

## CHAPTER 15

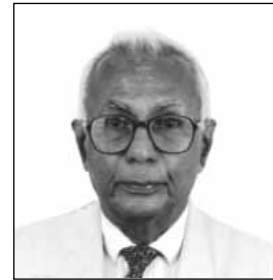
Public Representations on the National Question  
A Submission to the  
Ministry of Constitutional Affairs

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### CONFLICT OVER WATER AS AN OBSTACLE TO PEACE

#### Introduction

This paper discusses issues relating to water, for the achievement of a durable Peace. Prepared during convalescence after by-pass surgery, it represents a lifetimes' work by me in studying our ancient water and soil conservation ecosystems (irrigation systems). By way of introduction, a newspaper article titled *Error, Terror, and Environmental Disaster* (Part I, Island, August 16, 2003) was introduced with the following statement:



D L O Mendis

*'Closure of the sluice gates at Mavil aru cutting off water supply to the Allai irrigation scheme is in the news at this time, August 6 - 9, 2006, the anniversary of Hiroshima and Nagasaki atom bombing. In this article, Engineer D L O Mendis who worked in Kantalai and Allai schemes in the 1950's, in Walawe scheme in the 1960's, and in the Ministry of Planning and Economic Affairs in the 1970's; who has been a Pugwashite since 1978, and is the founding Secretary / Convenor of the Sri Lanka Pugwash group, describes his understanding of the situation.'*

#### Terror, Error and Environmental Disaster

The founding father of the Pugwash conferences on Science and World Affairs, Sir Joseph Rotblat passed away on August 31, 2005. A Rotblat Memorial lecture to the European Union in Brussels in May 2006, by Britain's Astronomer Royal and President of the Royal Society, Baron Rees of Ludlow, (formerly Sir Martin Rees), author of *Our Final Hour, How terror, error and environmental disaster threatens humankind's future*, (2003), dealt with global issues including, nuclear, chemical and biological weapons of mass destruction. This was the inspiration for my newspaper article referred to above.

#### Theory, Paradigm, Crisis and Revolution in understanding the evolution and development of ancient water and soil conservation ecosystems (irrigation systems) in Sri Lanka

A 4 stage hypothesis mentioned by R L Brohier in his Presidential Address at the Engineering Association in 1956, was published by Joseph Needham in 1971 (Fig. 1). My alternative 7 stage hypothesis (Fig. 2) was accepted by Needham who wrote: *'My treatment of the subject can be improved upon and I am counting on you to do it'* (1989). But, the damage was already done because the 4 stage hypothesis was used to prepare the *Water Resources Development Plan*, 1959,

from which all major projects are identified for feasibility studies and implementation. Thomas Kuhn's stages of Theory, Paradigm, Crisis and Revolution, was later used to explain how this happened (Mendis, 1988).

### Hydraulic engineering vs. water and soil conservation ecosystems

The 4 stage hypothesis is based on a hydraulic engineering perspective in which water is seen as inanimate and active, and the very term ancient irrigation works reveals that the emphasis is on *irrigation*. In the 7 stage hypothesis water is seen as animate and passive, and this is the ecosystems perspective where the emphasis is on *conservation*. Modern projects are designed and constructed on a hydraulic engineering basis, where for example small tanks are considered to be inefficient. Ancient projects were conceived and created on an ecosystems basis where small tanks were recognized as the heart of the human settlements. Contrasting consequences of the two perspectives is given in Table I.

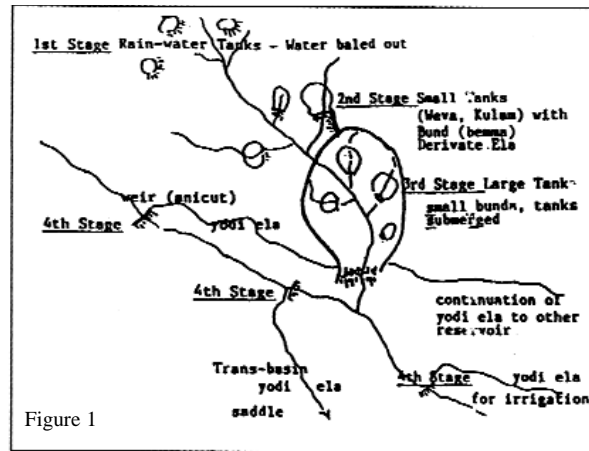


Figure 1

#### Hydraulic Engineering vs. Water and Soil Conservation Ecosystems

	Hydraulic engineering perspective – Hard technology	Ecosystems perspective (Soft technology)
1. Water	inanimate, active	animate, passive
2. Small tanks	inefficient, early stage in evolution and development, to be submerged by large macro reservoir built later	micro water and soil conservation ecosystems essential component of water and soil conservation ecosystems
3. Large reservoir	efficient system in combination with channel distribution irrigation system	main item in macro water and soil conservation ecosystem, with micro water and soil conservation ecosystems in command area
4. Diversion channel	built to augment large reservoir – last stage in development of irrigated agriculture system	earliest stage in irrigated agriculture and evolution and development of water and soil conservation ecosystems
5. Vetiya	abandoned small tank	deflection structure – micro water and soil conservation ecosystem; maintains water table
6. Downstream development areas	cleared of all vegetation to lay out channel irrigation system	must be designed as a series of micro water and soil conservation ecosystems, including forest areas
7. Forest areas	limited to catchment	not only in catchment areas – should be interspersed with fields in development areas for better nutrient flows
8. Objective or Focus	Water per se	Water for People and nature
9. Paradigm	Brohier's four stage hypothesis (1956); republished by Joseph Needham (1971)	D L O Mendis' seven stage hypothesis (1983)

In the 1950s, there were four major so-called foreign aid projects for river basin development studies. These were US Aid in the Mahaweli ganga basin and the Walawe ganga basin, and USSR technical assistance in the Kelani ganga basin and the Malwatu oya basin. Locations for new major reservoirs were found by examining the 100 ft. contours on the one mile to an inch topo sheets, without taking into account the ancient water and soil conservation ecosystems, except only the very large reservoirs and canals, like for example Kalaweve – Balaluweve and the Jayaganga transbasin canal. The map called the *Water Resources Development Plan, 1959*, was a result of this exercise. The UNDP Mahaweli development project planning, followed in the mid 1960s.

### Environment and Conflict in Sri Lanka

This was the title of my invited Address to British Pugwash in London when Joseph Rotblat and Pugwash were felicitated on the award of the 1995 Nobel Peace

prize. It was later published in the Arumugam Commemoration volume, *Water for People and Nature*, in 2003. (Chapter 14 in this volume) It deals with the wrong location of major modern reservoirs and canals identified for feasibility studies and construction, from the *Water Resources Development Plan, 1959*. This began with two major projects in southern ancient Ruhunurata, Uda Walawe in the Walawe ganga basin, and Lunuganvehera in the Kirindi oya basin.

### **Error, Terror, and Environmental Disaster in Ruhunurata**

During construction of Uda Walawe, the first large reservoir selected from this map, it was pointed out, that a better location for a large reservoir was at Ukgalkaltota, following Kuiper's principles of water resources development planning (Mendis, 1968):

1. Define the purpose of the engineering project: Formulate its useful end which makes the creation of the project a desirable objective.
2. Plan the project in accordance with its established purpose. Investigate alternative proposals and select the project that will most effectively fulfil this purpose.
3. Design the project in the most efficient manner and in accordance with appropriate criteria of safety.
4. Construct the project according to its design, while applying suitable standards of workmanship.
5. Operate the project, thus bringing the useful end of the engineering plan into concrete existence.

The Irrigation department had NOT considered alternatives when Uda Walawe site was identified. The Culavamsa describes Dvadahassaka desa, the region of twelve thousand villages, in the southern part of ancient Ruhunurata, and the topo sheet for Timbolketiya reproduced in Brohier's magnum opus shows evidence of this. Uda Walawe reservoir has a full supply level of 290 ft msl. The irrigable area in the Walawe basin is from 500 ft. msl. near Ukgalkaltota. Thus, virtually half the irrigable area is lost by wrong location of this great reservoir in the middle basin of Walawe.

If Walawe reservoir location was an error, Lunuganvehera weva in Kirindi oya basin was a blunder of a higher order of magnitude. An alternative site at Huratgamuva (Ch. 13 Fig 12) was brought to the attention of irrigation engineers by M S M de Silva, at that time General Manager of Ceylon Development Engineering company, Sub-Contractors for the construction of Uda Walawe headworks, but this was ignored. Later when both MSM and I were in the Ministry of Planning, we brought this to the attention of the Prime Minister, as Minister of Planning, and she addressed a letter to the Minister of Irrigation asking that the Irrigation department be asked to investigate the alternative Huratgamuva site, also. This direction was ignored and when government changed in 1977 the Lunuganvehera project was put up to the new Minister Gamini Dissanayake, for implementation.

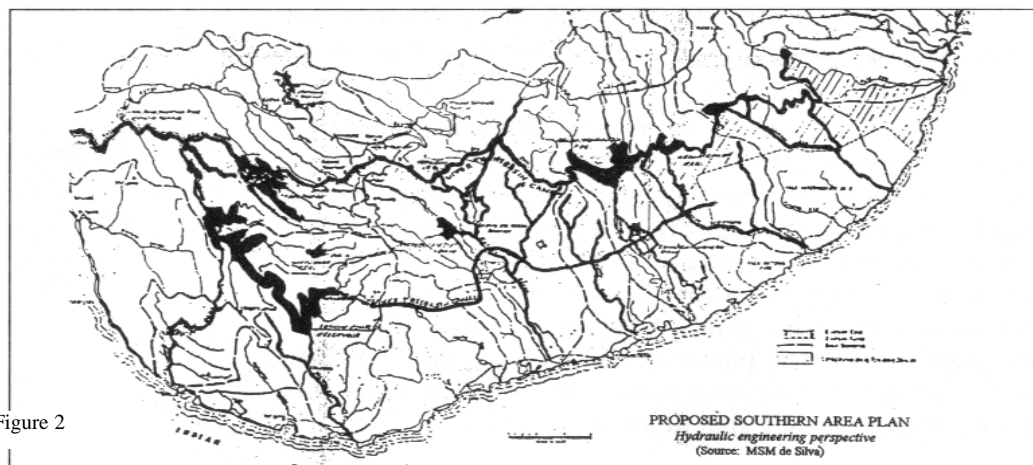
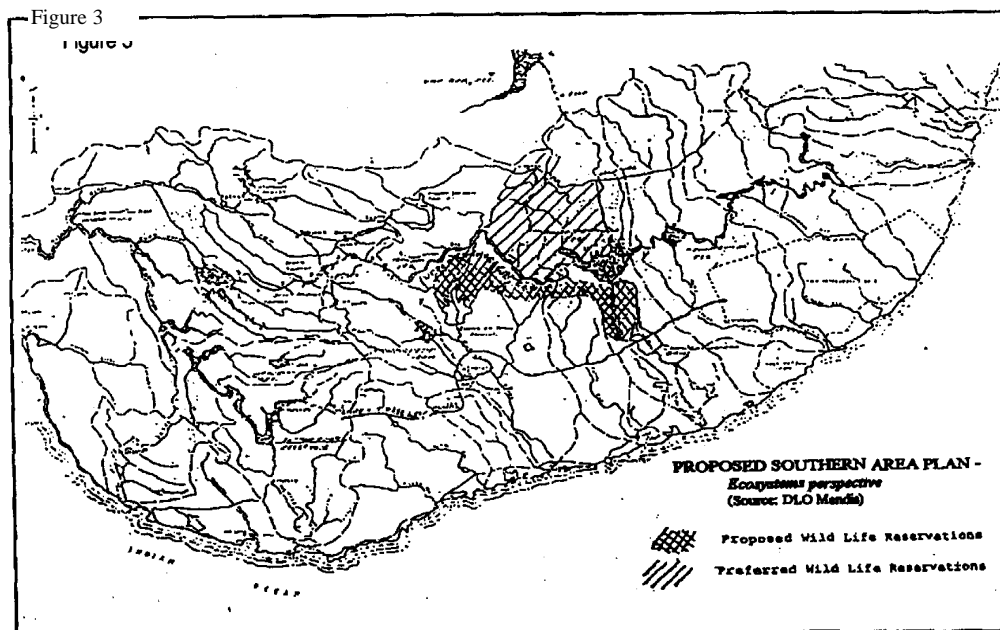


Figure 2

The youth insurrection that started in April 1970 had a lot of support in the southern area. A paper titled 'Past, Present and Future Conflict over water in Sri Lanka' presented at the 1995 international Pugwash conference in Hiroshima, was well received. But a former acting Secretary General of the Peace Secretariat, Dr John Gooneratne, wrote a scathing criticism of which one sentence reads: "Trying to tie the JVP uprising solely to bad water use seems to be more journalistic (and appealing – another Ruhuna myth) than based on evidence". (Mendis, 2002). Another comment by him is mentioned below.

### Ruhunurata - Proposed Southern Area Plan

M S M de Silva prepared a conceptual proposal called the 'Southern Area plan' (Fig 2) to transfer excess water from the southwest wet zone to the southeast dry zone by means of an Upper and a Lower Transbasin diversion canal. It is evident that both Uda Walawe and Lunuganvehera reservoirs are wrongly located between the two canals, and should be relocated. This was a hydraulic engineering project proposal. It was slightly modified on an ecosystems basis to take account of environmental hazards as in the ancient ecosystems (Fig. 3). A principal change is the relocation of Uda Walawe National Park above the Upper Transbasin canal joining Ugalkaltota and Huratgamuva reservoirs.



### Ruhunurata - Mavilaru and Allai scheme

It is not generally realized that ancient Ruhunurata extended along the eastern coast up to present day Muttur, including the right bank area of the Mahaweli ganga. An article by D G A Perera titled *Muttur, Seru Nuvara and Sampur in 2nd Century BC*, in the ISLAND, August 26, 2006, (Annex) describes this period in our history from the Mahavamsa. The take-over of the Mavilaru sluice in ancient Ruhunurata by the LTTE is an example of terror as defined by Sir Martin Rees in *Our Final Hour*.

### Ancient water and soil conservation ecosystems in Rajarata

R L Brohier brilliantly documented the ancient water and soil conservation ecosystems in Rajarata in a lecture to the Royal Asiatic Society in 1935 (Brohier, 1937). He showed that all the ancient large reservoirs and channels were interconnected in western Rajarata (Ch. 13 Fig. 4) and in eastern Rajarata (Ch.13 Fig. 5).

### Conflict in western Rajarata – proposed Eppawala phosphate rock project

Due to reductionism and compartmentalization of knowledge, scientists, including engineers, are generally ignorant of each others' fields of expertise and generally tend to keep a distance from

each other. Non-scientists are not so restricted and can blithely pass judgement on what they know little or nothing about. (For example, Dr John Gooneratne responded to my criticism of the Moragahakande project, with the statement 'Doesn't good Sinhala water go to Tamil areas?' Obviously he lacked basic knowledge of science, let alone engineering).

Pleasing exceptions have been seen in two landmark cases, one in the Supreme Court of Sri Lanka, the other in the World Court in The Hague. The former was the Eppawala phosphate rock (apatite) case and the latter was the Danube dam case. In the former, Judge Dr A R B Amarasinghe recognized the priceless value of the Kalaweva Jayaganga ecosystem, which would be destroyed if the Eppawala apatite is mined to exhaustion as proposed. His judgement is a remarkable testimony to the integrity of scholarship that knows no ordinary barriers of professional practice in this or that scientific discipline.

### **Sustainable Development**

In the latter case, Judge Dr C G Weeramantry, Vice-President of the World Court, set down perhaps for the first time in the history of that august assembly, the true wisdom of ancient Sri Lanka's Science and Technology as evidenced in our cultural heritage. Starting with the sermon of Arahant Mahinda on the Mihintale mountain to the King Devanampiya Tissa, Judge Weeramantry went on to a detailed exposition of the ancient irrigation system of Sri Lanka, including the famous dictum of King Parakrama Bahu the great, about conservation of water. He stated that this was one of the earliest examples of *sustainable development*, the very antithesis of environmental degradation and disaster. He followed this up at the 2002 UNEP conference in Johannesburg, when he gave a keynote address to Supreme Court Judges from around the world on Sustainable Development Law, highlighting the ancient irrigation ecosystem of Sri Lanka.

### **Conflict in Eastern Rajarata - proposed Moragahakande reservoir and NCP canal**

The proposed Moragahakande reservoir and NCP canal were shown on the *Water Resources Development Plan*, 1959. It was included in the UNDP Mahaweli proposals but was never taken up for implementation, even when Prime Minister, later President, J R Jayewardene proposed acceleration to complete the planned 30 year project in 5 or 6 years. Somehow the impression was created that it was an ethnic issue, as revealed by Dr John Gooneratne's comments (Mendis, 2002, pp. 165 – 168). As a result the very serious criticism of water resources development planning has gone by the board, and even the environmental disasters in Walawe and Lunuganvehera have been glossed over.

The criticism of the Moragahakande proposal was first based on the fact that the water stored in the reservoir was to be moved towards the north-central or even the northern province by means of the North Central Province or NCP canal. This was to be a ridge canal in double banking and it was argued that there would be conflict over water all along its course. Later it was found that the ancient Parakrama Sagara, the second Sea of Parakrama lay between Ambanganga anicut and Konduruweva, above Minneriya weva. (Brohier, Vol. I, pp 28 – 33). Hence the path of the NCP canal lay through the bed of the ancient Parakrama Sagara. But this ancient reservoir had already been vandalized, raped and violated three times: first under the Elahera hydraulic engineering project in the 1940s (Brohier, 1941), when Dr R I Batalin an expatriate engineer designed and constructed a number of flume-cum-bridge crossings for the ancient Elahera canal to pass over six cross-drainage streams thereby destroying the **unique rock-cut locks used to drop 60 ft. in the Elahera – Minneriya canal, by Parakrama Bahu**; next under the Elahera project in the 1950s when the Batalin structures were demolished; and finally in the Mahaweli development project. Here is a copy book example of what British engineer Henry Parker who spent 30 years in the island wrote in his book '*Ancient Ceylon*':

*"If we rashly think, after a mere glance at the site (in com-parison, on the other hand, with the actual practical experience of the Sinhalese for nearly 1000 years) that we can change all that, and effect untold improvements on the general designs of the ancient works we may*

*find, when too late, that they were right and we are wrong. Experience constantly impressed on me that if there was one subject which those wonderful old engineers understood better than another, it certainly was the irrigation of paddy fields, and the designing at least in outline, of the great structures that were needed for that purpose".*

It has now been announced in the Mahinda Chintana that the Moragahakande project is to be implemented after all, perhaps because of the vast sums of money, estimated at Rs 200 million, already spent on Feasibility studies. Perpetual conflict over water is assured.

### **Rajarata – A River for Jaffna and the Arumugam Plan**

If as is suggested, justification for Moragahakande is that it will ‘*take good Sinhala water to Tamil areas*’, (whatever that may mean), and if as I argue there will be conflict over water all along the course of the NCP canal, is there a better alternative? Indeed, there are two alternative projects, restoration of Parakrama Sagara, and / or Kalu ganga project that was studied by the Central Engineering Consultancy Bureau. Both these can be designed from the ecosystems perspective for water resources development planning, and can be an example to all parts of the island, not only the North Central Province.

In addition to these, and independent of them as it benefits another area, the Jaffna peninsula, is the ‘*River for Jaffna, the Arumugam Plan*’ (Fig. 4). A memorial meeting for Mr Arumugam on his 101st birthday anniversary will be held in the Irrigation department on August 31, 2006: Dr CR Panabokke will talk on "*Small Tanks*", and Dr PR Anthonis on "*My memories of Mr Arumugam*". Engineer Thiru Arumugam, Mr Arumugam’s eldest son now living in Australia, has described the Arumugam Plan as follows:



Figure 4 A river for Jaffna - The Arumugam Plan

*‘The scheme consisted of converting the saline Elephant Pass Lagoon into a fresh water lagoon by building bunds on the western and eastern end sea outfalls and diverting this fresh water to Vadamarachchi Lagoon by means of a link channel. Work was started in the 1950's and Elephant Pass Lagoon was converted into a fresh water lagoon, but the link channel was never completed due to lack of funds. A few years later during exceptional floods the eastern bund of the Elephant Pass Lagoon breached and remains in that state to this day. It is hoped that one day this scheme will be completed in view of the immeasurable benefits that will accrue from it’.*

The source of fresh water for the ‘*River for Jaffna, the Arumugam Plan*’, is the Iranamadu reservoir when it spills once every five or six years into the Kanagarayan aru which flows into the Elephant Pass lagoon. (Fig. 4). This is at present under the control of the LTTE, and it may

be a big step towards Peace if a joint project can be negotiated with them to restore the '*River for Jaffna, the Arumugam Plan*'.

In this connection, attention is drawn to the Vannitech in Killinochchi, which is a small research centre modeled on the lines of a US College and funded by the Tamil diaspora. At the time of my visit in November 2005, the acting President was a first class honours electrical engineering graduate from Moratuwa University, only 27 years old!

In my '*Tribute to Sir Joseph Rotblat*' at the Royal Society Memorial service, on December 9, 2005, I said that the existing divide between Vannitech scientists and the Tamil diaspora on the one hand, and scientists in the rest of Sri Lanka on the other, is like the global cold war divide between scientists in the mid 1950s which led to the Russell – Einstein manifesto and the beginning of the Pugwash movement. (Mendis, 2005a).

**It may be possible for the Minister of Science and Technology, Professor Tissa Vitarana, to bridge this divide among scientists with his Vidatha science program.**

Again in this connection, attention may be drawn to the prospectus prepared for a Commemoration for the late Dr A N S Kulasinghe. It is not a new Centre, that is proposed, but a method to spread the use of creative technology through real projects all over the country. Almost every day TV programs show dilapidated or broken bridges, and footbridges, and suspension bridges, in remote parts of the country, roads in terrible states of disrepair, lack of proper water supply, and so on. The prospectus proposes a method of tackling these problems at the local level without foreign aid. It may not meet with the immediate approval of the Establishment, in the first instance, but this must be overcome. There are good precedents like concrete roads built by Sarvodaya, and the Kotadeniyawa bridge built by the SDCC in December 2003, and some decentralized water supply systems. All these may be very acceptable to the Vannitech engineers.

#### **Infiltration of Pugwash by the Tamil diaspora**

It is appropriate at this stage to mention infiltration of the Pugwash movement by the Tamil diaspora. The Sri Lanka Pugwash Group was started back in 1982, when an expatriate Sri Lanka engineer V Tharumaratnam offered to fund an international Pugwash conference in Sri Lanka. Joseph Rotblat visited Sri Lanka as his guest, and met local scientists and engineers in Colombo and Kandy, and recommended to the Pugwash Council that the 1983 conference could be held in Sri Lanka. (Mendis, 2005a)

Thereafter, a newspaper advertisement called a meeting to set up the Sri Lanka Pugwash Group and start organizing the international conference. At that stage a small, influential group of Sinhalese scientists and engineers objected on the absurd grounds that at a time when Sri Lanka science and scientists were starved for funds, it was not correct to spend such a large sum of (Tharumaratnam's) money on foreign scientists! So, instead of an international Pugwash conference in 1983, a Sri Lanka Pugwash *Symposium on Tropical Agriculture* was held. One wonders what the impact of the 1983 disturbances would have been if the proposed international conference had been held.

Pugwash has influenced the cause of Peace in some conflicts and potential conflict situations like the Biafran war, the Cuban missile crisis, Rwanda, Bosnia, and so on. In contrast to all those behind the scenes activities, an incident at the 2003 conference in Halifax, Canada, showed infiltration of the Tamil diaspora into Pugwash. The Secretary General of Pugwash said '*There are no Tamils in Sri Lanka Pugwash*'. (Mendis, 2005b). [Activities of the Tamil diaspora in Canada are now well known]. Joseph Rotblat was very disturbed when he was told about the incident, which still remains unexplained after his death. The greatest irony is that the incumbent President of Pugwash, Professor M S Swaminathan, well known in Sri Lanka, is himself a Tamil, from Tamilnadu.

All this may have been a matter of some embarrassment to Jayantha Dhanapala, who is now Co-Chairman of the Sri Lanka Pugwash Group. But, it is hoped that he will succeed Kofi Annan and give global Peace a new lease of life, especially in Sri Lanka.

### **Environmental disaster in eastern Rajarata – the Kantalai bund breach in 1986**

The Kantalai reservoir bund breached unexpectedly on the night of April 20, 1986. This is documented in Chapter 14 of the Arumugam Commemoration volume by Engineer G J P Gunawardena, with an editorial comment by me. The government Committee of Inquiry found that the breach was due to human error, and the view that it was due to an explosion was not accepted. So, it was environmental disaster due to error, not terror.

In a related issue, in a recent Sunday Times (Financial Times) article on August 20, 2006, one Robert Ingall made some utterly false claims, to which my response was not published by the Times. Ingall's article and my response are given in the Annex, because Ingall may be an example of an economic hit man (EHM) at work.

### **Swedish International Water Conference, August 14 - 28, 2006**

At the recent international water conference in Sweden there were two important presentations that will have an impact on water policy in Sri Lanka. The first was by a representative from the International Water Management Institute, (IWMI, formerly IIMI) in Colombo, and the other was by a well known authority on water, Professor Asit K Biswas, from a third world research centre in Mexico. The IWMI statement was all about the worsening global water crisis and would have been welcomed by economic hit men all over the world. Biswas statement on the other hand would have been resented by EHMs. Policy makers in Sri Lanka should take serious note of both these statements as they will have an important bearing on our peace efforts in the future.

### **Conclusion**

As mentioned, this submission was prepared under some personal duress. Although necessarily based on personal experience, supported by earlier publications, there are some omissions that should be mentioned even in summary form in this Conclusion.

Professor Alan Bloom in his classic *The Closing of the American Mind* wrote:

... *'concern for the safety of one's family is a powerful reason for loyalty to the state which protects them'*. (Bloom, 112)

There have been many recent instances when the Sri Lanka state failed in its duty of protecting its citizens, thereby giving reason for disloyalty according to this dictum. Back in the 1980s the President actually announced that the state could not protect its citizens who were advised to protect themselves. Politicians and important persons were given armed bodyguards, and some individuals were issued arms, some of which were never returned. The disturbances that began in July 1983 resulted in the exodus of Tamils, aided by foreign governments that lifted normal visa restrictions to enable asylum seekers to emigrate. The predictable result was the creation of a global Tamil diaspora. [Today, the situation is reversed and ordinary Tamils have difficulty even getting visit visas]

The claim to *'traditional Tamil homelands'*, supported by the diaspora, is one result. With the example of Israel in their minds the diaspora will be aware that control of water will be key to achieving this. But, a correct approach to understanding the ancient water and soil conservation ecosystems of Sri Lanka is sadly lacking among engineers and decision makers. It seems to me that the actions of a number of them in high places who influence politicians, justifies the observation of one time Principal of Mahinda College, Galle, F G Pearce, who wrote in a letter to his friend Ven. Seelakhanda Mahathera:

*'The one characteristic of the Sinhalese people that I have always observed is that they are jealous of each other'. (Guruge, 2001, 451)*

This was perhaps a contributory cause of the JVP uprising and its brutal suppression in the 1980s. Although an EU delegation is said to have reported that between 40,000 and 60,000 had disappeared, there is little or no awareness abroad of these figures. If anything the well organized Tamil diaspora may include them among their own *'disappeared'*.

To confuse the issue further, the Sinhalese cultural heritage is discussed, for example on TV, whereas destruction of the economic heritage in the form of the ancient water and soil conservation ecosystems by the imposition of modern hydraulic engineering projects is not understood. Moragahakande is the latest and greatest in a sequence that started with Walawe and Lunuganvehera. It is being spoken of as a great achievement to be!

In conclusion, I have been appointed as a Member of the Governing Board of the IFS, Kandy, by H E President Mahinda Rajapakse. I intend using the opportunity to launch a study of our ancient water and soil conservation ecosystems, co-authored with Dr C G Weeramantry, to be the first volume in the *Science and Civilization in Sri Lanka* series.

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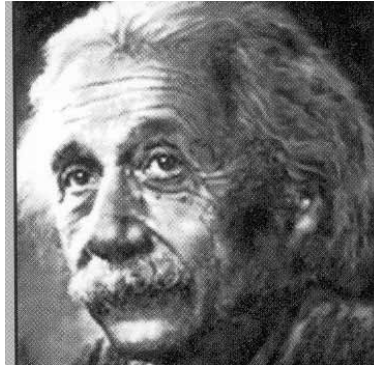
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#### **Annexes:**

- Breaching the dam problem by Robert Ingall in *Financial Times*, August 20, 2006 (not included)
- Letter to *Sunday Financial Times* in response to Ingall's article (unpublished)

**From an address on the occasion of the  
Fifth Nobel Anniversary  
Dinner of at the Hotel Astoria New York, December 10, 1945**



*Albert Einstein*

The war is won but the peace is not. The great powers, united in fighting, are now divided over the peace settlements. The world was promised freedom from fear, but in fact fear has increased tremendously since the termination of the war. The world was promised freedom from want, but large parts of the world are faced with starvation while others are living in abundance.

The nations were promised liberation and justice. But we have witnessed, and are witnessing even now, the sad spectacle of liberating armies firing into populations who want their independence and social equality, and supporting in those countries, by force of arms, such parties and personalities as appear to be most suited to serve vested interests.

Territorial questions and arguments of power, obsolete though they are, still prevail over the essential demands of common welfare and justice .