities are only partly ensuring what we call education, and that the family, the professional framework and many other social cells are, on various levels, playing the most important roles in education. The crisis in education makes it an essential element of the world problematique, but it is increasingly appearing also as a privileged agent of the resolutique. This is why it requires prime articulation in the problematique-resolutique pair.

The challenge of learning

First of all, we must repeat that in our view the term 'education' goes far beyond that imparted by the existing school systems. We see the most important task of education *as learning how to learn*[1]. It may be a truism to say that education is the key to improving the quality of human resources. But education must be understood as consisting of a series of processes that not only shape vocational qualifications, but also enable the individual to actualize his or her potential by absorbing and mastering the cultural factors necessary for intelligent participation in society, for the acceptance of responsibility, and for the maintenance of true human dignity.

Unfortunately, knowledge and social relations have reached such a state of

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1. See *No Limits to Learning*, report to the Club of Rome, (Botkin, Elmandjra, Malitza, 1978).

complexity that the educational system has become a natural prey to three afflictions – plethora of knowledge, anachronisms, and unsuitability.

This *plethora of knowledge* applies to all age levels. The sheer scale of the accumulation of knowledge in all fields means that we no longer know how to select what should be transmitted to children and students. To cite an example, the quantity of scientific and technical publications in 1986 alone equalled and perhaps surpassed that of all scholars and experts from the remotest past up to World War II. How is such a flood of information to be sorted out? How is it to be transmitted? How can we select what is to be transmitted?

Anachronism occur because this flood of information is constantly being renewed: ideas are modified as new knowledge is added on and qualifies the old. Yet, practically nowhere are primary and secondary teachers retrained. They teach what they were taught twenty years before in quite a different environment. Even with retraining – which would be immense progress in itself – they would still be behind times since it is not possible to pass on knowledge until it has matured and been fully absorbed by the brain, and this process takes time.

Unsuitability is what confused children and young people feel characterizes the conventional education they receive, since it does not properly relate to the world they have to face. Television and strip cartoons, novels and science-fiction films, the universe of concrete, glass and aluminium, all seem a very far cry from what is taught at school. All too often, vocational training does not prepare them for the true needs of the labour market and sometimes even trains them for jobs that no longer exist. This situation is difficult to remedy since the effects of structural and curriculum reform – with all their unwanted side-effects – are felt only in the long term, after at least ten or fifteen years. Moreover, the actual length of that long term cannot be predicted.

> Listen, look, understand, for thus it is on earth. Do not be idle, do not walk aimlessly, do not wander without a destination. How should you live? How should you go on for a short time? They say it is very difficult to live on the earth, a place of terrific struggle, my little lady, my little bird, my little one.
>
> a maxim from *Huethuetlatolli*[1]

If education has been traditionally considered as a function of teaching,

1. A 13th century pre-Colombian quotation collected by Bernadino de Sahagún.

today and even more in the future, education should mean the *permanent process of learning* by every human being in society. Learning how to adapt to change has become one of the new primary objectives of education.

From their very infancy, human beings begin to learn by acting, participating and experimenting, and not merely looking on passively. Even in early childhood, a human being is learning to be a protagonist rather than a spectator. It is through this active relationship with his human, natural and physical environment, and solely in this relationship, that a person's sense of independence, personality and creativity will reach a high level of development. It should be remembered, though, that to act positively does not imply the non-observance of all rules or the rejection of restrictions.

The education of every human being at any age must embrace the multiple functions that mark the learning process and guide it towards the immediate future, with the following objectives:

—acquiring knowledge;
—structuring intelligence and developing the critical faculties;
—developing self-knowledge and awareness of one's gifts and limitations;
—learning to overcome undesirable impulses and destructive behaviour;
—permanently activating each person's creative and imaginative faculties;
—learning to pay a responsible role in society;
—learning to communicate with others;
—helping people to prepare for and adapt to change;
—enabling each person to acquire a global view of the world;
—training people to become capable of solving problems.

In the world of today, these last four points constitute the only way to prepare future adults to face the world of tomorrow, but they are still practically ignored in the classic educational processes. All kinds of more or less convincing reasons are produced to explain this gap—from the overloaded curricula to the inadequate training of the teachers in quasi-explored fields. Some countries, such as France, have introduced a compulsory subject which they call Civic Education in the school curricula. It seems obvious that 'World Education', as a subject, or better yet 'Introduction to the Great World Problems and the Problematique' should henceforth be a compulsory subject in the education of children and adolescents.

The role of the teacher to whom the future of the child is entrusted is one of the most noble roles of society and requires dedication. Yet in many places the teacher is undervalued, underpaid and given a relatively low status in society.

adjustment to change and the management of instability so as to be creative.[1] For their spiritual and intellectual balance, for their ability to overcome so-called stressful situations, they need new arms which they can actually find within themselves, though they are not aware of them and have never practiced using them. They will have to resort to combinations that have been scorned for too long. 'The human being is a thinking reed,' wrote Pascal. But that which is cerebral and intellectual in a human being cannot approach as mysterious a truth as reality unless it resorts to searching the apparently irrational, the intuitive, and the emotional elements, which are, to a great extent, the foundation of human relationships.

The role of education is thus even more vital than we have imagined. But it will take much research and work to rethink the concept of education and enable it to acknowledge the dimensions of the needs in the coming times such that the educators of today and tomorrow will be in a better position to discover the immensity and the nobility of their task: to lead the way to an evolution of the mind and behaviour and thus give birth to the new civilization.

The contribution of science and technology

In the industrialized countries of the North, society has been shaped by technology, their way of life has adapted itself to make full use of it, and prosperity has been built on it. Technology imported from the industrialized world is also being used in the urbanized areas of the South. At the same time, many of the problems of contemporary society have been caused directly or indirectly by technology or, more often, by its misuse. It is to be expected, therefore, that technology with its seminal partner science will be an essential element of the resolutique.

Science and technology are too often assumed to be more or less two aspects of the same thing—'research and development gives rise to science and technology.' In reality the system of science and that of technology are very different. That of science is open and its product is freely disseminated throughout the world; that of technology is directed by economic motivations and its products are jealously guarded commercial property.

The role of science is to uncover knowledge. It explores the unknown and provides new data. Data is not in itself information but the raw material of information, which human intelligence through a process of selection, orders and coalesces to produce information. A matrix of information can become

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1. Ilya Prigogine, Nobel laureate in Physics and a member of the Club of Rome, develops this topic brilliantly in his works.

knowledge. Again knowledge does not spontaneously generate understanding; for this it requires wisdom born of experience. Thus we are concerned with a continuum which runs from crude data, through information and knowledge to the end refinement of wisdom. Data we possess in large quantities, but information can easily be concealed and lost in its disorder. Today we have enormously greater amounts of information and knowledge about man and the universe than our forefathers had, but there are few signs that human wisdom has increased significantly over the last five thousand years. In these difficult and complex times we begin to realize that the pursuit of wisdom is the essential challenge that faces humanity.

> Where is the knowledge which is lost in information?
> And where is the wisdom that is lost in knowledge?
>
> T.S. Eliot[1]

One would expect therefore that research on the nature of wisdom and its generation would be of the highest priority. But have we the ingredients to start such a project, and if presented to one of the great research foundations, would it have a hope of acceptance? However, in recent years much knowledge has been gained on the workings of the brain, on human behaviour, and indeed on the nature of homo sapiens. Such interdisciplinary research, which involves biochemistry, physiology, neurology, endocrinology, molecular biology, psychology, anthropology and many other sciences, holds great promise and should be actively supported, although its findings may seem, at this stage, merely theoretical. It should explore not only the rational mind, but also emotional and intuitional aspects of being which play such an important part in the life of the individual and are at the root of his apparently irrational attitudes and behaviour.

Research aimed at the extension of knowledge and conducted without the aim of immediate practical use, is known as pure or fundamental research and It is usually undertaken in the laboratories of universities or, as in the East European countries, in the institutes of Academies of Science. Scientific European countries, in the Institutes of Academies of Science. Scientific understanding, arising from pure research is an essential element of contemporary culture. University research also has an important educational function. University teachers who are actively engaged in research and hence working at the advancing frontiers of knowledge are able to transmit the spirit

1. British poet and writer (1888–1965)

of the scientific method and to inspire their students. This function is as important in the less developed as in the industrialized countries. Indeed it is a prerequisite to the understanding of today's world, necessary if the offerings of science and technology are to be of use in the process of development.

There is a second type of fundamental research increasingly pursued in industrialized regions, namely oriented fundamental research, which is an essential part of the input in the development of the most advanced technologies. Such research, while not expected to have direct practical application, is needed to identify areas of ignorance which have to be eliminated in the development of advanced technical processes. Such research may be carried out in the laboratories of corporations or under contract in universities. It can thus be a very useful link between industry and academia.

Much research today is of a directly applied nature, aimed at solving specific problems in industry, agriculture or the public services. It may be research in the natural sciences such as chemistry, physics and biology, or in economics and the behavioural sciences. Indeed, the complexity of so many contemporary problems demands a combined attack from several disciplines. Experience shows that in such multidisciplinary approaches, research workers from many sciences, natural and social, in dealing with a particular complex problem, soon acquire a degree of communication which transcends the boundaries between the disciplines. The cultivation of multidisciplinary research is urgently required by the resolutique. It is difficult to generate within the universities, since they are vertically organized into departments and faculties which often have little contact with each other. Applied research must be intensified in the developing countries where it is already widely, if insufficiently, pursued in the agricultural sector. In such countries it is much less common in industry, since the small size and relatively low level of sophistication of firms makes it difficult to identify technical problems or to afford to employ scientists to solve them.

Technological development is the essential, but only the initial step in industrial innovation. It consists of bringing together technical knowledge acquired through research or purchase, and to develop it through a chemical pilot plant or engineering prototype so as to be a reliable and effective manufacturing process, which is competitive in the market. The cost of the development phase is usually greater than the cost of the research stage on which it is based. However, there are many other elements involved in technological innovation, such as market surveys to test the potential demand for the new product and hence its economic viability, the acquisition of risk capital and management skills, as well as recruitment and training of a reliable

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we destroy it and thereby ourselves.

Research leading to technological innovations. This type of research activity is aimed at solving or alleviating many of the contemporary problems. These innovations will be both remedial and preventive. We shall outline here a few of the most obvious lines of attack.

First as already stressed, there is an immediate need for a massive campaign for energy conservation and efficiency. On the conservation side, the requirement is more for the application of well-understood techniques than for research. However, if this is to succeed there will have to be considerable changes in human habits, and this will entail new activities in the social sciences. There is, however, great scope for research aimed at improving efficiency in the generation, transmission and utilization of energy (for example, by using superconductors), in the design of new types of engines, in machines of a wide variety of types, and in chemical manufacture. Techniques of energy accounting need to be developed and applied. While the bulk of these efforts will have to be made in the countries of the North with their energy-intensive economies, the South with its increasing populations will face the same needs. It is encouraging to note the recognition of this in the recent 'Nairobi Declaration on Climatic Change' (May 1990).

Secondly, it will be necessary to give a very high priority to an international programme of research on alternative energy sources and similar work in individual countries. This should include nuclear fusion development, magnetohydrodynamics and the whole range of soft energies. Work should also be accelerated on the possibilities of a future hydrogen economy, the gas being produced by the decomposition of water by electrolytic or catalytic means. This is not an alternative energy but an energy transmission method for use in automobiles, aircraft, and so on, if oil becomes costly or is discouraged for earth-warming reasons.

Beyond this, the search must go on for new, clean technologies and for ways to clean up traditional processes. In the chemical industry, for example, research could be directed towards improving methods of manufacture including research on new catalysts. Research in this industry must also be aimed at finding ways to make toxic wastes harmless with minimum energy expenditure. Here, as in other industries, research on recycling techniques is required. A further task for the chemical industry is to devise biodegradable plastics for packaging and other purposes.

In agriculture and the agro-industries a determined effort is needed to reduce energy use. Much useful research is already in progress in breeding non-leguminous cereals capable of fixing their own nitrogen, which will reduce the use of nitrogenous fertilizers. More work is required to replace

chemical pesticides by biological control systems, to intensify research in genetic engineering so as to provide basic cereal crops with greater resistance to insect and fungal damage and also to possible changes in climate.

In the field of transportation also interesting work is in progress since, in view of the desirability of encouraging communal travelling, new and flexible systems of urban transportation are urgently required.

Science and technology for development. Disparities between developed and developing countries in science and technology are even greater than in their economic levels. Some 95 per cent of the world's research and development is carried out in the industrialized countries. It is also true that the poorer a country is, the greater will be the proportion of its scientists engaged in fundamental research. While the large developing countries such as Brazil, India and Mexico have an infrastructure capable of supporting a significant extent of applied research and development, in the rest of the developing world there is little applied research other than in agriculture. In such countries, a mere increase in the number of scientists is unlikely to influence economic growth; indeed it is more likely to increase the brain drain. This is because there is generally no employment for the scientists in the productive sectors. Science in these countries can only contribute significantly to development if it is intimately linked with the productive process.

It is generally accepted that a major, and perhaps *the* major need in the development of the South is the creation of an indigenous capacity in each country for research and development. This was the main conclusion of the UN Conference on Science and Technology for Development held in Vienna in 1979, at which various financial and other mechanisms were devised to make this possible. After more than a decade, however, there is little to show. Yet the need remains to build this capacity if the developing countries are to enter the modern world economy. There is a vicious circle here. If productive capacity is to grow and hence if development is to take place, a critical scientific and technological infrastructure is necessary. Yet such an infrastructure seems impossible to build unless it is in symbiosis with the productive means. The means to overcome this impasse present a vital challenge to the countries concerned and to the international community.

The role of mass media

The impact of mass media on public opinion and individuals no longer has to be demonstrated; a larger and larger part of humankind will henceforth be deeply influenced by the radio and television programmes it has access to. For better or for worse, the media are among the main agents involved in forming public opinion and influencing the thinking of individuals.

The role of mass media, however, has so far never been deeply analysed in all its dimensions. We know very little about the nature and duration of the influence of various media. Our reasoning is based more on impressions and hypotheses than on clearly established facts; even in the West, the phenomenon is still recent and the reasoning is founded on the reactions of Western public opinion. In developing countries the phenomenon is even more recent and still of quite limited scope, which makes the study of the reactions in these countries more problematic.

The reactions that have been recorded so far are for the most part critical when they are not outright negative; the irresponsibity of journalists is frequently criticized, as is their subjectivity and their lack of professional ethics. But the general role of mass media is too new for us to be able to draw definite conclusions about it. This is why it is fitting to consider the question of the true power of mass media and of the role they now play and can play in future in the building of the new global society. The answer to these questions necessitates a dialogue with communication professionals with a view to finding out what role they are ready to assume, not only for a better comprehension by the public of the world problematique, but also of the resolutique.

Experience has shown that the power of the media often referred to is not just an impression. There is no question about the reality of such power; consider, for example, the role played by transistor radios in inciting the Algerian war of independence, or the pressure brought to bear by the press in the Watergate affair which led to the resignation of the president of the United States.

The media also represent a balancing power in democracies by exposing political or financial scandals, as also by defending consumer interests. It is true that they are always in danger of being manipulated—whatever the political regime—due to political pressure, economic interests, disinformation procedures or even self-censorship. Mass media, especially television, have acquired considerable power over the last two decades; they have not, however, reached the level of maturity and responsibility which the exercise of such power would require. Where development is concerned, television has often complacently displayed horrifying images of the hunger and death of children in Ethiopia and Sudan, images that seem to have been taken out of Nazi concentration camps. Viewers across the world have been amply exposed to the sensational aspects of underdevelopment and have been brutally shocked by such images.

However, doesn't the public expect this dramatic version of information? A frightening event induces curiosity and the newspaper headline 'War

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discussions. Environmental and pollution issues are timidly making an appearance in feature programmes, while development is just beginning to be treated in its positive aspects.

We previously mentioned in our recommendations a number of more specific subjects that have to be brought to the attention of the public through educational programmes, such as environmental protection, energy saving, the role of science and technology, the interdependence of countries in the North and those in the South and what this means for each of them, and so on. The freedom of information, the free access for all to information and the pluralism of information remain the noble causes of battles never totally won and forever waged again. In the process of adapting to change, of continuous learning in a transitional society, and of adjusting to uncertainty and complexity, the role of the media becomes considerable.

It will certainly be necessary to engage in a broad debate with the journalists and top media executives in order to define their new role. This is an initiative the Club of Rome will certainly take as the first step in a long dialogue.

10. Motivations and Values

We return once more to one of the main motifs of the contemporary scene, the dominant influence of technology in shaping our lives and society. Starting from the Industrial Revolution, we have gradually adapted our aspirations and lifestyles to fit in with an ever more sophisticated and pervasive technology which has permitted the enjoyment of what has been seen as material progress. This has, of course, increased the prosperity of a wide cross-section of the population in the industrialized countries, while reducing poverty, improving health conditions, extending life expectancy, providing general, if not always appropriate, education, and introducing many social amenities. The recognition that technology has a determinative role in world development is relatively recent and, even today, the economic system which relies so heavily on technological solutions to problems, has not yet fully come to terms with it. It is still implicit in the thinking of many economists that technological developments arise from the interaction of economic forces and are, as it were, one of the muscles of Adam Smith's 'invisible hand'. There is no doubt much truth in this; however, more and more technological innovations originate from discoveries in the scientific laboratories and could not have been foreseen. Therefore, science is the autonomous force which gives rise to profit-motivated technology, in creating new products and systems, and hence new demands.

Despite the unwanted social and ecological side-effects of technology, and a general suspicion of it as the creator of the nuclear bomb and of genetic manipulations, general expectations of an ever-increasing affluence and more and more material possessions flowing from it persist within an economic system which is driven by the stimulation of consumer spending and credit

availability. The luxuries of yesterday become the necessities of today; planned obsolescence speeds up the turnover of goods; the wastes of society accumulate and are even more difficult to dispose of as scientific sophistication diffuses into everyday goods.

There is, of course, the other side of the coin. Considerable amounts of wealth from economic growth have been diverted to the creation of social benefits—unemployment benefits, health services, education, and welfare measures to reduce poverty. In a number of countries, this process has been so strong that it has evolved to form the welfare state, which is beneficial but has psychological costs. For instance, it is felt by many that the welfare approach encourages an over-reliance on the state, with an unhealthy lowering of individual responsibility and initiative. The paternalism of employers, that was resented so much by the trade unions, has been replaced by the paternalism of the state whose huge bureaucracies are, in turn, regarded as distant, faceless and impersonal.

The materialistic technology-based approach to development has penetrated into societies and cultures of all types, and even the most rigid fundamentalist cultures find it impossible to resist the promise of power and affluence which it appears to offer. The goal of material affluence seems to generate greed and selfishness. Not that these features have ever been absent in individuals and societies, but they appear to be magnified by the shrinking of non-materialist values, and have become more apparent due to the disclosures of corruption, crime and financial scandals by the press.

> Our present civilization is based materially on an extraordinarily successful technology and spiritually on practically nothing.
>
> Dennis Gabor[1]

The shortcoming of science is that although it has contributed greatly to our material well-being, promoting health, increasing our lifespan, giving us leisure, it has done little to enrich human existence, in comparison with directly material improvements. The imperative need now is to attempt to master technology and mould it to suit a human environment, so as to make it contribute to the general and sustainable well-being of all peoples in this generation and the succeeding generations, within a holistic global and even cosmic framework, and to balance material advances by cultivating social, moral and spiritual attributes. This is becoming as obvious in the developing countries as it is already in the industrialized countries.

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1. Gabor, 1978

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generation feels the absence of a sense of self and they do not know where to look for it.

These features, projected from the individual level, operate correspondingly in the social environment. National egoism is likewise ambivalent; it can express itself as a natural and desirable love of one's country or ethnic community, or it can be whipped up to arouse chauvinism, xenophobia, racism, hatred of other countries or styles of living, and finally to cause a war. In international negotiations it often surfaces as the advocacy of narrow self-interest by one nation against the wider harmony and future well-being of a group of nations, including its own, and often sacrifices long-term self-interest to score immediate tactical points.

The existence of these matters is seldom acknowledged and when they do emerge, they are shrouded in taboo. If this diagnosis is at all valid, there would seem to be a need for lifting the taboos and honestly acknowledging the existence and power of the negative and positive aspects of individual and collective behaviour, and for adopting an approach based on the enlightened common interests of every inhabitant of this small planet to ensure that sustainable physical and social environments can be established for ourselves and our descendants.

This self-centredness, however, is merely one aspect of a broader question: what are the spiritual and ethical values that will constitute a foundation for the new global society, the emergence of which we are observing today?

> Oh stealer of songs, my heart!
> Where will you find them?
> You are needy and poor,
> but grasp firmly the black and red ink
> wisdom,
>
> And perhaps you will no longer be a beggar.
>
> Aztec poetry
> —MSS *Cantares Mexicanos*
> Fol. 68, r.

A new basis for moral and spiritual values

The global society cannot emerge unless it drinks from the source of moral and spiritual values which stake out its dynamics. Beyond cultures, religions and philosophies, there is in human beings a thirst for freedom, an aspiration to overcome one's limits, a quest for a beyond that seems unfathomable and is often unnamed. Experience has shown that no dictatorship, no violence, no restriction has ever managed to completely wipe out of man's heart this often

passionate quest which emanates from the collective unconscious analysed by Carl Jung.

Individuals and groups are increasingly placing this issue at the forefront of their concerns. Thus the South Commission, presided over by Julius Nyerere, expressed a very clear position in that respect in its last report (1990), showing signs of an encouraging rise in awareness:

> In the final analysis, the South's plea for justice, equity and democracy in the global society cannot be dissociated from its pursuit of these goals within its own societies. Commitment to democratic values, respect for fundamental rights—particularly the right to dissent—fair treatment for minorities, concern for the poor and underprivileged, probity in public life, willingness to settle disputes without recourse to war—all these... increase the South's chances of securing a new world order.

However, noble declarations such as this, which formerly inspired individuals and societies, no longer seem to be acceptable in contemporary activity. In the behaviour of people and of states, even those with constitutionally guaranteed rights, morals are flouted and the law ignored or twisted to suit the convenience of the authorities. In so many relationships and areas of communication, the implicit trend is 'back to the jungle'.

As already mentioned, people need to possess a sense of self-respect if they are to lead a life of decent human dignity. This was understood well in many traditional societies, but it is very difficult to sustain in the whirlwind of change. As a consequence of the many cross-continental migrations, people are faced with cultural contradictions, and often experience an identity crisis or are demoralized. In Western societies with their shallow consumerism, 'I am what I own' or 'I am what I do', the more fundamental aspects of life have shrunk in importance, including those of religion, ethnic identity, and inherited values and beliefs. Such a situation leads to hyper-individuality, selfishness of all kinds, over-consumption, as well as an excessive search for distraction, as for instance in TV viewing and drug addiction. There is an obvious need for a new approach in which values are deliberately inculcated to provide spiritual goals and meaning to the life of the individual. However, change is very often seen as a threat to the self.

Have traditional values then been suddenly forgotten or abandoned? Have spiritual values been set aside all at once? What is the evidence? In our chapter on 'The Human Malaise', we indicated that these values have in fact been progressively rejected by recent generations. In the industrial societies spiritual values have been eroded by the invasion of materialism which has also infected the elite classes in the developing countries. Again, confusion in

values arises in some countries from the crises in the major religions, due to the difficulty these face in adapting to a world which is undergoing rapid change without losing the essence of their message, as well as of responding to the serious questioning of the bewildered people of their congregations. Moral values are also being eroded, since they are flagrantly ignored by the individuals and societies for whom they are presumed to be the inspirational message. Lax behaviour, selfishness and materialism appear to have made them irrelevant. But people are troubled by such symptoms. Never before has the issue of values been the subject of so many symposia, discussions and so much research. This demonstrates that a need is being expressed with increasing intensity for a value system which would provide stability to the life of individuals and society, and which would inspire the vision of a systematic world capable of leading to a systematic future.

Does this mean that a new value system is in the making, which would be in opposition to traditional values or to the capacity of traditional values to take a stand on the new challenges, such as genetic engineering, that trouble human conscience and judgement? Can we speak today of universal human values that would be common to all the inhabitants of the planet, despite the diversity of their cultures?

These questions are not easy to answer and yet they are what our future depends on; a global society can hardly be possible without being based on common or compatible values that will shape attitudes, the common determination to face up to challenges, the moral strength to respond to them and the management of change. We cannot want the emerging global society unless it is founded on the possibility of living together with the acceptance of differences and pluralism.

A large proportion of traditional ethics are still meaningful today, though they may take different forms because of changes in the conditions of reference. Virtually everywhere, present-day society is more open and richer, or at least aspires to a shared well-being. It is also better informed. For example, the idea of solidarity is changing from a concept limited to the family tribe to a much broader concept, while its strictly tribal connotation may be openly discredited.

To this end, values may be defined and hopefully agreed upon if they are expressed in a way that is better adapted to the present situation. Among permanent values we would suggest freedom, human rights and responsibilities, family life, equal rights for men and women, compassion for the aged and the disabled, tolerance, respect for life and peace, and the search for truth.

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the ethics of solidarity, dictated by the fact that the dimension of the problems posed to humanity today requires cooperation between human beings as a condition for their survival.

A new ethical vision such as this will necessarily have repercussions on the national level.

In conclusion, the speed of evolution and of current changes leads us to consider that the time factor has an ethical value in itself. Every minute lost, every decision delayed means more deaths from starvation and malnutrition, means a further slide towards irreversible damage caused by pollution phenomena in the environment. No one will ever know for sure the human and financial cost of lost time.

Once this has been recognized, the ethics of solidarity and of time leads to an ethics of action, where each citizen must feel concerned and mobilize himself for action. The isolated individual always feels helpless amidst the immensity of the battle in which he is surprised to find himself. This should induce individuals to associate with others, and to find together the force and the effectiveness which they cannot muster alone. Collective ethics depend on the ethical behaviour of each individual in the group and it is obvious that inversely, the individual's adherence to a code of ethical behaviour can be encouraged, invited and aroused by the collective approach.

How can different traditional and modern, collective and individual value systems co-exist both in a society and at the individual level?

The emergence of certain universal values such as human rights or respect for nature does not mean the end of ancestral values even though they may contradict each other. In addition, individual values may at times conflict with collective values, or one value may conflict with another. A classic example of this conflict is the sale of arms, which is a source of profit for a nation and a source of employment for numerous men and women, yet is in opposition to the same nation's desire for peace.

The harmonious co-existence of very different values is nothing new, but it has been seriously undermined by the rise in fundamentalism. It is rather the relative importance attached to the values that change according to the age of the ideology or religion in sway. As each person is biologically and socio-culturally unique, the emphasis should be on the individual aspect. 'Collective' values are often the outcome of a choice made—or worse, imposed—by those holding the reins of power, who want at all costs to

impose their values on the rest by showing contempt for others' values, by even attempting to suppress them. 'Collective' values can only be taken into consideration when there exists true freedom and a high level of cultural development.

Elite circles are often reconciled easily to changing values despite the surface controversy. The general public is not involved, only manipulated, in debates of this type. The gulf between elite thinking and popular thinking is enormous. It is here that we find distortions and tensions that are difficult or even impossible to resolve.

The interesting and important point here is that different value systems do in fact continue to co-exist, even though their co-existence is sometimes coloured by opposition and mistrust. Indeed, it is not so much a question of the co-existence of contradictory value-systems as of the same values being interpreted in different terms. When all is said and done, the factor that makes such co-existence possible, as also the plurality of interpretations, is the capacity for dialogue and communication.

To conclude this brief survey, we must stress two phenomena that are going in opposite ways. There is indeed a weakening of the moral sense of individuals, who feel cheated not only because the ethical structure that used to serve as their reference and to which they willingly submitted has collapsed, but also because the threats posed by the contemporary world situation have frightened them into a chilly self-withdrawal. Simultaneously, there is a progressive collective awareness of the great problems of the world, old and new, which is encouraging research on solutions. The spiritual and ethical dimension is no longer an object of scorn or indifference; it is perceived as a necessity that should lead to a new humanism.

> May the divine Spirit protect us all; may we work together with great energy; may our study be fruitful and thorough; may there be no hatred between us.
>
> Aum, Peace, Peace, Peace, Peace
>
> Vedic Prayer (3000 B.C.)

11. Learning our Way into a New Era

We shall make no attempt to summarize our conclusions; indeed the very nature of the problematique precludes such a possibility. Instead we shall make some observations and suggestions as to how to blaze a trail into the unknown landscape of the future through learning, which is a leading feature of the resolutique. Before doing so, however, we shall re-state a few guiding principles that are scattered throughout the book:

— need for the involvement and participation of everyone in seeking a way through the intertwining complex of contemporary problems;

— recognition that the possibilities of positive change reside in the motivations and values that determine our behaviour;

— understanding that the behaviour of nations and societies reflects that of its individual citizens and members;

— acceptance of the postulate that dramatic solutions are unlikely to come from the leaders of governments, but that thousands of small, wise decisions, reflecting the new realization of millions of ordinary people are necessary for securing the survival of society;

— practice of the principle that privilege, whether individual or national, must always be complemented by a corresponding responsibility.

As stated in the introduction, the ideas and proposals for action in this book are offered as a basis for learning our way into the future. It is not necessary—indeed it would be impossible to expect—that there should be complete agreement with all the thoughts we have expressed with regard to the world

in revolution, or on the relative importance we have given to the various problems. The material presented here should rather be regarded as matter for widespread discussion and debate; it is intended to spark off a variety of examinations and reassessments on the part of those responsible for the management of society at all levels. We also hope that the many, whose contacts with governance are quite remote but whose future is deeply involved in the forthcoming changes, will begin to understand more clearly the significance of many of the topics presented here, such as the interdependence of the nations and the interaction of the problems. The time has come to show how every individual is more or less directly concerned with the problems of the world and the changes that are brewing, even if he or she can more easily perceive the symptoms than their causes. Even now, few remain untouched; one has only to mention the problems of co-existence with immigrants of different ethnic origins, the effect on children and adolescents of certain television programmes, the internationalization of automobiles or the international spread of consumer products to arouse a variety of reactions.

To learn our way through this period of transition and to identify sure points of reference, we have to modify our reasoning, our mental images, our behaviour and understand the realities on which we base our judgements so that we can cope with this world mutation, with its array of global issues such as the environment, food security, development of the poor countries, the crises of governance, and all the others we have attempted to describe.

The complex and uncertain situation in the future will force decision-makers at all levels, especially the politicians, to search for new approaches and to adopt unconventional attitudes. But it will not be possible to implement their decisions, no matter how brave and pertinent they are, unless they succeed in obtaining wide public support. However, general resistance to change and fear of the unknown constitute an unfavourable environment for strong and unconventional action on any issue. The dynamics of public opinion will not be able to operate usefully, unless individuals have access to information about the nature of present global phenomena and acquire through their understanding of them the conviction that the very survival of the human race is at stake. It is also obvious, however, that the eloquence of the facts alone will be insufficient to convince individuals that these phenomena are of immediate concern to them. To most people they will seem distant, theoretical and too vast in comparison with the problems of everyday life, their family, and their professional, financial, health, and day-to-day survival problems. The range of difficulties may well elicit a reaction of withdrawal, a refusal to understand, or anxiety at the

thought of having to grapple despite helplessness and isolation, with a set of facts that are mind-boggling in their variety and complexity.

Such doubts and feelings of alienation will have to be acknowledged and deliberately addressed so that they can be dispelled by sharing fears, and a familiarity with the facts gradually achieved through discussion with others. The situation must be seen in local and personal terms. This is one reason for the need for a new, revitalized democracy, organized on a more participative basis, stimulated by the comprehension of global concerns.

The need, then is 'to think globally and act locally'. The Club of Rome has, since its establishment, realized the need for such an approach and there are a multitude of ways in which it could be achieved. We offer a few examples in the following pages.

Global-Local Interaction

On the initiative of Maurice Strong[1] and the Club of Rome, a meeting was held in 1989 in Denver, with some forty Colorado decision-makers to discuss the following question: in what ways do the great world problems affect the economic and social life of the state of Colorado and in what way can the political and economic leaders of the state exercise an influence on those great problems? During the work and discussions of the meeting, the necessity for joint action became more and more evident in a number of areas, especially on environmental issues. If every inhabitant in Colorado made energy-saving as well as fighting against waste his or her daily duty, their actions would collectively improve the situation of Colorado, and therefore of the United States, *and* of the world. If the individual is alone, the result will be merely symbolic. If a number of individuals join to act in the direction of better environmental protection and if their influence in the community strengthens their fight, then the result will be significant. The Denver meeting was followed by an open forum in which the ideas and conclusions of the small, restricted meeting were shared with a large audience of the general public. Similar meetings are being planned initially in Japan, and in other countries, and similar approaches are being taken by other bodies and sometimes even by governments.

In a different area, that of development, we underscored[2] the role of local initiatives in the development process, often taken by non-governmental organizations, groups of villagers, and the like, in solving problems relating to

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1. Secretary-General of the United Nations Conference on Environment and Development, member of the club of Rome.
2. See Chapter 7, Development and Underdevelopment.

farming, health and hygiene, education, and so on. Such activities are also spreading in the big-city slums and these are contributing to modifying the conceptual basis and the global vision of development policies, that are the reflection of the multiplicity of geographic, cultural and human situations for which they have provided the reality of experience in the field.

The Club of Rome, in disseminating its views and encouraging the emergence of global thinking in local action has encouraged the creation of National Associations for the Club of Rome. These now exist in about thirty countries in the five continents. The Associations are governed by a common charter, some of the articles of which insist on the nature of the interaction between the local and global levels:

> Each Association shall approach the global problems in terms of the country's own cultural values and thus contribute to the general understanding of the human condition on the planet.
>
> It shall have the duty to disseminate locally to decision-makers, academics, industrial circles and the public at large, the reports, findings and attitudes of the Club. It shall contribute experience, creative ideas and proposals towards the understanding of the global problems to the Club.

The National Associations for the Club of Rome have, therefore, the mission of establishing communication between the national realities and the problematique as seen nationally on the one hand and the global thinking of the Club on the other, and acting as relays for the circulation and dissemination of Club thinking in each country. Going from global to local and from local to global requires a radical transformation in modes of thinking and reasoning which will become essential henceforth. It is a new intellectual exercise which we shall have to extend and integrate.

Local-Individual Interaction

The picture would be incomplete if we did not examine the possibilities of action of the individual human being who is at the centre of the entire edifice. In extreme cases, such as the threat of war or natural disasters, individuals are immediately transformed into citizens, aware of their responsibilities and ready for cohesive action. Other less spectacular but likewise significant examples bear witness to the fact that individuals are not inert and indifferent in the face of imminent dangers. When there is an environmental threat close at hand, or when a situation arises where people's interests are at stake and gross instances of exploitation are revealed, we find that initiatives are taken in

most diverse fields by individuals, and that small groups are prepared to fight for causes that affect them directly or indirectly, and by which they feel motivated.

To mention but a few examples, transport or telephone users organizations, or in a different category, NGOs that care for disabled children, old people or battered wives, NGOs engaged in the fight against AIDS and a host of other diseases or in the struggle for human rights, ecological groups, peace groups and a multitude of other developmental NGOs such as we have presented here. Neither must we forget the initiatives in many countries by the jobless to create employment for themselves or to set up their own business, as well as the NGOs that were founded to assist small businesses and to provide them with technical assistance.

Individual commitment to action is therefore possible and already widespread, which demonstrates that a link can be established between the human being and local or national action, which in some cases, flourishes, extends and becomes international.

The emergence of the informal sector

The success of grassroots NGO initiatives no longer needs to be demonstrated. Very often, these movements are sparked off by individual men and women. Examples throughout the world are many. In the Indian state of Uttar Pradesh, the local people have rallied around a man called Sunderlal Bahuguna to stop the construction of a US$ 1.7 billion dam, which would have submerged their villages and seriously increased the danger of avalanches in the region. Several reports that questioned the technical feasibility of the project and an eleven-day fast by Bahuguna led the government to back down on its plans. In Kenya a woman, Wangari Maathai—the founder and president of the grassroots Green Belt Movement and member of the Club of Rome—has led a successful battle to stop the construction of a sixty-two-floor office building in a popular Nairobi public park. In Mexico City, where the problem of pollution has gone far beyond bearable limits, Marcos Chan Rodriguez mobilized his neighbourhood to form a grassroots group to reduce the operations of a cement factory that was pouring cement particles into the air. In the process, the group realized that to arouse the ruling party's interest, it had to appeal to the left-wing opposition, and thus make the democratic system work.

The enormous proliferation of NGOs can be seen in every sector of national and intenational activity; some are strictly professional, others represent special interests; they may be single-issue groups, or may deal with general concerns; they may have a religious orientation, or be based on a particular

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made even on issues of the largest scale through multiple actions on a small scale.

Innovation in language, analysis and approach

In so many elements of this global revolution we lack knowledge, and there is no guarantee that more research will lead to greater certainty, or that it will yield its results in time for them to influence important decisions. Further, we know a lot about some elements, but we understand very little. We have to learn, therefore, to act in spite of continuing uncertainty. Politics has always been the art of making decisions under conditions of uncertainty. The difference today is that the uncertainty is much more and is compounded with rapid change. This abiding uncertainty demands adaptation of our institutions and approaches in order to achieve greater flexibility and a great capacity for action as we train our sights on the moving targets of history.

A central challenge in this connection is how to reconcile the language and concepts of economics that dominate the world today with environmental language and concepts. Two approaches are possible: environmental aspects can be added to conventional economic analysis, or economic approaches can be integrated within a broader ecological view. Great care and precise thinking are needed in this area, in which distinction must be made between different types of economics: macroeconomics, microeconomics, and environmental or ecological economics. We must find ways of integrating environmental aspects more effectively with the established and powerful approaches of both macro-and microeconomics.

The role of the market and its relation to the role of the government is of vital importance in seeking to resolve and manage the environmental problems. No solutions based exclusively on the market exist in the real world. All Western countries, for example, have developed mixed economies in which governments provide a framework of regulations, incentives, support and guidelines to the private sector. It has been acknowledged that the market approach alone cannot handle problems of common property resources or issues of long-term common interest. The government must provide the boundary conditions in the public interest.

The problems we face are not only intellectual and analytical; real interests and the structure of power are always at stake. In the real world, contradictory interests are inevitably operating. In establishing a normative approach, definite arrangements for action have to be established between power groups and indeed between nations, which will continue to have different interests, values, norms and cultural traditions.

In 1972, the Club of Rome published *The Limits to Growth*, a book that aroused a worldwide controversy by highlighting the dangers posed by the relentless pursuit of material growth by the West. In *The First Global Revolution*, two members of the Council of the Club of Rome describe how material growth and over-consumption have now become a global problem. Environmental pollution, runaway population growth, food and energy shortages, and geopolitical upheavals make the future prospects of the world seem very bleak.

What we are witnessing today is the emergence of the post-industrial society, and the tumultous changes around us are elements of this transitional phase. Poised on the brink of a social revolution ushered in by modern information technology, the world has two choices:

- to continue pursuing material goals and selfish aims, and thereby cause the slow but sure decline of all world systems;
- to unite and work towards building an improved life for future generations.

This book offers an overall perspective of the complex and interactive global problems, and discusses means of solving them comprehensively.

Cover design: Monica Gandhi

Orient Longman

KING & SCHNEIDER: THE FIRST GLOBAL REVOLUTION

OLBN 0 00116 032 X

A Call for Solidarity

The whole of this book is a call for world solidarity. Living as we do during the onset of the first global revolution on a small planet beset with conflicts which we seem hell-bent on destroying, in an ideological and political vacuum, faced with problems of global dimensions which the fading nation-states are unable to solve, with immense possibilities for the improvement of the human condition, rich in knowledge but poor in wisdom, we search for the keys to survival and sustainability.

The only hope seems to lie in combined action taken in the light of a complete understanding of the impending perils and the commonality of self-interest of all men and women. We have stressed the importance of individual behaviour and values which constitute the cells of the body of society, determining its functioning and values. A fundamental upsurge of wisdom can probably only come through the inner development of the individual. The great religions in their purest aspirations have attempted to make this possible over the ages, with few outward signs of success.

We cannot, therefore, expect miracles and have to construct a position of stability. This can only be based on the worldwide cultivation of an enlightened interest in the survival of the race and of human societies. This, in turn, can only be made possible by the universal understanding of the human predicament, its dangers and its promises.

> Mankind may have to choose between the two extreme alternatives of committing genocide or learning to live henceforth as a single family.
>
> Arnold Toynbee

For the creation of this solidarity, our biology and our egoism can be powerful allies. For most people, their egoism is not confined to the individual lifespan, but extends to that of their children and grandchildren with whose being they identify. It should be possible therefore to strive, selfishly if you will, to create circumstances which will make possible a dignified and truly human existence for future generations. Such an effort will entail many material sacrifices on the part of the present generation, but it should also bring abounding benefits in the qualitative aspects of life. If we are to succeed in establishing world solidarity as the supreme ethic for survival, the first step is in arousing understanding.

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