

INQUISITIVENESS FOR SCIENCE IN TAGORE POEMS

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Abstract

Rabindranath Tagore, Nobel Laureate in Literature (1913), a well-known Bengali poet known as *Viśvakavi* (poet of the world) has written a large number of poems showing his acumen and ever ending inquisitiveness for science. A few quotes from his poems have been attempted here with English translation.

1. Introduction

Rabindranath Tagore (1861-1941), Nobel Laureate in Literature, 1913, was well-known for his acute interest and inquisitiveness for science. In the fag end of his life it was formally expressed in the publication of his only proper book-rather booklet (98 pages)- *Vishwa Parichay* in 1937, dedicated to the eminent scientist Acharya Satyendranath Bose (1894-1974). But we do detect his passion for contemporary science in many of his poems. He was specially interested in astrophysics — used to read any available book on the subject at the time in order to quench his thirst for the knowledge about the universe. He used to think that it is essential to enter into the arena of science at the very beginning of education. If necessary, one could take the help of literature in this regard. This sense of responsibility inspired him to write this book on popular science- *Vishwaparichay* ('Introducing the Universe') in 1937-four years before his death in 1941).

Endless time and limitless sky pushed him time and again into the creation of universe a riddle—still wrapped in mystery inside an enigma. His quest for science was always about the great universe and the timeless time. The mystery of

nature-unknown, un-seen and un-understood crept directly or indirectly into the paeans of many of his poems in a very natural contour. In his writings he brought the world- "*The World*" again and again much more than his land of birth-India or Bengal—that is why he is called 'the Poet of World' (*Viśvakavi*).

Rabindranath was seriously aware that science never excuses any misinterpretation of itself. He was always careful in quoting scientific facts or allegories. On his 80th birth anniversary he expressed in poem about his entry into and departure from the expanding universe and the endless time (First quote).

2. Quotes from Poems

(All prose translations from the poems are by this author)

"When I enter into my 80th birthday, a wonder creeps into my mind-when the silent floods of rays of the fire storm fly with unthinkable speed flooding the profound emptiness in all directions.

Appears suddenly on the lap of limitless sky like a transient spark in the ceremony of unlimited creation of the century's sequential history".

('Janmadine'-5th poem, Mongpu, Sunday May 5, 1940).

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Rabindranath's wonder is still a mystery to contemporary science. Exploration of the mystery is still on. We are amazed to find that whatever scientific informations are there in those stanzas are eternal and established science. There is no misconception or disparity in those lines.

"Like the distant path of the galaxy of stars, clad in mystery in the midst of its watey rays, I felt my remoteness as a traveler in that unseen terrain-its destination remains unknown".

(‘Janmadine’-1st poem, Udayan, Santiniketan, Feb. 21, 1941, morning).

The poet also mentions here the unknown mystery of the stars of the universe and their uncertain movements. Just before his final departure on his last birthday, the poet remembers about the uncontrolled destiny of human life. Lying on his deathbed the poet again tells about the transient appearance and disappearance of human life in the back ground of its mysterious creation. He expressed how small is the form and existence of human life in this eternal boundless space and time.

"In the field of grand creation, there are fire works all over the sky as a measure of the ages, From the limitless invisible arena, I came with a small quantum of fire to one corner of space and time".

(‘Ārogya’-9th poem, Udayan, Santiniketan Feb. 5, 1941, Evening).

The tale of limitless space-time got prominence in many of his writings. His book of poems-‘*Śeṣ Lekhā*’ mentions again the origin of unknown mystery of life.

"The sun asked on the firstday:
Who you are in the new garb of your
existence? No answer.
Year after year gone by,
The last sun of the day threw
The last question at the shore of
The western sea in a calm evening:
Who you are? Still got no reply.

(‘Sun on the first day’ ‘*Śeṣ Lekhā*’, No. 13, Jorasanko, Calcutta, July 1941, Morning).

The query posed by the sun is also the query of the poet. He also did not get the details of the cycle of birth and death. He was aware of the difficult mathematics of physics in ascertaining the different qualities of stars rotating around the circle of eternal time. Poet's interest and wonder about the infinitesimal aspects as scientific research knew no bounds. It was not beyond his understanding that the dynamics of the theory and creation of the grand universe were not embedded into his imagination of astrologers but was soundly based in mathematics. He wrote:

"Fumes of fire fly into the distant empty
Sky in all direction.

In the core, the galaxy of stars
rotates around the orbit of
eternal time-its speed, its heat
its mass, its volume-the sky count
them all in minute details.

The experts observes them all
from a distance of a lakh crore
of miles in undetectable light".

(Prašna’, Nabajātak, Shyamali,
Santiniketan, Dec. 7, 1938)

He did congratulate the scientists who are researching on the roaming stars. He wrote again:

"From this end of the earth, the scientists
look at the glaring creation of stars- the
bubbling fire in the flood storms spreading
over a distance of crores of miles".

(‘Calti Chabi’, Sejuti, 1937-dedicated to
his close friend Dr. Nilratan Sircar
(1861-1943)]

The poet prayed to the powerful sun to expose the benevolent aspect of the creation by piercing through the tiny atoms and subatoms of our earthly body:

"I wake up everyday in the rays of the
rising sun and say:

Oh, the sun!

Remove my body, my cloak by the fine fire quantum of your glowing body—your benevolent form is there in the unseen core of my body made of atoms and subatoms—let it be expressed in my silent eyes”.

(‘Dehatīt’: *Patrapuṭ*, 10th poem, Santiniketan, Nov. 7, 1935)

The human body is formed in combination of atoms and subatoms—their assembly gives the contour of our body. The features of our body are expressed inside its cloak. Hence, the prayer to the sun to expose the good in our heart as life is sustained only in the sun’s presence. In another poem of ‘*Patrapuṭ*’, the poet presents a poetic description of the present environment of the earth’s subplanet—the Moon.

“So goes the saying:

Once upon a time the Moon was clad with volleys of air, she had the art of colours, the hym of the tune—she was always fresh and young—with passing of time, she started losing the flow of her glare—she became tired but yet with your charm. What now remains inside her is an unfriendly conflict between light and shadow—No more blossoms of flower—No longer flows the noisy fountain”.

(‘Udashin’: *Patrapuṭ*, 11th poem, Santiniketan, Feb. 16, 1936).

The poet mentioned the dry, lifeless terrain of the moon. Illuminated by sun’s rays, the moon sometimes flashed and sometimes remain shadowed. The spectrum of colours evolved from white generates colour sense in human mind. The origin of that sense is in the very core of human felling. In scientific expression, the sense from sight reaches the brain through neural avenues. The brain then characterize, the colours. This is what is known as colour sense and that differentiate between red and green. This sense make rose beautiful.

The sense separates prettiness from ugliness. As the chorus of tune, rhyme and rhythm renders something sweet to the ear and fulfills our hearing, sight makes things beautiful to our eyes and we admire. The beauty of rose is not confined to any one person; there is no relativity in it—it is beautiful to all sections of people. This is the feeling of human mind and this is what is termed as human sensation.

“In my sense of colours, *pānnā* stone becomes green, *cunistone* becomes red. I opened eyes to the sky—East to West; Looking at the rose I exclaimed—what a beauty! She really turns beautiful”.

(“Āmi” : Shyamali, Santiniketan, May 29, 1936)

3. Science of Beauty

There is an inherent scientific explanation for beauty. That is egalitarianism between things and egalitarianism toward colour make things nice and pretty. In epics and in literature, it is display of words which make them attractive. Tune in songs and usage of sweet rhythm, use of complimentary colours in art and sometimes its geometric application make things beautiful. Feature, colour and smell—put all together make rose beautiful. Whatever may be scientific sense in it, poetry is a symbol of truth. Nature with its beauty in colour, sense attracts humans in a positively mystic way.

Poets are worshipers of beauty but also equally alert about its danger. Time may come when poetry will become apoeitic, violin will lose tune, sky will be dark due to lack of energy and will lose its blue horizon—that day existence will lose personality, dry mathematical expression will only remain and beauty of the world will slip into oblivion. At that point of darkness, new search for beauty will begin again. The universe with all its stars, planets and the sun is made up with the combination of atoms, sub-atoms and particles. Rabindranath always remembered these features

in his poems—created in the symphony of tune, beauty and words. He pointed to the root of the creation of the universe in his poems.

“All message, all tunes, all beauty, all fires of my meditation, flame and creation engraved all over the sky in all directions—the picture, of union of atoms and sub-atoms”.

(‘Jugal’: *Bichitritā*, Santiniketan, 18.2. 1932)

4. Creation of the Universe

The infinite universe made up with combination of atoms, sub-atoms and particle presents itself in innumerable forms and fashions. A free atom moves with a tremendous speed (1000 metre per second). Rabindranath named this atom fickle, directionless and uncontrolled :

“Atoms/subatoms in boundless space, and time create their dancing cycle, dancing from one limit to another creates innumerable forms”.

(‘Sesh Saptak’-Poem No. 17, Santiniketan, 1925)

5. Gift of Dance

But according to quantum theory, the quanta or particle could be given a wave form thereby bringing it within some amount of control. Regularity returns and then it becomes beautiful.

“Revolutionary atoms become pretty through the cycle of dance and the moon sings around its feet in its glow”.

(‘Nriya’, *Nataraj*, Santiniketan, 1927)

The poet in his poem- ‘*Nriya*’ (Nataraj-book of poems) tell how ryme and rhythm of dance generates feeling in the paralysed universe and how the wave of dance purifies the mind, enriches the heart. The wave form of atom not only enriches science but gives new ideas. Bose-Einstein Condensate (BEC) postulated by Satyen Bose (1874-1974) and Albert Einstein (1879-1955)

established that the rythmic movement of atoms and particles creates a new state of matter. Disciplined atoms now moves around themselves creating a coherent state.

The unknown elements involved in the creation of the universe always inspired the poet, surprised him. The infinity of the universe, its regularity of action generated respect, query and inquisitiveness in his understanding of the glamour of nature. When in 1928 Einstein’s Relativity theory and Quantum physics brought new concept of creation of atoms and subatoms, the poet was not confined in the domain of literature, his interest in exploring the mystery of root of the creation of the universe became profound :

“I felt the mystery of creation in you—in the glory of existence of the universe. You are there, you came—the mystery spreads towards me like divine lotus.

The timeless time, the sky without limit, sleepless light interwin in your body in eternal hymn.”

(‘*Sristirahsya*’ : *Mahua*, Jorasanko, Calcutta, Aug. 20, 1928)

The poet feels glorified at the glory of the creation of the universe. He is moved by its mystery. That the mystery of its creation has not yet been solved makes it spiritual. Still he believes in the capability of the scientists in the hope that the mystery will be solved one day.

Life originated at some point in the sands of time. That life became larger and larger and salutes the creator. An epithet of his song-‘I have searched for the unknown in the midst of the known’ sings the essence of the soul of science.

“The stars burn for many millions of years in the dark moving stream of time circle of fire moves around. In that stream this earth is bubbles of soil-life, exists there in atomic time with timiest glow-dances on the hands of eternal”.

(‘Prān’(Life), *Parishes*, Santiniketan, July, 14, 1932)

Rabindranath is probably the only poet who explores the origin of light in the midst of darkness. It was at a time (around 1900) when black body radiation was discovered by Max Karl Ernst Ludwig Planck (1858-1947, Nobel Laureate in Physics, 1918).

Long after that was discovered the 'Black Hole' which engulfs all sources of light. Does the Poet's imagination remember any scientific innovation or view points? May be not. Probably, the poet tells about the beginning of good sense after the end of dark ages, wars, revolution or tyranny and oppression.

To him that light is the light of God.

"Light bubbles are from the core of darkness-that is your light and glow. The light is alive amidst all conflicts and confrontation-that is what is your light".

(Poem No. 99, *Gitali*, Allahabad, 1914)

The purpose of the poem is transparent in the last two stanzas but the first stanza does give enough scope for scientific discussion. Though it is debatable.

It is well known that clash between clouds generates electric current which turns into sound for a moment and then spreads instantly. It is like high-powered wave which is electric flash in poet's words.

"Suddenly hears in that moment of the evening sky—the crick of sound from the emptiness run from distance to distance in a moment."

(*'Balākā'* *Balākā*, Srinagar, Kashmir, 1915)

"Every particle from all corners of the vast universe is drawing towards it".

(Poem No. 14, *'Utsarga'*, Santiniketan, 1914)

This reminds us about the eternal theory of gravitation-this enables every particle to draw any particle with mass. This is not only the gravitation of the earth which draws everybody

downwards but it is the attraction of every particle towards every other particle.

6. Rabindranath and Jagadish

Acharya Jagadish Chandra Bose (1858-1937) was three years older than Rabindranath (1861-1941) but he was one of his closest friends. Bose's scientific success in the West made the poet very proud. The possibility of bringing the treasure of science from its favourite temple of the West to the temple of the East excited him. Rabindranath actively helped Jagadish Chandra in collecting funds for the establishment of Bose Research Institute (now Basu-Bijyā Mandir) in Calcutta 1917. He wrote several poems for Jagadish 'Jagadish Chandra Basu' in '*Kalpna*', '*Utsarga*' in '*Kheyā*' and in '*Banabani*'. The poet was fully aware of his research on electromagnetic waves. The poet respectfully remembers his epoch-making discovery of wireless communication which brought people in distant areas nearer in time difference.

Life in plants and trees is another miracle in the chain of inventions by Jagadish. The influence of the power of light is at the root of this research. Jagadish Chandra experimentally demonstrated how plants and trees respond to electro-magnetic waves. The poet dedicated the poem-'*Utsarga*' to Jagadishchandra.

"Oh, my friend, this is my shy plant. What you got from the sky? What flowed in the current of air? The life hides within the layers of leaf".

(Poem dedicated to Jagadishchandra, '*Kheyā*', Calcutta, 1906)

Seen and unseen light originate from the electro-magnetic waves in the sky, air. Plants are en-livened by the light power of the universe. Light is essential for sustaining life in plants. That is what the poet called the lyric of life.

The poet termed very beautiful-the glory in the cycle of coolness and cruelty, good and bad

rule and misrule in the disastrous display of nature in this beautiful but dangerous world. He termed every moment as grand for the world in the annals of time. Even in describing the history of the powerful and enjoyable world, the poet was never carried away by emotions and thereby distracted from scientific outlook.

“The great soul, secret store of grand death lie underneath your earth—we touch it today—feel its presence throughout the whole body”.

(Poem No. 3, ‘*Patrapuṭ*’, Santiniketan, Oct. 16, 1935)

All life, all plants, originate from the soil of this earth and all of them—human body, animal kingdom, plants and forest are eventually lost in the same soil.

7. EPILOGUE

The poet’s life time (late 19th and early 20th century) was the age of creative science—it started in the last two decades of the 19th century—this period of modern science was also the best time of the poet’s creative writings. His book of poems—‘*Gitanjali*’ (Song Offerings) written in 1910 was awarded the Nobel Prize in Literature in 1913. This same year, Niels Bohr (1885-1962), Nobel Laureate in Physics, 1922, published his research

work on hydrogen atom. It first explained the role of quantum mechanics in the making of atoms in modern physics. The making of atoms and subatoms and its unknown aspects started creeping into Tagore’s poems after this. He lived during the most fruitful period of science in the 20th century; he was very careful in using them in his own way. The great scientists of India, then under British Colonial rule, were his contemporaries. They all conducted their research in their native India.

This elated Rabindranath. He remained interested in the efforts of exploring the mystery of the creation of the Universe to the last day of his life. He could not get answers to many questions. The scientists of world are still working unabated to explore the mystery of the creation of the universe—the poet’s unanswered last question. That still remains unanswered even today.

Suggested Further Corroborative Reading

Majumdar Sisir K. “Rabindranath’s Thoughts of Science : An Overview (A tribute in his 150th Birth Anniversary)”.

Indian Journal of History of Science, New Delhi, Vol. 46, No. 2., June 2011, P. 313-334.

(First Write-up in English for non-Bengali readers on this aspect of Tagore works)