

Early Fusion Music:

Cross-Cultural Musical Exchanges in Colonial India from the Late 18th to the Early 20th Century: Mathematical and Computational Perspectives

One research fellowship, under the aegis of the Indian Heritage in Digital Space Programme of the Department of Science and Technology, Government of India, at the National Institute of Advanced Studies (NIAS), Bangalore, India

Supervisor:

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About the Project

The period of Company rule in colonial India witnessed the international exchange of many material goods such as textiles, spices, opium and tea. These trade interactions also yielded opportunities for the exchange of cultural ideas between Europe and India. There were thus bidirectional influences in architecture, painting, textiles and various aspects of culture. In the realm of music, in particular, cross-cultural exchanges happened in various parts of the country, largely exemplified by the colonial adoption of Indian classical and popular music, especially in Bengal. The later Western influences on Tagore's music are well documented but much earlier, were influences in the reverse direction, which remain much less known and largely undocumented.

After the East India Company established a firm foothold in Calcutta in 1757, an influx of English middle-class civil and military personnel brought Western classical music to the subcontinent. A taste for arrangements of local Indian melodies arose among British expatriates from this time onwards and significantly influenced English popular music in the late 18th century of the Common Practice period. What is relatively less known, however, is the integration of Hindustani classical music and traditional north Indian compositions in the creations of popular British composers of the late 19th and early 20th centuries, including those of Elgar, Holst, Foulds and Woodforde-Hinden.

This period also saw the beginning of a new genre of compositions in south Indian classical music called Nottusvara, wherein devotional lyrics in Indian languages (mainly Sanskrit or Telugu) were set to popular tunes (often British, Irish or French) and played by European bands. A good example of this phenomenon is the song, *Santatam Pahimam Sangita Sharade* set to

the tune of the British National Anthem, *God Save the Queen* by the composer Muttusvami Dikshitar. These tunes are considered to be simple and therefore, some experts in the field have questioned whether stalwarts like Muttusvami Dikshitar and Tyagaraja, who typically composed songs in complex raaga, would have really adopted such simple tunes into their repertoire.

The present project will thus **mathematically and computationally analyse** certain tunes that constituted this cultural exchange in the history of Indian and European classical and popular music, particularly during the 18th and 19th centuries, characterise their complexity and identify patterns in the notation that may reveal specific signatures of particular composers. The hypothesis that predominantly only 'simple' melodies inspired from Western sources were adopted into Carnatic music will thus be tested, by employing an appropriate mathematical characterisation of 'simple' vs. 'complex' tunes.

Approach

This fellowship would mathematically and computationally analyse the structure of (a) popular English melodies of the 18th and 19th centuries that were adopted into Carnatic classical music, (b) compositions in the Nottusvara genre of Carnatic music that were strongly influenced by these melodies, (c) local Indian tunes, particularly from Bengal and northern India, which were incorporated into English melodies in the 18th and 19th centuries, (d) classical English compositions of the late 19th and early 20th centuries that were influenced by Hindustani classical music, and (e) the particular elements of Hindustani music that influenced these compositions, in order to understand their complexity and probe into reasons why these tunes influenced one another to such an extent. This will largely involve mathematical characterisations of the notion of simple vs. complex patterns/tunes using complexity measures such as Lempel-Ziv complexity, effort-to-compress complexity and other information theoretic measures. Computational learning algorithms such as artificial neural networks, hidden Markov models, audio/speech/signal processing and time series analysis techniques would also be used to identify signatures of tunes/songs/notations to aid authorship identification.

Eligibility and Applications for the Project

Applicants for this fellowship will be primarily guided by Nithin Nagaraj, with the possibility of registering for a doctoral degree in NIAS, TransDisciplinary University or elsewhere. Applicants should preferably have a background in the mathematical or computational sciences, with strong interests in music.

Applicants must have completed or be in the process of completing a Master's/ME/MTech/MPhil degree in any relevant subject in the mathematical or computational sciences (such as Computer Science/ Computer Engineering/ Electrical Engineering/ Electronics and Communications Engineering/ Information Science/ Information Technology/ Signal Processing/ Audio or Speech Processing or other relevant subjects), but with a strong demonstrable interest in the areas mentioned above and with a consistently proven academic record (minimum 55% marks). Some research and/or experience in the concerned areas would be preferred. Candidates who have qualified for Junior Research Fellowships through NET/DST/CSIR/ICSSR/JEST are strongly encouraged to apply.

The researcher will receive a fellowship for three years from the **Early Fusion Music Project**, including a monthly stipend of INR 25,000 per month for the first two years and INR 28,000 per month for the third year, with an additional 24% per month as House Rent Allowance in all three years.

The selection of the candidate for the project will be through personal interviews, to be held in NIAS, on 17 and 18 June 2019.

How to Apply for the Project

Applicants for this project should send in a statement of interest, along with scanned copies of their undergraduate and post-graduate degree certificates and mark sheets, and a resume containing their academic history, skills, interests, published work and other accomplishments, all collated into a single PDF file.

All applications for the project should be emailed to Nithin Nagaraj (nithin.nagaraj@gmail.com) with the subject line of the email as 'Early Fusion Music Project'. **All applications must be sent by email**, with the deadline for receiving applications being **30 April 2019**.

If necessary, interested candidates may contact the above-mentioned faculty for clarifications and additional information.

Eligibility and Selection Procedure for the NIAS Doctoral Programme

Applicants should **also** consider seeking admission to the NIAS Doctoral Programme, and work for their doctoral degree under the aegis of this project. Admission to the NIAS Doctoral Programme would be based on a common entrance test and two levels of interview. Short-listed candidates would be invited for a written test and interviews on 17 and 18 June 2019.

How to Apply for the NIAS Doctoral Programme

Applications will **only** be accepted online. For further details, please visit <http://www.nias.res.in/content/online-application-doctoral-programme>. The deadline for receiving application with all required documents online is **30 April 2019**.

Applicants to the NIAS Doctoral Programme, under the aegis of the Early Fusion Music Project, must only apply through the relevant link in the Project section, entitled “Early Fusion Music: Cross-Cultural Musical Exchanges in Colonial India from the Late 18th to the Early 20th Century: Mathematical and Computational Perspectives” of the above website. Please also email a copy of your application to Nithin Nagaraj (nithin.nagaraj@gmail.com).