

Epistemological *Jugalbandī*

Sound, Science, and the Supernatural in Colonial North India

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In 1885, the Bengali musicologist Krishnadhan Bandyopadhyay (1846–1904) published his cutting-edge treatise on the theory and practice of music, the *Gītasūtrasār* (*Quintessence of Music*).¹ In his introduction, Krishnadhan proposed a radical approach to the epistemology of sound. He first acknowledged that music was the ancient lore of humanity (“*saṅgīt manuṣyajātir prācīnatam bīdyā*”) and then perfunctorily described the classic explanations for the divine origins of music.² Here, he was summarizing the established Indic traditions that articulated how sound had emanated from God—in this case, Shiva—which was how pre-colonial musicologists, especially those writing in Sanskrit or Classical Hindi (Brajbhasha), conventionally began their treatises. Even Krishnadhan’s Muslim contemporaries, writing in Urdu, paid homage to these associations between sounds and Hindu gods in their own works. However, Krishnadhan then advocated for a new line of enquiry: “Now, having first given up all these mythological narratives and having adopted a logical and rational path, let it be seen how music originated” (“*ekṣaṇe ai sakal paurāṇik bibaraṇ parityāg kariya nyāy o jukti path abalamban pūrbbak dekhā jāuk, saṅgīter utpatti kirūp*”).³

Krishnadhan supported his position by invoking the English-language research of the Anglo-Indian scholar Augustus Willard (*Treatise on the Music of Hindostan*, 1834), as well as Charles Burney (*A General History of Music*, 1789), to argue that approaches borrowed from linguistics (*bhāṣātattvabī*) could explain how ancient music had evolved along with language. He summarized this perspective, and then grounded the production of music in animal biology:

From this it is known that music is the natural religion of living things. Accordingly, the famous zoologist, the most respected Darwin, has said that through sexual selection [*maithunik nirbbācan*] (seksúýyāl silekśan) the sounds of living creatures slowly changed by means of reproductive development [*jananbikāś*] (ibholyusan) and, propelled by necessity, this resulted in the physiological voice. In fact, living creatures attract females through vocal sounds, and there is a particular need for the voice to be appealing. This voice excelled most in the practice of humankind. It resulted in the various disciplines of vocal music, instrumental music, and so on.⁴

Krishnadhan's willingness to break with tradition extended to the minutiae of his treatise, in which he maintained that adopting Western staff notation was the best way forward for Hindustani classical music.⁵ While other Bengali musicologists were also exploring the possibilities of notation, Krishnadhan's attitude gestured to his manifesto for sound as universal, intelligible, and open to what he considered a rational and analytical mode of study.

Across the nineteenth century and around the world, circles of scholars were fashioning a universal approach to sound and pursuing a musical history for humankind.⁶ Krishnadhan's own acquaintance, Sourindro Mohan Tagore (1840–1914), had developed his own global histories of music, inspired in part by earlier European scholars, most notably Charles Burney (1726–1814).⁷ Beyond musicology, questions about sound and phonology were being articulated through new vocabularies: in poetics, Sourindro Mohan's famous cousin, Rabindranath Tagore (1861–1941), wrote about the aural textures of the Bengali language, and created neologisms to accommodate his ideas, including *dhvanyātmak* (“soul in the sound”) for onomatopoeia, as Projit Mukharji describes in his chapter in this volume.⁸ Figures like Sourindro Mohan have received more scholarly attention in recent years, and have been positioned in global conversations.⁹ This is not incidental: Sourindro Mohan wrote extensively in English and directly addressed conversations happening on the other side of the world, so he can readily be included in histories of European music and sound. But do these European histories and debates automatically turn “global” because they found conversation partners in India? Sourindro Mohan, like many Indian intellectuals of his time, was highly multilingual and pursued other lines of enquiry in Bengali and Sanskrit. His conversation partners in those language arenas, who chose not to write in English, have largely been forgotten in the “global” histories we write today.

Although musicologists like Krishnadhan Bandyopadhyay or Sourindro Mohan Tagore were engaging with developments in European research and scholarly practice—from sexual selection to staff notation—their ideas do not add up to a total epistemic rupture, or a total colonization of South Asian knowledge systems. Instead, elements of European science were reworked and embedded in longstanding, precolonial intellectual traditions about the nature of sound and music. Looking across a range of genres, and languages, this chapter examines moments of enquiry into the physics and experience of sound, and considers points of continuity, transition, and departures into new directions. Far from a single arena of global debate, nineteenth-century books, manuscripts, and newspapers in Indian languages indicate an enormous diversity of ideas, arguments, and sonic practices, many of which intersected with ideas from Europe, but selectively and often unexpectedly.

This chapter begins by reviewing how nineteenth-century Indian scholars discussed music and the nature of sound by drawing upon pre-colonial models. Moving outside of musical literature, I listen for echoes of sonic practices in books relating to medicine, healing, and divination, in order to consider the relevance of early modern understandings of sound and the body in the age of competing booksellers and doctors. Finally, I examine how French history and British philosophy became entangled with Hindustani music and tantric hymnology. I argue that these entanglements gesture to what I term an epistemological *jugalbandī*—borrowing a term in Hindustani music for a creative dialogue—that is, a contrapuntal, selective, and adaptive conversation between knowledge systems. I suggest this term challenges us to rethink how we discuss global flows of ideas under colonialism, without flattening the textures of local arenas and vernacular languages.

Pre-colonial Ontologies of Sound

When colonial-era writers recorded their reflections on the nature and physical properties of sound, or considered why music can have profound effects on the listener, they were joining a long line of South Asian scholars and musicologists who had been considering these questions for centuries.¹⁰ Sanskrit intellectuals wrote densely theoretical treatises under the rubric of *saṅgīta-śāstra*, canonical knowledge relating to the performing arts, especially music.¹¹ As Krishnadhan noted much later, many of the classical works began with a consideration of primordial sound (*nāda*) and the

relationship between sonic structures and the divine. The intellectual discipline of *saṅgīta-śāstra* continued and flourished under the Mughal empire, when, from the seventeenth-century onward, writings proliferated in Persian—as *‘ilm-i mūsīqī*, “science of music”—and courtly vernaculars, especially Brajbhasha (classical Hindi).¹² Each generation of treatise writers was in conversation with their predecessors: some were very traditional, and systematically recalled established theory, while others were more radical and cutting-edge.

Far-reaching changes in the languages, literary forms, genres, and material media that were deemed appropriate for conversations about aesthetics had significant implications for writing about music. Over the mid-nineteenth century, Indo-Persian gave way to Urdu, and while Brajbhasha musical literature continued to be read, fewer poet-scholars wrote new works on music in that dialect, in line with a larger sea-change toward different forms of Hindi and new styles of poetry.¹³ As the Persian treatise and the Brajbhasha poem were phased out, the nineteenth century saw a wealth of new treatments of music in Urdu, (Khari Boli) Hindi, and Bengali, including instrument manuals, essays, and music histories, alongside reorientations of older genres like the treatise or songbook.¹⁴

A particularly rich example is an Urdu study of music, Mardan Ali Khan’s *Ghunca-yi Rāg (Bouquet of Music, 1863)*. Khan’s distinctively opinionated voice comes through as he examines the theory and history of north Indian music and surveys contemporary developments in instrumentation and dance. He situates the study of music within the intellectual sciences (*‘ulūm-i maqūl*) and describes his own book as a “selective compendium” (*intekhāb mukhtaṣar*), prepared over a lifetime.¹⁵ He relates information he has sourced from other works of scholarship, but also anecdotal knowledge (*‘ilm-i khabar*) and the ideas learned from salon-type assemblies of musicians and listeners (*‘ilm-i majlis*), including life-stories and “accounts of nobles, lords, blessed Sufis, and pure ones.”¹⁶ These threads can be tied together around a specific topic, as in his introduction to the legendary source of the *sur*, a musical “note” or the essential unit of “sound”:

The sound of a given *sur* is like such-and-such a creature. But there is a great variety among them, and the impression and constitution of each and every *sur* has been established. Some have written about the seven nostrils of the phoenix’s beak. This is a famous mountain creature. The name of this creature in Arabic is *kuknus* or *kaknus* or *qaqnus*, and in Persian *ātish-zan*

["combustible"], and in Hindi they say *dīpak-lāṭ* ["lord of the flame"]. This comes from the combination of *dīpak*, meaning lamp-light, and *lāṭ*. It is well known that this is a solitary creature; it has no partner. In its youth, it becomes lustful, and collects together a pile of rubbish around itself, and dances like a peacock in heat. At that time, a beautiful sound comes out of its beak, in which there are seven nostrils, and a lamp-like light appears. Then, as a result of this, the pile instantly burns up into ashes, the phoenix itself burns up and becomes a fire, and from those ashes, by the knowledge of the omnipotent and perfect Creator, an egg comes out—then the creature is born out of this twenty days later. This is how it reproduces. God is most wise. The above picture is evidence.¹⁷ When Hazrat Muhammad Gaus Gwaliori, whose miracles are famous, honored Tansen by meeting with him and giving him initiation, he revealed an abundance of hidden things, and showed him the course of this creature's lust. The aforementioned Miyan (Tansen) thought about the *sur dīpak* in connection to this. Actually, *dīpak rāga* had this same undesirable power.¹⁸

This passage conveys many of the larger themes in Mardan Ali Khan's scholarship. The phoenix allows him to draw connections between musical structures (the seven notes of the scale) and "natural" phenomena (the seven nostrils) and to convey how patterns in sound reflect the larger patterns of creation. His outline of the word for "phoenix" in Arabic, Persian, and Hindustani echoes other sections of the book, where he relates conceptual histories, explaining how an idea has been analyzed by generations of Muslim scholars, and transmitted through the circuits between Arabia, West Asia, and South Asia. The phoenix story, like other legends in the book, ultimately reveals God's miraculous designs. Khan gestures to implicit authorities and evidence: facts and opinions are "famous," "well-established," or confirmed by clear diagrams. This approach extends to his relating the authoritative oral transmission behind the stories, in this case the most celebrated musician of all time, Tansen, and his Sufi master. The single anecdote about the miraculous origins of the seven notes therefore sweeps across the western Indian ocean and through the centuries, tying the divine creation to historical celebrities and to the everyday practice of living musicians.

Many twentieth-century ethnomusicologists have discussed how musicians continue to collect stories about the miraculous qualities of particular *rāgas*,¹⁹ and Daniel Neuman suggests that "the most articulate expression

of the power of music is revealed through anecdotes, assertions, and stories about the magic potential of *rāgs*.²⁰ Mardan Ali Khan referenced *rāga* *Dīpak*, and later discussed the famous story of how Tansen caused a conflagration by performing it before the Emperor.²¹ Early modern musicologists, poets, and painters had explored the idea that *Dīpak* could start fires, either literally or in the form of a fever within the body. In the hands of a master, *Dīpak*'s power was miraculous, but it was also “undesirable” (to repeat Mardan Ali Khan's term) and dangerous, and there is a suggestion that these associations had made *Dīpak* unpopular and less likely to be performed as early as the seventeenth century.²² Another Urdu music treatise, the *Maḍan al-Mūsīqī* (*Mine of Music*) (written from the 1850s but first published 1925), also noted that because *Dīpak* could produce these fires,

singing of this Raga was banned and its place given to the Khat Raga. . . . This is how our forebears described the effects of various Ragas. In fact the above Ragas were able to produce the prescribed power in those days. But now these effects have totally disappeared. Instances of Ragas captivating the minds of the listeners or making them weep, etc., are to be found even today.²³

The power of *Dīpak* is not denied here but is relegated to a former age when musicians were able to perform miracles. *Dīpak* did not disappear entirely, but it is conspicuously absent in many otherwise comprehensive surveys of *rāga* from the nineteenth century.²⁴ This might be because people were wary of its heat, but also because it had acquired recognition—through word of mouth and the printed page—as the terrible fire-inducing *rāga*, which meant that to perform it *without* producing a flame was a sure sign of lackluster ability. By the end of the nineteenth century, it was a mark of gnostic prestige for musicians to know this solemn *rāga*. Neuman was told by a musician that although he knew how to perform *Dīpak*, he chose not to: “If you sing *Dīpak* *rāg* in a house regularly it will be bad for the house, it will be destroyed. If you play it for eleven days you feel it in your body. My eyes will start burning. I'll get pimples and boils.”²⁵ Significantly, even when a musician says he does not (rather than cannot) sing *Dīpak*, by invoking the theory of sonic power of *rāga*, he lays claim to possessing the requisite skills to perform a miracle through his music.²⁶

Dīpak was the most famous example of music's power, but it was not unique. Ideas about specific powers that were recorded in early modern

music treatises continued to be reported by word of mouth in the mid-twentieth century:

Kedar (*rāga*) melodies were taught by prison wardens and their assistants to those prisoners who were able to pay an adequate remuneration to the music teacher. If, by chance, the singing of *Kedar* did not melt the stones of the prison walls, the teacher would say that the rendition of the *rāga* was not absolutely correct.²⁷

There are different dimensions to the distinctive powers of the *rāgas*, including factors like time of day. (Kaufman also recalled a conversation from 1934 that seemed to prophesy the Second World War as a consequence of Western musicians' performing compositions at wholly inappropriate timings.)²⁸ While the effective properties of music are primarily associated with *rāga*, musical structures like vocal ornaments were also considered powerful. In his memoirs, the celebrated musician Alladiya Khan (1855–1946) recalled how the *dhrupad* artist Behram Khan (d. 1878) had made a joke at the expense of *khayāl* singers; outraged, Mubarak Ali Khan (d. 1880)

sang such a forceful *taan* [a fast vocal ornament characteristic of the genre] that because of its force, all the four legs of the cot broke and it crashed. . . . Mubarak Ali said, "If one sings a forceful *gamak* *taan*, he would die spitting blood. Such is the singing of the *khayalia*." Indeed, it was a *taan* of that kind. All fell silent.²⁹

These examples indicate how the esoterica of music theory and pre-colonial philosophies of sound continued to resonate across the colonial period: ideas enshrined in the treatises of musicologists working in royal courts circulated through to the twentieth century, and impacted on the repertoires, self-fashioning, and life-stories of professional musicians. At the same time, the intellectual study of music and sound was far from static: these examples do not indicate an Orientalist fantasy of the superstitious musician. Pre-colonial studies of sound acknowledged the idea that musicians could wield miraculous powers through their craft, and musicologists invoked a variety of disciplines and theological worldviews to make sense of where sound came from and how it impacted the embodied self. As the infrastructures and contexts supporting musical scholarship changed over the nineteenth

century, new generations of scholars engaged with older musical lore in new directions, resulting in a range of sonic epistemologies, from Mardan Ali Khan's phoenix to Krishnadhan Bandyopadhyay's Darwinism. This diversity can be interrogated further by looking beyond musical scholarship, to consider the place of sound in literature on the medical body.

Music and Medicine, Exorcism and Ears

Many early modern intellectuals thought of music and medicine as conversant disciplines. In the realm of Indo-Persian music treatises, Katherine Schofield has shown how seventeenth-century authors considered the influences of planetary bodies and bodily humors—drawing extensively on sources on Unani physiology—in their treatment of music's effects on the human system, and drew correlations between *rāgas* and the four elements and humors.³⁰ Certain scholars took a complementary interest in musicology and medicine; for example, Maharaja Pratap Singh (r. 1776–1803) of Jaipur, himself a lyricist and musician, commissioned one Hindi treatise on music, (*Saṅgītasāra* [*Essence of Music*], c. 1799) and another (in Hindi and Sanskrit) on medicine (composed in Hindi as the *Amṛt Sāgar* [*Ocean of Nectar*], and in Sanskrit as *Pratāp Sāgar* [*Pratap's Ocean*]). This medical treatise drew on canonical Sanskrit authorities (i.e., the *Caraka* and *Suśruta* compendia), but that is not to say it was treated as an old-fashioned relic.³¹ It received renewed interest in the late nineteenth century, when it was published in at least eleven different versions between 1864 and 1878 alone.

A later edition of the *Amṛt Sāgar*, from 1891, is a multilayered work: the edited Hindi text has been augmented with lithograph illustrations of human anatomy, organs, cross-sections of a womb containing twins, and the complete human skeleton. These images appear at the front of the book, alongside diagrams of pots, jars, and vessels being heated in laboratory-style arrangements. These images, which appear without labels or captions, excite the reader's attention with the promise of contemporary science, before progressing to the text itself, a digest of classical Ayurvedic principles. This was not seen as an incongruous alignment: diagrams of muscles and tendons sat quite comfortably alongside discussions of the permeable, humoral body.³² For example, fevers induced by ghost possession could be treated with mantras, apotropica *aṅjana* (medicinal collyrium), and *tantra*:

On the attributes of the one in whom a fever has arisen from being struck by a ghost:

Becoming agitated in their body
 Sometimes laughing, sometimes weeping, sometimes trembling,
 Their mind never still: know that a ghost has entered them.

On the effort to drive the ghost away:

Tying them up and scolding them, and applying mantra, *yantra*, and *tantra*, and destroying them they are driven away bit by bit—everyone has written the proofs of this.

On the mantra to cast out a ghost:

“aum ham him hun” drives out the ghost.³³

This was the first in a series of effective mantras, which came with accompanying instructions for how to use additional tools, such as peacock feathers. These authoritative techniques thus combined sonic utterance (*mantra*), diagrams of power (*yantra*), and ritual instruments (*tantra*). The pervasive presence of mantras and incantations throughout medical and therapeutic literature in the late nineteenth century qualifies the idea that printing medical texts was a symptom of an imported modernity, grounded in a disenchanting worldview. The continuing relevance of mantras gestures to popular assumptions about the efficacy of the utterance, the ability to impose one’s will on biological or spiritual matter through the medium of sound, and the place of audition as a receptive gateway for gaining access to the patient’s internal constitution.³⁴ The ears in effect provided a keyhole to unlock the self. This physiology drew on a long-established tradition of the porousness of the yogic body, which had multiple “doors,” that is, points of access and manipulation.³⁵

What if the ears themselves were compromised? The *Amṛt Sāgar* listed thirty-two illnesses of the ear: twenty-eight from the *Suśruta* Ayurvedic compendium, and four from *Carak*. It then considered a selection in detail:

On ringing in the ears: when Wind is trapped in someone’s earhole, and then in that man’s ear many sounds are resounding, beginning with the *bherī* drum, *mṛdaṅg* drum, and conch, they call this “ringing in the ears” (*karṇanād*).

On tinnitus: when Wind, Bile, and Phlegm become trapped in someone’s ear, and in their ear there is a cough-like sound of splitting open bamboo—they call that illness “tinnitus” (*karṇakṣved*).³⁶

The reader is then led through a series of treatments (*jatan*, pp. 313–316), beginning with:

the juice of green ginger mixed with rock salt and oil—taking all of these together and heating them a little, pour them into the ear; then earache, ringing in the ears, and deafness and tinnitus (*kān kī pīṛ karṇanād aur baharāpan aur karṇākṣved*)—all these illnesses will be removed.³⁷

In my translations, I have kept the distinction between the conditions known as *karṇanād* and *karṇākṣved* by translating them as “ringing in the ears” and “tinnitus” respectively, but this raises a challenge that numerous scholars working in sound studies have underlined.³⁸ Projecting English phrases and modern medical terms backward in time poses problems. Today, practitioners and scholars of Ayurveda may see both terms as equally referring to tinnitus.³⁹ However, Mark M. Smith has stressed that people made sense of the sounds they experienced using comparisons from their own world: just as soldiers in the American Civil War heard bullets and thought of buzzing bees or swarming insects,⁴⁰ the theorists of Ayurveda considered how people heard sounds without external causes, and described those sounds in terms of specific drums, the conch, cough- or sneeze-like wrenching sounds, and the ripping of bamboo.

The selection of instruments in the description of these auditory conditions is revealing, as they had particular connotations in divination. Nineteenth-century readers continued to consider destiny as entangled with the human body and its sonic environment. A popular Sanskrit divination manual, the *Pañcasvarāśya* (*The Five Vocalisations*) of Prajāpati (pre-1625), which had many Hindi commentaries that continued to circulate in manuscript form into the mid-nineteenth century, laid out the methods of *svar vijñān*, “breath knowledge.”⁴¹ The practitioner was advised to exhale and sound out syllables, and then diagnose their meanings by consulting a prescribed chart. The sonic textures of the breathed, uttered syllables, drawn upward and outward from the inner constitution, could reveal larger truths and generate knowledge.⁴² This attentiveness to the sound and movement of the breath was part of a larger set of sonic omens, including divination by listening to animals and birds, which were often discussed in nineteenth-century guides to medicines.⁴³

The production of printed books in Hindi escalated dramatically mid-century and jostling publishers stressed how their products could provide a

diverse toolbox for self-regulation and management.⁴⁴ So much is apparent from works like the *Amar Binod Bhāṣā* (*Amar's Vernacular Delight*, 1884), another medical handbook that reformatted pre-colonial lore for the contemporary book market. This was a Hindi (Brajbhasha) adaptation of the medical sections in the famous Sanskrit encyclopedia, the *Amarakoṣa*, edited for ease of use. The subtitle read:

[A book] in which the causes of disease are described from the definitions of the Glossary [i.e., the *Amarakoṣa*], covering in every matter the treatment of all diseases by means of medicine, mantra, *yantra*, and so on—and, from the definitions of astrology, a complete understanding of mortality.⁴⁵

In this manual, sonic practices were included both as treatments (i.e., healing mantras) and omens, as in the section on *śakuna-parīkṣā*, or how to identify auspicious signs for embarking on a journey:

bheri, *mṛdaṅg*, and *mardal* sound sweet
 maid and calf are running
 a pair of fish, curds cooking
 a priest comes to speak, with a *tilak* on his face . . .
vīṇā, *bher*, and conch give so much delight
 the king goes with a courtesan
 all these and more are all good signs
 when you encounter them, set off from your home
 he whose front door the doctor (*vaidya*) visits
 will never again suffer from an illness in this lifetime.⁴⁶

It is unclear what was meant by these three drums—*bher* or *bheri*,⁴⁷ *mṛdaṅg*, and *mardal*—sounding sweet (*mṛdu*), or why a *bher* might be paired with a conch and *vīṇā*, or whether the readers of this book understood what they were expected to listen out for. However, this kind of prescription indicates how print did not simply provide a platform for disseminating either “modern” or European ideas: some nineteenth-century readers clearly enjoyed the new opportunity to engage with older systems of sound knowledge. Listening practices were wide-ranging—from the sigh of the breath to the calls of birds—and were not thought of as a separate domain but fed directly into the shared techniques of healing and divination.

These books circulated alongside other kinds of self-help manual, which took an entirely different approach, such as *Kaṇṭhasudhāranbidhi*

(*Treatments for Improving the Voice*, 1886) by Saiyid Gulam Husen, a *ḍāktar* based in Gurgaon.⁴⁸ Music and medicine converged here too, but Husen's priority was to recommend chemical preparations for the health and maintenance of singers' voices. In his preface, Husen followed the familiar model of many other self-help books, by describing how he had helped a friend who was struggling to sing the *Rukmaṇī Maṅgal* (a song associated with wedding celebrations) by applying a medication (*auṣadhī*) to his throat. His friend benefitted from it immensely and, we are told, implored the reluctant Husen to write a book for treatments for when you lose your voice (“*galā baiṭhne kā ilāj*”). Instructions appeared in Hindi, while ingredients were written (in lithograph) both in Devanagari and a cursive Roman script—e.g., “*kār boneṭ āf ye moniuā 4 gren—Carbonate of ammonia gr 4*”⁴⁹—perhaps to clarify the intended meaning or to assist the book user when they went to source their chemicals. The book also provided a brief introduction to the anatomy of the throat—beginning with how there were two distinct “paths” (*mārg*) for eating-drinking and breathing, and two cords (*ḍoriyān*), and so on—which Husen attributed to the saying of the *ḍāktars*. In his explanation of how the voice can become hoarse, he discussed the problems facing singers in terms of biological matter, the movement of air, exertion, and changes with age. He also suggested that certain practices, like drinking alcohol, could damage the voice. Husen prioritized the *ḍāktari* model, but also briefly outlined how *hakīms* and *vaidyas* (i.e., Unani-Tibb and Ayurvedic physicians) would explain hoarseness too.⁵⁰

Reading these materials together gestures to a range of popular understandings of how the body operated. Non-specialists and specialists alike listened to both the workings of the body and its sonic environment and understood the human body as physically and spiritually malleable, vulnerable both to sonic instruments like a mantra, an auditory omen, or a chemical compound. Intellectually, music and medicine sat on a continuum of knowledge and self-regulation. Ideas and substances from Europe could be brought into the mix but did not automatically displace traditional techniques and theories. In the following section, I consider further how we might conceptualize these subtle forms of reconfigured knowledge.

Epistemological Jugalbandī

Conversations about the nature of sound and its effects on the body were unfolding across different genres and languages, and a number of writers

drew on an eclectic range of theoretical frameworks and European sources to develop new ways of thinking through old traditions about sound. Rather than replacing or subordinating local knowledge systems, unfamiliar materials from European languages were invoked as authoritative opinions, in order to provide evidence and support for Indian ideas. This eclectic approach to reinforcing indigenous concepts of sound and metaphysics is quite different from “diffusionist” models of colonial intellectual history, and speaks to the ongoing debate about vernacular modernities.⁵¹ In the realm of colonial-era musicology, it has often been taken for granted that Indian scholars changed the way they wrote about music, having digested the methodologies and biases of English Orientalist scholars, especially William Jones. However, I have argued elsewhere that this kind of historiography has been overly dependent on Anglophone sources and reformist literature. By taking the vast vernacular archive of sources about music into account, the picture becomes much more complicated: European ideas—when they were considered relevant—were not systematically imported to the absolute detriment of pre-colonial music theory.⁵² In certain cases, it is perhaps more helpful to read the archive in terms of what I term an epistemological *jugalbandī*. In classical music, the *jugalbandī* (lit. “to tie a pair”) is a form of duet between two well-matched solo vocalists or instrumentalists.⁵³ In the context of scholars attempting to make sense of sound and explain its power, we find works that are neither a neat translation of European ideas nor a reiteration of pre-colonial lore: instead, the writers tie together different epistemologies, appealing to a universal sense of sound. Here, I will briefly comment on two Bengali examples from the 1870s to 1880s that exemplify this eclecticism.

Nabinacandra Datta was a scholar of music based in Calcutta, who was part of a community of amateur musicians and enthusiasts that collected around the prolific musicologist, Sourindro Mohan Tagore and his academy, the Bengal Music School (est. 1871). Taking inspiration from Tagore and Kshetramohan Goswami (1813–1893), who took a directing role at the School, Nabinacandra wrote a guide to classical *rāgas* in 1872, using Goswami’s favored notation system. On the title-page of this hefty work (307 pp.), the *Saṅgītaratnākara*, Nabinacandra gave his study an English subtitle, *The Art and Science of Hindu Music*, and advertised his other books, on astronomy and agriculture.

From his introduction, it appears that Nabinacandra was writing in harmony with a number of other music enthusiasts associated with Tagore’s

circle, who bemoaned what they saw as the stagnation of musical progress in India.⁵⁴ Music had not realized its full potential, he argued, because of people with “impure tastes” (“*asādhu rucir prabhābe*”) who did not appreciate the intricacies and the profound power (“*asāmānyā śakti*”) of “pure” music (“*pabitrabhāb*”). Evidence of this power could be traced throughout world history, for example:

At one time, King Henry IV of Denmark expressed his desire to test the power of music, and commanded a singer: “You boast that your own compositions will de facto drive their performer insane—demonstrate this to me today!” The singer, following the king’s command, commenced such unprecedented music that there and then the king himself was driven insane, and four or five nearby individuals lost their lives and perished. Once Caliph Umar was quelling a rebellion and gave the order to behead the prisoners. A Persian singer was among them. He told the king that he desired to sing a song, and if the king permitted it then he would fulfil his heart’s desire. The king consented. He sang such a sweet tune that Umar granted him his life and, upon his request, the lives of the other prisoners.⁵⁵

It is unclear precisely where Nabinacandra acquired these anecdotes, but he may have been mis-reading Jean-Jacques Rousseau’s (1712–1778) *Dictionary of Music* (c. 1765). Rousseau retold two fables together: one about Eric, King of Denmark, who was driven into a frenzy by music and murdered his finest servants, and another about the musician Claudin, in the court of Henri III of France, whose rendition of the Phrygian mode excited a courtier to take up arms before the king, before Claudin calmed him down again with the Hypophrygian mode.⁵⁶ Nabinacandra appears to have conflated the two stories (and added to the confusion by misreporting Henri III as Henry IV). Rousseau had considered several tales in this vein, to explore the power of music over “the affections of the soul” and “the marvelous and almost divine effects which the Ancients attribute to *Music*.”⁵⁷ Like Rousseau, Nabinacandra collated a range of stories around these common themes, and passed seamlessly through Denmark, the Caliphate, the court of Murshidabad in Bengal, and then onto the French Revolution.⁵⁸

At the time of the French Revolution, a song was composed called the Marseillaise Hymn [*mārselis him*]. Wherever that song struck, the people there would give up their everyday business and taking up swords would

set forth for the cause of war with eastern Austria and Prussia. In the end, under Napoleon's command, that army conquered almost all of Europe. Many such examples of Music's wondrous, bewitching power could be collected. The Father of the Universe, the treasury of compassion, has revealed his limitless greatness by making this kind of ineffable, concrete connection between our sense of hearing and sound [*śabder sahita śrabaṇeindriyē eirūp anribbacanīya sambaddha nibaddha kariyā*].

Theories about the metaphysical effects of sound and legends about music's miraculous powers were nothing new to Indian scholars, but Nabinacandra repositioned local figures—like the Bengali tantric singer Ramprasad Sen—in a global history of sonic power, where music could rob the individual of their sanity, right injustices, and even change the political destiny of Europe. Nabinacandra's discussion of the Marseillaise hymn is very similar to those of many English writers,⁵⁹ but his research is interlaced with Hindu theology, revolving around the Father of the Universe (Biśvapitā, elsewhere Lord of the World, Jagdīśva) and expressed through a specific vocabulary for describing a sacred “wondrous, bewitching power” (“*adbhut mohinī śakti*”). In particular, *mohinī śakti* was a familiar term in Vaishnava religious tradition, gesturing to the feminine energy within God that is responsible for the enchanting and illusory world of perception. Therefore, tropes borrowed from Rousseau and Napoleon were deployed as rhetorical strategies to think through the categorical sense organs (*indriya*), divine energy (*śakti*), and sacred sound (*śabda*).

Nabinacandra's essay at the start of a book of *rāga* notations was typical for his time: many Bengali music editors liked to begin their performance-oriented books with intellectually stimulating introductions. A case in point is Kailascandra Simha's *Sādhak Saṅgīt* (*Worshipper's Music*, 1885), a tantric hymnbook. This was designed for goddess worship, both in terms of providing an appropriate song repertoire, and examining the sonic techniques for accessing the deities through meditation and the activation of the body's *cakras*.⁶⁰ To support these endeavors, Kailascandra included an introduction to the six *cakras*, and the truth of the Goddess as the primeval energy (*śakti*) of the universe. Like Nabinacandra, he pulled European intellectuals into the conversation, making a direct reference to the essays of Herbert Spencer (1820–1903)—“There is an Infinite and Eternal Energy from which everything proceeds” (cited in English)—as an example of non-Hindu scientists acknowledging the reality of the Goddess, even without the insights of devotion (*bhakti*).⁶¹

These two Bengali authors were not merely reiterating ancient ideas about sound and the sacred. Of course, they were speaking to a long-standing intellectual tradition, using familiar categories and theological principles, and had not radically changed the terms (literal words and larger concepts) of the discussion. However, their printed medium, colonial readership, and social position as urban gentleman-scholars colored their studies and marked a departure from the work of earlier generations of professional musicologists and theologians. In particular, their reading habits and engagement with non-Indian history, trends in Anglophone writing about music, French legends, and British philosophy gave them the ingredients to compose a *jugalbandī* of European and South Asian reflections on sound.

They represent a quite distinct approach to that taken by writers like Krishnadhan Bandyopadhyay, from the start of this chapter, who acknowledged Hindu ideas about the origins of music but found Darwin's evolutionary theory was more convincing. It is important to remember that Krishnadhan was originally part of Nabinacandra's musical community, and had worked closely with Kshetramohan Goswami of Bengal Music School fame, before a series of disagreements led them to parting company.⁶² Krishnadhan did not engage European voices as confirmation of Indic ideas but instead asked his readers to change their assumptions about the sonic universe, appealing to a different kind of modernity from the version cultivated by Nabinacandra and other neo-traditionalists.

Looking beyond music and Bengal, and moving westward to Bihar, it is apparent that Krishnadhan was not alone in his warm embrace of European science as an alternative to *śāstra* lore. One especially intriguing window onto the kinds of conversations happening around the science of sound comes from an Urdu work on acoustics, thermodynamics, and optics, *ʿIlm-i āvāz o garmī o roshnī* (*Knowledge of Sound, Heat, and Light*, 1871). This was a composite text of essays and even newspaper columns on the physics of soundwaves, some of which were incorporated into the body of the book complete with the lithographed headings of the Patna-based newspaper *Chasma-yi ʿIlm* (*Fountain of Knowledge*). The editor may have been one Sohan Lal, who printed a treatise on heat from the same press.⁶³ Here, sound was explained in terms of the physics of waves and vibrations, presented through digestible prose and neatly annotated diagrams of soundwaves, resonating tuning forks, and a concise illustration of the anatomy of the human ear.⁶⁴ This last image, which showed bones and membranes in cross-section, was a reproduction ultimately derived from a drawing by William

Bagg for John Quain's (1796–1865) *Elements of Anatomy* (first published 1835).⁶⁵ The *Elements of Anatomy* gave a description of the “tympanum or drum” in the middle ear,⁶⁶ which is labelled in the Urdu lithograph as “*kān kā dhol*,” the “*dhol* [a specific variety of drum] of the ear.”⁶⁷ The prose is economical and less ornamental than my previous Bengali examples, but this writer was also conscious of his readers’ response to this new information about how their bodies were operating without their knowledge. Following an explanation of how the eardrum responds to soundwaves, he observed:

This is an astonishing mystery (*ajīb bhed*), the likes of which cannot be solved. But it is well established that what we call seeing or hearing, and the activity in the brain (*jo ‘aml dimāgh men*), is one and the same thing. That which is outside of the brain is a wave (*lahar*) or a variety of motion (*cāl*).⁶⁸

Works like this book, or the newspaper columns dedicated to scientific findings, gesture to the excitement these Urdu writers and journalists experienced as they worked through guides to human anatomy and physics textbooks. Curating and re-presenting this material around the themes of “sound, heat, and light” was partly a way to think through the different aspects of waveforms, but also, I suggest, to ground physics and biology in the tangible realm of experience and sensation. The science enthusiasts of Patna were asking their readers to reconsider the underlying structures of their world, their senses, and their bodies. This demanded rethinking the mechanics of how they listened, but also the philosophy and enchantment of their conceptual universe, setting aside notions of primeval *nāda* or humors in deference to reverberating waves and eardrums.

How does the north Indian-language archive shed light on the landscape of intellectual engagement with music and sound under colonialism? While many of the authors I have examined were from elite communities, and were at ease with developments in European history, science, and philosophy, others were not; in particular, re-workings and new editions of pre-colonial texts, and continuities between manuscripts and printed books, gesture to larger arenas of listeners, musicians, physicians, astrologers, and journalists, who were engaging with the theory and practice of sound. The esoterica of musical metaphysics were not necessarily obscure, and the persistent trope of the fiery dangers of *Dīpak* gestures to the ongoing relevance of ontologies

of sound throughout the colonial and post-colonial period. However, these ideas were not unchanging or timeless either, and transformed alongside the structures of mediation and interpretation. Even before the advent of recording technology, the possibilities of the book industry, print journalism, notation, and the reproduction of schematic diagrams influenced the ways in which discussions about sound unfolded. However, the influence of colonial technologies was not straightforward: diagrams of the dissected eardrum circulated alongside images of the seven-nostriled phoenix, and both were used as supporting “evidence” for the author’s own knowledge system. While the illustrated ear served a similar function in the *Elements of Anatomy* and the *‘Ilm-i āvāz*, the same cannot be said of Herbert Spencer’s appearance as an unwitting devotee of the tantric goddess.

I have attempted to make sense of certain thinkers in terms of an epistemological *jugalbandī*, since the overall picture is one of diversity and creative adaptation. Ideas and practices from Europe were selectively deployed and refashioned, outright ignored, collated alongside local or older knowledge systems, or used to overhaul the *śāstras* altogether. How can this multifaceted landscape of intellectual enquiry and sonic practice be incorporated meaningfully into a global history of sound in the nineteenth century? I suggest that the archives should caution us when we position non-European writers who responded directly to contemporary European discussions about music as the only type of “global” intellectual. Europe’s explicit conversation-partners were only one element in the larger landscape of nineteenth-century reflections, and by concentrating too narrowly on Anglophone voices we risk closing our ears to the textures of music and sound in colonial South Asia.

Notes

1. While Anglophone scholarship conventionally associates “musicologist” with the growth of *Musikwissenschaft* in nineteenth-century Europe, in this article the term refers to scholars engaged with the systematic and canonical epistemology of music that developed in the South Asian context.
2. See Richard David Williams, “Music, Lyrics, and the Bengali Book: Hindustani Musicology in Calcutta, 1818–1905,” *Music and Letters* 97/3 (2016), 465–495; Sagnik Atarhi, “Whither Musicology? Amateur Musicologists and Music Writing in Bengal,” *Ethnomusicology Forum* 26/2 (2017), 247–268.
3. Krishnadhan Bandyopadhyay, *Gītasūtrasār* (Koch Bihar: Rajakiya Press, 1885), i. All translations are my own unless attributed otherwise.

4. *Ibid.*, ii. See Charles Darwin, *On the Origin of Species by Means of Natural Selection*, 5th edition (London: John Murray, 1869), 559.
5. On debates about notation in this period, see Charles Capwell, "Musical Life in Nineteenth-Century Calcutta as a Component in the History of a Secondary Urban Center," *Asian Music* 18/1 (1986), 139–163, especially 148–150.
6. See James Q. Davies, "Instruments of Empire," in *Sound Knowledge: Music and Science in London, 1789–1851*, ed. James Q. Davies and Ellen Lockhart (Chicago: University of Chicago Press), 145–174.
7. On Tagore's musicology, see Williams, "Music"; Charles Capwell, "Marginality and Musicology in Nineteenth-Century Calcutta: The Case of Sourindro Mohun Tagore," in *Comparative Musicology and Anthropology of Music: Essays on the History of Ethnomusicology*, ed. Bruno Nettl and Philip V. Bohlman (Chicago and London: University of Chicago Press), 228–243.
8. Hanne-Ruth Thompson, *Bengali* (Amsterdam: John Benjamins), 317.
9. Bennett Zon, *Evolution and Victorian Musical Culture* (Cambridge, UK: Cambridge University Press, 2017), 78–114.
10. For a comprehensive discussion of Sanskrit writings on sound, see Annette Wilke and Oliver Moebus, *Sound and Communication: An Aesthetic Cultural History of Sanskrit Hinduism* (Berlin: De Gruyter, 2011). On Sanskrit music treatises see Emmie te Nijenhuis, *Musicological Literature* (Wiesbaden: Otto Harrassowitz, 1977).
11. Jonathan Katz, "Music and Aesthetics: An Early Indian Perspective," *Early Music* 24/3, 407–412, 415–420.
12. Emmie te Nijenhuis and Françoise "Nalini" Delvoye, "Sanskrit and Indo-Persian Literature on Music," in *Hindustani Music: Thirteenth to Twentieth Centuries*, ed. Joep Bor, Françoise "Nalini" Delvoye, Jane Harvey and Emmie te Nijenhuis (New Delhi: Manohar, 2010), 35–64; Richard David Williams, "Reflecting in the Vernacular: Translation and Transmission in Seventeenth- and Eighteenth-Century North India," *Comparative Studies of South Asia, Africa and the Middle East* 39/1 (2019), 96–110; see also Katherine Butler Schofield, *Music and Musicians in Late Mughal India: Histories of the Ephemeral, 1748–1858* (Cambridge, UK: Cambridge University Press, 2023).
13. Allison Busch, *Poetry of Kings: The Classical Hindi Literature of Mughal India* (New York: Oxford University Press, 2011), 202–239.
14. Allyn Miner, "Enthusiasts and Ustāds: Early Urdu Instructional Books," unpublished paper; Williams, "Music."
15. M. M. A. Khan, *Ghunca-yi Rāg* (Lucknow: Naval Kishor, 1863), 2–3.
16. *Ibid.*, 2.
17. This description is accompanied by an illustration of the phoenix with seven nostrils.
18. *Ibid.*, 13–14.
19. An early reference in English scholarship is A. H. Fox Strangways, *The Music of Hindostan* (Oxford, UK: Clarendon Press, 1914), 155.
20. Daniel M. Neuman, *The Life of Music in North India: The Organization of an Artistic Tradition* (Chicago: University of Chicago Press, 1990), 66.

21. Khan, *Ghunca-yi Rāg*, 61.
22. Katherine Ruth Butler Brown, "Hindustani Music in the Time of Aurangzeb," (PhD dissertation, SOAS University of London, 2003), 177, 187, 196–197; Walter Kaufmann, *The Ragas of North India* (Bloomington: Indiana University Press, 1968), 53.
23. As translated in Karam Imam and Govind Vidyarthi, trans., "Melody through the Centuries," *Sangeet Natak Akademi Bulletin* 11–12 (1959), 6–14, 13–26, 33, 49–58, at 8.
24. Example notations given in Alain Daniélou, *The Rāga-s of Northern Indian Music* (London: Barrie and Rockliff, 1968), 253–255.
25. Neuman, *Life of Music*, 66.
26. See Richard David Williams, "The Rāg that Burned down Delhi: Music and Memory Between 1857 and 1947," *Cracow Indological Studies* 23/1 (2021), 197–217.
27. Kaufmann, *Ragas*, 13.
28. Kaufmann, *Ragas*, 18.
29. Alladiya Khan, Amlan Das Gupta, and Urmila Bhirdikar, trans., *My Life: As Told to His Grandson Azizuddin Khan* (Calcutta: Thema, 2000), 46.
30. Brown, "Hindustani music," 189–201.
31. On colonial and modern Ayurvedic medicine, see Rachel Berger, *Ayurveda Made Modern: Political Histories of Indigenous Medicine in North India, 1900–1955* (London: Palgrave Macmillan, 2013); Dagmar Wujastyk and Frederick M. Smith, *Modern and Global Ayurveda: Pluralism and Paradigms* (Albany: State University of New York Press, 2008); Projit Bihari Mukharji, *Doctoring Traditions: Ayurveda, Small Technologies, and Braided Sciences* (Chicago: University of Chicago Press, 2016).
32. Ayurvedic medicine builds on the doctrine of three humors (*tridoṣa-vidyā*), that is, Wind (*vāta*), Bile (*pitta*), and Phlegm (*kapha*).
33. Pratap Singh, *Amṛt Sāgar* (Delhi: Hindu Press, 1891), 30.
34. On mantra, see André Padoux, "Mantra," in *The Blackwell Companion to Hinduism*, ed. Gavin Flood (Oxford, UK: Blackwell, 2005), 478–492.
35. Monika Horstmann, "Managing the Senses in Sant Devotion," in *Exploring the Senses: South Asian and European Perspectives on Rituals and Performativity*, ed. Axel Michaels and Christoph Wulf (New Delhi: Routledge, 2014), 78–92.
36. Singh, *Amṛt Sāgar*, 311.
37. *Ibid.*, 313.
38. For an overview, see Mark M. Smith, "Echo," in *Keywords in Sound*, ed. David Novak and Matt Sakakeeny (Durham and London: Duke University Press, 2015), 55–64.
39. Hemangi Shukla and Nileskumar Chabhadiya, "A Clinical Study on the Concept of *Karnanada* and *Karnakshved* with Special Reference to Tinnitus," *International Ayurvedic Medical Journal* 5/3 (2017), 705–10.
40. Mark M. Smith, *The Smell of Battle, the Taste of Siege: A Sensory History of the Civil War* (New York: Oxford University Press, 2014), 48.
41. For example, Prajapati, *Pañcasvarāśya* (unpublished Sanskrit and Hindi manuscript), Wellcome Collection, London, MS Hindi.144.

42. *Svar vijñān* is still practiced today although, anecdotally, it generally appears to be understood as a therapeutic rather than divinatory technique.
43. For example, Madan Pal, *Nighaṅṭa Bhāṣā Nāgarī (Herbology in Hindi)* (Lahore: Mustafai Press, 1890), 149–152.
44. On the implications of vernacular printing for medical literature, see Seema Alavi, *Islam and Healing: Loss and Recovery of an Indo-Muslim Medical Tradition, 1600–1900* (London: Palgrave Macmillan, 2008); Mukharji, *Doctoring Traditions*; and Kavita Sivaramakrishnan, *Old Potions, New Bottles: Recasting Indigenous Medicine in Colonial Punjab (1850–1945)* (Hyderabad: Orient Longman, 2006).
45. *Amar Binod Bhāṣā* (Lucknow: Nawal Kishore, 1884).
46. *Ibid.*, 9.
47. *Bherī* might refer to a double-headed barrel-drum made of copper (according to the early thirteenth-century *Saṅgītaratnākara*) or a kettledrum. In Nepal, *bherī* is also the name of a trumpet.
48. On *ḍāktarī* medicine see Mukharji, *Doctoring Traditions*.
49. Saiyid Gulam Husen, *Kaṅṭhasudhāranbidhi* (Agra: Mumtaziya Press, 1886), 33.
50. *Ibid.*, 6–7; for parallels in Bengali, see Mukharji, *Doctoring Traditions*, 78–79.
51. For example, Partha Chatterjee, *Our Modernity* (Rotterdam: SEPHIS, 1997); Gyan Prakash, *Another Reason: Science and the Imagination of Modern India* (Princeton, NJ: Princeton University Press, 1999).
52. Williams, “Music.”
53. Neuman, *Life of Music*, 92.
54. Lakshmi Subramanian, “The Master, Muse and the Nation: The New Cultural Project and the Reification of Colonial Modernity in India,” *South Asia* 23/2 (2000), 1–32.
55. Nabinacandra Datta, *Saṅgītaratnākara (Ocean of Music)* (Calcutta: Sucharu Press, 1872), iv.
56. Jean-Jacques Rousseau, *Essay on the Origin of Language and Writings Related to Music*, ed. and trans. John T. Scott (Hanover: University Press of New England, 1998), 442. Rousseau’s source seems to be *Chamber’s Cyclopaedia* (London, 1741–3), 591n89. The original source of the King of Denmark tale was perhaps Saxo Grammaticus, *Danorum regum heroumque historiae (History of Danish Kings and Heroes)* (Paris, 1514). See Stephen Rose, *The Musician in Literature in the Age of Bach* (Cambridge, UK: Cambridge University Press, 2011), 136n88. The King of Denmark tale was included in an Armenian music treatise by Minas Bžškean (1777–1851) in 1812, most likely drawing on Rousseau’s dictionary. I am grateful to Jacob Olley for this information.
57. Rousseau, *Essay*, 442–443.
58. Datta, *Saṅgītaratnākara*, v.
59. Compare with Joseph Mainzer, writing in 1848: “Have we not witnessed the *Marseillaise Hymn*, wherever it was heard, exciting indescribable enthusiasm: the workmen quitting their shops, abandoning wife and children, and running in their shirt-sleeves to swell the ranks of the republican army? Deeds, which seemed beyond human power, were accomplished whenever the *Marseillaise* was struck up.” Joseph

- Mainzer, *Music and Education* (London: Longman, Brown, Green, and Longmans, 1848), 31.
60. Kailascandra Simha, *Sādhak Saṅgīt* (Calcutta: Victoria Press, 1885), 15. See Richard David Williams, “Playing the Spinal Chord: Tantric Musicology and Bengali Songs in the Nineteenth Century,” *Journal of Hindu Studies* 12 (2019), 319–338.
61. Simha, *Sādhak Saṅgīt*, 3n.
62. Williams, “Music,” 484; Atarhi, “Whither musicology?”
63. See also Sohan Lal, *Garmī kā Bayān (Exposition on Heat)* (Patna: Faiz-i Amm, 1875).
64. *ʿIlm-i āvāz o garmī o roshnī* (Patna: Faiz-i Amm, 1871), 4.
65. E.g., William Sharpey, Allen Thomson and John Cleland, eds., *Quain’s Elements of Anatomy*, 7th edition, vol. 2 (London: Longmans, Green and Co., 1867), 740, fig. 495. It is unclear which edition was available to the author(s) of *ʿIlm-i āvāz*. It is also possible that this image had been reproduced in another work, which in turn became the source-text for *ʿIlm-i āvāz*.
66. *Ibid.*, 744.
67. *Kān kā ḍhol* is still used in Hindi today, though *kān kā pardā* (ear-membrane) is more common.
68. *ʿIlm-i āvāz*, 4.