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The Arts of Science in the Contact Zone: A Satirical Picture

Abstract This chapter focusses on a print by the artist Gaganendranath Tagore done in 1922, which features the biophysicist Jagadish Chandra Bose and his experiments in plant science. Considering the overlapping networks of art, science, and nationalist politics within a particular sphere in early twentieth-century British India, the chapter explores the connections between human and non-human contact zones as well as questions around religion and science and the politics of colonial knowledge between the metropole and the colony.

Keywords Art and Science, Expanded Contact Zone, Plants, Caricature, Nationalism, Politics

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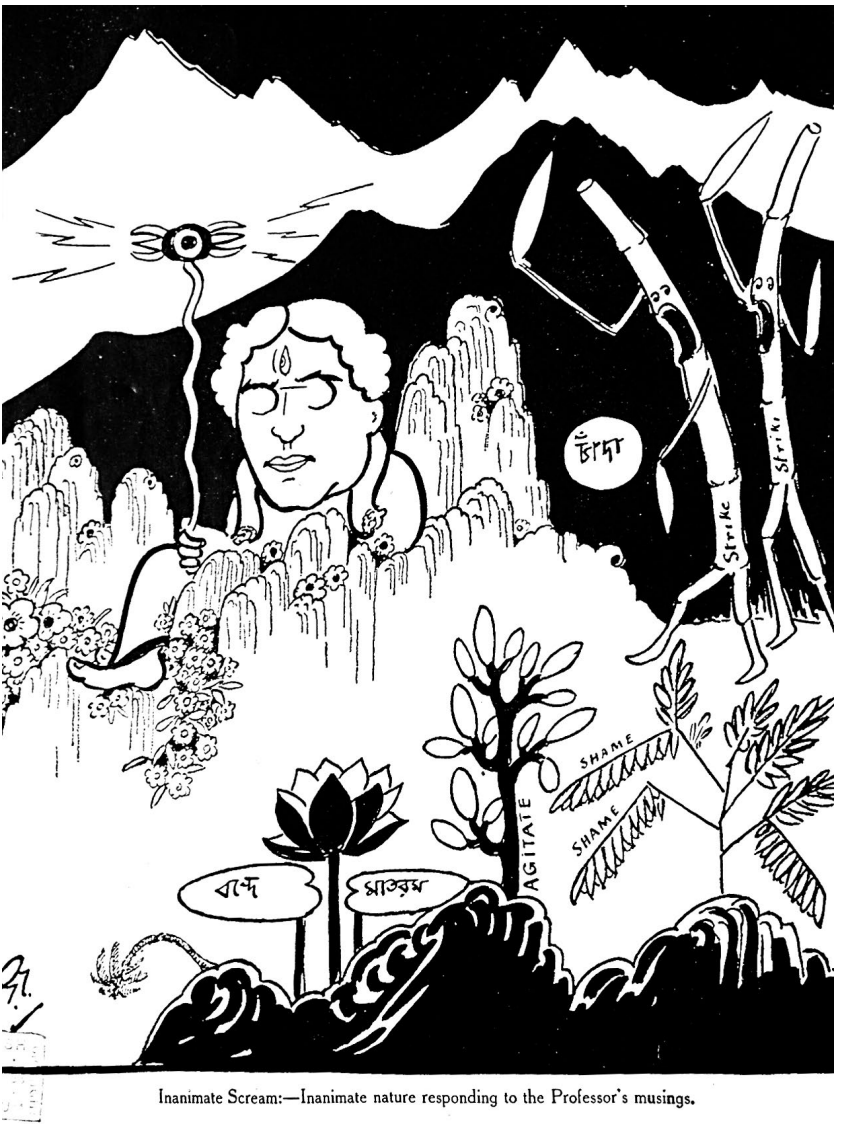
The object I focus on in this short essay is a black and white print by Gaganendranath Tagore (1867–1938) from a portfolio of "satirical pictures" published in 1921 by Thacker and Spink titled *Reform Screams*. While the portfolio serves to establish a context of political feeling and social reform in pre-independence India through satire, the print I have chosen allows for access into a contact zone that is not only geographic but also one that lies between human and non-human worlds (‣**Expanded Contact Zone**). In this image, Gaganendranath depicts the Indian scientist Jagadish Chandra Bose (1858–1937) who pioneered the investigation of radio waves and experiments in plant science. Bose is particularly remembered for his experiments that proved that both organic and inorganic matter respond to external stimuli. Titled *Inanimate Scream*, Gaganendranath's picture provokes questions related to religion and science and the politics of colonial knowledge between the metropole and the colony. Through the web of relations and displacements (both geographic and disciplinary) the object unspools, this essay explores the relevance and future of the concept of the contact zone in contemporary art history.

The central figure in this black and white print is seated in the mountains, seemingly elevated and held up by the range of cliffs around him. From his hand, a spark like an inverted thunderbolt spreads tiny waves across the landscape. The figure with its outline of curly locks and sparse facial features sports an obvious third eye on his forehead. Around him, the trees and plants are alive. Two skinny plants, drawn as active anthropomorphic creatures in mid-protest, march behind him. With big shouting mouths, they wear bands around their waists with the words "Strike" in English and a speech blurb of sorts that asks for "chanda," a monetary subscription for a cause. In the foreground, smaller plants writhe and move. On the far left, a little plant moves away from the mighty lotus beside it, whose flat leaves proclaim "vande mataram," the title of a poem in praise of the motherland composed by Bankim Chandra Chattopadhyay in the 1870s, which went on to become a politically active slogan in the struggle for Indian independence, having been sung at the Indian National Congress by Rabindranath Tagore in 1896. On the other side of the lotus, the Desmodium, also known as the Telegraph plant, seems to move its leaves in a synchronized dance to a call to "agitate," and on the far right, the Mimosa plant (also known in Bengali as *lajjabati lata* or the "shy plant") twists away from itself to a chant of "shame shame."

So, what is really going on in the busy frame of this image and how does it spill out into the political and scientific context of early twentieth century Bengal? Providing a concise context for the work of Gaganendranath Tagore and his milieu, this object allows me to explore the relationships between art, science, and political irony. The often-wary reception of Bose's work both in India (by Indians who sneered at his practice in Western science and choice of working in Britain) and in the West (by the scientific



Inanimate Scream:—Inanimate nature responding to the Professor's musings.

Figure 1: Gaganedranath Tagore: *Reform Screams, Satirical Pictures*. 1921. Thacker and Spink.

community wary of his affinity to Indian philosophy), Bose's contested positions in both worlds were ripe for double meanings and irony in the caricature form.

Gaganendranath Tagore was born into the illustrious Tagore family in 1867. His brother Abanindranath Tagore (1871–1951) and uncle Rabindranath Tagore (1861–1941) were amply involved in the intellectual and creative fervor that characterized the early years of the Indian freedom movement in elite Bengali circles. The condition of being colonial in these circles was a particularly complex one. The intellectual elite behind the processes of Indian modernism were caught, between embodying the very fruits of colonial education, knowledge systems, and fiscal relationships based on land revenue that profited the landed gentry, on the one hand, and the burgeoning struggle for India's independence and independent identity, on the other. I argue that Gaganedranath's caricatures are a site not only for these formal, social, and political tensions, but also a creative strategy that may be understood as a self-reflective coping mechanism in a world in flux. His caricatures range from the harshest social critique of Bengali society highlighting the contradictory and exploitative ways of the "westernized," educated Bengali male, to violent political events, and humorous, yet, more sober takes on Gaganendranath's illustrious contemporaries. It is in the last category that my object falls. Having moved away from the lampooning quality of the grotesque figures of his earlier portfolios such as those in Adbhut Lok (The Realm of the Absurd 1917), this series of caricatures holds the self at ironical distance, laughing good-naturedly and yet with a certain trepidation at the intensely embedded structures of the individual educated Bengali scientist and intellectual in colonial forms of knowing and being. As Sanjukta Sunderason aptly puts it: "colonial caricature prompted self-ironical laughter that erupted through a 'fertile relationship of contradiction' with what the historian Ranajit Guha calls the 'braided temporalities of the colonial city, which remained irretrievably split between the time of the colonized and the colonizer'" (Sunderason 2016, 4).

The Bichitra club (active between 1916 and 1920) met on the southernmost verandah of the Tagore family mansion in Jorasakho. It became a semi-organized society of sorts for the Tagores, especially Abanindranath and Gaganendranath and their friends and students, where experimentation in the creative arts was the primary goal. It stood for a capricious intellectualism where the distinctions between art, design, home, and stage were constantly being challenged. Gaganendranath's cartoons came out of the Bichitra Club moment and are reminiscent of his early black and white ink sketches of 1907–1911. While Gaganendranath's pre-1917 watercolors and his post-1921 Cubist works have been regarded as his consistent and major contributions to Indian modernism (‣**Multiple Modernities**), his caricatures primarily circulated (‣**Circulation**) as portfolio prints and were sometimes reproduced in journals such as the

*Modern Revie*w and *Prabasi* ("Expatriate") (Sunderason 2016, 10). The intimate circle of important friends of the Tagore household included, among others, the scientist Dr. Jagadish Chandra Bose, the chemist Sir Prafulla Chandra Ray, the educator Sir Ashutosh Mukherjee, and Sir Surendranath Banerjee, one of India's earliest political leaders during the British Raj, all of whom were to become not-so-subtle subjects of Gaganendranath's sketches.

J. C. Bose was a close friend of Rabindranath's and visited him often in Calcutta, at the Tagore estate in Selidah and then in Santiniketan (Tagore, 1981). In Bose's professional life, Rabindranath helped secure funding for Bose's continued scientific research in Britain from the Maharaja (Prince) of Tripura, a state in northeastern India. Educated at St. Xavier's College in Calcutta, Bose went on to England to earn several degrees in the sciences from Cambridge and the University of London. His professors at Cambridge remained supportive of his research and sponsored him to the Royal and Linnean Societies. Bose's research in microwave physics was readily accepted and used by his European contemporaries (Patrick Geddes 1920). In fact, it was Bose's Mercury Coherer that was used by Gugliemo Marconi, the Italian scientist and inventor of the modern telephone, to receive the radio signal in his first transatlantic radio communication experiment (Shepherd 2009, 106). Yet his plant researches were met with hostility by the mechanistic materialist philosophy of science that prevailed in Victorian Britain. The prominent electrophysiologists at the time were reluctant to accept Bose's conclusions that all plants possess a nervous system, a form of intelligence, and a capacity for remembering and learning (Shepherd 2012, 196). Bose's ideas attracted neovitalists who saw the future of biology in metaphysics, such as the biologist and urban planner Patrick Geddes, who lived and worked in India. In the correspondence exchanged between Bose and Tagore, it is evident that, for Bose, his research in science, especially his experiments in plant physiology, was not divorced from but in conversation with ideas of life and living mechanisms in Indian philosophy. Arguing that all matter had life-like properties, Bose claimed that "at the source of both the inner and outer lives is the same Mahashakti who powers the living and the non-living, the atom and the universe" (Bose, quoted in Nandy 1995, 29). The epitaph to Bose's first scientific monograph, *Response in the Living and Non-Living* (1902), reads: "The real is one: wise men call it variously." In quoting a well-known statement from the Rig Veda, Bose implied that he believed his electrographic discovery that the animate and the inanimate world are one was an affirmation of the unity of life that the Vedas proposed (Brown 2016, 104).

Bose's scientific stance was soon to become a political one. Legitimizing science not simply as a knowledge system created and ratified only by the West, but as a discipline perfectly compatible with and perhaps bound to Eastern philosophy, his work set into motion a new kind of nationalism embraced and disseminated by political figures

such as Rabindranath and the monk Vivekananda. In a letter written to Rabindranath in 1901, Bose acknowledges his commitment to the freedom struggle and demonstrates the links between biology, philosophies of science, and colonial politics. "I am alive with the life force of the mother Earth", he writes, "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 [Britain] (through me)" (Sen 1994, 92).

Gaganendranath's caricature of Bose seated in the mountains with a third seeing eye conflates him with the Hindu deity Shiva who resides in the Kailash mountain range. Considered a continuation of the Vedic deity Indra, who was associated with lightning and thunder, Shiva's third eye and trident standing in for the forces of creation and destruction reinforce Gaganendranath's reference to the god-like capacities of the scientist, innovator, and holder of knowledge in the higher realms that remain inaccessible to the lay person, while placing Bose in the almost comic position of playing god. This element of theater comes alive more urgently in the rhythmic and coordinated response of the plants to Bose's trident / electricity transmitter. Functioning as an obvious link to Bose's research and inventions in electricity, the waves emanating from the trident animate and hold the visual plane together with a kind of eerie electromagnetic energy. The plants dance as if under the spell of an external force, and while their moves are supplemented with seemingly political slogans, their inability to really act fulfils the pathos and self-irony that likens the plant subjects to colonized Indian subjects. There is a revolution waiting to happen on multiple fronts and yet it is stalled in a state of semi-autonomy. Gaganendranath's attention to detail also signals his interest in Bose's research. While the lotus (Nelumbo nucifera) activates a reference to Indian myth and culture, the Desmodium and Mimosa plants come straight out of Bose's research. The Desmodium Gyrans (now Codariocalyx motorius, known in Bengali as *Bon charal*) has a trifoliate leaf, whose two small lateral leaflets make spontaneous gyrations of regular periods, causing the plant to "dance" when presented with external stimulus or, indeed, spontaneously due to turgor increase and decrease in its own cells (Shepherd 2012). Another plant capable of rapid movement, the Mimosa Pudica responds to touch, sudden temperature change, the start or end of a constant current, and induction shock. Having performed various experiments with the Desmodium and Mimosa to record plant movement and physiological changes, Bose's main conclusions were that plants have a well-defined nervous system, receptors for stimuli, conductors (nerves) which electrically code and propagate the stimulus, and effectors, or terminal motor organs (Shepherd 2005, 610–611). By bestowing life and decision-making abilities upon the vegetal muteness of plants, it was as if Bose had brought to light the suspended condition of speech and non-speech in the colonized subject.

Mary Louise Pratt writes that the concept of the "contact zone" is "an attempt to invoke the spatial and temporal co-presence of subjects previously separated by geographic and historic disjunctures, and whose trajectories now intersect" (Pratt 1992, 8). If, for Pratt, a "contact" perspective is about the ways in which "subjects are constituted in and by their relations with each other" (Pratt 1992, 8), I argue for an expansion of the way in which subjecthood is understood to explore the relations between human and non-human subjects. In Gaganendranath's caricature, the constitution of the subjects takes place in a messy tangle of relations that complicate imperial relations and geographic trajectories with epistemological practices entrenched in colonial systems. The act of speech in the contact zone therefore becomes one that must consider the formations of subjecthood in an active zone of contact that dissects ideology and epistemic formations, taking both human and non-human subjecthoods seriously.

Figure

Fig. 1: Photo: Sria Chatterjee.

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