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Influence of Technology on Indian Musical Instruments

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Abstract- In Indian music, there is a rich and extensive range of musical instruments, used both in the art music and in the folk music. Earlier man used percussion instruments to accompany dance and to serve primitive ritual. The most primitive drums were made up of wood and the skins of animals like lizards, snakes and fish etc., however with the arrival of ceramics, wooden shell gave way to a clay vessel, and hands are replaced by sticks. Sticks and the skins of aquatic animals changed to huge cattle. The laya vadyas or the rhythm instruments are the earliest musical instruments in the history of mankind. Newly introduced technology and the utilization of latest materials have brought tremendous changes in the overall tonal quality of Indian musical instruments. The non-availability of the materials from which the instruments are made, resulted in the finding of an alternate. The elongated and fragile bodies of the stringed instruments like Tampuras' and 'Veenas' are more difficult to transport from one place to another. As a result, miniature Tampuras' in the box type and 'Folding Tampuras' are being built, with the same tonal quality. Fibre Glass Veena, and Electronic Veena are the experiments being made in the field of making Veena. As a result of the introduction of the most modern technology and the application of the latest materials, the total tonal quality of the Indian instruments have enhanced to the maximum.

Keywords- Indian music, Modern technology, Indian instruments, Electrical music.

Introduction-

The history of musical instruments has its deep roots in many thousands of years back, when the primitive man started using natural things to make sound. Simple rhythm instruments are the earliest examples where man used his own instruments as clapping hands and stamping feet. Musical instruments are created primarily for the production of sound. From a small piece of stone to the highly sophisticated, computerized electronic synthesizer, any object which can produce sound and tones is a musical instrument It is obvious that the earliest known invented musical instruments are however noticeably different from those discovered by man. Many instruments have become accessible and adapted quickly by the people in far places, because of the contact existed between different civilizations. Some instruments have moved outside from India and a good deal of India's custom, culture and instruments has been accepted by Indonesia. The 'Ravanahasta veena', a bowed instrument of the western region of India, is an important example.'1 The blending of human body with that of music is very clear in the earlier days, in which bones and limbs have been used to make musical instruments. In order to enhance and enrich the vocal music, people gradually felt the need of the accompaniment of musical instruments. From the prehistoric time to this modern period of science, both the vocal music and the musical instruments playing have been passed on, through generations to generations. However, the very first instrument is the human body itself and is used for keeping rhythm by stamping, clapping, or beating up on the different body parts.

Influence of Technology on Indian Musical Instruments-

In Indian music, there is a rich and extensive range of musical instruments, used both in the art music and in the folk music. Vedic literature refers to the various kinds of musical instruments which were used in those days. Even before 2400 BC, the chanting of Vedas with all types of musical instruments was common in India. Turva',

bakura, nadi, kannadavina, karkari, dundubhi, bhumi dundubhi, vanaspati etc. can be cited as examples for wind, stringed and percussion types, most of which are invisible now. Instruments are the products of human thoughts and are the artificial devices of man. Newly introduced technology and the utilization of latest materials have brought tremendous changes in the overall tonal quality of Indian musical instruments. It is the technical advancement which complimented both as a stimulating and supporting factor to make people equipped to conduct excavations and empowered them to unveil it to the modern world. The logical explanations and the situational analysis also must have played a major role in these explanations. The "Theory of Resonance" was the main 'secret' behind, which attracted people to the crude sound produced by those instruments. In respect of the dramatic performance, it is a threefold application as Tata', 'Avanadha' and 'Natyakrta'. According to him, 'Avanadha' has got its name as it is tied by leather. Bharata has devoted a chapter, which contains only the description of orchestral music. 'Brhaddesi' of Matanga has brought out even the smallest details regarding the wind instruments. Narada's 'Sangitha Makaranda', gives an exclusive idea of the production of sound on various instruments. Saranga Deva, treated all kinds of musical instruments prevalent in his time and even prior to him. He gives an elaborate details of 'Vamsaka vrnda',- an orchestra formed only with the wind instruments.'2

Flute was the only accepted and commonly used instrument by all the human races of the world in the ancient history of musical instruments. In the old usage, the term 'flute' stands for all the pipes blown across and also using reeds which make the breath to vibrate. It may be of either of stones, of animal bones or bird's bones, of woods or of reeds. Wind instruments also called as 'sushira vadyas' by ancient scholars, are in ten kinds which is mentioned by Sarangadeva in his 'Sangeetha Ratnakara'. As per the journal 'Nature', the music was widespread in pre-historic times and a 'vulture-bone flute' has been unveiled by a group of researchers from Germany in the year 2008. It is a five-holed flute made from a vulture's wing bone measuring 20cm long, having a mouthpiece in 'V' shape.'3 From the Neolithic period onwards, drums have made their presence through the archaeological excavations. 'Ranabheri' is made useful as a drum as well as making announcements. It was the huge conical drums beat which declared the stated hours of the day and night, during the medieval period.'4 After the human voice, which was being considered as the very first instrument, it was the percussion instruments like stones, sticks, logs and rocks etc. which occupy the second step in the progress of music. Earlier man used percussion instruments to accompany dance and to serve primitive ritual. The most primitive drums were made up of wood and the skins of animals like lizards, snakes and fish etc., however with the arrival of ceramics, wooden shell gave way to a clay vessel, and hands are replaced by sticks. Sticks and the skins of aquatic animals changed to huge cattle. The laya vadyas or the rhythm instruments are the earliest musical instruments in the history of mankind. 'Ranabheri' is made useful as a drum as well as making announcements. 'It was the huge conical drums beat which declared the stated hours of the day and night, during the medieval period.'5 Each and every culture had the 'give and take' attitude between themselves depending on the nature and use of media of communication. Both of the Nagas of the eastern provinces of India and the Todas of Nilgiris in Tamil Nadu have a kind of dancing with howling and screeches, which resemble their hunting calls.'6 The rhythmic system of India has been the most complex and highly evolved system of the world. This fact is acknowledged by the scholars and musicologist all over and it is said that Ustad Allah Rakha asked his son, tabla wizard Ustad Zakir Hussain to seek the guidance of the mridangam maestro Palghat Raghu.'7

The science of musical instruments with their classification is known as Organology. It is the descriptive and analytical study of musical instruments. The classification system based on the acoustic principles by the Erich von Hornbostel Curt Sachs in 1914 was considered as the most systematic classification of instruments in the west, whereas in India, it was in practice around two thousand years before itself. The emergence of new electronic instruments in the second half of the century have been adopted by many musicians and 'Curt Sachs' classifies these instruments as electromechanical and electric under 'electrophones' - a new classification, called

Electrophones.'8 Newly introduced technology and the utilization of latest materials have brought tremendous changes in the overall tonal quality of Indian musical instruments. The non-availability of the materials from which the instruments are made, resulted in the finding of an alternate. The elongated and fragile bodies of the stringed instruments like Tampuras' and 'Veenas' are more difficult to transport from one place to another. As a result, miniature Tampuras' in the box type and 'Folding Tampuras' are being built, with the same tonal quality. Veena with removable parts. Fibre Glass Veena, and Electronic Veena are the experiments being made in the field of making Veena. As a result of the introduction of the most modern technology and the application of the latest materials, the total tonal quality of the Indian instruments have enhanced to the maximum.

Electrical music instruments are able to produce electrical tone signals for amplification without tine use of air columns or mechanical vibrators'. There is not even a single piece of equipment without having an electric component, in the production of music today. Electronic music predates the rock and roll era by decades. It was in the late 1970's and early 1980's that the analog synthesizers turned out to be smaller, more accessible, further user friendly and more affordable. This is an electronic musical instrument capable to imitate the drum's sound or other instruments in the percussion group. This instrument does produce an electric signal that makes a drum sound, when the pad is hit with stick. Musicians in the younger generation are able nowadays to produce qualitative 'demo' CDs In their own homes using computers, electronic keyboards and synthesizers. Thus they can avoid the expenditure of hiring a recording studio. 'The very first programmable drum machine, the PAiA Programmable Drum Set, was first introduced in 1975.'9 With special reference to electronic musical instruments, the use of sampled sound makes it possible not only to reproduce exactly the sound of a particular instrument, but modify it to suit any particular application through the use of the operating software of the instrument itself also. Sounds from musical instruments as well as from any other sources can also be recorded and stored in a digital sampler. A tune can be played in a keyboard, along with the sampled sounds, after connecting it to the sampler. Using a Musical Instrument Digital Interface (MIDI) system, a computer can be connected with other electronic instruments, such as keyboards and electronic drums, to make sounds together or in series.

Many different ways of sound generation have been used during the evolution of electronic musical instruments. The modern electric guitar has originally been developed from the acoustic guitar but it has only a superficial resemblance to it. This guitar, which was invented in 1931, uses pickup which converts the vibrations of the strings electronically in to sound. Electric guitar has to be amplified, as the signals generated by an electric guitar are very weak. A synthesizer is an instrument which is able to produce sounds that is programmed already. It is a collection of functional units which can be interconnected in different ways**.** "Just as Les Paul is the father of the electric guitar, Dr. Robert Moog is the father of the Moog synthesizer".10 according to Brian L Knight Dr. Moog has manufactured 'theremin', one of the first electronic instruments, with a company which started in 1954. He also paid his attention on the progress of an electronic synthesizer and the 'Moog Synthesizer' has got introduced to the world in 1964. The invention of the synthesizer has resulted as a beginning step towards the origin of keyboard. The rapid progress in the field of electronics advancement has shown many exciting possibilities of orchestration in music. Certain talents in the field of music as well as electronics had paid their attention in developing some electronic gadgets for the accompaniment of sruti. It is worth mentioning of Mr. G. Raj Narayan, [11] for his valuable contribution of the 'Electronic Tambura - Sruti box'. The pioneer in the field of electronic musical instruments in India The Radel Electronics pvt. Ltd', has rendered a great service to the music industry.

Conclusion-

Indian music is highly rich in its great tradition, and has had a continuous development from early times. Once the technology was introduced to the rich tradition, music began to flourish rapidly in the fields of performance, popularity etc. Thus the contributions of technology in music are unlimited in the day-to-day usages in modern days. Due to the impact of the growth of Science and Technology, massive reformation has happened in all the fields of

music during the end of the 19th and the beginning of the 20th century. As the technology moves forward, the music is there to utilize these possibilities to open new fields.

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