

Professor R.H. Paul Commemoration Lecture 1998

Energy, Development, Security - A Global Pugwash Perspective

by

D.L.O. Mendis

I deem it a great honour and privilege to present the Professor R.H. Paul Commemoration Lecture of the Institution of Engineers, for 1998. I wish to thank, most sincerely, Mr. M. Zubair, Chairman of the Electrical Engineering Section, for giving me this rare opportunity. As a mere future civil engineer, I used to sit in obscurity somewhere at the back of Professor Paul's electrical engineering class. However, as I shall mention in greater detail, at the end of this presentation, I came to know him rather well in later life, as a warm and concerned human being, rather different from the impression he had made on me earlier, as a pedagogue in the groves of academe. I have no doubt he too made a similar re-appraisal, different from the previous impression he had of me.

The subject I shall discuss today, in a broad brush presentation, is titled *Energy, Development, Security - A Global Pugwash Perspective*. As the first civil engineer to deliver this Commemoration Lecture, I am reminded of an apt story to start with: The physicist Professor Carl Friedrich Von Weizsacker delivered a lecture in the Bavarian Academy of Fine Arts "On Language" in 1959¹. Beginning his lecture with what he said was "a remark which lacks the requisite gravity", he quoted two couplets from Goethe's Maxims:

*"How was it you succeeded so well?
'Tis said you really do excel"*

To which the old Goethe's response was:

*"My dear, I was clever in what I wrought:
On thinking I never wasted a thought"*

With delightful light-heartedness, Von Weizsacker says: "What situation do we find ourselves in at this symposium? In a free variation of Goethe's answer:

*"My friends, you've smelled a rat, I avow
I've never talked on language till now"*

Professor Paul who had a keen sense of humour, would have been amused by my present situation. But, he would have liked my choice of a subject because, after the first insurrection in the 1970s, he had been really concerned about both youth unemploy-

ment, and scarcity of foreign exchange. He had made two suggestions: that we should "export brains", and that "point to point" television should be set up with locally available resources, for teaching science to more rural students². It is unfortunate that neither of these suggestions was given serious attention by high level decision makers in the Ministry of Planning and Economic Affairs.

1.0 Introduction

I seek your kind indulgence to strike a personal note at the beginning of this lecture. In the decade of the nineteen seventies, known as the third UN Development Decade, I worked in the Ministry of Planning and Economic Affairs. In the middle of that decade, my Presidential Address to Section C of the Sri Lanka Association for the Advancement of Science was titled *The Technology of Development and the Underdevelopment of Technology in Sri Lanka*³. In that paper I presented several models illustrating the causes of technological backwardness in Sri Lanka, as I saw it. The Centre-Periphery theory of domination and dependence, due to Professor Raul Prebisch, the first Secretary-General of UNCTAD, was one of these (Figure 1).

- 1 Von Weizsacker, CF. "Language as Information" in *The Unity of Nature*. Farrar, Strauss, Giroux. New York, 1980, p. 28
- 2 Transactions of the Institution of Engineers, Sri Lanka, 1971, P.
- 3 Proceedings, Sri Lanka Association for the Advancement of Science, 1975. SLAAS, Colombo, 1976

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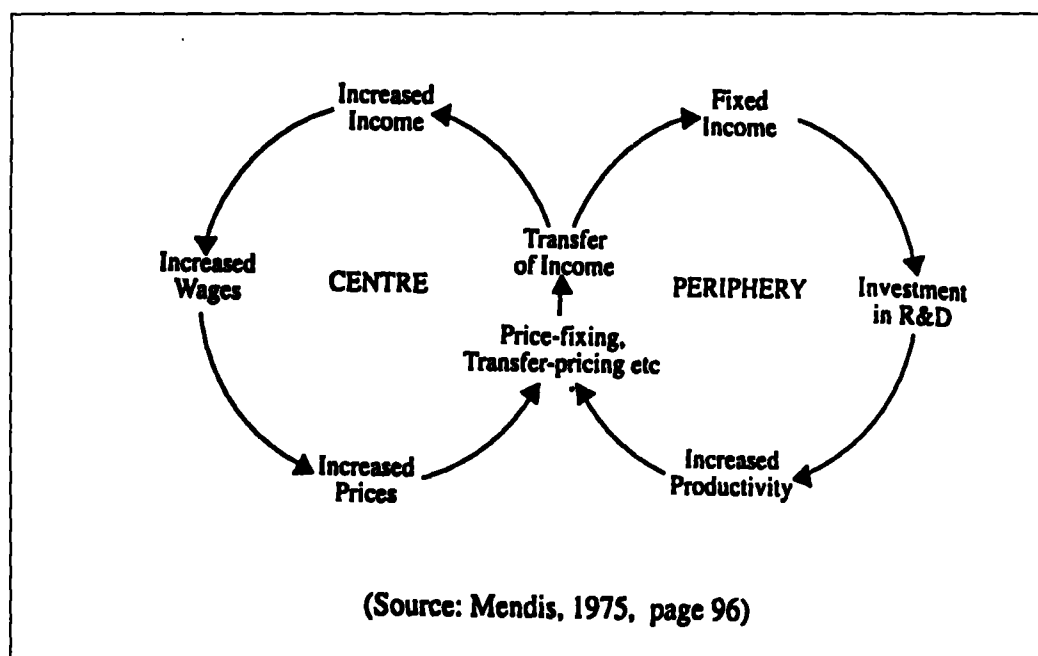


Fig. 1. The Development of Underdevelopment

Since that time I have been greatly enlightened by the work of Raul Prebisch's successor as Secretary-General of UNCTAD, Dr. Gamani Corea, from whose book *Taming Commodity Markets - The Integrated Programme and the Common Fund*⁴, I shall quote extensively in this presentation. (Incidentally, I may be forgiven for mentioning in passing, that Dr. Corea, as Secretary of the Ministry of Planning and Economic Affairs, chaired the Board of Selection of the Public Services Commission which selected me to that important Ministry in 1969).

Pugwash. In presenting what I describe as a Pugwash perspective on Energy, Development, and Security, I must emphasize, at the very outset, that these are my own views, and that they do not in any way reflect an official position of the prestigious international Pugwash Conference on Science and World Affairs. These views, based on my own experience at many Pugwash conferences since 1978, have been tempered by reading a recent Pugwash publication titled *World Citizenship - Allegiance to Humanity*⁵, edited by Professor Joseph Rotblat, the 1995 Nobel Peace Prize Laureate, to which I shall refer later.

Professor Francesco Calogero, who held the office of Secretary-General of Pugwash from 1988 to 1997, gave a valedictory address at Lillehammer on *Pugwash - past, present, future*. He said, inter alia, that the prestige of Pugwash rests on three aspects of its past (and present) performance, namely: a personal concern of Pugwashites for the survival of our civilization and our species; involvement in Pugwash from the beginning of eminent scientists; and, a focus on substance rather than on form, in Pugwash discussions. Ex-

panding on the first aspect Professor Calogero said that Pugwash debate "goes beyond any narrow interest: in particular beyond the identification with any specific cause, associated with some nation (the 'nationalistic' or 'patriotic' syndrome) or some ideology (the conviction to be right, the politically 'correct' syndrome), and also beyond the ambitious urge to promote an important role for oneself (the 'prima donna' syndrome)."⁶

This is an useful description of what I understand as the 'global Pugwash perspective', which eschews the 'nationalistic' or 'patriotic syndrome', the politically 'correct' syndrome, and the 'prima donna' syndrome. My intention is to conform to these Pugwash guidelines in this presentation today.

2.0 Background

The relation between Energy and Development is well known, in Sri Lanka today, especially to an audience of this nature. So too is the relation between Development and Security, at the present time. Likewise, a relation between Energy and Security may immediately come to mind in connection with the terrorist attacks on the petroleum installations in Orugodawatte and

4 Corea, G. *Taming Commodity Markets - The Integrated Programme and the Common Fund* in UNCTAD, Vistaar Publications, New Delhi, 1992,

5 Rotblat, Joseph (Ed.) *World Citizenship - Allegiance to Humanity*, Macmillan press, London, 1997

6 Calogero, Francesco, "Pugwash, past, present, future" in Mendis, DLO *Meaningful Development - A Pugwash Perspective*, Sri Lanka Pugwash Group publication, Kandy, 1997, p. vi

Kolonnawa in 1995, and on the Kelanitissa thermal power station more recently, in November 1997. It is for these reasons that I selected the subject of this lecture, in which I shall try to show that the conventional wisdom of development is taking us in a wrong direction, today. I shall start with some historical background of geo-politics, for which I shall introduce, very briefly, six studies on aspects of global development.

Limits to growth. First, the Report to the Club of Rome Limits to Growth⁷, published in 1971 showed that growth could not be sustained on account of insufficient natural resources. Non-renewable resources would run out in a comparatively short time, unless consumption was curbed and/or alternative resources were found. Second, was a response to that Report published shortly after, by the Bariloche Foundation in Argentina, chaired by Professor Amilcar O Herrera, which was described as a Latin-American model meant to be a third world alternative to the Limits to Growth study. OPEC's "first oil shock" which came shortly after seemed to confirm both the Limits to Growth study's conclusions, and the Latin-American model, as distinct possibilities for the future, depending on which development strategies were followed.

The Brandt report. Third, was a study initiated by Robert McNamara, a Pugwashite, (apart from his other qualifications as one-time head of the World Bank, and of the CIA). In January 1977, he had proposed that an independent Commission of experienced and distinguished persons, from both developing and developed countries, should be brought together to study and report on global economic problems and development issues. An Independent Commission on International Development Issues chaired by Willy Brandt, former Chancellor of West Germany, and a Nobel Laureate, was appointed by the United Nations, and its Report titled in English: "North-South: a Programme for Survival"⁸ was submitted to the Secretary-General of the UN in 1980, after a two year period of study. The mandate of the Brandt Commission was stated thus: "It should seek to identify realistic and desirable directions for international development policy in the next decade, giving attention to what in their mutual interest both the developing and developed countries should do".

Responses to the Brandt Report. The fourth reference is a 1981 book titled Towards one World?, International Responses to the Brandt Report,⁹ from the Friedrich Ebert Foundation. Like the Bariloche Foundation's response to the Limits to Growth study, this book Towards One World? is a response to the Brandt Report. It consists of a wide array of views, ranging from agreement to scepticism concerning findings of

the Brandt Report. Of special interest to Pugwash is the general agreement on ending the arms race in order to release resources for development, as in Sri Lanka today. The following are typical comments, as summarized in the book:

Raul Prebisch: "It is imperative that the developed countries look much further beyond their immediate problems with a marked sense of historic foresight which hitherto they have not displayed".

Margaret Thatcher: "The greatest contribution that the developed countries can make is to restore a buoyant rate of growth in their economies, and then to enlarge the markets which they offer to developing countries".

Amilcar O Herrera: "The present crisis is the reflection of the crisis in a way of life and a concept of the world, and cannot be resolved simply by way of economic growth and certain other palliative measures which do not go to the root of the problem".

Andre Gunder-Frank: "...contrary to the apparent belief of the Brandt Commission, the present crisis is not a Keynesian under-consumption crisis of demand deficiency but a classical overproduction crisis of accumulation".

The Brundtland Report. Fifth, Our Common Future¹⁰, the Report of the World Commission on Environment and Development, published in 1987 dealt with 'A global agenda for change'. It included an Executive Overview: From One Earth to One World. Known as the Brundtland Report, after its head, Ms. Gro Brundtland, Prime Minister of Norway, it was an UN study on problems of environmental degradation at the global level. Global solutions need institutional change at the highest levels, because available administrative systems are deemed inadequate.

Commodities. Sixth and last, but not least by any means, is Dr. Gamani Corea's authoritative 1992 book *Taming Commodity Markets - The Integrated Programme and the Common Fund*, from which I shall quote at length. It deals with the principal problem facing all former colonial, poor, developing countries, the problem of markets for their primary production. Dr. Corea sums it up thus: "The heavy dependence of many of the developing countries on commodity production and trade goes back to colonial times when investors from

7 Meadows BH, Meadows, DL, Randers, A, and WW Behrens, Limits to Growth, Potomac Associates/Universe Books, New York, 1971

8 Brandt, Willy, "North-South: a Programme for Survival,

9 Friedrich Ebert Foundation (Ed) Towards one World?, International Responses to the Brandt Report

10 Brundtland, Gro Our Common Future: Report of the World Commission on Environment and Development

the metropolitan countries developed and exploited the natural and human resources of the dependent countries for the purpose of supplying foodstuffs, agricultural raw materials, and minerals to their own and international markets..... These exports linked the colonial territories to the world economy"¹¹

The impact of fluctuations in commodity prices, both short term and long term, is described thus: "In the case of smallholders and subsistence farmers, there is often a tendency to increase rather than to curtail production in times of falling prices because of the desperate need to sustain incomes. Even governments of poor countries are tempted to protect revenues and foreign exchange earnings in the face of declining external prices by measures that support production, such as devaluations of local currencies and reductions in export taxes. (Emphasis added) The result of all this is a weakening of the corrective response of supply to a fall in prices and an aggravation of this fall"¹². Dr. Corea's conclusion is that "market forces by themselves do not serve to bring about stability in commodity markets"¹³.

This calls for intervention by governments, says Dr. Corea: "The case for intervention in commodity markets flows from the concepts and analysis of classical economic theory as it comes to be applied to the special case of agriculture. It does not have its origins in the socialist case for state intervention or state trading. Its aim is to improve rather than to replace the price mechanism and the play of market forces"¹⁴. Dr. Corea adds that though government intervention is mostly necessary in developing countries, it is being practiced most effectively in developed countries: "To this day, agriculture remains heavily protected in the United States, Japan, and the European Economic Community....." And he describes the effect of this protection, unequivocally: "Domestic protection restricts markets open to outside producers and thereby exerts a depressive effect on world markets and prices"¹⁵.

Describing the historical evolution of international commodity policy, Dr. Corea says that after the recession of the 1930s, schemes for stabilizing prices were set up for tea, rubber, sugar, wheat and tin. In respect of these pre-war schemes for tea and rubber he says: "Some of the principal consuming countries had a direct political and economic stake in the producing territories. They were both the governments of these colonies and the source of investments in the industries concerned. The question of confrontation with powerful countries, or the issue of 'political will' on their part, was, in such circumstances, much less of a factor than it has come to be in later times"¹⁶.

He goes on to say that the economist John Maynard Keynes "had included a global scheme for stabilizing commodity prices in general as part of a triad of institutional

arrangements to deal with international economic relations in the post-war period"¹⁷, which however had not been implemented when only two of the three proposed institutions, the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (the World Bank), were established following the well-known discussions in Bretton Woods, New Hampshire, USA, in 1944.

The question of commodities had next been discussed in the Havana Conference in 1947 which prepared the "Havana Charter", according to which "a new and comprehensive International Trade Organization was to be set up with responsibility for a wide range of issues"¹⁸. But this too never came into existence because the USA failed to ratify the Charter. However, "virtually all the newly independent countries were heavily dependent on their commodity production for their economic well being"¹⁹, and the "commodity issue" became an issue in North-South negotiations in general. This was brought into sharper focus by Raul Prebisch the first Secretary-General at the First Session of UNCTAD in 1964. Dr. Corea also notes that "During the debate on commodity agreements.... the delegate of Libya, Mr. El Attiga, suggested that petroleum be included among the products that were to be the subject of regulation schemes. This did not find favour with the other countries, developed or developing. Developing country representatives felt that the oil industry was not in need of support being in the hands of powerful foreign companies"²⁰. This of course was after the 1961 nationalization of oil in Sri Lanka, but nine years before OPEC's "first oil shock".

NIEO. The historic Sixth Special Session of the United Nations General Assembly in 1974, had been convened to discuss issues arising from the so-called "first oil shock" of 1973, when OPEC dramatically increased the price of petroleum. Gamani Corea says: "The Sixth Special Session took place in an atmosphere vastly different to that which prevailed in the earlier life of the United Nations. A new group of countries with considerable economic and financial power had emerged almost overnight on the world economic scene. Its actions had shaken the industrialized countries, which had up to then been the arbiters of

11 Reference 4, p. 1

12 Ibid, p. 7

13 Ibid, p. 8

14 Ibid, p. 9

15 Ibid, p. 9

16 Ibid, p. 19

17 Ibid, p. 20

18 Ibid, p. 20

19 Ibid, p. 22

20 Ibid, p. 23, Footnote

economic change, virtually immune to whatever the developing countries might do..... The political significance of the OPEC action was such that the dividing line at the Special Session was not between oil importers and oil exporters, but between developing countries, now in pursuit of a new economic order, and the developed countries, guardians of the status quo²¹. However powerful decision-makers in the IMF and World bank, with necessary support from their loyal friends in developing countries, set about "re-cycling petro-dollars", in effect reducing the impact of the "oil shock" on the developed countries, at the cost of the developing nations.

Dr. Gamani Corea had attended the Sixth Special Session in New York just a few days after assuming office in Geneva as Secretary-General of UNCTAD. He says:

*"At the Special Session, I outlined the rationale for a major initiative in the area of commodity trade, linking the commodity question to the new situation that had arisen in the wake of the energy crisis"*²². Dr. Corea had argued for "the linking of the prices of commodities to the prices of manufactured goods and the greater co-ordination of policies by the producing countries with a view to stabilizing and improving their earnings..... there would also be scope for arrangements for compensatory financing, both of a short- and a long-term character, to help meet unforeseen short-falls. The Sixth Special Session concluded with the adoption of a 'Declaration and Programme of Action on the Establishment of a New International Economic Order' (NIEO). The decision was taken without a vote. In subsequent years - and to an increasing degree with the passage of time - some of the leading industrialized countries began to distance themselves from the NIEO concept, with attitudes ranging from ridicule to hostility. But such was the climate of the time that when the Declaration and Programme was adopted, they acquiesced in its adoption without calling for a vote, contenting themselves with explanatory statements and reservations. ... (Some statements and reservations had been strongly worded, however, for example the statements made by the USA). The Programme of Action for a NIEO, for the most part, did no more than reiterate the familiar platform of the developing countries on a wide range of specific issues. What was new in the NIEO was rather its general flavour and its particular emphasis on structural change in the world economy on the one hand, and on collective self-reliance on the part of the developing countries on the other. The language of the NIEO reflected the changed atmosphere of that time and the sense of the developing countries of having, for the first time, a 'presence' on the world economic scene"²³.

NAM In the wake of the Sixth UN Special Sessions, and as a prelude to the 5th Non-Aligned Movement Summit Conference chaired by Prime Minister Mrs Sirimavo Bandaranaike, in Colombo, I was able to organize a Non-Aligned Science Conference for the

SLAAS in June/July 1976. Scientists, from more than 30 developing countries, many of whom were far better informed about science and world affairs than Sri Lanka scientists, discussed issues of development and non-dependence in a week long conference, and presented their conclusions in a number of Resolutions at the final plenary sessions. That experience reinforced my conviction of the need for scientific and technological co-operation among non-aligned and other developing countries²⁴. However, the heady experience of that international SLAAS conference was soon forgotten, for a very good reason: after the change of government in July 1977, irony of ironies, leadership of the Non-Aligned Movement (NAM) passed from Mrs. Bandaranaike to the new Prime Minister JR. Jayewardene, popularly known as Yankee Dickie. Sri Lanka supported Mrs. Thatcher against the Malvinas in the Falklands war, and by the time President Jayewardene handed over to the next Chairman, President Castro of Cuba, in 1982, the Non-Aligned Movement had sunk into virtual ineffectiveness.

At my first international Pugwash Conference in Breukelen, Netherlands in 1980, I presented a paper on "The New International Economic Order (NIEO), Basic Needs, the Physical Quality of Life Index (PQLI), and Zero-tillage Agriculture"²⁵. I spoke about problems of developing countries, and introduced to Pugwashites the NAM countries demand for a New International Economic Order. Eight years later in 1988, the year after the WCED Report *Our Common Future* was published, the Pugwash Council presented its historic Dagomys Declaration, the opening paragraph of which says: "We live in an interdependent world of increasing risks. Thirty-three years ago, the Russell-Einstein Manifesto warned humanity that our survival was imperiled by the risk of nuclear war. The familiar challenges identified in that Manifesto and the 1982 Warsaw Declaration of 111 Nobel Laureates remain as important as ever. But in the spirit of the Russell-Einstein Manifesto, we now call on all scientists to expand our concerns to a broader set of inter-related dangers: destruction of the environment on a global scale and denial of basic needs to a growing majority of humankind"²⁶.

21 Ibid. p. 27

22 Ibid. p. 27

23 Ibid. p. 29

24 Mendis, DLO, "Science, Technology and the Liberation of the Third World", Marga Journal, Special Issue, June 1976

25 Proceedings, Pugwash Conference on Science and

26 Proceedings, Pugwash Conference on Science and World Affairs, 1988, p

The phrase - *destruction of the environment on a global scale* - echoed findings of the 1987 Brundtland Report, and the phrase - *denial of basic needs to a growing majority of humankind* - virtually summed up the gist of my first presentation at an international Pugwash conference, eight years earlier. With these preliminary remarks to establish the necessary background, I now come to the main topics of my lecture.

3.0 Energy

Energy, in all its aspects, is a subject for discussion at every international Pugwash conference today. In a 1974 SLAAS paper on "*An Energy Policy for Sri Lanka*"²⁷ I had shown that energy together with labour and capital could be a basis for perspective planning. In 1994, a Pugwash study on "*A 1.5 Kw. Society*"²⁸ developed this concept further. Energy is all important for survival, and, as a commodity it is often the cause of conflict in the modern world. Primitive humans first depended on muscular energy in hunting and gathering the products of nature, both fauna and flora. Human energy was augmented by the power and energy of domesticated animals after the advent of pastoralism, and by the power of water flowing under gravity for irrigated agriculture, after the neolithic revolution. Various mechanical devices were invented in ancient civilizations, including levers and pulleys for lifting. Together with the wheel, and draft power, this made construction of ancient structures possible, some of which still exist and function in Sri Lanka and other seats of ancient civilizations. Sri Lanka's ancient irrigation systems, now described as *water and soil conservation ecosystems* have been recognized as one of the wonders of the ancient world.

In modern times the science and technology of ancient civilizations in China²⁹, India³⁰ and west Asia³¹ have been studied, but the indigenous science and technology of the ancient civilization in Sri Lanka has not been studied systematically. There must be a wealth of knowledge awaiting discovery. For example, **unique west-facing wind-powered furnaces for smelting iron ore**, that had produced iron and steel of highest quality in ancient times, and *damns* sword steel used in the Crusades, were discovered in the Samanala weva area some years ago, and investigated by a British woman archaeologist/metallurgist³². This discovery, surely a landmark in the study of ancient civilizations, has not received the attention it deserves from local scientists, engineers and historians.

After pre-Christian civilizations of Europe and Asia, and the medieval Islamic civilizations of Asia, Africa and Iberian Europe declined, European colonial expansion gathered momentum, with sailing ships and

galleons using wind energy³³. Centres of empire grew in European capitals, first Lisbon and Madrid, later Amsterdam, Paris and London. The Renaissance and the Reformation (which gave rise to the Protestant ethic³⁴) were stimuli for the medieval industrial revolution in Europe³⁵. The next industrial revolution used steam, and wind energy, to supplement and supplant hydraulic energy. Emergence of the market system and early mercantile capitalism, following European colonial expansion, changed the face of the globe forever³⁶.

Modern science, like cricket, is a British colonial inheritance in countries like Sri Lanka. Science has recognized the sun as the primary source of all energy, which is further classified as renewable and non-renewable energy. Net primary production or NPP is a measure of renewable energy from photosynthesis. Some of the NPP from earlier geological time is available in the form of liquid petroleum, natural gas, coal, shale and peat deposits, which are the best known and most exploited non-renewable energy sources. Their over-exploitation (Figure 2) has been brought to attention by scientists, but development of alternative technologies based on renewable energy sources, is still inadequate. Work done at the National Engineering Research and Development Centre in this area needs to be encouraged and followed up with support from government for applications on local projects³⁷.

Electricity and oil are perhaps the most convenient forms in which commercial energy is available in the modern world. Application of electricity to transport, which is dominated by oil on account of the internal combustion engine³⁸, suffers from insufficient development of storage technology. Electric cars using lead-acid batteries involve too high a dead load for

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- 27 Mendis, DLO, *An Eneergy Policy for Sri Lanka*, Proceedings of the SLAAS, 1974 (Abstract)
 - 28 Durr, Hans-Peter, "The 1.5 Kilowatt Society", in *The World at the Crossroads*", Pugwash, 1994
 - 29 See for example Needham, Joseph et al. *Science and Civilization in China*, Vol. 4, Part 3, Cambridge, 1971
 - 30 See for example publications by Abdul Rahman, CSIR, New Delhi
 - 31 Seyyed Hossein, *Islamic Science*, Chicago University press, 1981
 - 32 Juleff, Gill, *Ancient West-facing Furnaces in Sri Lanka*, Nature, 1994
 - 33 Mendelssohn, Kurt, *Science and Western Domination*, Cambridge, 1985
 - 34 Weber, M,
 - 35 Gimpel, J. *The Medieval Machine*, Victor Gollansz, London, 1977
 - 36 Heilbroner, Robert L. *The Making of Economic Society*. Prentice-Hall, 1962
 - 37 Mendis, DLO, *Progressive Development of Technology under Development Councils*. CRDS, Colombo, 1993
 - 38 Heilbroner, op. cit. pp. 102-104

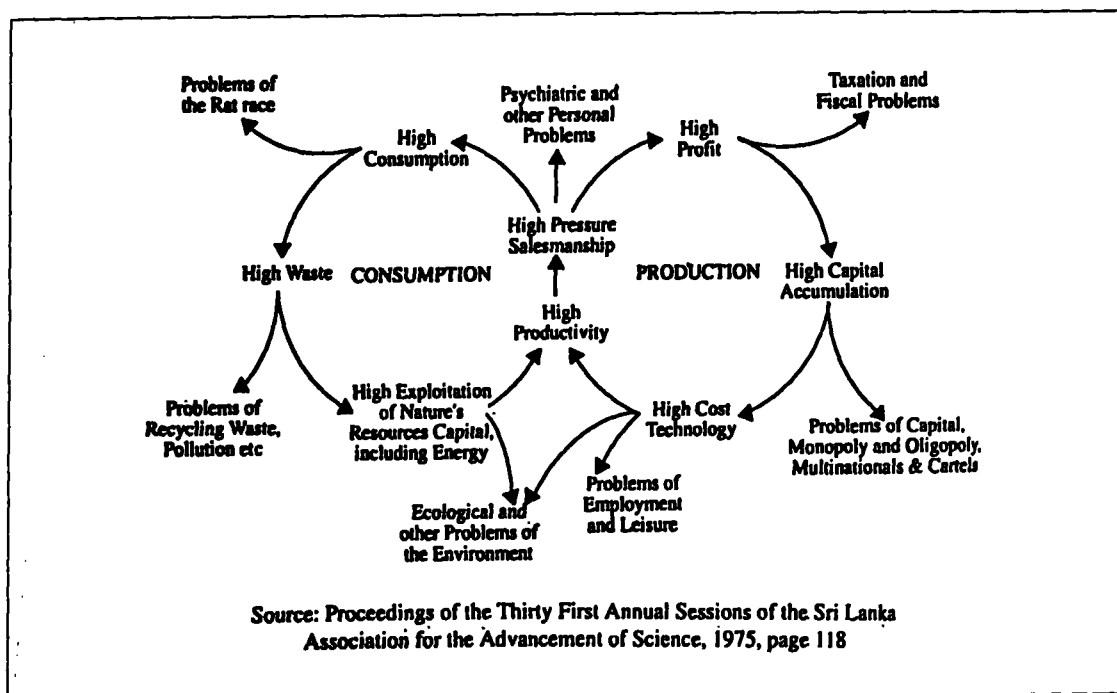


Fig. 2. The Vicious Spirals of Overdevelopment

design efficiency and convenience. Development of hybrid cars and commercial vehicles³⁹ is an area for future investment, in which local engineers and entrepreneurs in Sri Lanka and other less developed countries should take a lead. Lenin is said to have given a formula for rapid economic development as: **Electricity + Soviets = Development.**

Electricity. Electricity had been introduced to the island by the private sector in British times, but for whatever reasons government initiatives which followed grew into a monopoly. Nationalization of foreign owned oil companies in this country in 1961 was a bold step which led to the Hickenlooper amendment to the US constitution, and withdrawal of the US Mission from Ceylon, for a short time. Both electricity and oil have been state owned monopolies for a long time, but now there are indications of impending privatization. Unlike in the USA and other countries, the monopoly state Electricity Board did not permit any other enterprise to generate power for the state owned national electricity grid. An exhaustively researched 1982 publication by Hunter and Amory Lovins of the Rocky Mountain Institute, Colorado, USA, *Brittle Power*, argued that the USA was vulnerable on account of dependence on highly centralized technologies for its electricity systems, as well as for supply of food, water and industrial products⁴⁰. It identified as threats facing the energy system in the USA, "natural events, aggressive physical acts (war, terrorism, and sabotage), failures of complex technical and economic systems, and accidental failure or deliberate disruption of the devices that control these systems"⁴¹. Since we follow closely the methods of the US electricity system, we too should be subject to these same threats; but whereas these

problems have been identified and addressed in the USA, indications of a similar approach in Sri Lanka are not readily available.

4.0 Development

I have already quoted Dr. Gamani Corea on the importance of commodity production and marketing in developing countries. He gave a IFS/SLAAS monthly lecture on *National and International Dimensions of Development*, in September 1993, some notes from which I have used for this part of my presentation today.

It has been pointed out (Dr. Corea said) in debates at various forums of the United Nations that even in the 4th UN Development decade, the last decade of the 20th century, *global poverty is increasing*. Consequently there is a new setting for development today compared to a decade or two ago. As a result many countries, maybe most, are changing their economies in the direction of loosening up controls that previously regulated them. There are two main reasons for this:

- the recession starting in the early 1980s in the industrialized countries, in large part deliberate to counter the 'overheating' of their economies
- the effect of this on the poor, developing countries in Latin America, Africa and parts of Asia

39 See, for example: Lovins, Amory and Hunter, and Weizsacker, H. Factor Four - Doubling Output, Halving Resource Use. 1997

40 Lovins, Hunter and Amory, *Brittle Power*, Brick House Publishing Co. Massachusetts, 1982. p 5

41 Ibid, p. 10

There was no mention at that time (September 1993) of effects of 'overheating' in east Asian economies that are currently being experienced, mentioned below.

The lost decade. The decade of the eighties became known as the Decade of Despair, the 'lost decade'. Developing or Less Developed countries (LDCs) had little choice but to turn increasingly to the IMF, World Bank, and Multinational corporations. Donor sources laid down policies of 'structural adjustment', and developing countries had to open out more to market forces, reduce the role of the state, and increase private enterprise in *virtually all sectors of their economies*.

Another aspect is that the earlier development approach of LDCs had 'run its course'. The state was the only 'engine of growth' in these LDCs, not due to any socialist ideology but as a pragmatic response to reality due to lack of a strong private sector. However, inspired by socialist ideologies, the role of the state was intensified in some countries, including Sri Lanka. This trend also came up against constraints of funds, personnel, expertise, and so on, resulting in diminution of impact, a damper. By late 1970s the stage was set for a change. Sri Lanka was one of the first to change towards greater de-regulation. India has followed suit more recently. Today only North Korea and Cuba have not accepted these IMF and World Bank led changes.

In Sri Lanka there is some evidence, though not very striking, of improvement in the economy since the late 1970s. For example the share of manufacturing and services is increasing, agriculture is decreasing and is now around 25%; export of manufactured goods has replaced tea at the top; remittances of migrant workers is next highest. Similar changes have occurred in import structure. Previously consumer goods was highest, but now 50% of imports are intermediate goods, and 25% are capital goods. We may hope to achieve Newly Industrialized Country or NIC status by early 21st century, though not 2000, if growth rates are sustained at 8-9%. It may be noted in comparison that China has maintained growth at 13% over the past 2 years.

There is some optimism today, Dr. Corea said, (in 1993), inside and outside Sri Lanka, that growth rates can be increased. But it will not happen 'naturally' but must be heralded in by new policies. So, we must look at how our policies can evolve further. The IMF and World Bank's neo-capitalist policies that Sri Lanka has adopted are laissez-faire market policies with a minimum role for the state. For many years this was thought to be the key to the growth of the Asian 'tigers', but this was not so. Their growth was due to a blend of intervention by the state, and the private sector, in what is now seen as an intimate partnership

with the state which did not withdraw. *It was not laissez-faire capitalism but 'state directed capitalism'.*

NIC status. We too should reflect on moving to this new phase. The first phase is 'clearing the decks', 'dismantling controls', removing obstacles. So far some change has been achieved, but not enough. In the second phase some laissez-faire concepts have to be modified and amended with some degree of pragmatism.

In summary, there are two imperatives for achieving NIC status -

- transformation of our infrastructure - roads, airports, legal systems. This is a vital component of modernization. (For example there is not a single highway in Sri Lanka, at the present time).

- similarly, skills, and knowledge, must be upgraded.

Knowledge is the key, because economic activities are knowledge-intensive. The future world will be divided into countries that know, and countries that do not know. Scientific and technological development in every aspect from schools to Universities, was almost an obsession with (the late) Nobel Laureate Professor Abdus Salaam. Dr. Gamani Corea then gave his own equation or formula for development as:

Infrastructure + Skills = Development

Food security. In regard to other broad policies, Dr. Corea said that while industrializing, agriculture should be developed, hand in hand in this country, particularly food production from the security viewpoint. We must provide most of our food, even if it is against the 'comparative advantage' principle of classical economic theory. Also, attention has to be given to the problem of poverty alleviation, and the special case of the rural poor, to arrest drift to the cities.

Markets. In regard to attitudes to domestic markets, Dr. Corea said that although exports are necessary, production for domestic markets too must grow, because linkages come from these. We should not have a policy in which the export sector gets more incentives. We should have a 'level playing fields' policy for both exports and production for local markets. Similarly, though protection for domestic industry is criticized, we cannot do without it altogether. Infant industries, nascent industries, need protection. In fact 'the whole economy is a nascent economy' Dr Corea said. Protection is necessary, but it could be time-bound.

Market forces are a powerful lever, but left to themselves they do not ensure equitable distribution. So, they must be moderated in such a way as to check

negative aspects. The State must moderate maldistribution of many things, including distribution of income, and environmental degradation. These are necessary qualifications of the laissez-faire market economy. Referring to the role of the Public sector, Dr. Corea said that Planning is necessary. Just as a map is needed to get somewhere, similarly a plan is necessary for economic development.

In the industrial sector, the best of domestic policies will not produce results, he said, *if the global dimension is hostile*. If all LDC export drives are to succeed, then where are the markets? Not in the DC, certainly not. Many of them are grappling with recession. An adverse external environment is bad for a LDC. If new policies are to succeed, there must be improvement in the external economic environment.

This is one of the weaknesses of the World Bank's policies. For example, *real prices of primary products (exported by LDC) today are actually lower than the lowest prices in the depression in the thirties!* Hence the debt-service ratio is very high in LDCs. This was so in Latin America in the fifties, but now there has been a 'turn-around' in the debt crisis of the middle-income countries. But this is not so in the poorer LDCs. That was why Professor Raul Prebisch, the first Secretary-General of UNCTAD, was fighting for a generalized system of preferences, not a selective system. (Dr. Corea is Chairman of UN Debt Committee of the LDCs).

In regard to resources, Dr. Corea said that private foreign investment grows only where profits are possible. Market access is difficult for LDCs. It does not seem clear that the Uruguay round will find an answer. Mega blocs is the newest trend. EEC, NAFTA, APEC are examples. Some countries will develop with them, for example the USA and neighbouring countries under NAFTA. In the Asia Pacific Economic Community, APEC, there will be Japan, USA, Australia, NZ, China, East Asia, SE Asia, maybe some Latin American countries also, like Mexico, Argentina, Peru, Brazil. But South Asian countries will be left out (Sri Lanka included).

Dr. Corea said that he would end his lecture on a pessimistic note because the North has to be convinced that danger to them is not the success of the South, but its failure. To do this, revival of the North-South dialogue is essential, but there is no indication of that as yet.

In the course of the discussion that followed Dr. Tissa Vitarana said that markets are shrinking on account of recession. South Asia is at a disadvantage without bilateral trade agreements with developed countries, as the East Asian and SE Asian countries have, for their export oriented development strategies. Moreover, in

Sri Lanka, though there is increased manufacture, the local component is very small, maybe 15%. Also, most of the profits are exported - so there is no real development. In regard to increasing automation, in the computer age, Dr. Vitarana said that even in Newly Industrializing Countries this results in marginalisation and shrinking job opportunities. Therefore, labour saving automated industrialization will not help us.

Long term strategy. Dr. Corea, responding to the question of inadequacy of external markets, said that he was stressing that in the long term we must look for markets not only in developed countries but also in LDCs themselves. A small country like Sri Lanka will find it less difficult to export than a large country like India or some of the East Asian countries, he said. In regard to the question of high imported components, he said that it was better to have some industrialization even with imported inputs. For example Japan has no indigenous raw materials. In regard to inadequate value-added in local manufacturing he said that the bulk is in forward linkages, not in backward linkages. For example Japan's cars and TV sets go into primary markets. In regard to the fear of displacing labour by automation, he said that this fear has been expressed from the time of the industrial revolution, but the profits accruing can be reinvested in other industries to create employment. For example, mechanization generates savings although it creates unemployment. That is why structural unemployment in developed countries is affordable, and can be supported.

Dr. Nissanka Seneviratne made two points: firstly, knowledgeable people are leaving this country; secondly, in regard to the policy of "export or perish": he said that Sri Lanka is one of two countries with silica quartz of highest quality. We do not have the knowledge or skills to exploit this, but in the name of exports we are sending this out. Similarly, in regard to migrant labour, the "human costs", is a very worrying aspect. Tremendous social degradation results for so-called foreign exchange earning.

Brain drain. Responding in regard to brain-drain, Dr. Corea said that inadequate remuneration is untenable in the long run. He observed wryly that "Political brains don't drain". In regard to export of raw materials he agreed entirely that exporting raw materials in raw form is commodity exporting, not industrialization. I don't know the answer he said, is it technical, or entrepreneurial? Whatever it is, it is better to keep the raw material until we can process it at some later time. In regard to the export of labour he said that it is saddening that we have to export lowest paid

personnel, even in the Middle East. Dr. Corea added that the Sri Lanka Consul in Kuwait had told him that he has sent back 2 coffins per week, a very sad commentary.

Globalization. Dr. Gamani Corea did not specifically mention the now rather well known term **globalization**, in his lecture. However, in a chapter in the Pugwash book referred to earlier, *World Citizenship - Allegiance to Humanity*, a Canadian economist Morris Miller, in a chapter titled *The Threat and Promise of Globalization*⁴², argues that:

-The gap between the rich and the poor is widening with immiseration remaining persistent and widespread

-The nature of technology is changing rapidly, widening the educational/financial gap and increasing the unemployment rate

-The pressure on the environment is increasing, exacerbated by the spreading poverty and by the debt overhang

-The capacity of developing countries to compete is decreasing and that of the large multinational corporations is increasing with particularly distressing socio-economic-political consequences for developing countries

- 'Off-shore' international financial flows are large and growing rapidly - and the rate of increase, composition and volatility of these flows has been increasingly beyond governmental control

Observing that *the international economic scene is far from a level playing field*, Miller suggests two economic/financial preconditions for achieving growth with equity, and improvement or maintenance of social and economic standards:

1. Lowering real interest rates to the historic range of 1 per cent or less and dampening the volatility of exchange rates
2. Increasing financial flows to developing countries

Here in Sri Lanka, the following comment has been given publicity recently:

"A hidden plan appears to be constructed to amalgamate a country's resources with a group of international financiers. It is to be implemented stage by stage, which seems to be conforming to a carefully constructed pattern, which is being already implemented in more than one country. These stages could be identified as follows: 1. Restructuring 2. Privatization 3. Shares 4. Share-hold raiders 5. Sold assets, and 6. No more national wealth."

1. *Restructuring - which entails replacing the present national structure (which is beneficial to the country) with an international structure, which will eventually lead to globalization*
2. *Privatization - This appears to be the transfer of ownership of a country's resources from a national level, to that of an international level. Under this the first two utilities that seem to be earmarked for privatization are telecommunications and electricity*
3. *Shares - When an institution is privatized, naturally the shares will be made available*
4. *Share-hold raiders/ foreign investors: Although a government may initially hold 51% of the shares, what is observed in other countries where this system is implemented is that subsequently more than 51% of the shares end up in the hands of foreign investors, e.g.. New Zealand and Australia*
5. *Sold assets: As a result of the above, a country's resources appear to be entrenched in the hands of international financiers*
6. *No more national wealth: The ultimate result would inevitably lead to a country being dispossessed of its national wealth"*⁴³

The implication seems to be that the IMF's structural adjustment programs are set up and supported by public sector administrators, technocrats, and scientists, who, by and large are unaware of, or quite unconcerned with the impacts of these programs as seen in the above analysis. (Their prime concern may be to position themselves for new plums of office which these very structural adjustment programs will make available).

The recent crises in East Asian economies, according to the above analysis, is in part a consequence of globalization. These crises were discussed recently, in a public seminar organized by the Central Bank on January 22, 1998, chaired by the Governor Mr. AS Jayewardena. A panel which included Mr. Moksevi Prelis, Director/General Manager of the Development Finance Corporation, a distinguished engineer/banker and former Vice-President of this Institution, answered questions raised by members of a packed auditorium, very competently. The general impression was that the crises in the "tiger" economies, had been inevitable on account of lack of real productivity, excess investment in infrastructure, for example high-rise buildings, and bad financial planning. The discussion suggested that Sri Lanka had a better control of its economy, in the manner recommended by Dr. Gamani Corea, as "state-directed capitalism".

43 Obeysekera, JP. Letter to the Editor, Daily News, October 2, 1997

Eppawala. There was only one sour note, as far as I was concerned. In answer to a question about the proposed Eppawala Phosphate rock project, the answer was that it did not make sense to keep such an asset for utilization over several hundreds of years, when it could be sold and benefits given to the local people. My response was that the local people were in fact protesting against the project, but that their protests were being ignored by decision-makers in Colombo. In fact, I quoted Dr. Gamani Corea's statement that *"exporting raw materials in raw form is commodity exporting, not industrialization"*, (see above) but the reaction of the panel appeared to be in support of the view that it was better to make a profit out of it now rather than later.

It is possible that only few in the Central Bank auditorium audience knew much about the Eppawala phosphate rock project. This enormous deposit was "discovered" back in 1971, by the Mineralogical department, (in the same sense that Columbus "discovered" America). The Ministry of Planning and Economic Affairs' Regional Development Division took it up as a Divisional Development Council (DDC) project. I was involved in the preliminary planning, and tried to get the Engineering students of Moratuwa University involved in various ways. Civil engineering students did the survey for a branch railway line from Talawa railway station, under the direction of the late Mr. LS De Silva, General Manager (Technical) of the Railway, who gave his enthusiastic support, and authority for the work. (However, for various reasons the branch line was not constructed, and tractor trailers continued to be used for hauling the product to Talawa railway station). The project is documented in the Transactions of this Institution, for 1974, in my paper titled *Planning the Eppawala Phosphate Rock Project using Appropriate Technology*⁴⁴. The DDC project, was taken over by the Ministry of Industries in the 1970s, and escaped privatization after 1977.

Those who advised the Minister of Industries will have a lot to answer future generations of farmers and industrialists in this country, if this ill conceived project to sell-out this magnificent deposit of a totally non-renewable resource, to a multinational corporation, is implemented in the teeth of opposition from local people of the Rajarata, as well as by engineers, scientists and local entrepreneurs. For as Dr. Gamani Corea, said, regarding the export of mineral sands, *this is simple commodity trading; not by any stretch of the imagination can it be called industrialization.*

According to reports, the Eppawala phosphate rock deposit will last for centuries, if used judiciously for our own agriculture. But, if the deal with the multinational corporation goes through as planned it will be exhausted in some 35 years, leaving a wasteland

in the very heart of the Rajarata, the scene of one of the most wonderful man-made water and soil conservation ecosystems the world has ever seen⁴⁵.

The Minister of Industries has given a comprehensive newspaper statement on the subject very recently, seeking to justify the project⁴⁶. He says however, that an Environmental Impact Assessment study has to be done, and if the Environmental Authority is against the project it will not be undertaken. One hopes that the EIA study will be done by impartial scientists, and that the Minister will be true to his word.

One final comment: Dr. Gamani Corea has documented a meeting with Sheik Yamani, the then Oil Minister of Saudi Arabia, in Geneva, in the mid 1970s. He said: *"I wanted to know whether in fact the OPEC countries would be interested in investing in the Common Fund. His reply was 'If there is security and an adequate return to investment, then why not? Saudi Arabia has itself some commodities other than oil - like phosphates' "*⁴⁷ Since they have not traded, it seems that even oil rich Saudi Arabia will try to protect its phosphates, but poverty stricken, strife-torn Sri Lanka, is eager to virtually squander this rare, non-renewable natural resource.

How bad projects come on stream. It is necessary to know how bad projects like Eppawala come on stream. One suggestion is that the separation of functions into water-tight compartments in the executive, can lead to such a situation. For example, it was stated at a public hearing in Indonesia, of the afore-mentioned WCED mission: *"In the case of environmental problems, it is obvious that the problems cannot be solved by one group, one group working in separation. You cannot say people are dying of poisoning, it is the Ministry of Health that will solve it. Or to say because it comes from factories, it is the Ministry of Industry. That is impossible.... the problem needs a more holistic approach. The United Nations Organization as a professional organization, has developed this fragmentation. It started automatically with no bad intention at all. But at the same time, the member countries requested and national bodies also requested entry points in recipient countries. So WHO corresponds with the Ministry of Health, UNESCO corresponds with the Ministry of Education, FAO with the Ministry of Agriculture - the fragmentation is getting worse"*⁴⁸.

44 Mendis, DLO, "Planning the Eppawala Phosphate Rock Project using Appropriate Technology". Transactions, Institution of Engineers, Sri Lanka, 1974

45 Mendis, DLO, The Ancient Water and Soil Conservation Ecosystems of Sri Lanka. Lecture at the Southern Development Authority, Sri Lanka, December 16, 1996

46 Daily News, January 27, 1998, p. 6

47 Reference 4, p. 17 footnote

48 Reference 8, p. 311

This sounds familiar here in Sri Lanka, where the general public is often faced with problems arising from division of authority in the public domain. In the case of Eppawala, the Ministry of Industries makes a profit, and couldn't care less about fertilizer requirements of farmers who come under the administrative authority of the Ministry of Agriculture. And, as for Central bankers, they know everything about the conventional wisdom of money, as was evident at the above-mentioned public seminar.

A post-script A very recent news item states that a vast mineral sands deposit has been found off the west coast of Sri Lanka⁴⁹. There may be moves to sell this deposit also as a commodity, in the near future. Implications for Pugwash will be the greater since thorium derived from monazite has a potential for nuclear power and energy.

5.0 Security

The question of security arises at different levels, or scales. One can identify at least four levels, namely local, national, regional, and global. Security at the local level refers to the security of the individual, and the community. At national level, security implies security of individuals, communities, and the nation. (Dr. Gamani Corea's reference to food security above, was obviously at the national level). At regional level, security will involve the security of individuals, communities, and the Sri Lanka nation, in the regional South Asian context. At the global level, security will also involve issues that affect all individuals, and all or most countries and nations, like global warming and sea-level rise, and ozone layer depletion problems, for example.

A long term Pugwash perspective. In the Pugwash study referred to, *World Citizenship - Allegiance to Humanity*, these scales have been ingeniously defined in terms of populations, and quantified to a base ten, in an Executive Overview, thus: "A move to social organization at the global level would continue a steady progression in which social groups have increased in size from the family, in the beginning, to the nation state/continental region, today. (This progression is modeled nicely by successive factors of ten: 10 0- individual; 10 1- family; 10 2- neighbourhood; 10 3- village; 10 4- small town; 10 5- small city; 10 6- medium sized city; 10 7- large city/small state; 10 8- medium sized state; 10 9- large state/continent/civilization; 10 10- entire globe). This trend is perhaps the soundest reason to be optimistic about the prospects for moving to a world organized at the global level. Moreover the time is right for such a transition: modern communications make this final step possible"⁵⁰.

Types of security. Security, at whatever level, may also relate either to personal security or to material security. Personal security refers both to physical safety

and to peace of mind. The former includes the physical well-being of the individual, family, community, and so on, dependent on the provision of assured supplies of basic needs. The latter depends on basic freedoms, enshrined in Constitutions of many countries, including freedom from fear, freedom of association, speech and expression, and freedom from poverty, hunger and disease. The US Constitution refers to the right to life, liberty and the pursuit of happiness. Material security, refers to safeguards against damage to infrastructure including sabotage, and deliberate or incidental destruction in the home, neighbourhood, village, town, city or nation.

In times of peace, personal and material security of this type should be available to all citizens, equally, but in practice as is well known 'some are more equal than others', whatever the system of government. For example in Sri Lanka, when civil unrest was at its height, in the 1980s, government announced that it could not guarantee the safety of its citizens who were asked to learn to defend themselves; but, simultaneously extra arms and security personnel were given to guard Members of Parliament, and some other privileged persons. Professor Alan Bloom has said that "concern for the safety of one's family is a powerful reason for loyalty to the state, which protects them."⁵¹ By this token many Sri Lankans of all races, would have been justified in being "disloyal" to the state at that time of civil commotion and unrest.

Democracy. Civil security in democratic countries should be provided under normal conditions by a properly organized civil police force. Security from external threat should be provided by the armed services, the army, navy and air force. However, armed services are brought in under special circumstances to deal with security threats from within the country. In such a situation, the nation's armed forces can even become engaged in armed conflict with a section of its own people, as we know only too well in Sri Lanka. In the worst case scenario this leads to abandoning the Rule of Law, militarization, and finally to military dictatorship or no party rule. We have experienced virtual suspension of civil law during the 1980s, and are seeing increasing militarization at the present time, on account of the separatist civil war. What Fukuyama has said rather ominously may be noted in this context for the future: "Democracy is also not particularly good at resolving disputes between different ethnic or national groups..... A modernizing dictatorship can in principle be far more effective than a democracy in creating the

49 Daily News, January 29, 1998.

50 Reference 5, p. 9

51 Bloom, Alan, *The Closing of the American Mind*, Chicago University, 1986

social conditions that would permit both capitalist economic growth and, over time, the emergence of a stable democracy"⁵²

Recounting history, the Sinhala-Muslim riots led to enactment of Martial law by the colonial government in 1915. Many excesses had occurred, the best known being the killing of Henry Pedris to whose memory as a patriot, a statue has now been erected in Colombo. In 1958, when the Sinhala-Tamil conflict erupted⁵³, a State of Emergency was proclaimed by government for the first time after independence, and the services were called in to assist the police force to maintain law and order. In 1962, an abortive attempt at a coup d'état by a group of privileged elites in the police and armed services, led by a civilian⁵⁴, was nipped in the bud, and did not lead to widespread internal conflict. Attempted insurrections in 1971, and again in the late 1980s, led to armed conflict between the nation's security forces and insurrectionists. The 1971 attempted insurrection was soon suppressed, but the attempted insurrection in the late 1980s, was prolonged, and fearfully costly in terms of loss of life and destruction of infrastructure⁵⁵. It also did even further damage to Sri Lanka's image abroad, that had been brought to an all time low after July 1983.

Disappearances. The present government appointed Commissions of Inquiry to inquire into the disappearances of tens of thousands of persons during widespread civil disturbances in the 1980s. The Reports of these Commissions have now been handed in to the President who has said that those suspected of crimes will be prosecuted even if they happen to be serving in the ongoing separatist civil war. This contrasts with the position adopted by the previous government which offered an amnesty to service personnel for excesses committed at the height of the period of so-called JVP terror, which led to the "disappearances". This was also the case in some Latin American countries, like Chile and Argentina for example, where too there were excesses and disappearances when attempted insurrections were suppressed by the state. After the conflicts ended in those Roman Catholic countries, some of those involved in causing "disappearances" sought to make their peace with their Maker, in the confessional.

In Sri Lanka, a particularly gruesome parallel which obliquely brought in Buddhism, was brought to my attention by a very distinguished engineer. He told me that a rookie policeman whom he knew had informed him that when he first reported for duty he was asked to "burn a heap of rubbish" behind the police station, with a can of petrol. But, he was horrified to find that the "heap of rubbish" was in fact a heap of human bodies. Worse still, it appeared that some of them were not dead, but dying. My friend had asked

the rookie policeman what he had done, and the reply was that he had recited the "isipitho gatha" and poured petrol on the heap of bodies and set it alight. At the time of this happening, in the 1980s, we had all become used to seeing dead bodies burning on the streets, in the suburbs of Colombo, and Kandy, and in main streets of small towns like Tissamaharama and Hambantota. My friend who told me the story, himself had access to the highest in the land at the time, but he chose to get the terrible story off his chest by sharing it with me. I feel that there must be a moral in this somewhere, related to personal security of the individual.

Buddhist perspective. The correct Buddhist perception of security has been discussed in a Keynote Address at the YMBA by the scholar monk Bhikkhu Bodhi of Kandy, recently. He explains very convincingly that *consumerism* promoted by the profit motive is the cause of a great deal of insecurity. He says, *inter alia*: "In sum, the glorification of the profit motive gives rise to a social order in which the underlying springs of social activity are the twin defilements of ignorance and craving. The experts who defend the system, the advocates of free trade and globalization, tell us that the unrestrained functioning of the economy is the pre-condition for general human happiness, 'the greatest happiness of the greatest number'. But what the Buddha teaches is just the opposite. In a society governed by ignorance and craving, in which greed, reckless growth, and competition are the spurs to mass-scale human activity, the inevitable outcome has to be suffering and conflict"⁵⁶

Conflict. Inversely related to security is conflict: security is directly proportional to absence of conflict, and vice versa. But, this is the negative description of security, just as absence of illness is a negative description of health: *Only illness enables us to see health as health*⁵⁷ It is possible to identify causes of conflict which, by this definition, cause an absence of security, or insecurity. In some Pugwash and other presentations I have identified and discussed *environmental degradation* as one such cause of conflict in Sri Lanka. This in turn was related to water. In my analysis,

52 Fukuyama, Francis, *The End of History and the Last Man*. Penguin books, 1993, p. 119

53 Vitachchi, Tarzie, *Emergency '58*, Lake House, Colombo, 1959

54 Horowitz, David L. *Coup Theory and Officers' Motives*, Princeton, 1980

55 Chandraprema, C. The JVP Insurrection, 56 Ven. Bhikkhu Bodhi, "The Buddha's Message for the next century, Daily News, January 31, February 2,3,4 1998. Keynote Address, YMBA Centenary Celebrations, January 8, 1998

57 Von Weizsacker, CF. "Models of Health and Illness, Good and Evil, Truth and Falseness" in *The Unity of Nature*. Farrar, Strauss, Giroux. New York, 1980, p. 257

it was not a simple shortage of water that was at issue, but a fundamental mistake in understanding what I have described as ancient *water and soil conservation ecosystems* of Sri Lanka⁵⁸. In this context, I have to acknowledge even belatedly, that it was Dr. Ray Wijewardena who suggested that the term "irrigation" was misleading and should be replaced by the term "water conservation", in the proposed "Irrigation" volumes of the *History of Engineering in Sri Lanka* series of this Institution.

SDA proposals. The Southern Development Authority (SDA) has announced that it proposes to "divert four rivers" to provide water for its proposed development plans. I gave a talk at the SDA in December 1995⁵⁹, explaining that trying to divert rivers in such a casual manner is like "Playing God", and that it is totally unnecessary because all the water required for industries in the south can be obtained by tapping shallow rechargeable ground water aquifers in the Walawe basin. I added that if the river diversions are undertaken, *blood will flow once again in southern waterways*.

This grim warning fell on deaf ears. Later, I was able to explain the folly of the proposal to divert Menik ganga to augment Kirindi oya, to President Chandrika Bandaranaike Kumaratunge herself, in the presence of General Anuruddha Ratwatte, Minister of Irrigation and Power, and his officials, at a meeting at Temple Trees in March 1997⁶⁰, but nothing has changed as a result. I take this opportunity to repeat what I have said before, that the SDA is preparing the ground for another bloody upheaval in the south, on account of some of its fanciful, and unrealistic plans.

Human rights. The positive definition of security springs from fundamental human rights, of which the right to life comes first. Down the ages, human rights have been enshrined in constitutions, the Edicts of Asoka carved in rock more than 2300 years ago, the Magna Carta of the European middle ages, and the US Constitution, for example. The UN charter begins with a preamble which says:

*"We, the people of the United Nations, determined to save succeeding generations from the scourge of war..... and to affirm our faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small..... have resolved to combine our efforts to accomplish these ends". It has been argued, however, that "rights exist only to the extent that they are perceived and claimed as such. In the case of persons they are embodied in perceptions of 'security' which is identified by the overwhelming majority of human beings with the absence of threats, in particular the threats of destitution, of disease, and of violence"*⁶¹.

Non-violence. Mahatma Gandhi used non-violence successfully as a defence (and also as a weapon), against the British in colonial India. His example has been followed by others, with varying degrees of success. Bertrand Russell has correctly observed: *"It certainly has an important sphere; as against the British in India, Gandhi led it to triumph. But it depends upon the existence of certain virtues in those against whom it is employed. When Indians lay down on railways, and challenged the authorities to crush them under trains, the British found such cruelty intolerable. But the Nazis had no scruples in analogous situations"*⁶²

Violence. This absence of scruple is evident in the violence of the USA, the single super power in the world today, for example in the Kuwait war and its aftermath the continuing sanctions against Iraq⁶³. But, it is nothing new, for it had been very much in evidence for example in the Vietnam war⁶⁴ which had been extended to Laos as well. In what was described as a "secret war" the US dropped 3 million tons of bombs and mines on Laos, which had a population, before the bombing started, of 3 million people. That unfortunate country now has a legacy of millions of landmines which continue to kill and maim innocent civilians, men, women and children. The late Princess Diana campaigned for a ban on landmines, and the 1997 Nobel Peace Prize was awarded to another woman, campaigner against landmines, Jody Williams of the USA. Incidentally, both Sri Lanka and the USA refused to sign the recent UN Treaty to ban landmines introduced by Canada, on the grounds that it will handicap us in the war for Peace. I have noticed even in Pugwash, where there are no outside observers, and what is said cannot be attributed later to individuals, a strong Pugwash convention, a certain hesitation to talk about US atrocities, though the US is not alone in this.

58 Mendis, DLO, "Environmental Degradation: Little Known Cause of Violent Conflict in Southern Sri Lanka". Proceedings of Pugwash, 1992, etc.

59 Mendis, DLO, see Reference 39

60 Mendis, DLO, "The Empress' New Clothes: Impending Socio-cultural and Environmental Disaster in Southern Sri Lanka" Paper presented at the 47th Pugwash Conference in Lillehammer, Norway, August, 1997. Unpublished

61 Reference 31, p.107

62 Russell, Bertrand, Autobiography, Cassell, 1967, p. 437

63 Clarke, Ramsey, The Fire This Time, US War Crimes in the Gulf. Thunders Mouth Press, 1992

64 See McCarthy, Mary, Vietnam, Penguin books, 1968, for example

Roots of Insecurity in Sri Lanka The ongoing civil war in the north and east of the island is a particularly sad example of a conflict that has grown out of all proportion, resulting in lack of security to numberless innocent citizens, including vast numbers of refugees displaced from their homes and villages⁶⁵. This so-called "separatist" civil war is widely described as an ethnic conflict, an euphemism for what is also called a "tribal war", especially when it occurs in Africa. The protagonists in the Sri Lanka conflict are also often described in the foreign media as "Sinhala Buddhists" and "Tamil Hindus".

The introduction of "Sinhala only" by the SWRD Bandaranaike government in 1956, followed by the first Sinhala-Tamil ethnic riots in 1958, is seen by many as the beginning of Sinhala/Tamil division, which grew into a civil war. But, others have done extensive and intensive research to show that so-called "Sinhala chauvinism" has deeper and even older roots. In this lecture I am presenting a different perspective.

PQLI I had drawn the attention of Pugwash in my 1980 paper to the fact that the *Physical Quality of Life Index* (PQLI) in Sri Lanka, was remarkably high, at 82⁶⁶. This showed the quality of life in Sri Lanka was exceptional, despite its comparatively low per capita income. In fact, Sri Lanka, had been the subject of study by interested western scholars on account of its high health and nutrition achievements, and high life expectancy, and its exceptional literacy and educational standards, in the 1970s. An interesting manifestation of this, were the seven free and fair general elections held between 1956 and 1977 (inclusive), when the incumbent government was voted out of office each time, surely the ultimate proof of the term "free and fair elections"?

The one mistake of the electorate, (or perhaps it was the fault of the system), was the overwhelming majority given to the winning party or coalition, first in 1956, again in 1970, and even more emphatically in 1977. The result was a tendency to retain power, for ever. I have discussed this in the IFS/SLAAS Monthly Lecture series in September 1996⁶⁷, from which I abstract the following events, for which the 1977 government must be held responsible: 1977 - post-election violence, including ethnic violence; 1978 - Removal of Mrs. Sirimavo Bandaranaike from the electoral scene by removing her civic rights; 1979 - Army commander sent to Jaffna on a mission to "wipe out terrorism in six months"; 1980 - sacking of 50,000 striking white collar workers; 1981 - Disruption of Development Council elections in Jaffna, followed by civil disturbances and destruction of the Jaffna Public Library by burning; 1982 - Advancing the first Presidential elec-

tions followed by postponement of General elections, on the basis of a Referendum, the very legality of which is still the subject of debate and discussion.

July 1983. The pogrom against the Tamil minority in July 1983, is indubitably the critical watershed in the deteriorating relations between Sinhalese and Tamils, both in Sri Lanka and abroad. Government failed to provide security to its citizens, the killing of Tamil political prisoners in Colombo jail on two separate occasions being a particularly horrific example, where it simply disclaimed responsibility, saying it was the result of a 'prison riot'. The Sri Lanka government informed its foreign embassies that the July violence was due to "a spontaneous uprising of Sinhalese, enraged at the killing of 13 soldiers in Jaffna". It had already been given publicity at the UN High Commission for Refugees, when the government changed its mind, and blamed three left-wing political parties that were summarily banned. The term "state sanctioned violence" that James M Richardson used in his 1990 GC Mendis Memorial Lecture⁶⁸, seems to be a fair and adequate description of what happened in July 1983. However, government never made any apology to the Tamil people.

This may be contrasted with the apology given to the Japanese people at the 50th anniversary of Hiroshima, by Professor Rotblat⁶⁹ that was responded to by a Japanese scientist Professor Ogawa, who apologized for Japanese war crimes. An apology however late is acknowledgment of responsibility, and gives confidence for a start to any credible reconciliation. For example, a recent comment on "disappearances" says: *...something happened during 1988-90 that was shameful. Something that led to the death of persons conservatively estimated as being close to 40,000. The fact that some would interpret these deaths as inevitable, in a period when the very foundations of organized government was being threatened, should in no way excuse some of the excesses that took place during that time. The fact remains that the kith and kin of those disappeared need some recognition that these things happened. Human rights workers point out that many of these families say that they feel that they belong to some kind of ghost population of people who really do not know what happened, and people who have never had the comfort of being told "Yes, it happened, and we are sorry"*⁷⁰. (emphasis added)

65 Gunaratne, Rohan, Indian Intervention in

66 Reference 2367 Mendis, DLO, "Multiple Intelligence Theory and Engineering Education in Sri Lanka". Unpublished

68 Richardson, James M, 1990, "GC Mendis Memorial Lecture"

69 "50th Anniversary of Hiroshima", Proceedings of Pugwash, 1995, p.

70 Sunday Times, October 26, 1997

Traditional Tamil homelands. The mass movement, after that black July, of Tamil people, to their "traditional homeland" in Jaffna, as refugees from other parts of the island where they had been permanently or temporarily domiciled, was the beginning of permanent separation. Although many individual Sinhalese people, of all classes and social levels, empathized with the Tamil people in their hour of pain and anguish, understood their humiliation, and shared their suffering, a few others, sadly, did not. A very few may even have gloated over the misery of their brethren. In the immediate aftermath of the pogrom, a number of foreign countries unconditionally opened their doors to Tamil refugees from Sri Lanka, and tens of thousands were led to leave the land of their birth. That was the beginning of the efflux of political refugees who were followed in due course by economic refugees. The exodus has continued unabated even after the opportunity for refugee status ceased. Enterprising Tamils (and Sinhalese, and others too) had left the country earlier, but never in such humiliating circumstances, nor in such large numbers.

Diaspora. It is not a matter for surprise that some of these emigrants have used their genius to set up very effective information and logistics networks, that can reach to all corners of the globe via modern communication systems, that they have easily mastered. In the situation of insecurity that still prevails, including lack of adequate employment opportunities, Tamils (and others) are now constrained from time to time to even try to smuggle themselves into foreign lands in search of a better livelihood than they can find in Sri Lanka. Some of them simply perish in the process. On account of its abject human rights record, the government found it difficult if not impossible to counter the well organized propaganda of the diaspora, resulting in a growing division between expatriate Sinhalese and Tamils in many foreign lands. The call for a separate state for the Tamil minority was often supported by foreign persons, even in informal Pugwash discussions, and even by persons who had never visited Sri Lanka.

This difficult situation is exacerbated by misinformation from some elites who, for their own benefit, try to project an impression of impartiality, without adequate knowledge or information about what they are writing about. A classic example is the book *Buddhism Betrayed?*⁷¹ which has unfortunately been banned in Sri Lanka. The Foreword in that book states, that there is a false faith in the small irrigation tank or weva, the temple, and the paddy field, among Sinhala Buddhists in Sri Lanka, thereby "retarding growth", and aggravating ethnic conflict. I have shown in many Pugwash and other presentations that **nothing can be further from the truth.** The small tank is valued by traditional farmers, Sinhalese, Tamils and Muslims in Sri Lanka,

and Tamils, Telugus, Malayalees and a variety of other ethnic groups, in south India, as a water and soil conservation device⁷². But, it is *not* seen as "efficient" by hydraulic engineers (Sinhalese and Tamil) who plan modern projects, and it is therefore one of the fundamental premises of water resources development planning in the Irrigation department in Sri Lanka, that small tanks, like terrorism, should be *wiped out*.

6.0 Economic Insecurity

Another aspect of insecurity, at the national level, is the war on economic targets now being waged by the LTTE. They have succeeded in attacking these targets in the heart of Colombo with devastating success. The oil installations in Kolonnawa and Orugodawatte were fire-bombed in 1955, followed by a similar attack on the Central Bank in January 1996. Further attacks took place in 1997, on the tourist hotels and the new Twin Towers in the city centre in October, and on the Kelanitissa Power station in November. This destruction, combined with the cost of the ongoing war itself, has given every concerned citizen cause to think about national economic security as well. Over and above dependence on the foreign controlled international marketplace, as described by Dr. Gamani Corea, we are faced with pressures from escalating internal military losses, including aircraft.

Government spokespersons always talk about the need for money for development that can result if this wasteful expenditure on the war can be cut back. This may or may not be the reason for some highly questionable projects that have been in the news: the Eppawala phosphate rock project has already been discussed, and the Rs. 5 billion project for sealing leaks in the Samanala reservoir may now be discussed.

(Since I have published views on both these projects, of interest to engineers and other decision-makers, long before the present proposals were mooted, I run the risk of being accused of violating the Pugwash principle, of avoiding a *prima donna* pose. My defence is that I am not posing, or taking a bow, I am actually making myself unpopular by trying to illustrate how ill-conceived projects are taken up for implementation by the system that is in place in this country. Incidentally, this may in fact be typical of all poor developing countries).

71 Thambiah, SJ. *Buddhism Betrayed?*, Princeton, 1993

72 Mukundan, TM, "The Eri System in Tamilnadu" *Water Resources Management, Proceedings of a Seminar. CPR Environmental Education Centre, Madras, 1993, pp. 41-62*

Samanala. When impounding the reservoir began, leaks were detected in the right embankment foundation, and impounding was checked by opening the undersluices of the dam. A great fuss was then made about the need to check the leaks, the suggestion being that the dam was in danger. Local experts who inspected the dam and studied the leaks did not agree, and they proposed certain measures to check the leaks and seal them, *at a reasonable cost, using locally available resources*. These proposals were rejected, and a foreign "expert" brought in for the purpose proposed that "wet-blanketing" should be done to seal the leak. In a well publicized meeting at the BMICH⁷³, the foreign "expert" described a similar exercise to seal sinkholes in a reservoir in Pakistan, and the term *wet-blanketing* was explained to those hearing it for the first time, as depositing earth in the water in the reservoir using heavy equipment. Local engineers were not impressed, and insisted that their method was much cheaper, and equally effective or better. No mention was made of the cost/benefit analysis of the proposed wet-blanketing exercise. It seemed like giving a blank check to drop loads of earth into water, and the cost was blithely referred to as "It may cost 3 billion rupees, or 5 billion or more, who knows?"

Last November, Nature took a hand, depositing more rain in the catchment area than the undersluices could pass out of the reservoir which filled up to spill level. The news item about the leaks thereafter, was that a great deal of electrical energy that could be generated by passing that water through the turbines, was being lost, on account of leaks. Once again, the general public was not given actual figures, as in a benefit/cost analysis, and the suggestion was that wet-blanketing should be accelerated.

Energy saving. But, there are at least two more sides to the story of saving energy, of interest to this audience. A certain amount of water has to be released for irrigation downstream which would flow, not through the Samanala turbines, but through the dam's undersluices. If there is a leak, the undersluices could be kept closed, while the leak met the riparian rights of the downstream users. And, in time, nature would heal the leak, at no extra cost. Local people were probably not consulted at all about the problem of the leaks, although it is their livelihoods and even their lives that could be endangered first. These local people could have been encouraged (if they needed any encouragement) to do chena cultivation in the catchment area of the reservoir, to increase the sediment load in the river, and help seal the leaks that much sooner.

The other side of the story is that a study had been made by a Sri Lankan engineer about the amount of the air-conditioning load in Colombo that was being

met by grid energy, and the losses associated with this load⁷⁴. He showed that if the AC systems were made more efficient, following the example of Singapore⁷⁵, the saving in energy would be equal to or more than that "lost" due to the leaks in Samanala weva embankment foundations. Important decision-makers did not bother to take the proposal seriously. In fact, when a Very Important Person was shown the heat pumping technology that could be used for more efficient space heating and cooling, thereby saving energy (as in Singapore), his curt response was "I'm not interested in saving energy!". At least he was being honest about it.

7.0 Is World Citizenship the answer?

The Pugwash publication *World Citizenship - Allegiance to Humanity* referred to above, argues that most of the important problems facing the human race today are global. Nations of the world faced with the threat of nuclear weapons, which was and still remains the first concern of Pugwash, are *interdependent* on account of a shared environment, and a global economic system. Pugwash scientists express the hope that as a result of this interdependence, humanity must come closer together. On the other hand the dangers of *globalization* were referred to in the introductory remarks above, and also in the more extensive quotations from Dr. Gamani Corea's book, and the letter by JP Obeyesekere. The collapse of far-eastern economies and the consequences for Sri Lanka in the coming weeks and months are also related to this.

In this context the interpretation of the Buddha's teachings by Bhikkhu Bodhi, referred to above, are of the utmost significance in providing a down-to-earth view. He says: "Ironically, the linking together of the world population in the globalized economy is accompanied by a progressive atomisation of individuals which undermines their ability to function as co-operative, responsible members of their societies. This happens because the ultimate effect of corporate culture is to reduce a person to a mere consumer whose whole being centres on intensity and variety of private experience. In subtle ways that operate below the threshold of perception, the consumerist conception of the good life cuts away at the bonds of community that unite the members of a social order into a unified whole. By appealing to those values that inflame egotism and self-interest, it replaces social cohesism with a social

73 See Proceedings of conference, January 26, 1994. IESL, Unpublished

74 Tharumaratnam, V. Managing Director, Mini Well Systems Ltd. Colombo

75 Lovins, Hunter and Amory, and Ernest Von Weizsacker, Factor Four - Doubling Output, Halving Resource Use, RMI, 1997

atomism that locks each individual into a self-enclosed world of his or her own private concerns. The union of autonomous, responsible, disciplined individuals essential to a true community gives way to a 'culture of narcissism' in which each person is obsessed with maximising his or her own status, wealth, position, and power - the outward signs of material success. If we are puzzled why social discipline and responsibility have become so rare today, reflection on the above may provide an answer".⁷⁶

The Pugwash study *World Citizenship* presents the case for communications to create a global outlook. It says: "Renowned theoretical work on communications and society shows that the dominant mode of communication strongly influences social organization. For example, the development of the printing press gave rise to national languages and cultures, and is closely associated with the development of the nation state. It also began the modern political age by making mass participation in politics possible. Today, electronic communications promise to transform social organization again..... Electronic communications have no territorial grounding: their members interact in 'cyberspace'. Might it be that the social tensions stemming from the aspirations of ethnic communities for land could be lessened in a similar way? Two types of nation could exist side by side: one, the nation state, defined geographically, which is multicultural and concerned with the economic and social well-being of its citizens (though subordinate to global authorities in some areas); the other, associations of people with a common cultural heritage, bonded together by different means of communication, including electronic, but without a defined land area"⁷⁷

Professor Francesco Calogero in his contribution titled "Quasi-Nations" says that people with some strong common interest could use the electronic media to cross national boundaries and eventually form a 'quasi-nation'. He gives the example of the international community of physicists, the discipline to which he belongs. (But, the same thing is possible he says for other disciplines and occupations, like sportsmen and women, or stampcollectors, or whatever). He also offers an interesting comment that will ring bells in the minds of many scientists: "Of course there also exists within this same community, less positive behaviours: opportunism, various kinds of theft and cheating, and also the formation of academic cliques established by individuals who support each other and bypass those fair standards of merit that should determine all decisions about individuals (appointments, invitations to lecture, and so on)"⁷⁸.

Concerning sports, it is interesting that our Chairman, Mr. Zubair, had said when Sri Lanka won the World Cup in cricket, that captain Arjuna Ranatunga should have been sent to Jaffna with the trophy. This was an independent example of the "quasi-nation" approach proposed by Professor Calogero for long term conflict

resolution and achievement of security. Today, we have the Jaffna cricketers visiting the south, and that may be the start of a cricketing 'quasi-nation' approach to Peace.

A similar but different approach to world citizenship has been given by Dr. Vickramabahu Karunaratne, once one of Professor Paul's favourite electrical engineering students, now a distinguished University academic, and leader of a political party that was blamed for the July 1983 violence, and banned. He has invoked the old socialist slogan "*Workers of the World Unite*", and given an explanation of the race-hatred seen in the 1983 violence in terms of class analysis. He says: "*Racial and ethnic violence ceases to exist when the class which has no interest in perpetuating myths and pseudo history based on race concepts comes to rule the world*"⁷⁹.

Class formations in Sri Lanka. The following is relevant in this context. At the turn of the last century a growing class formation could be identified in the emerging sectoral distribution of population. New social classes included merchants, plantation owners, plantation workers, fish mudalalis, fisher folk, small landowners, petite traders, peasants and rural workers⁸⁰. Three spatial-economic sectors were seen, a plantation sector, an emerging urban sector, and a residual rural sector⁸¹. Emerging social formations could also be identified, described as consisting of a *national bourgeoisie*, a *petite bourgeoisie*, and a *working class*. The national bourgeoisie consisted of merchants and landowners, the petite bourgeoisie included petite traders, small landowners and fish mudalalis, while the working class included rural and plantation workers, peasants and fisher folk. There was no urban proletariat at that stage (Figure 3).

An organized urban working class, a proletariat, came into being, later, which was politicized and unionized⁸². The traditional militancy of organized labour was evident in a number of activities, including strikes, and the Bracegirdle affair⁸³, and reached a high point in the 1952 hartal⁸⁴, organized against the increase in the controlled price of rice at the time. The organized urban working class, was led by the old left

76 Reference 56

77 Reference 4, pp. 15-16

78 Reference 4, p. 127

79 Karunaratne, Vickramabahu, *Tribe, Nation and Assimilation of Nations*, World Publications, 1983

80 Jayewardena, Kumari, *The Rise of the Working Class Movement*, 1972

81 Reference 32

82 Reference 80

83 Reference 80

84 Ibid.

political parties which were members of an United Front that won the elections and formed the government in 1970. A new left insurrection took them by surprise less than a year after they took office. That uprising was quickly suppressed by the state, and some of the survivors have done well in less militant roles, since that time. The second insurrection in the 1980s, however, left fewer survivors. Both these attempted insurrections had little support from the urban working class. When compared with the situation in Russia shortly after the October Revolution, some similarity may have been seen in the gulf between peasant and proletarian in both cases. Lenin had attempted to bridge that gap with his New Economic Policy, NEP⁸⁵ in Soviet Russia. No such thing happened in Sri Lanka, and after the first 1971 insurrection, "Kuru" Gunawardena, speculated on whether we were ready for a Workers and Peasants government⁸⁶.

After the second attempted insurrection in southern Sri Lanka was suppressed, the northern Tamil separatist movement grew rapidly with support from outside the country. Today, the spiraling cost of living and rising unemployment, combined with general deterioration in the economy, and ever-increasing militarization to fight the separatist civil war, are sources of anxiety and insecurity, individual and collective. The roots of this insecurity seem to be deeply entrenched. The official "Peace Package" does not appear to have much chance to uproot that insecurity, and achieve a durable Peace, because as Joseph Rotblat said in his Nobel Peace Prize lecture: "*Whatever system of governance is eventually adopted, it is important that it carries the people with it*"⁸⁷. That is why a global Pugwash approach based on a vision of world citizenship, no less, has been presented today.

And, a Moratuwa University undergraduate, Marliya Sultan Bawa, a Sri Lanka Young Pugwashite, says: "*..... any solution is going to be temporary. What Sri Lanka*

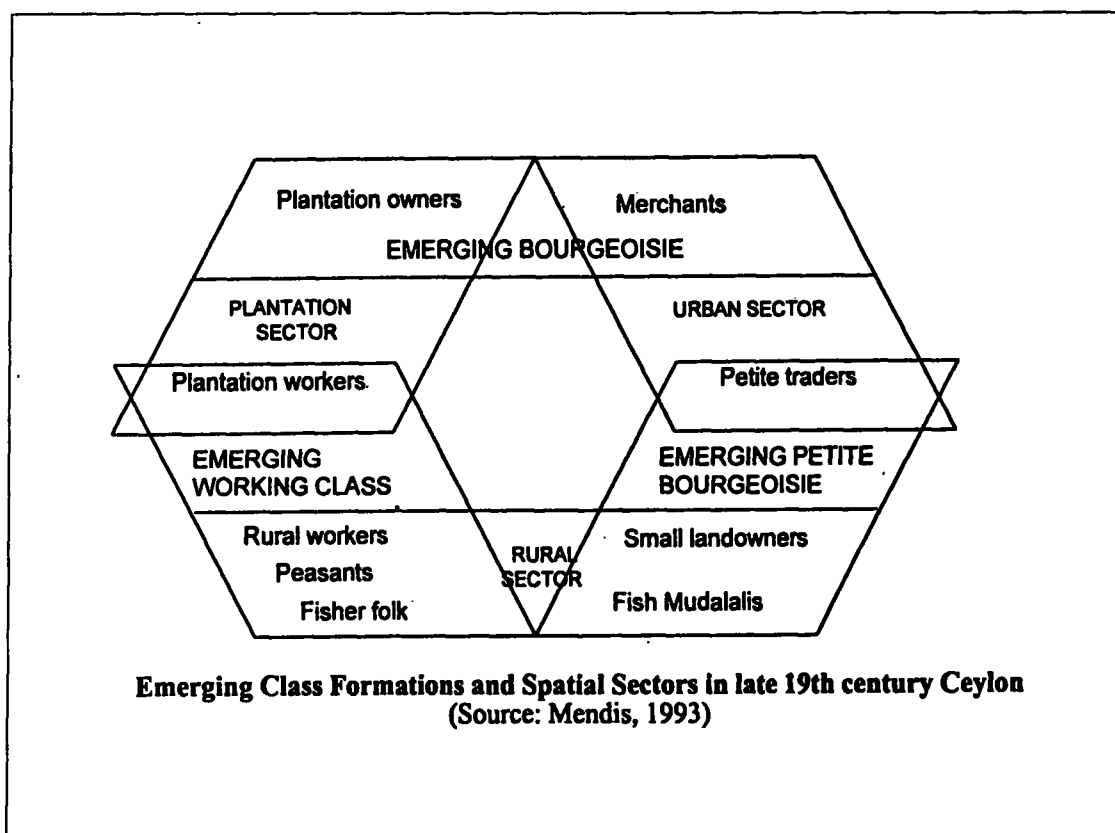


Fig.3. Emerging Class Formations and Spatial Sectors in late 19th century Ceylon
(Source: Mendis, 1993)

- 85 Sweezy, Paul M. "Charles Bettelheim in Revolution from Above: the USSR in the 1920s" in *Post-Revolutionary Society*. Monthly Review Press, 1980, pp. 96-112
- 86 Gunawardena, Gamini, *Are We Ready for a Workers and Peasants Government?*, Colombo, 1974
- 87 Mendis, DLO *Meaningful Development - A Pugwash Perspective*, Sri Lanka Pugwash Group publication, Kandy, 1997, p. xx

needs is a reconciliation between the two major communities. The political policies have accentuated the linguistic differences by educating children in different streams in schools. It is education and understanding of each other's culture that can bring about peace."⁸⁸ (Emphasis added).

Finally, it is interesting to observe that both Karunarathne and Pugwash agree that English will probably be the link language of the future. Karunarathne says: *"It is very likely that the English language which is today fast becoming the link language of advanced science, technology and arts, that is all advanced knowledge, will be the link language and the language of the super culture of the proletariat"*⁸⁹ Pugwash some 14 years later, says: *"Electronic communications have no territorial grounding: their members interact in 'cyberspace'. Might it be that social tensions stemming from the aspirations of ethnic communities for land could be lessened in a similar way? Two types of nation could exist side by side: one the nation-state defined geographically which is multi-cultural..... the other, associations of people with a common cultural heritage, bonded together by different means of communication, including electronic, but without a defined land area. Currently most computer communication takes place in English, but software will be developed that will allow computer users to write in any language they wish"*⁹⁰.

Unfortunately however, the international Tamil diaspora has long been using the global electronic media to further its case for a separate state in Sri Lanka, using both English and Tamil. In turn, the Sinhalese diaspora, such as it is, (since it does not yet seem so well organized as the Tamil diaspora), is also using the email and internet to counter the former in 'cyberspace'. So, instead of forming a 'quasi-nation' that could unite the races, the media, particularly the electronic media has been used, or is being used, to further separate them. The recent successful bombing of non-military targets, including the Dalada Maligawa in Kandy, is good evidence of their organization⁹¹. Incidentally, these bombings have finally given the lie to foreign media (e.g., the BBC) defence of terrorist attacks as being aimed solely at military targets, and not at civilian targets. Even a former British High Commissioner was misled into believing this, when he made a wrong statement immediately after the bomb blast at the Central Bank in January 31, 1997, that the target must have been the Naval headquarters nearby⁹².

8.0 Conclusion

May I thank you most sincerely for your presence here today, and for your patience in giving me a fair hearing this past hour. Please bear with me just a little longer, because I said that I would tell you something about how I came to know Professor Paul so well in

later life. It so happened that he very generously allowed us to share his house in Meewatura, Peradeniya, in the 1960s, when his family was living in Colombo. My wife kept house for him and he lived upstairs. He would tune in to his old multi-band valve radio set at night, with headphones on so as not to disturb the little ones downstairs whom he thoroughly enjoyed "playing grandfather" to. In the morning, my son aged two plus and just beginning to talk, would stand at the foot of the stairs and call out "Uncle, come, dup", at which the great man, who loved little children, would promptly respond and come beaming down the stairs. But, at the foot of the stairs, instead of taking a left to the dining room he would invariably take a right to where our infant daughter, just a few months old, would be gurgling on a mat in the drawing room, with the morning sun streaming in through the big glass French windows of the Meewatura bungalow.

Next he would be stretched full length, half on the mat and half on the floor, talking to the little infant in "baby language". The wonderful thing about this great scientist was that he would insist that the little mite could understand what he was saying! (This of course was an improvement on her father who had difficulty in understanding the good Professor's electrical engineering lectures!) Anyway, our daughter eventually entered the Faculty of Engineering at Peradeniya, but soon transferred to a US College where she started out to major in Civil engineering, like her father. Perhaps it should not have surprised us when she decided, after one year, to transfer to electrical engineering, and make her future career in that field, though sadly, Professor Paul was no more at that time. But who knows, she may have had her very first lectures in the subject from the Father of Electrical Engineering education in Sri Lanka who loved our little baby daughter, like his own granddaughter, for which we bless his memory.

87 mendis, DLO Meaningful development-A Pugwash Perspective, Sri Lanka Pugwash group publication, Kandy, 1997, P. xx

88 "Minor conflicts have turned into endless conflagrations because of the ready availability of weapons. Is it moral for arms dealers to promote such trade?", in Science, Technology and Ethical Priorities, Proceedings from Student Pugwash USA's 9th International Conference, 1996.

89 Reference, 79, p. 14

90 Reference 5, p. 16

91 Gunaratne, Rohan, Lecture at the Bandaranaike Centre for International Studies, Colombo, January 9, 1997
Daily News, Letter to the Editor, February 9, 1997

In conclusion, you may want to know something more about the Pugwash movement. It all began after the Russell-Einstein Manifesto signed by eleven eminent scientists of whom nine were Nobel Laureates at the time, was published in 1955. (Joseph Rotblat was awarded the Nobel Peace Prize in 1955, 40 years after the Russell-Einstein Manifesto was made public at a meeting chaired by him in London). The last paragraph of that manifesto reads: *"There lies before us, if we chose, continual progress in happiness, knowledge and wisdom. Shall we instead chose death, because we cannot forget our quarrels? We appeal, as human beings to human beings: Remember your humanity and forget the rest. If you can do so, the way lies open to a new paradise; if you cannot, there lies before you the risk of universal death"*⁹³

It was decided to organize a meeting of scientists who shared this abhorrence for war, and Pandit Nehru suggested that it could be held in India in 1956. However, the "Suez crisis" intervened, and the meeting was eventually held in the little fishing village of Pugwash in Nova Scotia, Canada, the birthplace of Cyrus Eaton, who funded that meeting in July 1957. Those scientists could all talk freely with each other, without outside observers, and without fear of later being quoted (or more likely, misquoted) about what they said, Pugwash traditions that are maintained to this day. International Pugwash conferences are held each year in a different country, and participants are invited in their individual capacities and do not represent anyone but themselves.

The Sri Lanka Pugwash Group, was set up in 1981, when a proposal to host an international Pugwash Conference in Sri Lanka had been accepted by the Pugwash Council. Unfortunately that proposal was rejected by a small group of engineers and scientists, and the Sri Lanka Pugwash Group organized a very successful Symposium on Tropical Agriculture instead. In August 1997, Professor Joseph Rotblat, FRS, NL, handed over the position of President of Pugwash to Sir Michael Atiyah who had been President of the Royal Society 1990-95, and Master of Trinity College, Cambridge, 1990-97. Sir Michael came to Sri Lanka in December 1997 as Chief Guest at the Annual Sessions of the SLAAS. There have been over two thousand Pugwashites in the world, including twelve Sri Lankans, of whom Professor Cyril Ponnampereuma, is deceased, Professor Noel Baptist is now an Australian citizen, and the best known is Mr. Jayantha Dhanapala, the recently appointed Under-Secretary General of the UN. As the founder and Secretary/Convenor of the Sri Lanka Pugwash Group, I remain hopeful that these numbers will increase considerably when a Pugwash meeting is held in Sri Lanka, in the not too distant future. In the context of the ongoing

civil war, I hope to convince the Pugwash Council that this should be done sooner rather than later.

9.0 Appendix

The following verses are reproduced from *Science in Society - Its Freedom and Regulation*, Proceedings of the 1982 Canadian Student Pugwash meeting which I attended in Ottawa, Canada:

PUGWASH

There's wisdom in a seaward look,
and vision clears in salted air;
and, knowing this, the Prophets took
Neptunian wine for their despair.
They drank it at the sea's command,
which bids the spirit do and dare.

And so, to gain the strength of salt,
men from all lands to Pugwash came
to find which nations were at fault
in Statehood's most amazing game;
and all came here with hope to halt
this planet's suicidal shame.

Pugwash is but a fishing town,
yet folk some day will know its name,
for here came men of great renown,
and youth emerging into fame;
and who can say some word they spoke
may not postpone our day of shame!

Wilson MacDonald
"PUGWASH"