

*Nobel Laureate Charles H. Townes, Chief Guest Speaker  
"Tagore and Our Search for Solutions to Address the Global  
Water Crisis"*

*July 20, 2013 at 1:30 pm  
10 EVANS HALL U.C BERKELEY*

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**Outline**

- 1-- The unity of Nature: Tagore and Modern Science**
- 2-- Science of the Water Crises**
- 3-- Great Bengalis and our Quest for Solutions to our Ecological Crises**
- 4--Additional Points**

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**1) The unity of Nature: Tagore and Modern Science**

This Seminar on the Global Water Crisis is among other things a birthday celebration for me and Mr. Tagore put on by my friend, and long time associates Dr. Rashbihari Ghosh, and his volunteers. On behalf of Mr. Tagore, and IIBHB, Public Health and the UC Berkeley, I would like to dedicate this year's seminar to two great Bengalis, I admire very deeply: the great spiritual leader, Swami Vivekananda, who brought the Vedanta to America a spiritual enlightenment, and Bangabandhu Sheikh **Majibur** Rahman, the founding father of Bangladesh, who gave his life for secular democracy. After a discussion of the ecological crises we now face, I will speak about the vision of these men and how it can contribute to our search for solutions.

We are here today at the Fourth Annual Townes and Tagore Seminar to address a problem that affects all of us. Our planet is beset by an ecological crisis unprecedented in human history: a composite of interrelated crises we address individually in terms of climate change, the water crisis, deforestation, desertification, the collapse of biological diversity, the degradation through pollution of the air, water, and soil that constitute our biosphere, and the list goes on.

But nature is a unity, and it is pointless to consider these problems in isolation. However, different people think about unity in different ways. In the West, unity serves as the ideal of scientific thought, and modern science is our quest to newer and more powerful expressions of nature as a unified system of laws which explain the coherence and interconnectedness of the world we experience.

However, our science increasingly tells us that our ecological crises are the consequence of our species and a way of life that developed in the West more than two centuries ago. Nevertheless, despite all we have learned about nature, and more particularly, our biosphere, as an interconnected whole, and our own implication in this crisis, we make very few attempts to embrace, respect, and conserve the unity and

integrity of our environment in our ethics and policy. We fail to live in harmony with nature, and we have gone astray.

If we are to find solutions to our environmental crises, we must think first about human nature. Specifically we must find ways to effect its reconciliation with the natural unity that nurtured its evolution these billions of years. For this, I would like to turn to a work by Tagore, "The Relation of the Individual to the Universe." Tagore states that we separate ourselves from nature at our own risk. To quote Tagore: "India knew that when ... we violently detach ourselves from the inexhaustible life of nature; when we become merely man, not man-in-the-universe, we create bewildering problems." Tagore goes on to state that attempts to solve the problems so created "shut off the source of their solution," are artificial, and such attempts bring "[their] own interminable difficulties."

So where do we begin?

Many stories begin with water. The Book of Genesis begins with the breath of God on the waters of the deep. In the Kurma Purana, between the ages of creation, Visnu himself, the possibility of all future life, is said to sleep upon this same water. Likewise, in the creation story of current evolutionary theory, the possibility of human life emerges 2.4 billion years ago when primitive aquatic organisms on the surface of an ancient ocean evolved chlorophyll and began to use the light of the sun to reduce the carbon dioxide atmosphere and liberate free oxygen. At that time, our earth began to breath for us and set the course for the evolutionary lineage that would bring forth Homo sapiens. As life proliferated, and much of the organic carbon that formed in the process was buried by geological processes and sequestered in the Earth as the coal, oil, and natural gas that is currently extracted to drive our economies.

It is now accepted that the return of this fossilized carbon to the atmosphere is the chief contributor to climate change. We might say that over the span of two centuries, our species has reversed the effects of the geological and biological mechanisms that have sustained our evolution for more than two billion years to the point that the survival of our species is now open to question. To use Tagore's language, we have "violently detached" ourselves from the natural processes that fostered our development as a species and we are now facing the consequences.

However, even as we become aware of the consequences of fossilized carbon consumption, we are as a whole insufficiently committed to the changes in energy policies, that would permit the mitigation and reversal of these problems. Now that we understand the origins of the water crisis, in as much as we are not united and committed to develop a solution, this crisis has become, additionally, a crisis in vision—or more accurately, an inability to turn vision into meaningful commitment and action.

**2) Science of the Water Crisis**

As the water crisis emerges, clean water resources will become more important than hydrocarbon resources. However advances in technology and the understanding of nature are not always accompanied by the wisest use of technology.

One of the causes of the water crisis is global warming driven [chiefly] by the release of greenhouse gases over the past 200 years and compounded by continued deforestation. The hotter the world becomes and the less we conserve, the less water is available, especially in the deep aquifers that should be immune to these climatic variations. However, these resources, too, are being depleted.

#### *Fracking*

To release hydrocarbons through fracking, we are destroying a resource that is immeasurably more important for the survival of our species and an ecosystem that has provided our species the very possibilities of its evolution and a good and natural life.

Proper use of technology is to improve human life with respect for the nature that makes it possible.

It is very unlikely that our politicians or policy makers would destroy hydrocarbon resources to facilitate access to potable water, although the latter is immeasurably more important for our survival. However, the fact that the reverse of this scenario is so common place says much about our misplaced priorities.

\* Unwise use of emerging technologies/ industrial practices, including fracking is not a use of technology in accordance with Tagore's vision or my own.

\* It is not the best use of science or even a decent one to pursue profit at the expense of others' health and happiness

\* Abuse and over use of water has resulted in the depletion of ground water and also aquifers are damaged by toxic contamination from our thoughtless use of ground water

#### *South Asia*

\* The Himalayan mountains are one of the major sources of fresh water in the world. Ice-caps melting on the Himalayan mountains due to global warming pose a serious threat to access to clean water.

\* The water that comes from the highest parts of India, in the foothills of Himalayas and drains into the Indian ocean, most flows into the Bengal region. China's dam building on the Tibetan plateau will have an adverse affect on the water resources of Bengal Basin. These reservoirs have caused much water which would otherwise go to the Bengal basin, to be lost by evaporation. There is also the possibility that much of the impounded water could be diverted and channeled to dry areas of China. This huge megadam will also block silt from reaching the annually flooded farmlands of the Bengal basin, depriving them of fertility.

\* If China and India continue to emulate the west's historical pattern of high-energy development, Bangladesh at least has the option of trying a somewhat different route, which may have advantages in an era of continually declining energy.

If 80% of Bangladeshis were living on the land, rather than displaced into the city slums, education and cultural access could be brought to them by modern communication technology, but only if these channels are protected from take-over by profit-seeking interests. Improving the educational status of women has been remarkably effective in lowering birth rates, as has increasing women's economic options.

\*Increasingly, transnational corporations are plotting to control the world's dwindling water supply. In contain extensive man-made raised areas to protect against flooding.

According to a U.N. climate report, the Himalayan glaciers, that are the sources of Asia's biggest rivers--Ganges, Indus, Brahmaputra, Yangtze, Mekong, Salween and Yellow--could disappear by 2350 as temperatures rise, or even as early as 2035 . Approximately three billion people live in the drainage basin of the Himalayan rivers, which is almost half of the current human population.

\*The Himalayan system, which includes subranges, stretches across Afghanistan, Bangladesh, Bhutan, People's Republic of China, India, Nepal, Burma, Cambodia, Thailand, Laos, Vietnam, Malaysia, and Pakistan. Some of the world's major rivers rise in the Himalayas, and their combined drainage basin in India, china, Pakistan, Bangladesh, Nepal, and Myanmar could experience floods followed by droughts, in the coming decades. In India alone, the Ganges provides water for drinking and farming for more than 500 million people.

#### *North America*

\*The west coast of North America, which gets much of its water from glaciers in mountain ranges such ' as the rocky mountains, cascade mountains, and sierra Nevada, also would be affected. According to the California Department of water resources, if more water supplies are not found by 2020, California residents will face a water shortfall nearly as great as the amount consumed today.

#### *Water Privatization*

\*England and France, where water has already been privatized, rates have soared and water shortages have been severe. The major bottled-water producers, Perrier, Evian, Naya, and now coca-cola and Pepsi-co-are part of one of the fastest growing and least regulated industries, buying up freshwater rights and drying up crucial supplies { corporate giants act in their own interest-water only flows uphill to the wealthy who can afford it

#### ***3) Great Bengalis and our Quest for Solutions to our Ecological Crises.***

A global crisis requires global solutions, and if solutions are to emerge they must take into account all the wisdom that is available to us. Our pursuit of vision must reach across the planet to cultures other than those that came up with the modern, Western science. And we must reach across the humanities to disciplines that account the human condition qualitatively, in terms of the human spirit—in terms of history, poetry, philosophy, and religion.

First, I strongly urge you to study one of the world's great spiritual leaders, Swami Vivekananda, and his assessment of the West. Nine volumes of his English works are available for free on line. This man who brought the Vedanta to America had a great respect for our democracy, our optimism, and our commitment to solving problem Yet he warns us that we should never think that the gains of progress can ever serve as a substitute for the real or divine Self. Our ability to care for others and to respect our selves is diminished by greed, the pursuit of power, and the rush to get ahead. The solutions that we need today must involve considerable scientific and technological innovation and ingenuity, but we cannot repair our relation with our environment if in the process we lose sight of our own humanity. The 1915 Nobel Laureate in Literature, Romain Rolland, provides an excellent introduction to this great man in his "Life of Vivekananda." I recommend you read it.

India is an ancient homeland of the human spirit, and this includes the humanities. If we are to celebrate the greatness of Tagore, we must also celebrate the traditions and the poets that inspired him, including Kali Das, the great 5<sup>th</sup> Century Indian poet and dramatist.

Bankim Chandra, outstanding writer, scholar, real Pandit, and visionary 19<sup>th</sup> century leader of the Indian Renaissance.

Kazi Nazrul Islam, the Bengali rebel poet, arrested and jailed by the British for sedition in the cause of Indian independence. Nataji (leader).

Subash Bose, the great freedom fighter of India who significantly shaped the cause of Indian independence, Their calls for action compelled the British to leave India.

Finally, I ask you to read the life history of Bangabandu, Sheikh Majibur Rahman, the founding father of Bangladesh, for his commitment to secularism and democracy, his exemplary sacrifice, and his forgiving of his enemies for the sake of peace and unity. Like Thomas Jefferson, Majib is the father of a modern democracy, and a role model for us all.

These are the people whom I admire, and I look to them for inspiration. But I look to people like them for solutions. Good science cannot deliver good policy without the combined efforts of our political, moral, and spiritual leaders, our scholars, our poets, and our artists. Science needs the humanities to save humanity—to address the crises that now confront our species and our planet.

Now, more than ever, we must work with all people from all walks of life together on cultural, technological, and spiritual exchanges between the West and the East, the North and the South. And in all these regards, we are fortunate to have the legacy of individuals such as Tagore, Vivekananda and Bangabandu (friends of Bengal).

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#### 4) *Additional Points*

I also support the idea and proposal of Dr. Ghosh to invest 1/4 of 1 % of the U.S. budget to build an environmentally friendly water infrastructure in regions where it is needed.

Alternatively, if it is appropriate, the U.S. can, without changing the budget, reallocate a portion of interest-free loans or aid to be used for water infrastructure. Convert this aid into investment with a low interest. No adequate action plan has been made to address this crisis—it is our collective responsibility to protect fresh water resources. We should utilize resources of expertise (engineers) to institute training programs in developing countries with a specific focus on implementing water infrastructure.

Science and human values: The provision of environmentally friendly infrastructure in parts of the world where it is most needed must be done with no loss of time to protect remaining ground water. Then the US will be a role model for the rest of the world

Investment will bestow mutual trust provided we are careful about how this investment is actualized. Until you build up trust there will be more resistance and tension. Only the building of trust will allow for the building of infrastructure.

Let us not waste any more time. The Groundwater is crucial for the livelihood of 1.5-1.7 Billion rural households in the poorer regions of Africa and Asia. I am also deeply concerned that the water shortage in California is very severe; and I do not understand why we could not overcome the groundwater shortage here, when we have resources, technology and expertise is available. I am asking all of you to get involved in protecting the remaining drinking water resource and join IIBHB and help Dr. Ghosh to increase public awareness of this serious problem both at home and abroad

Finally, I want to invite your attention that due to my advance age, I plan to put some information together, including my letters and supporting papers to various authorities, to demonstrate what a great injustice was done to Dr. Ghosh and to our institute by the city of Berkeley. The city took two of his houses located in central Berkeley by using concocted predatory code [violations] and also kept more than \$200,000 deposit for repairs. These documents will be available soon. Please join me to fight for Dr. Ghosh to save the facility of our institute and protect the integrity of our great city.

Thank you

Charles Townes