

Tagore, Bose and Mahalanobis: The Confluence of Minds

Let me first thank the Chairman and other members of the Sir J.C.Bose Trust especially Professor Parul Chakravarti for giving me such a big honour by inviting me to this conference organized by the Trust on 'Tagore, Bose and Mahalanobis: confluence of minds.' Tagore in his memorial address to Jagadish Chandra Bose in 1937, while mentioning the Bose Institute as the centralized form of all the schemes and scientific thoughts of J.C. Bose, optimistically hoped that the spirit of science will find its lasting shrine in this place and the aspiration of the great master will remain a living force in its heart.

To get an invitation from the Trust related to that Institute is truly a great honour – I feel humble and bow in all humility to the memory of the three great minds of modern India. Thank you once again for this honour, notwithstanding my acute sense of the vastness and complexity of the subject, I have chosen to speak about. Perhaps it is indicative of my capacity to tread upon fields where angels would surely hesitate and only foolish men like me, will like to embark upon, with but innocent, partial knowledge!

With these words, of both thanks as also apology let me begin with the term confluence and also related terms like unity, harmony and synergism.

Confluence

In Indian spiritual heritage wherever confluence of rivers takes place that place turns into a pilgrimage – a seat of sacredness. Whenever there is a confluence of minds new ideas spring up generating a social or philosophical movement or a spiritual regeneration of the society as it happened in India during the Vedic times. Just to give one example: the Vedic ritualistic world view was replaced by a new ontological configuration brought about by the sharp insightful minds of the Upanishadic seers with the help of their collective wisdom ushering in a renaissance of thought and change of minds in society.

That was the Upanishadic view of oneness between *Brahman*, the unchanging reality or the sacred and the changing world of external appearances or the secular.

When all distinctions between the internal and external vanish, the separation between the Self and the non-Self comes to an end and one experiences Pure Being as Pure consciousness and everything at that moment becomes sacred. This was a new religiousness of the Upanishads which could be understood by realizing the intertwining of the sacred with the secular and as a result the creation of a new humanity, in which both consciousness and sensuous live together, becomes a reality. Any split between these two brings split in the self. We are both together, we are neither just spirituality nor just consciousness – nor are we just matter. We are a tremendous harmony between matter and consciousness.¹

Similarly in the fag end of the 19th century and the first four decades of the 20th century the confluence of these three great minds of India created a new culture of science and

related it to literature and spirituality so much so that Ilya Prigogine, a 1984 Chemistry Nobel Laureate, went so far to say in the same year that curiously enough, the present evolution of science is running in the direction stated by the great Indian poet (Tagore).

To both Tagore and Bose nature appeared to be not merely a physical phenomenon, but a living entity, a transcendental spirit which could lead man to realize the presence of an essential sense of unity in the world of apparent chaos and diversity.

Interrelatedness of living and non –living worlds and underlying Unity

In this context we may remember the findings of J. C. Bose, who told us that plants had life and they responded to electromagnetic currents. This was in a way no surprise to the Indian psyche because in the Indian world-view the inanimate and animate were inter-dependent and there was as much life in the stone as in the earthworm, the man or the tree i.e. a physical phenomenon. Acharya Bose dealt a blow to the distinction made by the European mind between the animate (organic) and the inanimate (inorganic) or the biological realm of plants with the help of sensitive instruments and scientific rigor. Tagore, right from his childhood days, because of the company and training of his father Maharshi Debendranath Thakur, was made familiar with the Upanishads which, in its ancient intuition, proclaims that whatever there is in this world vibrates with life, the life that is one in the infinite.”²

Having their beliefs firmly rooted to the preachings of the ancient Hindu Upanishads and the Vedas, Tagore and

Bose conceived nature not merely as a physical phenomenon, but a living spirit, which could help man to realize the essential Truth of Life.

Here the microcosm and the macrocosm are seen as interrelated (*yatha pinde thatha bramhande*) and profound synchronization is achieved between the subjective and the objective realms.³ In the course of his academic career roughly between 1899 and 1902, Bose ventured to go beyond orthodox physics and the traditional methods of science laid by the West, to draw some interesting correlations between the living and the non-living world.⁴ It is through this interdisciplinary approach to science that Bose sought to introduce an Eastern spirituality within a materialist Western science and thereby sought to establish a new scientific paradigm to create ‘a new East for the West to appreciate.’⁵ While working with his electric wave receiver, Bose became preoccupied with the question of responses to electric touch upon various objects and went on to compare metallic fatigue and excitation with that of excitation in living tissue.⁶ Thus he pursued a research to draw a link between the animate and the inanimate in their responses to electric stimulus, and wrote his seminal book, ‘Responses in the Living and Non-living’.⁷

This project of Bose or this idea of interrelatedness and the underlying unity was elaborated by him in his presidential address at the Bengal Literary Conference in 1911:

“You are aware that, in the West, the prevailing tendency at the moment is, after a period of synthesis, to return upon the excessive sub-division of learning ... Such a caste-system in scholarship, undoubtedly helps at first, in the gathering and classification of new material.

But if followed too exclusively, it ends by limiting the comprehensiveness of truth. The search is endless. Realization evades us. The Eastern aim has been rather the opposite, namely that, in the multiplicity of phenomena, we should never miss their underlying unity. After generations of this quest, the idea of unity comes to us almost spontaneously, and we apprehend no insuperable obstacle in grasping it.”⁸

The poet and the scientist had become affiliated with each other in pursuit of the same objective. Tagore expressed this alliance in his dedication of his *Katha O Kahini* to Bose,

“You gave the jewels of Truth, I give you in return its words and vision.”

This idea of Tagore and Bose of relatedness and unity of matter and consciousness, of animate and inanimate which was based on ancient Indian spiritual thought of oneness, created a big controversy in the West and also in India about Bose as a scientist and Tagore as a thinker and a poet.

Controversies over Tagore and Bose

When Tagore’s *Gitanjali* came out in English translation and he was awarded the Nobel Prize in the West because of their overactive life, it developed a thirst for the infinite peace and feeling of the Eternal. Contemporary notices of *Gitanjali* during that time confirm this, one said:

‘They are offerings from finite to infinite.’

Another said,

Mr. Tagore ‘uses things as if they were thoughts; something which had the imprint of the gods.’ This peace and feeling of the eternal is possible if one tries to understand the unity of mankind – an idea which was so much needed for people to realise during that time in the war ravage Europe.’

Sturge Moore, after hearing Tagore’s reading of his poems at Rothenstein’s had remarked to Yeats that the poems were ‘preposterously optimistic’. To this Yeats replied: ‘Ah, you see, he is absorbed in God’.

That was true. Tagore’s poetry appeared at that time as an antithesis to pride of life and disquiet about absolute evil, and as a release into another world. England and Europe, during that time were under the spell of an existential dilemma and angst and were searching for an answer as how to transcend this angst and get rid of the fabric of pessimism and realized that in Tagore’s poetry, one can find a message and that is that one can possibly transcend pain and sorrow and celebrate life. It was during that time due to a psychological situation in England and Europe in which people were ready to listen even to a mere message because his poetry in its original though true and great poetry yet in translation did not have that much a form and style but the message of the poems which, however, because of a genuine, European, emotional demand did impinge.

In the initial exuberance shown at the time of his receiving the Nobel prize Tagore was accepted by the West as a spiritual guru, the great mystic from the East, a gentle Christ with a putative message for the West, a messenger of peace and unity of mankind and transcendentalism, who found God

in nature and man, a man from the orient belonging to a culture of the other, a voice from Asia.

From the very beginning of his western career this stereotypical figure of Tagore as latter-day Wise Man from the East, the prophet, did lingering harm to him. Nirod C Chaudhuri in his book 'Thy Hand, Great Anarch' said that very soon the literary alternative to Tagore came from the post war poets and novelists and above all from the Bloomsbury group and then with the loss of psychological topicality of his message the initial exuberance faded away very soon and the Western man's disillusion dawned in and criticism started.

Graham Green said about Tagore, the bright pebbly eyes of the theosophists. The fact that the West oscillated so widely from one extreme of exaggerated praise and admiration to another extreme of contempt and rejection only proves that they were fanatasized images of Tagore which had very little to do with reality.

Same thing happened with Jagadish Chandra Bose. After 1900, Bose extended his study to the effects of radiation on plant and animal tissues, his highly sensitive apparatus revealing striking but at the same time controversial similarities in the responses to electrical stimulus of living and non-living substances. He thus became more physiologist than physicist, though his work on plant physiology, with its mystical overtones, was never accepted in the way his work in physics was, either during Bose's lifetime or subsequently. According to C.V. Raman, India's first Nobel laureate in science, Bose 'did some very clever physics before he started on all his mumbo-jumbo.'⁹ But surprisingly he was speaking almost the same language. Amongst Raman's many

remarkable insights was the emphasis on identifying geometry in nature, both of organic worlds as also inorganic.

West chose to see Bose as the embodiment of a unique yet typically mystic Eastern mind endowed with the capacity and the imagination to grasp the absolute and simple truths of the earth and the universe and in due course he was accepted as a scientist offering the alternative orientations to science and understanding of scientific creativity outside the normal habitat of science. As a physicist his admirers such as Albert Einstein, Bernard Shaw, Henri Bergson, Aldous Huxley, and Romain Rolland found in him the personification of a historical civilization which had a more humane concept of science and a more integrated view of the organic and inorganic worlds than the West could offer. Even when he had fallen from grace he was accepted as a scientist of alternative sciences, in whom one can see a symbol of Indian science, where a book of surgery is written in verse and God is invoked before a scientist embarked in any kind of scientific activity. Bose was accepted as a pioneer who had Indianized modern science to make it compatible with the culture of an ancient society. London Spectator emphasized his ‘easterness’ and called him having a ‘sanyasi mind’.¹⁰ Geddes described him as an Indian *rishi* (*hermit*) free from greed.¹¹

Modern and Alternative Sciences

This raised the modern versus alternative sciences debate by drawing an instinctive relationship between science (technology) and “western” people and exemplifying a prevalent discourse within which non-western people are relegated to a particular ontological position in relation to “modern science” (and technology) that can be characterised

as “waiting room” of scientific sociability. It constituted modern science as a universal knowledge and relegated scientific research in the non west to “waiting rooms” of history and development.¹²

In this debate the Eurocentric modernists by borrowing a term ‘bricoleur’ from Levi Strauss argue that the engineer (the engineer according to Levi Strauss creates specialized tools for specialized purposes. The bricoleur is a "jack-of-all-trades", who uses few, non-specialized tools for a wide variety of purposes. There is a loose connection between, on the one hand, the bricoleur and "primitive" societies, and, on the other, the engineer and modern societies) is always trying to make his way out of and go beyond the constraints imposed by a particular state of civilisation while the “bricoleur” by inclination or necessity always remains within them.¹³

Modernity and Tagore

But, however, the colonial west felt extremely surprised when both Tagore and Gandhi warned us in the beginning of the 20th century about the danger of developing a colonial mentality or mental colonisation.

Tagore said in those days that true modernism is freedom of mind and not slavery of taste. He observed, “You must apply your eastern mind, your spiritual strength, your love of simplicity, your recognition of social obligations in order to cut out a new path for this great unworldly car of progress shrieking out its loud discards as it runs”¹⁴ and thereby debunked the whole notion of exclusivity of Western modernism and the development project and hence, while defining modernity, he had no hesitation to declare in Beijing

in 1924 that ‘The impertinence of material things is extremely old. The revelation of spirit in man is modern. I am in its side, I am modern.’¹⁵

Both Tagore and Bose had the courage to speak of other modernity or what Bhikhu Parekh says, ‘critical traditionalism’¹⁶ to infuse the Eastern spiritual resources and Vedantic beliefs into the corpus of modern science and leave a distinctly Indian imprint and widen its worldview.

Revelation of Spirit in man is the core philosophy of Tagore. Tagore’s was not the lone voice during those days. Jose Ortega Y Gasset, considered to be the greatest Spanish philosopher of the modern time, developed a philosophical system known as ‘ratiovitalism’ had said clearly that modernity brought two common elements

Disorientation and

Dehumanization in poetry and as a result it led to violence and vivisection.

and then affirmed that artisans are recognized by their tools. The poetical tools of the Bengali poet Tagore resembled the universal propositions of philosophy. Rabindranath is not in need of anything historical and sumptuary, particular to his time or his land:

With a little of sun,
With sky and clouds,
With mountain and thirst,
With storms and river banks,
With a door and frame of window from
which to look out,
and above all, with all a loving favour

for God

He produces his songs.

This lyric poetry thus consists of universal things which are and have been everywhere and transforms it into a bird eager to sing from every branch. Then Ortega includes a sentence of Tagore,

‘In the creation of God, nothing has an end. All which is true remains.’

Science, Eastern Spirituality and Nationalism

Proponents of alternative sciences have been deeply concerned with violence perpetuated through “modern western science”. They have criticised modern science for its qualities of “extreme use of reason directed towards the extreme use of violence”¹⁷ and vivisection as explained by Ashis Nandi¹⁸ and Shiv Viswanathan¹⁹ and according to them, qualities of violence and vivisection are intrinsic to modern science and not simply are a result of, for example, its misguided application. The effort of the advocates of alternative sciences has been to look for epistemological alternatives to modern science in order to search for non-Eurocentric, non-violent, and non vivisectionist ontological possibilities.

The main purpose of Bose was to raise the question about the issue of modernity intertwined with science and Enlightenment and challenge the Western vision of a fully autonomous science and reveal the tendency of the Western mind to forget that every culture produces its own science as

surely as each scientific achievement produces new cultural realities.

By leaving a distinctly Indian imprint in the corpus of modern science; and secondly, by widening the worldview of modern science Bose brought a refreshing spirit to the excesses of Western scientific methodology by infusing the Eastern spiritual resources and Vedantic beliefs which proclaim the ideal of the Unity of Life. Bose made a valiant attempt to give a different orientation to the study of science, which, however, was not acceptable by his critics both in the West and India and which ultimately became a part of alternative sciences.

Bose sought to introduce an 'eastern' spirituality within a 'materialist' Western science, much like Mahendra Lal Sircar²⁰ and Reverend Father E. Lafont²¹ but with a definite conscious assertion of 'Indian' spirituality.²² It is emphatically said that for purposes of discipline— intellectual, moral, religious— the most efficient study is Science... concerns all mankind for all times.²³ In this respect I may recall the words of D. S. Kothari, a very distinguished humanitarian physicist who said, 'Science provides an understanding of and control over nature, but it is the moral and spiritual insights which give meaning and purpose to life, individually and collectively'.²⁴

The perception of Bose and Tagore was to protest and resist the colonial political agenda by propagating the study of science and disproving that India is a 'nation of dreamers' and they are incapable of grasping the depth of disciplines like science, notwithstanding the fact that the ancient India produced scientists like Aryabhata, Varamihira, Bhaskara,

Brahmagupta and many others and discovered zero. Science became a symbol of nationalism and culture. After Bose's triumphant return from his visit of Europe, Rabindranath called on Jagadish Chandra to offer him his congratulations on his successful mission abroad.

But not finding the scientist at home he left a bunch of champak flowers on his table²⁵ and after some months wrote a poem addressed to Bose which was later on published in his volume of poetry, 'Kalpana':

*Vigyan lakhir priya paschim mandire
Door sindhuteere
Hey bandhu, giyecho tumi; jayamalyakhani
Seethe hote aani
.....
Se vani pashibe sudhu tomari antare
Kheen matree swarel*

The nationalist message is clear and in due course Tagore urged Bose to take up larger responsibilities in the Indian struggle for national pride. Bose wrote to Tagore, how he was feeling uneasy before a lecture of 10th May 1901 at the Royal Society, when he envisioned a woman (was it mother India?) in rags who muttered, "I have come to greet you" and all his uneasiness instantly disappeared.²⁶

Science in the discourse of both Tagore and Bose acquired a nationalist and spiritual configuration. In 1900 Bose, in a letter to Tagore from London wrote,

"I heard the call of mother in your words of enthusiasm."

In the same year Bose, as a delegate of the Govt of India, took part in the International Congress of Physicists at Paris and while presenting his paper he, for the first time drew a parallelism between the living and the non-living. The paper was regarded as one of the most important received by the Congress and it was published in its volume. The audience in the conference was awestruck. Among them was Swami Vivekananda, who saw in Bose the embodiment of a new India and wrote in a letter,

“Here in Paris have assembled the great of every land, each to proclaim the glory of his country.... Among these peerless men gathered from all parts of the world, where is thy representative, O thou the country of my birth? Out of this vast assembly, a young man stood for thee, one of thy heroic sons, whose words have electrified the audience, and will thrill all his countrymen.”²⁷

Bose created a new paradigm of nationalism with the help of scientific essence. He is now hailed as a symbol of Indian nationalist culture, its national pride. Tagore hoped that through scientific researches India would regain its old glory and in a letter to Bose wrote a poem about it:

“Alone at the deep centre of all things;
Where dwells the One alone in Sun, Moon and flowers,
In leaves and beasts and birds and dust and stones,
Where still one sleepless Life on its own lap
Rocks all things with a wordless melody,
All things that move or seem motionless.
Call thou thy scholar-band come forth
Out on the face of nature, this broad earth.

Let them all gather. So may our India,
O once again return to steadfast work,
To duty and devotion, to her trance
Of earliest meditation.”

One can realize how exciting were the days when great minds like Tagore, Bose and others, in search for a nationalistic construction, made use of scientific essence, Vedic monism and its message of the ‘unity of life’ and the ethos of the traditional India to give expression to their nationalistic zeal. It was a unique confluence of ideas to infuse the people of India with the spirit of nationalism. This could be possible because they had a deep understanding of India- both of its past heritage and its present and created a new archetype of modernity where past does not pass off but past and present together create the future. In that archetypal construction emerged their vision of India. On one side, they salvaged the scientific essence and the modern scientific research by Indians and used it as a means of pilgrimage to that essence, of realizing the Indian scientific spirit so as to create a national pride among Indians and on the other side, both of them with the help of scientific experiments and philosophical speculations respectively searched for the unity of life based on Vedic monism. In his letter to Tagore, dated 29th November, 1901, Bose acknowledged his responsibilities as a scientist to revive the national pride of his country:

“I am alive with the life force of the mother Earth, I have prospered with the help of the love of my countrymen. For ages the sacrificial fire of India’s enlightenment has been kept burning, millions of Indians are protecting it with their lives, a small spark of which has reached this country.”

In his another letter to Tagore, dated 30th August, 1901, Bose gave expression to Vedic monism to raise the feelings of nationalism:

“There is a great gap between the living and the non-living, and I was experimenting on the responses on plants to make a connection between the two. Just now I got the amazing results; Same, Same, all are the Same!”²⁸ Poetically he wrote, “These trees have a life like ours. They eat and grow, face poverty, sorrows and suffering.

This poverty may induce them to steal and rob, they also help each other develop friendships, sacrifice their lives for their children.”

This depiction of Nature, as a means to realize the essential unity in all existence, had been also evoked by Tagore in many of his writings. In his essay, ‘The Relation of the Individual to the Universe’ in *Sadhana* the poet said:

“In ancient India we find that the circumstances of forest life did not overcome man’s mind, and did not enfeeble the current of his energies, but only gave to it a particular direction.

He felt that truth is all-comprehensive, that there is no such thing as absolute isolation in existence, and the only way of attaining truth is through the interpenetration of our being into all objects.”²⁹

These are the fullest articulation of Vedic monism for creating a nationalistic feeling of the unity of people irrespective of their caste, creed, religion or social status.

They did not stop there only and by using the folk wisdom and ancient Indian religious beliefs went back to their roots. Immediately after his marriage, with his young wife, Abala Bose, Bose began to devote the two annual vacations to seeing and knowing India and to realizing what India stood for. He tried to understand the mythologies and folklores of India and some of the stories out of the great Indian epics *Ramayana* and *Mahabharata* which almost all Indian children used to grow up with and attempted to create a nationalistic spirit for India, its heritage, ethos and all that India stood for. Bose translated the myth of the origin of the river *Ganga* and used the anti-rational view prevalent in our racial unconscious:

“*Ganga*, where do you come from?”

I used to ask the river.

“From the matted hair of Mahadeva”,

she would reply. And where do you end? She would reply,

“At the feet of Mahadeva”,

“I could clearly hear this answer in the murmur of the river.”³⁰

Tagore now found in his work the true meaning of the universe which Indian saints discovered long ago.³¹

The New Way of Science

Fortunately today the Enlightenment’s concept of science, from which the dominant culture of science draws sustenance, is changing. In the West many developments took place in the 18th and 19th centuries, culminating in the assertion of pure objectivity and definitiveness of science. Science became abstract and mathematical to a point of discomfort. Voices of dissension could be heard. The vision of India or Tagore or

J.C.Bose of the spiritual unity of all existence is taken up seriously now in the Western frontiers.

This is corroborated by Peter Tomkins of 'The Secret Life of Plants':

“While we in England were still steeped in the rude empiricism of barbaric life, the subtle Easterners had swept the universe into a synthesis and had seen the one in all its changing manifestations.”

Fritzo Capra (1939-) in his book, 'The Tao of Physics', endorses this view and says that the basic element of the Eastern world view are also those of the world view emerging from modern physics and further says that his book aims at improving the image of science by showing that there is an essential harmony between the spirit of Eastern wisdom and Western science. (1983, p.25) At another place Capra refers to the basic unity of the universe as upheld in Eastern mysticism and modern physics:

“The most important characteristics of the Eastern world view are the awareness of the unity and mutual interrelation of all things and events.... The Eastern traditions constantly refer to this ultimately the indivisible reality, which manifests in all things and of which all things are parts.”

The famous German physicist and philosopher, Werner Karl Heisenberg, Nobel Laureate in Physics in 1932 for his 'Uncertainty Principle' met Tagore in Calcutta at his Jorasanko house in 1928 and had long conversations with him about Science and Indian Philosophy. He is reported to have said in 1972 that Rabindranath's philosophical ideas had been

of help to him as a physicist. Heisenberg, aged 27 then had several conversations with the mature poet of 67 years old about relativity, incommensurability, inter-connectedness and impermanence as fundamental aspects of physical reality. After the conversations he said: "Some of the ideas that had seemed so crazy, suddenly made much sense. That was of great help for me."³² His enduring fascination with the relationship between Man and Nature, notably in his Hibbert Lectures "The Religion of Man" at Manchester College, Oxford University on May 19, 21 and 26, 1930, brought him close to Albert Einstein. In the same year on July 14, Tagore and Einstein had a seminal discussion on the issue of scientific truth and one about the physical world. One dialogue from their discussion is worth quoting:

Einstein – That the universe exists is a matter of faith for me.

Tagore – The universe can exist only if I know that I am Human.

Einstein is emphatic in his belief that the world as a reality is independent of human consciousness. Tagore, on his part, affirms that his conception of truth is also impersonal, and that it is not therefore dependent on the perception or consciousness of any particular person of any particular time and place. "Truth" according to him, "is one with the Universal Being, must essentially be human, otherwise whatever we, the individuals, realize as true can never be called truth... In science we go through the discipline of eliminating the personal limitations of our individual minds and thus reach that comprehension of truth which is in the mind of the Universal Man."³³ According to Tagore's Vedic-Upanishadic vision, the individual in the universal (*simar*

maje ashim tumi bajao apan sur) i.e. the later is articulated in and through the former. The valid vision of truth is integral – both individual and universal, both real (experientially real) and ideal (transcendentally ideal).³⁴

Brain Josephon, physics Nobel Laureate has commented:

‘Tagore is, I think, saying that truth is a subtler concept than Einstein realised.’³⁵

Understood in this light, in Indian knowledge system, there is no conflict between modern science and spirituality, physical sciences and literature, between empirical knowledge and metaphysical, between reason and imagination and between scientific and aesthetic values. Capra endorses the view that imagination is what helps critical reason to develop into creative intuition and says, ‘The rational part of research would, in fact, be useless if it were not complemented by the intuition that gives scientists new insights and makes them creative.’

This creativity is in no way different from literary creativity.

Tagore and Bose: Creative Use of Science

Both Tagore and Bose made use of literature and Science respectively not only creatively but in their writings one can see science or literary creativity intermingling with each other. Tagore’s only expressly scientific poem was on ‘The Sensitive Plant’ which appeared as preface to his collection of poems called *kheya* (*The Ferry*). In beautiful poetic terms it summarizes J.C.Bose’s findings on the sensitive plant. However, scientific thought permeated even his early poems. In *Prabhat Sangeet* – one of his earliest poetic publications - there are two complementary poems *Anananta Jivan* (Endless Life) and *Anananta Maran* (Endless Death). These two are

full of scientific illustrations. There is a third poem *Sristi Sthiti Pralaya* (Creation, Conservation and Destruction) which is a marvelous synthesis of pictures of the world's beginning depicted in modern science and in Hindu mythology. Edward Thompson in his book on 'Rabindranath Tagore: His life and work' said about the poem:

“Thought is lit up by imagination, and we have an unforgettable picture of the vast wastes and of primal Energies at work.... Space is filled with whirling fire fountains, and burning nebulae, shaping themselves to become world.”

The theme of creation is an extremely favourite one with Tagore. He reverts to this theme again and again and describes with scientific precision the story of earth's beginnings. In the poem *sandhya*, (twilight) in his collection of poems called *chitra*, he says:

.....*Aake aake andhokare hoteche bahire*
Aakate aakte dipta tara, sudur pallir
praddeeper moto\ Dheere jeno uthe bheshe
mlan chobi dharanir nayononemeshe
kato jug- juganter atit abhash,
kato jeev heebaner jirna itihasl
Jeno mone pare sai balya niharika;
Tar pare projwalanto joubaner sikha;
Jeeva dhatri jananer kaj bokhe loye
Lokkho koti jeev – kato , kato klesh,
Kato judho, kato mritu, nahi tar sheshl

There is large number of Scientist- writers, who gave copious examples from Tagore's writings to establish the fact that in a good number of his creative writings - poetry and

prose - one can find allusions after allusions of his scientific knowledge and expression of unmistakable scientific imagery.³⁶ He also wrote articles and books on pure science but in Bengali so that the people of Bengal can understand its nationalistic value and use it for their progress and development but both Tagore and Bose were for the humanization of Science and explained to the West that when the European peoples would be able to realize deeply that their scientific heritage is rooted in their culture, history and humanity, the science will be self-conscious and well founded and the crisis of civilization, which was Tagore's stirring lecture at the age of 80, would be gradually over. In fact, Science and Culture are 'the two birds on the same branch'. The Katho Upanisad speaks of the two birds on the same branch as the 'experiencer' (*bhokta*) and the 'seer' (*drasta*) – and one cannot live without the other.

Personal Relation of Tagore with Bose

This paper will remain incomplete, if I do not mention the personal relationship between Tagore and Bose and remove some misgivings created by some scholars. In the poet's own words:

“I found in him (Bose), a dreamer, and it seemed to me, what surely was a half truth, that it was more his magical instinct than the probing of his reason which startled out secrets of nature before sudden flashes of his imagination. In this I found our mutual affinity but at the same time our difference, for to my mind, he appeared to be poet of the world of facts that waited to be proved by the scientist for their final triumph, whereas my own

world of visions had their value, not in their absolute probability but in their significance of delightfulness.”³⁷

Tagore met Bose in 1891, but their close friendship began after Bose’s triumphant return from Europe in 1896. Thereafter on numerous occasions they met together and Bose influenced Tagore to write short stories, poems like *Karna-Kunti Sambad* and many others and listened to his delightful songs and Bose, on his part, told Tagore about science and discoveries. Tagore was Bose’s greatest Bengali advocate. Though by his own admission he hardly understood Bose’s scientific achievements, he raised money from the Maharaja of Tripura to enable Bose to stay in Europe and carry on his researches. It is said by Dutta and Robinson by quoting Ashis Nandy that this friendship lasted for ten years. Bose was a touchy, somewhat vain man who found friendship and collaborations difficult. The success of Shantiniketan and the award of the Nobel Prize to Tagore seemed to have provoked Bose to jealousy.³⁸ Bose was now seemed to be looking for an excuse to break away from a man he had once declared was one of his best friends.³⁹ But it is difficult to accept this allegation of jealousy when one reads the letter to Tagore by Jagadish on Tagore’s receiving the Nobel prize:

“All these years, I felt a deep anguish that you had not been bedecked with the world’s greatest honour. Today, I do not feel so any more. How may I express my gratitude to Almighty God? Go from strength to strength. Let victory be always yours. Let “Dharma” be your eternal companion.”

There was another letter written in 1919 after Tagore relinquished his knighthood after the Jallianwala massacre in

Punjab shows how tight was the bond of friendship between them. Bose wrote just a line to Tagore in appreciation:

“Dear Friend, You have divine blessings on you ...”

It is true that the letters exchanged between the two, after some years, were much fewer than before. There might have been some misunderstandings but the warmth of their love remained till the end. Both of them were getting busier, having set up two Institutions and finding it hard to sustain them.

Jagadish dedicated his famous book ‘Nervous Mechanism in Plants’ (1926):

“To My Life Long Friend Rabindranath Tagore.”

Tagore’s reply to Bose’s letter on his return from the US was:

“When I received your book, I realized, ‘here lies our Truth, the Light and Life, the eternal manifestation of India. The fatigue that had come over me dissolved by the warmth of friendship that was conveyed by your letter.’”

Jagadish’s letter to Tagore in 1932 expressing his delight after Tagore’s visit to Iran and also his grief on the death of Tagore’s grandson (the son of Meera, Tagore’s daughter), and the one in 1936, sending some money to help Tagore’s Visva-Bharati University were sincere expressions of his feelings. Bose died in 1937 and the memorial address by Tagore after Bose’s death bears testimony to the love and respect they had for each other. It is true that the letters exchanged between the

two were much fewer than before and their might have been some misunderstandings between them but the warmth of their love remained till the end.

One was an *acharya* and the other was *gurudev* but the meanings of these two appellations are different. One is a theoretician, who creates theories (*aachenoti arthaan*) and asks people to follow the right path for investigation (*aacharam grahayati*) and the other is a preceptor. A theoretician works mostly in isolation and hence has less visibility, a teacher works in society having more visibility. The search of both was for an alternative idea of India but not for a revival of ancient India. Bose was searching for a creative philosophy of science and looked for inputs in India's ancient heritage and Tagore also went to the ancient heritage in search for living and reasoning in freedom for the unity of mankind. As we have come to a new millennium, we may arrive to a position to affirm in the coming decades that Europe did not say the last words about science and other issues. Time may still vindicate the vision of the two dissenters.

Mahalanobis in this Scenario

Where does `Prasanta Kumar Mahalanobis fit in in this scenario?

Despite a 30-year difference between the two, Prasanta Chandra Mahalanobis “was one of Tagore's rare friends who did not place him simply on a high pedestal full of only aura and fame, but treated him as a lively intellectual and affectionate companion.” Rabindranath Tagore also took a liking to young Mahalanobis, being particularly impressed by

the combination in him of a love of literature with a flair for logical analysis.

“Just as Tagore sought to bring humanity closer through Visva-Bharati or his one-nest-world university at Santiniketan, Prasanta Chandra strove to use the ideal of humanism through statistics,” “Statistics for human welfare” was a stated goal in the Memorandum of Association of the institute.

While Tagore coined the Bengali word for statistics *rashi vigyan* or *rashi vidya* and wrote a poem in the inaugural issue of the journal of the Indian Statistical Institute, Mahalanobis served as the first joint secretary of Visva-Bharati for 10 years and framed the constitution of Visva-Bharati in 1921. Tagore would often call upon Prasanta for advice on ‘political’ matters. He also travelled with Tagore several times on his foreign tours. Prasanta acted as Tagore’s secretary in Europe in 1926 and in one of his letters to E. J. Thompson he wrote, ‘we have been going from place to place like gypsies. Poet had a nervous breakdown in Prague... there are two different sets in Prague, Czechs and Germans, and everything had to be repeated twice.’⁴⁰

Mahalanobis's analytical turn of mind manifested itself at a very early age and he was given to arguing things out with his friends and even with his superiors.

Though undoubtedly a clever man but this trait was not liked by many including Leonard K. Elmhirst, the English man brought by Tagore from Cornell University, where he did a course in agriculture, to take charge of Sriniketan. In ‘Poet and Plowman’ Elmhirst writes that Prasanta Mahalanobis, the

newly appointed secretary to the new Visva-Bharati University wanted Elmhirst to write out a prospectus so that the news would go around and the whole country come to know about the work at Sriniketan and also to write a column every month in 'The Modern Review' and then there would be no dearth of financial help from different parts of the country. Elmhirst had to decline his ideas as he thought it would be too early to go into print till they were much further in their feet and concluded that Prasanta's 'torrent of suggestion without penetration flowed on'⁴¹ but he did not think, it was worthwhile.

Prasanta was attracted towards Tagore because of his demeanour, poetic grandeur, interest in science and love for the country. Another reason for his fascination was Tagore's analytical force which brought into focus some very original issues like nationalism, traditionalism, educational commitment, freedom of mind and interpretational epistemology which created a tremendous awareness all over India and the world; each area provided insights into his scientific and Upanishadic faith of the unity of universe. Prasanta joined hands with Tagore in repudiating the violent nationalism and wrote in a letter to Edward J. Thompson in 1921 that Tagore never "supported nationalism, not in any form or guise. Even at the height of the *swadeshi* movement he was protesting against some particular aspects".⁴²

Mahalanobis copiously read the writings of Tagore and wrote to him often. The renowned statistician was also a most meticulous chronicler of Tagore's life and put together a year-by-year calendar of Tagore's activities. But here the conflict between litterateur Tagore, and historian Mohalanobis came on the surface. Tagore wanted to give recognition only to his

later day mature writings and hence dismissed the rationale of Mahalanobis of chronologically chronicling of his writings and humourously referred to a poem that he wrote to Prashanta in 1935: '*Aami chale gale phele rekhe jabo pichu*'⁴³ and politely asked him not to do so. But the history of Tagore study has proved that a synthesis between the literary and historical ideals of Tagore and Mahalanobis can truly take us to our coveted destination.

Let me here refer to an unpublished letter of Mahalanobis to E.J. Thompson which on one side shows Rani and Prasanta's great love and regard for Tagore that continued unabatedly till Tagore's last days as well as, Tagore's exceptional optimism of hope of a good time in a situation of great crisis:

“As you know the Poet was very seriously ill in September (1937). Just before this he was staying with us in Calcutta. I left for Shimla for a committee meeting; two days later, after a great deal of hesitation, he went back to Shantiniketan, and the same night he became unconscious. As the telegraph office was then closed, the railway people sent a telephonic message to our house at one o'clock at night asking that doctors should be sent to Shantiniketan immediately without waiting for the morning train as otherwise it might be too late. Rani (Mrs Mahalanobis telephoned to my uncle Sir Nil Ratan Sarkar (a famous Physician); (they) left for Shantiniketan at two o'clock by car and reached there early in the morning. Poet was then completely unconscious and the local doctors thought it was a case of apoplectic stroke. He however recognized Rani, smiled and said 'So you have come'; and again became unconscious. When

doctors arrived from Calcutta they found that it was a very bad attack of erysipelas complicated by kidney trouble. For sixty-two hours he was completely unconscious and all hopes were given up. Rani was near him all the time almost continuously as nobody else could administer medicine or food. He apparently retained a subconscious touch with her and it was only she, who could manage to do anything. Once he regained consciousness recovery was very rapid. As soon as he could speak he said that he wanted to write a poem or to paint a picture. As writing a poem would be more strenuous, he asked for his pigments and brushes. Within a few hours he painted quite a large picture. The whole of the foreground of the picture is a dark and ill defined veil of primitive forest, a warm flood of golden light breaks through in the centre showing the distance view on the other side.”⁴⁴

At the End

This warm flood of golden light breaking through the centre in the painting of Tagore, and showing the distance view on the other side, is extremely significant. It reveals the other side which definitely brings a message of an alternative world, a world within us – a world which can give meaning to our life and solace even to a soldier going to war. Let me quote here a letter which one Susan Owen, the mother of a First World War soldier Wilfred Owen wrote to Tagore in 1920, describing his last conversation with her son before he left for the war which would take his life at the age of 25 only. She writes, ‘Wilfred said goodbye with those wonderful words of yours – beginning at

“When I go from hence, let this be my parting word.”

When Wilfred’s notebook was returned to me, I found ‘these words written in his dear writing – with your name beneath’.⁴⁵

Thank you for your exceptional attention and patience to listen to my address.

Notes and References

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- 2) Rabindranath Tagore, ed. Sisir Kumar Das. New Delhi: Sahitya Akademi, 1966, Vol. III: p. 827.
- 3) Usha Choudhuri, *Vedic Mythopoeia: An Approach to religion, Myth and Poetry*, Delhi, 1983, p.2
- 4) J. Lourdasamy, *Science and National Consciousness in Bengal 1870-1930*. New Delhi: Orient Longman Private Limited, 2004, p. 102.
- 5) Pratik Chakrabarti, *Western Science in Modern India*. Delhi:, 2004, p.185
- 6) Patrick Geddes, *The Life and Works of Sir Jagadish Chandra Bose*. London: Longman, Green and Co., 1920, pp. 88-89. Cited in Chakrabarti, p. 193.
- 7) J. C. Bose, *Responses in the Living and Non-Living*. London: Longman, Green and Co., 1902
- 8) Jagadish Chandra Bose, *Sir Jagadish Chandra Bose: His Life, Discoveries and Writings*. Madras, 1921, pp. 60-61.
- 9) Quoted in Dutta and Robinson, *Rabindranath Tagore*, 1995, p.403

- 10) Quoted in Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial practices*, ranikhet, p.185
- 11) I. P. Geddes, *The Life and Work of Sir Jagadis Chandra Bose* (Longman, Green and Co., 1920).
- 12) Dipesh Chakrabarty (Chakrabarty, Dipesh, *Provincialising Europe: Postcolonial Thought and Historical Difference*, 2000) argues that as a result of Eurocentric historicism the non-west is relegated to waiting room of history, a stage that is perpetually characterised as “not yet”. Veena Das throws light on this issue in her analysis of Louis Dumont’s (a French anthropologist) criticism of A K Saran (an Indian anthropologist), that the latter’s theoretical position stemmed from his being a Hindu/Indian. Das argues that while Saran is shown as “doubly entrenched, “as a social scientist and an Indian/Hindu, similar double entrenchment is not seen by Dumont for himself”, Das Veena, *Critical Events: An Anthropological Perspective of Contemporary India*, 1984
- 13) Levi Strauss, *The Savage Mind*, 1966, pp.19-20.
- 14) Rabindranath Tagore, *The English Writings of Tagore*, Vol.III, 1996 (edited by Sisir Kumar Das, p. 368 & p.365
- 15) *Ibid*, Vol. II, 1996, p. 585
- 16) The critical traditionalists wanted to mobilize their indigenous resources, borrowing from Europe where necessary, Bhikhu Parekh, *Colonialism, Tradition and Reform*, New Delhi, 1989, p.35
- 17) Sardar Z, *The Revenge of Athena: Science Exploitation and the Third World*, 1998, P.1
- 18) Ashis Nandi, *Alternative Sciences : Creativity and Authenticity in Two Indian Scientist*, 1995, p.68
- 19) Viswanathan, Shiv, *Carnival for Sciences: Essays on Science, Technolgy Development*, 1997
- 20) Mahendra Lal Sircar established the Indian Association for the Cultivation of Science (IACS) in 1876 and

articulated his goals in his first article to set up a nationalist agenda and to create a culture of science in India through its practice and popularization (M.L. Sircar, 'On the Desirability of the National Institution for the Cultivation of the Science in India', in Indian Association for the Cultivation of Science, Calcutta, 1877, p.8).

- 21) Father E. Lafont, a man with keen interest in science who was engaged in building a spectra-telescope observatory at St Xavier's College. He always thought that study of science is compatible with unearthing the spirituality of Christianity and the practice of science has moral significance. See Andrew Cunningham, 'How the Principia Got Its Name Or, Talking Natural Philosophy Seriously', History of Science, vol. xxix, no.83, part 4, 1991, pp. 377-92
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- 25) Manoranjan Gupta, Jagadish Chandra Bose: A Biography, 1964, p.68
- 26) J. C. Bose, *Patraboli (Letters of J. C. Bose)*, ed. D. Sen (Basu Vigyan Mandir, 1994).
- 27) The Complete Works of Swami Vivekananda, Mayavati Memorial Edition, 1962, Vol. Vii, pp. 379-80
- 28) Dibakar Sen (ed.), *Patrabali Acharya Jagadish Chandra Bose* (Bengali). op. cit., p. 82. Cited in Chakrabarti, 210.
- 29) Rabindranath Tagore, *Sadhana (The Realization of Life)*. op. cit. p. 4.
- 30) Jagadish Chandra Bose, *Abyakta*, pp. 73-74
- 31) Ashis Nandi, *Alternative Sciences : Creativity and Authenticity in two Indian scientists*, p. 65
- 32) Capra Fritzof, *The Book of Tao*, 1972,

- 33) Rabindranath Tagore, *The Religion of Man*, London, 1931, p.19
- 34) D.P. Chattopadhyaya, 'Tagore on Humanization of Science', *Interdisciplinary Studies In Science, Society, Value and Civilizational Dialogue*, (ed. D.P. Chattopadhyaya), Shimla, 2004, pp. 161-180
- 35) This meeting of Tagore and Einstein was reported in the *New York Times* by the journalist Dmitri Marianoff (Einstein's step-son-in-law): "It was interesting to see them together; Tagore—the poet—with the head of a thinker, and Einstein—the thinker—with the head of a poet'. It seemed to an observer as though two planets were engaged in a chat". Tagore again met Einstein in mid-December, 1930, in New York for the fourth and last time. They shared a deep mutual respect. Einstein alluded to Tagore affectionately as "Rabbi" (affectionately called him so) and Tagore felt so much concerned for Einstein that he turned down the offer of an Honorary Doctorate from Berlin University as a protest against the Nazi treatment of Einstein.
- 36) Scientist and Writers like Partha Ghosh, B.M. Chaudhuri, D.P. Chattopadhyaya, Sisir K Majumdar, D. M. Sengupta, Biswanath Banerjee and others
- 37) J. C. Bose, *Patraboli (Letters of J. C. Bose)*, ed. D. Sen, Kolkata, 1994).
- 38) Krishna Dutt and Andrew Robinson, *Selected Letters of Rabindranath Tagore*, 1997, p.57
- 39) Ashis Nandi, *Alternative Sciences: Creativity and Authenticity in Two Indian Scientists*, 1995, p.56
- 40) Quoted in *Selected Letters of Tagore* (ed) Dutta and Robinson, 1997, p. 359
- 41) Leonard K. Elmhirst, *Poet and Plowman*, Visva-Bharati, 2008, p.137
- 42) Prasanta Mahalanobis to E. J. Thompson, December, 1921: E. P. Thompson, "Introduction": Rabindranath Tagore, *Nationalism*, London, 1991, p. 12.
- 43) Letter no 130 of Tagore quoted in *Kalyaneyesu Prashanta*, (ed) Prashantakumar Pal, 1904

44) Quoted in Selected Letters of Rabindranath Tagore, (ed) Dutta and Robinson, 1997, pp. 484-485

45) Robert B. Silvers and Barbara Epstein, India: A Mosaic, New York, The New York Review of Books, 2000, p. 6

The complete poem is from Gitanjali, no. 96, The English Writings of Rabindranath Tagore, Vol. I, (ed) Sisir Kumar Das, New Delhi, 1994, p.76:

“When I Go from hence let this be my parting word, that what I have seen is unsurpassable.

I have tasted of the hidden honey of this lotus that expands on the ocean of light, and thus am I blessed —let this be my parting word.

In this playhouse of infinite forms I have had my play and here have I caught sight of him that is formless.

My whole body and my limbs have thrilled with his touch who is beyond touch; and if the end comes here, let it come —let this be my parting word.”

(It will be worthwhile to bring from memory a parallel idea given by Rumi: If I die, don't say that he died. Say he was dead, became alive, and was taken by the Beloved.)