Prologue

Rabindranath Tagore stood apart from his contemporaries in his nuanced engagement with modernity. Although he embraced the intellectual grandeur of theoretical science as an essential facet of human culture, he remained deeply skeptical of technology, particularly when it was divorced from ethical and aesthetic considerations. This article explores Tagore's complex relationship with science and technology, tracing his philosophical objections to the latter while illuminating his reverence for the former.

The Dichotomy of Science and Technology in Tagore's Thought

Tagore was perhaps unique among his Indian contemporaries in holding that theoretical science should be an inalienable part of our modern culture. Not so with technology, which he mostly associated with capitalist exploitation and inhuman warfare. His aversion to the aircraft is a case in point. In a letter to Amiya Chakrabvarty, Tagore's great admirer Havelock Ellis (1859-1939), who found Nationalism to be a '*profoundly significant*' work '*of abiding value*', criticized Tagore for not adequately representing the *concrete blessings* of modern technology in his creative work. In his work, Ellis cited the absence of *'high romance'* of technological marvels such as modern ships and aircraft. He felt that a mere abstract representation was not enough; a direct representation of these in works of art was required. In trying to defend his Gurudev, the poet Amiya Chakravarty, later to become Tagore's secretary, said that although direct representation of modern technology was indeed rare in Tagore's work, there was ample representation of the 'sublime' nature of science on a

'high romantic plane'. (21 March 1925).[1] Chakravarty confused science with technology.

Tagore did not. Equating technology with 'efficiency' and science with 'infinity', Tagore wrote in response to Ellis' criticism:

> However amazing efficiency may be, it has never elicited music in the human mind; implements have made humans resourceful, but have not inspired them. Only that perfection which is complete in itself, where it has attained infinity, has motivated humans to be a poet, an artist. Science, when it places our amazed mind before the absolute theory of the atom, there we see the great – I have sung paeans to that greatness.[2]

Unlike Amiya Chakravarty, this differentiation between science and technology has always been obvious in Tagore's mind. However, we must admit that this is not a proper answer to Ellis's question. His question was: Why should the extraordinary expanse of Tagore's imagination fail to appreciate the aesthetics implicit in the movement of a bird-like aerial machine flying across the blue of the sky or that of a boat buoyantly floating on the immense waves of the ocean?

Ellis' question was legitimate. Just consider Tagore's response to his first flying experience in 1926 when he flew over to Persia.

> The sun rose above the horizon. This arrogant machine never even tried to come to terms with the rosy hue. It's dissonant with the azure of the sky; in the many-splendoured cloud-precincts of the firmament, it remained the odd thing out. It's a messenger of the modern age, it doesn't care for sentiments, it disparages beauty, and prods past what's not necessary. When the eastern horizon became scarlet and the western horizon acquired a pearl-white luminescence over a soft sapphire, this contraption buzzed out of it like an enormous black cockroach." [3]

[1] Naresh Guha (ed.), Kobir Chithi Kobike (A Poet writes to Another)

[2] Chithipatra (Letters), Vol. 11 Letter No. 31 Visva Bharati; translated from Bengali [1].

[3] Pahrasye, translated from Bengali

We are not accustomed to such pre-determined and one-sided imagery emanating from Tagore in other aspects of existence, however harsh they may be.

His precise aesthetic-philosophical argument against this colossal flying 'cockroach' is:

> Till now, space has mesmerised our minds with its lack of massiveness, its effortless ease of movement. And now humans have lifted this massiveness from the earth to the skies. No wonder it's a flying endeavour that parades power. Its movement is not in harmony with air; it distresses air; that distress is today transported from this world to the celestial one. This distress has no room for a bird's song, only a beast's howl.[4]

In other words, the aeroplane does not sync with nature, but rebels against it.

Curiously enough, while Amiya Chakrabarty in 1926 went overboard to defend his Gurudev, in the 1970s, when he himself had become a regular globe-flyer, he admitted that this was indeed a limitation on the part of Tagore. Chakravarty writes to Naresh Guha in 1976-77:

> I'd argued with Tagore regarding the aeroplane. He had boarded it, extracted wonderful feelings and insights too (you get some glimpses of it in his Iran travelogue), but couldn't accept it straightaway. All that he said was a matter of proportions, too much of machines spelt disaster for humankind, its utility must be proven in human benefit, like that.[5]

According to him, the railways, the ship, and the wireless all amazed and delighted Tagore. And these emotions were not peculiar exceptions, but the standard expressions of his naturally powerful sense of delight; he would always appreciate the explicit courage and innovativeness of humans. And yet, Chakravarty ad-

[4] ibid

[5] Naresh Guha (ed.)

mits, these did not get a deserved place in his creative literature. Having said this, Chakravarty relates,

> But we do sip coffee sitting in a plane, we do write poetry, study intensely, and simultaneously observe how the electric hue of the cloud-shadows on the wings fades out into azure.[6]

One wonders, probably he also, why this did not inspire Tagore?

Figure 1: Tagore with King Faisal in Baghdad (1932). Source: [2]

Chakravarty equates this techno-allergy of Tagore's with Gandhi's. But that is wrong. For Gandhi, it was not just technology, but science itself, as a matter of fact, the whole fabric of scientific rationalism, that was disparaging. Otherwise, he wouldn't have gone on to defend his stand that the 1934 Bihar earthquake was God's punishment for casteism, in the teeth of Tagore's severe censure.

But what lay at Tagore's disdain for modern technology was war. Reacting to an English priest's pride in the devastating efficacy of British aerial bombing over a defenseless Persian village, he wrote:

> It seemed that in such a situation, when humans start to unload multi-killer weapons from their aircraft, they become cruelly monstrous. For those that they kill do not cause the killers' raised arms to hesitate, because the entire process of calculation vanishes. When one's natural sympathy for reality gets obfuscated, the receptacle for that sympathy gets destroyed too. Gita's advice is also such an aircraft. Arjuna's mercy-afflicted mind is lifted so far above that from that height it matters little who kills and who gets killed, who is close and who alien. The human arsenal is replete with many such theory-laden aircraft to cover up reality. For

[6] ibid

> those that are bombarded from that altitude, the consolation is always ready at hand: *na hanyate hanyamane sharire*.[7]

As if this were not enough, he gave this message in English:

> ... If in an evil moment man's cruel history should spread its black wings to invade that realm of divine dreams with its cannibalistic greed and fratricidal ferocity then God's curse will certainly descend upon us for that hideous desecration and the last curtain will be rung down upon the world of Man for whom God feels ashamed.[8]

It is a fact of history that science had never been so directly involved in war before the First World War. One has only to remember that the great German chemist Fritz Haber (1868-1934) personally directed the German army on the war field on how to unleash poison gas on the enemy. Aeroplanes were used during the war, first for reconnaissance, then for bombing. By the end of the war, the Royal Air Force had been formed in Britain, quickly followed by other countries in Europe and the USA. It is clear that in between the two world wars, Tagore saw the aeroplane as predominantly a killing machine, one that doesn't allow the killer and the killed to see each other, thus generating a chilly *Gita*-esque aloofness. This, according to him, represented the height of inhumanity. He did not find any blessing dripping out from that technology.

About Fritz Haber

The Nobel Prize in Chemistry 1918 was awarded to Fritz Haber for the catalytic synthesis of ammonia from hydrogen and nitrogen at high pressure and temperature.

But, it is interesting to note the ambivalence of his work: on one hand, the Haber Process, without which today's food sup-

[7] Pahrasye, translated from Bengali

[8] ibid

ply would struggle to cover our needs, and on the other hand, his involvement in the manufacture and deployment of a deadly poisonous gas. During World War I, he was actively involved in chemical warfare by running a team of scientists to develop and deploy chlorine and other toxic gases. Haber had once said: "*During peacetime a scientist belongs to the world, but during wartime he belongs to his country*." Defending gas warfare against accusations that it was inhumane, Haber had said: "*The gas weapons are not at all more cruel than the flying iron pieces; on the contrary, the fraction of fatal gas diseases is comparatively smaller, the mutilations are missing*".

Einstein and Fritz Haber were close friends in Berlin. Haber was a staunch German nationalist. Einstein never felt that sort of affinity to Germany. In 1933, the Nazis forced both of them to resign from their positions at the Kaiser Wilhelm Institute in Berlin-Dahlem in 1933. In this backdrop, Einstein had remarked in a letter to Haber: "*It is somewhat like having to abandon a theory on which you have worked for your whole life. It's not the same for me because I never believed it in the least*".

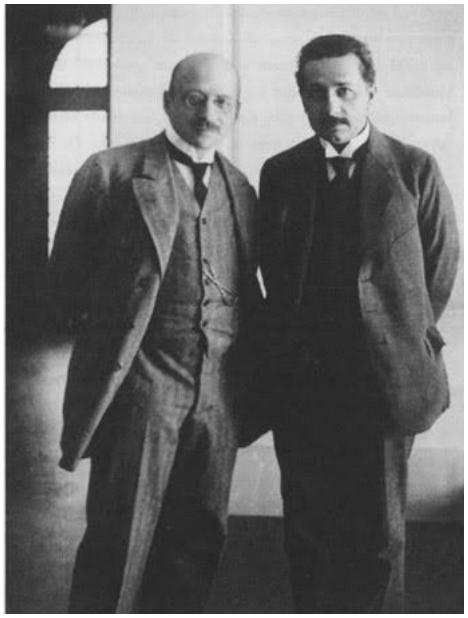

Figure 2: Haber and Einstein, circa 1914.
Source: AIP Emilio Segre Visual Archives

Subsequently, Haber moved to Cambridge for a short period, where Ernest Rutherford, the father of nuclear physics, famously refused to shake his hand over his involvement with poison gas warfare during the war. When Haber suddenly passed away in January 1934, in his eulogy, Einstein had called Haber's life "*the tragedy of the German Jew: the tragedy*

of unrequited love for Germany".

Several years later, during the Second World War, the Nazis put Haber's arsenic-based Zyklon-B to use in their concentration camp gas chambers to murder millions of Jews, ironically including even members of Haber's own family.

The Great World of Science

From technology, let us now have a brief look at the other pole vis-à-vis Tagore: that of *'pure'* science. There are three distinct stages of the poet's assimilation of modern science. At the first stage, he is a diligent, if capricious, student of science, one for whom science and poetry belong to two great but different worlds, mutually exclusive. As the culmination of this stage, one might consider his delightful essay *Āmār Jagat* (My World), written in 1914, shortly after he had returned from a momentous tour of Europe and the US. Here, he records a mock debate between a poet and his scientist friend. He accepts the superior position of science so far as knowing objective facts is concerned. He does not question the validity of such knowledge. One finds the patronising scientist almost patting the poet on the back. Presently, the poet hits back, questioning the scientist about his methodology. When describing the fixed stars, astronomy says they only *appear* fixed because you are looking at them from such a great distance. If you could look at them from a sufficiently close distance, or could devise some mathematical substitute for such close observation, you would find that they were moving fast. Very fine; then how about the earth? The surface just beneath your feet is flat, so why do you say that the Earth is round? Here, your point is that if you looked at the Earth from a distance, you would get a real picture of its true shape. Why these double standards? Why do you discount your immediate sense data in one

case and accept them in the other? Heaping instance upon instance, drawn from the fields of physics, botany, and psychology, Tagore himself arrives at the synthesis that both these viewpoints are necessary: he calls them the *near side* and the *far side* of the same thing. In today's terms, one may characterise these as the reductionist and the holistic approach, respectively. In his typical Upanishad-honed fashion, he calls them the finite and the infinite. A complete mind, he asserts, has a place for both. Indeed, only that mind is complete which can simultaneously comprehend the invisible ever-restless sub-atomic particles and a solid nugget of iron, or the extensively porous leaf when looked at under a microscope, and the tightly shaped leaf seen by the naked eye. He generalises that the concepts of time, space, position, distance, nearness, movement, stillness, inside, outside – all have this dichotomy. He joyously quotes the famous lines from *Īshā Upanishad* to drive his point home: *Tadejati tannaijati taddūre tadvantike* (It moves, it moves not; it is far, it is near.)

From here, it is only a step to conclude that the poet need not feel shy when his feelings are apparently at variance with the ideas of the scientist. Poetry has a world of its own, which is simply out of bounds for reductionist science. The point to note is that he is not against reductionist science per se, as long as it remains confined to the domain of science. Reductionist science, he seems to say, has no business meddling in the affairs of poetry. Thus, in the end, the patronising scientist gets a much-deserved rebuff from his poet friend.

From this time onwards, we find in him a progressively finer and more mature appreciation of the philosophical problems of science, as well as its relationship with the other creative aspects of man. He makes a surprising statement in 1932:

> If you ask me what pure modernism is, I would say it's looking at the world not with a subjective personal attachment, but with an

> objective clinical detachment. That is what constitutes a pure vision; that detached vision is bliss. Modern science analyses reality with a detached mind; modern poetry should also do the same, for that is what is eternally modern.[9]

It is 'surprising', because earlier he had accused modern (i.e., reductionist) science of intruding upon art and literature and thereby robbing it of its essential beauty, which resided in purely non-rational personal attachment. Literature, he said, was characterised essentially by its prejudices and caprices, which were in direct opposition to the impersonal, rational objectivity of science. He cites a beautiful example from his own *Chitrangada*. Arjuna is indulging in voyeurism when he stealthily looks at young narcissistic Chitrangada undressing before bathing in a pond, rapt at the exquisiteness of her form. Arjuna is excited and overwhelmed. This, Rabindranath appears to be saying, can be treated in two ways. One is the strictly Freudian interpretation, which is perfectly in order as science. However, the moment that interpretation interferes with and dominates over artistic presentation, it kills art. Tagore felt that Western literature of the modern period had fallen victim to just such an aggression from science. The extreme obsession of literature with the purely physical aspects of sex, which he saw as a 'nuisance', was a manifestation of this breakdown.[10]

Therefore, when he jumps from this position to its opposite and says that '*poetry should also do the same, for that is what is eternally modern*', one is a little taken aback. However, he goes fur-

[9]Rabindra Rachanavali (RR), WB Govt Edition, 1961, Vol. 14, p. 348.

[10]Talking at large of society, Arnold Toynbee expressed almost the same sentiments in 1976: '*... the scientific spirit has, I believe, contributed to the present outbreak of lawlessness, especially in the field of sexual relations. The ethical merit of science is that it is dedicated to discovering and facing the truth. Science challenges all traditional beliefs, conventions, and habits. ... Children today are educated – not merely formally but by the Zeitgeist – to have a scientific zeal for the truth and a scientific contempt for shams. ... Present-day children are ready to believe that their parents do not practice what they preach about sexual relations or about anything else.*' [3, p.19]

ther. He says:

> The mathematician no doubt engrosses himself in the profound symmetry permeating high-level mathematics, in the unity of forms. The fact of its orderliness is not only epistemic, it also belongs to the sphere of deep feeling: there, you get pure bliss. It finds expression at the apex of knowledge, where it is free of any utilitarian concern. Their knowledge attains liberty. One naturally wonders why this has not been the subject of poetry. The reason, of course, is that its experience is esoteric, its access denied to the common person.[11]

Thus, the poet confidently says, there is no intrinsic impediment to high mathematics being the subject of poetry! What a change from the position that science was poking its ugly nose in the delicate affairs of poetry!

Feynman's quote

In a public address given at the 1955 autumn meeting of the National Academy of Sciences, Richard Feynmann beautifully summarized in his inimitable way the double-edged nature of science - its power to create and to destroy.

Figure 3: Richard Feynman. Source: The Telegraph.

> Scientific knowledge is an enabling power to do either good or bad - but it does not carry instructions on how to use it. . . . . I learned a way of expressing this common human problem . . . . It was a proverb of the Buddhist religion: To every man is given the key to the gates of heaven; the same key opens the gates of hell. What then, is the value of the key to heaven? It is true that if we lack clear instructions that enable us to determine which is the gate to heaven and which is the gate to hell, the key may be a dangerous object to use. But the key obviously has value:

[11] RR, WB Govt Edition, 1961, Vol.14, p. 348.

how can we enter heaven without it? Instructions would be of no value without the key. So it is evident that, in spite of the fact that it could produce enormous horror in the world, science is of value because it can produce something.

Originally published in [4]. Then incorporated in [5].

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