KARNATAK UNIVERSITY

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‘The Role of Hawaiian Guitar in the Present Context of Hindustani Classical Music – A Practical Analysis’

A thesis submitted to the Karnatak University, Dharwad for the award of the degree of ‘Doctor of Philosophy’ in performing arts

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Sculpture depicting Lord Ganesha playing the ancient

Indian slide veena

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CERTIFICATE

This is to certify that the thesis entitled **'The Role of Hawaiian Guitar in the Present Context of Hindustani Classical Music – A Practical Analysis'** submitted by **Prakash Sontakke** to the PG Department of Music and Fine Arts, Karnatak University Dharwad, in fulfillment of requirements for the award of the degree of **Doctor of Philosophy** in performing arts, is a bona fide record of fully independent and original research work carried out by him from the period 2010 to 2014 under my supervision and guidance, and is worthy of consideration for the PhD degree. The matter contained in this thesis has not been submitted elsewhere for any degree or diploma.

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DECLARATION

I, Prakash Sontakke, student of the PG Department of Music and Fine Arts, declare that my thesis entitled **'The Role of Hawaiian Guitar in the Present Context of Hindustani Classical Music – A Practical Analysis'**, submitted to the PG Department of Music and Fine Arts, Karnatak University, Dharwad, in fulfillment of requirements for the award of the degree of 'Doctor of Philosophy' in performing arts, is a bona fide record of fully independent and original research work carried out by me from the period 2010 to 2014 under the supervision and guidance of Dr. Meera Shivshankar Gundi, and is worthy of consideration for the award of PhD Degree. The matter contained in this thesis has not been submitted elsewhere for any degree or diploma.

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Place: Dharwad

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INTRODUCTION

In the present scenario of Hindustani Classical Music there are several stroke instruments which are being used widely in classical music concerts all over India and abroad. Most of the instruments we know are from a very long and traditional lineage. The instrument like the Veena for instance has a very long lineage of more than a few thousand years. This is closely followed by the Sitar, also a very popular as well as traditional instrument, which has gone through interesting developments in design as well as techniques in playing. In contrast, the Tanjore Veena and Rudra Veena[i] have until now maintained their traditional approach of playing. The Sitar has carved a niche for itself in the Classical Music world because of various world famous Indian artistes who have formed and shaped their own individual style of playing.

Slide or bottleneck guitar is a particular method or technique for playing the guitar. Guitars played in this style are referred to as Steel Guitar, Bottleneck Guitar, Lap Steel Guitar, or simply, Hawaiian Guitar. The term slide refers to the motion of the slide against the strings, while bottleneck refers to the original material of choice for such slides: the necks of glass bottles. Instead of altering the pitch of the strings in the normal manner (by pressing the string against frets), a slide is placed upon the string to vary its vibrating length, and pitch. This slide can then be moved along the string without lifting, creating

[i] Tanjore Veena and Rudra Veena are widely regarded as the oldest known stringed instruments of South and North India respectively

continuous transitions in pitch, and achieving a glissando[ii] effect.

A very interesting outcome of this playing style is that the musician is *never* in contact with the instrument at any time! Placed flat on a surface, the guitar is not held by the musician, who only uses the slide and fingerpicks on the strings. This makes it considerably harder to extract nuances from the instrument, while compared to other instruments which can provide a reference to the player.

Area of proposed study

A relatively newer instrument like the Hawaiian Guitar (also known as Steel Guitar, Lap Steel Guitar or Slide Guitar), which has made its entry into the Indian music scenario less than fifty years ago, offers tremendous possibilities and very interesting scope for research. To begin with, there is no theoretical material that can be sourced from historical scriptures, or previous scholarly works on the Hawaiian Guitar. The other practical difficulties faced during this research is the non-availability of study material in terms of technique and playing style because no one has till now brought out any book or any material for such reference, nor indeed is there a formal pedagogy in our universities to include the teaching of the Hawaiian Guitar.

From a classical musician's perspective, the place of the Hawaiian guitar in traditional music is quite similar to Violin, which has come from the outer

[ii] A continuous slide upwards or downwards between two notes.

world, but one will not be wrong in saying that the Indian musicians have taken the Violin to greater heights in terms of exploration and giving it an almost parallel existence in the sub-continent. How is it that this instrument can adapt, reproduce, emulate to the sounds of Indian classical music of any form, be it Hindustani classical or Carnatic classical or Thumri, Dadra, Chaiti, Chaturang, Sadra, Birha, Chota Khyal, Bada Khyal, Masitkhani gat, Rajakhani gat, Vilambit, Madhya, Drut, Samvaad, Anuvaad, Vivaad[iii] etc., which are just small divisions of this great art. All of these can also be produced on the Hawaiian Guitar.

Objectives of the study

The present study explores the various aspects of the Hawaiian Guitar with particular emphasis on its versatility and adaptation to different styles of playing, and a study in the comparison of the Hawaiian Guitar with a whole spectrum of Indian stringed instruments such as Sitar, Veena, Sarod, Dilruba, etc. We also see how different musicians have used techniques to suit their style in both Indian and Western contexts. In brief, we discuss:

- The characteristics of the Hawaiian Guitar.
- A comparative study of the Hawaiian Guitar and the popular instruments in Hindustani Classical like the Sitar, Rudra Veena, Vichitra Veena, Santoor.
- An additional comparative study of the popular instruments in Carnatic

[iii] Different forms of singing and playing styles prevalent in Hindustani Classical music

Music such as Tanjore Veena and Gotuvadyam.

- A comparative study of the Hawaiian Guitar and the Sarod.
- A study on 'Sustain' achieved by bow instruments such as Violin, Sarangi, and Dilruba as compared to of Hawaiian Guitar.
- Advanced approach to Hawaiian Guitar techniques.

Scope and limitations of the study

While this study focuses on the techniques of playing the Hawaiian Guitar in the Hindustani traditional style, other styles closely related to the growth and evolution of the Hawaiian Guitar, as well as Indian traditional music have not been overlooked. Slide and stroke instruments in the Carnatic tradition such as Gotuvadyam are so closely related to the Hawaiian Guitar that their study is essential.

Another interesting point to note is that worldwide, the Hawaiian guitar has been played in almost every musical style. To begin with there is the folk style of Hawaiian itself, along with Jazz, Western Classical, Western/Country music, Rock and Roll, Popular music, Blues, Bluegrass, and of course Indian Classical styles. This is perhaps the only musical instrument in the world that can be played in such a versatile manner, adapting to so many different styles and cultures, and sounding authentic, and in some cases even enhancing that particular style. Additionally, the Hawaiian guitar can be played with many

different tunings and techniques to suit a particular style. By using the slide[iv] on the fretless fingerboard[v], the musician can elicit deep emotion along with perfect sounds.

Issues addressed

Due to its nontraditional origin, the Hawaiian Guitar in sometimes faces social ostracization to some extent because of the widespread misconception that Guitar has something to do only with western rock music and nothing else. This has led to many puritans doubting the authenticity of playing the Guitar in the Indian classical style. However, just as the Violin has been totally embraced by traditional Indian music, so will the Hawaiian Guitar because of its versatile nature. This study brings out the different techniques of Indian Classical music that can be adapted by the Hawaiian Guitar. Many practical examples have been presented to clearly elucidate the closeness of the Hawaiian Guitar with traditional stroke instruments, particularly Vichitra Veena of Hindustani and Gotuvadyam of Carnatic tradition.

Review of Literature

The Hawaiian Guitar, being relatively recent when compared to traditional instrument with a long classical history, does not have much theoretical material dedicated to its study. We also cannot find a dedicated pedagogical framework regarding playing technique of the Hawaiian Guitar, and therefore

[iv] A slide can refer to any smooth object, usually steel, that is moved along the strings in a Hawaiian Guitar
[v] Unlike regular guitars, in the Hawaiian guitar, the frets are just drawn and not raised on the fingerboard. This is similar to the violin, except that in case of the violin, the frets are not even drawn.

students of this instruments do not have readily available books or reference material. Even highly acclaimed books that have been written such as *'Lap Steel Guitar'* by Andy Volk (Centerstream Publications, 2003) focuses mainly on western artists, although it does devote a few pages to Indian music played on Hawaiian Guitar. However, no study exploring the techniques of Indian Classical music on Hawaiian Guitar has been published to date.

Lorene Ruymar's book '*The Hawaiian Steel Guitar and Its Great Hawaiian Musicians'* (Centerstream Publications, 1996) is a well-researched account of the history of the Hawaiian Guitar, along with '*Ancient Hawaiian music'* (Peter Smith Publisher, Inc., 1977) by H.H. Roberts. The more recent work *'Learn Blues Slide*' (Hagemann, 2012) by D. Hagemann is a very good practical guide. L. Sandberg's *'The Acoustic Guitar Guide*' (Chicago Review Press, 2000) is regarded by many as a definitive work. Apart from the above mentioned print books, journals and magazines such as *Guitar Player, Fingerstyle Guitar* and internet documents such as *'History and Origin of the Slide Guitar in the Blues*' by R. Payne, Harry Jacobson's *'Slide Guitar Techniques*' provide great insights into the development of the Hawaiian Guitar as a main instrument. Online reference books are an invaluable source of popular techniques, such as D. J. Stewart's *'Getting Started Playing Lap Steel Guitar*', D. J. MacLean's *'21 Great Ways to Improve Your Guitar Playing*', and Arlen Roth's *'Slide Guitar Blocking and Damping Techniques*'.

Methodology

The **primary source** of this study stems from the research scholar's direct observations of performing musicians, as well as audio and video recordings. Regular performances with many living legends, both in India and abroad, presented great opportunities to conduct a very close study of different styles and observe the versatile nature of the Hawaiian guitar in detail, enriching the content of this study. Interviews with eminent players of the Hawaiian Guitar have enabled this study to delve into the depths of the subject yielding clarity.

The **secondary sources** include books, journals, magazines, articles published in newspapers, interviews, discussion with scholars, and unpublished material handed down from generations.

Outline of the thesis

The **introduction** to this thesis provides a brief glimpse into the Hawaiian Guitar in the context of the present study, with particular emphasis on its versatile nature and adaptability to various styles of music. It also covers the area, aims and objectives of this study, its scope and limitations, the various issues addressed, a review of literature available on the Hawaiian Guitar, methodology adopted in carrying out this study and a note on the secondary sources used.

The **first chapter** goes into the history of the Hawaiian Guitar, the development of the Hawaiian Guitar as a main instrument with an introduction to the early pioneers who popularized the instrument, the

techniques associated with the use of the Hawaiian Guitar, social misconceptions regarding Guitar and the difference between Spanish Guitar and the Hawaiian guitar, comparative elements of the Hawaiian Guitar with Indian Classical music as the Guitar itself being an instrument of foreign origin, its use in other musical styles and analysis of how all those elements can be also explored and developed in the Hawaiian Guitar in the context of the Hindustani Classical tradition, as is being done by many eminent classical musicians. This chapter also delves into the popular techniques used while playing the Hawaiian guitar, and how they can be adapted to the classical style, while also going into the basics of western music theory and musical notation. The chapter ends with a detailed analysis of the sound produced in a guitar and how the various types of wood affect the sound, along with a few advanced techniques.

The **second chapter** compares the techniques of popular instruments in Hindustani Classical music like the Sitar, Rudra Veena, Vichitra Veena and Santoor in comparison with the Hawaiian Guitar, and how the elements of Hindustani classical music can be played on the Hawaiian Guitar. Eminent players and their techniques are also briefly dealt with.

Today many Indian classical instruments are exploring the techniques of the Hawaiian Guitar, elevating its status to great traditional heights, while simultaneously achieving path-breaking classical styles that will be etched in the history of music by this versatile instrument.

Chapter three deals with an **additional study** carried out in exploring the similarities between the Hawaiian Guitar and the ancient stroke instruments of Carnatic tradition such as the Tanjore Veena and Gotuvadyam. These two instruments are so ancient, dating back to Vedic times, when Indian Classical music was just one, and had not yet branched into the two traditions we know today, namely Hindustani and Carnatic. Additionally, the Gotuvadyam, according to one theory, is believed to be the ancestor of the Hawaiian Guitar, and hence this study documents the various techniques of Tanjore Veena and Gotuvadyam, which can be effectively incorporated by musicians playing the Hawaiian Guitar.

The **fourth chapter** describes the similarities between the Sarod and the Hawaiian Guitar, with particular emphasis on the analysis of the growth and development of the Gayaki style in Sarod playing and its impact on other stroke instruments in the Classical stream, especially on the Hawaiian Guitar, along with techniques used by eminent players of the Sarod.

Since 'sustain' is a very important feature of the Hawaiian Guitar, the **fifth chapter** studies the sustain achieved by bow instruments which have the advantage of infinite sustain over stroke instruments. This is an additional study carried out to understand the importance of sustain in the context of Hawaiian Guitar.

Advanced approach to Hawaiian guitar techniques are discussed in the **sixth chapter**, with a detailed look into the tuning techniques of eminent players from all the different categories and styles of music. A look at the difference between Indian and Western style of tuning is presented, along with techniques of Hindustani and Carnatic players that can be adapted by the Hawaiian Guitar.

In the **last chapter**, the research scholar's perspective is provided on how the Hawaiian Guitar can be instrumental in harmonizing the various aspects of music and life, and can be used to uplift Indian classical music to a more globally acceptable and appreciable level because of its Universal appeal. This is followed by a **gallery** of selected contemporary Hawaiian Guitars, featuring both hybrid models as well as the original Weissenborn. The **Bibliography** lists out all the references, including books, journals and websites referred and cross indexed. A comprehensive collection **resources** for practitioners of the Hawaiian Guitar is presented containing books, websites, a selected discography, and other resources. **Footnotes** in appropriate places serve to provide an immediate definition of terms used.

1. The Hawaiian Guitar

This chapter intends to bring out the characteristics of the Hawaiian Guitar, how it differs from the regular Spanish Guitar, the social misconceptions regarding guitar, its brief history, its social position and how instruments resembling the Hawaiian Guitar existed in the religious history and culture. As an instrument in Hindustani Classical music, some of the features that are explored are:

- The History of the Hawaiian Guitar.
- The Development of the Hawaiian Guitar as a main instrument.
- The Techniques associated with the use of the Hawaiian Guitar.
- Social misconceptions regarding Guitar and the difference between Spanish Guitar and the Hawaiian guitar.
- Comparative elements of the Hawaiian Guitar as the Guitar itself being an instrument of foreign origin, its use in some other musical style and analysis of how all those elements can be also explored and developed in the Hawaiian Guitar in the context of the Hindustani Classical tradition.

1.1. The History of the Hawaiian Guitar

It is widely regarded that the Hawaiian Guitar was invented by Joseph Kekuku (Ruymar, 1996). There is also a parallel theory that an Indian-born sailor named Gabriel Davion who had learnt the Gotuvadyam and the Vichitra

Veena[vi], came up with the concept of playing Hawaiian guitar in the same style as these two Indian instruments. However no thorough research has been carried out to verify the dates of these two occurrences, and so in the present study we will touch upon both the theories.

Joseph Kekuku was born to Joseph and Milliama Kekuku in the village of Laie, on the windward side of Oahu in Hawaii. It was in 1889, at the Kamehameha School in Honolulu, that Joseph Kekuku is said to have invented the Hawaiian Steel Guitar[vii]. (Bocchino)

How did the regular acoustic guitar become the Hawaiian Guitar? In the words of Miro Maximchuk (Bocchino), "The guitar was introduced to Hawaii in the early 1800s by the whalers. In the 1830s, King Kamehameha III brought Spanish-Mexicans in to train the Hawaiians as cowboys. They brought with them the guitar, which has always been well loved about the cattle ranches of Hawaii. The innovative islanders produced a new effect by slacking the guitar strings to a major chord tuning. The strings were plucked, not strummed. The bass carried the basic rhythm and the higher strings carried the melody to simulate the matchless falsetto voice of the Hawaiians. From the slack key guitar with its major key tuning, it was a logical step to the invention of the Hawaiian Steel Guitar."

[vi] The traditional slide Veenas of Indian classical music (Gotuvadyam: South Indian style; Vichitra Veena: North Indian style)

[vii] The Hawaiian Guitar is also referred to as Steel Guitar because of the steel bar that it is played with (and not the material of construction of the guitar). It is also called 'Lap Steel' or 'Slide Guitar'.

C. S. DeLAno, a publisher of Hawaiian Music in Los Angeles, whose "Hawaiian Love Song" was the first original composition to be written for the Hawaiian Steel Guitar, said this of Kekuku: "He told me that he was walking along a road in Honolulu 42 years ago, holding an old Spanish guitar, when he saw a rusty bolt on the ground. As he picked it up, the bolt accidentally vibrated one of the strings and produced a new tone that was rather pleasing. After practicing for a time with the metal bolt, Joe experimented with the back of a pocket knife, and then with the back of a steel comb, and still later with a highly polished steel bar, very similar to the sort that is used today." (Bocchino)

Dr. Helen Roberts was commissioned by the Legislature of Hawaii in 1923 to make a thorough study of Hawaiian music. In her 1926 book, "Ancient Hawaiian Music", she says, "Joseph Kekuku, a young Hawaiian man from Laie, Oahu was attending the Kamehameha School for boys in Honolulu. The guitar was a popular instrument among the students who were constantly strumming it. Like school boys all over the world, probably, they were not unfamiliar with the possibilities of the comb as a musical instrument, and one day as he was playing the guitar, the idea occurred to the young Kekuku to try the effect of a comb placed on the strings. He was delighted with the result and played with his new toy for a time before it occurred to him to use the back of his pocketknife. The second inspiration was even more satisfactory and therefore the knife was always used when he played the guitar. However

he wanted a more convenient piece of metal." (Roberts, 1977)

Simeon Nawa'a, a student at the Kamehameha School says this about Kekuku: "Two lads came to our school – Joseph Kekuku, the guitar player and Sam Na'inoa (his cousin) the violinist. They were good entertainers, and to our astonishment, Joe, besides playing the guitar the ordinary way, would shift to running a hair comb or tumbler on the strings producing a sweet sound, while Sam, the accompanist, followed him with his violin… Joe wanted to be a mechanic, and went to the school machine shop. He was working on something which appeared to be the first steel bar… Later he produced the round bar, which is now universally used by all steel guitar players." (Bocchino)

The concerts Kekuku gave at the school "took down the house." The other boys copied this unique style of playing the steel guitar, and brought it back to their home islands. In the words of L.G. Hudson, "The steel guitar became endeared to the musical hearts of the people of Hawaii." So even if Joe had experimented back in his hometown with using a bolt on his guitar to make this new sound, it was his first year at the Kamehameha School in 1889 when he used the machine shop to perfect the steel bar and when he performed in school concerts that is used by officials. (Bocchino)

Kekuku said it took him seven years to master the Hawaiian Steel Guitar. He started by perfecting his technique of producing unique sounds with a hair

comb, a tumbler, and finally a smooth steel bar made in the school shop, similar to some still used today. Within twenty years, the steel guitar had become the new sensation throughout the Hawaiian Islands. Then, like their forefathers, the fearless navigators of the vast Pacific Ocean, Hawaii's musicians became its finest ambassadors to every corner of the globe. (Ruymar, 1996)

1.2. The Development of the Hawaiian Guitar as a Main Instrument

The popularity of Hawaiian Guitars can be traced back to the late 1800s in the west when these type of guitars were preferred because they were portable and relatively easy to learn and served the many types of folk music well. Banjos and other similar African folk instruments were also rather common. Different forms of dulcimers[viii] were also common. It is generally accepted that those stringed instruments were sometimes tuned to open chords because even today it is a natural tendency for those teaching themselves music on them. Guitars were taken into many weather environments not well suited to their longevity, such as agricultural field hand environments and along the trails west into the Frontier of the U.S.A. Since Guitars were not always as stable to weather changes back then as they are today, they sometimes became difficult to finger as the necks bowed and the strings raised farther from the fret board. That high string action lent itself to promote "barring" the strings

[viii] A dulcimer is similar to santoor, a musical instrument with a sounding board or box, typically trapezoid in shape, over which strings of graduated length are stretched, played by plucking or by being struck with handheld hammers.

with objects such as pocket knives, combs, spikes and such. It is known that by the late 1800s it was not uncommon to see people playing Guitars and even Banjos by sliding such objects up and down the strings with one hand while picking the strings with the other hand.

In 1904, music audiences in the Unites States had their first taste of the Hawaiian Guitar. Joseph Kekuku began performing coast to coast along with his band, the "Kekuku's Hawaiian Quintet". They were sponsored by a management group called Affiliated. According to a publicity brochure, "The most beautiful and soothing of all music is brought to us from the South Seas islands of the Pacific and to many the instrumental and vocal music of Hawaiians is by far the sweetest. Hawaiian music by the gifted native singers and players has been a great success in America because it is different. The wistful beauty of the music seems to carry the American audience across the Pacific to those beautiful islands of the South Seas. We hear the native Hawaiians singing and playing, describing in turn love for country, birds and flowers, tropic moon, soft murmuring of the waves on the beaches of Waikiki and the songs of love. The melodious strains of the songs and the accompaniment of native instruments, with the peculiar sliding of the fingers on the strings, is plaintive and fascinating." (Bocchino)

But it was in 1915 that the craze for Hawaiian Music in America really started – this was at an event called the Panama-Pacific International Exposition in San Francisco. A Hawaiian Pavilion was built, hosting Hawaiian shows

several times a day. These shows had the highest attendance at the entire expo. According to Lorene Ruymar, “Aside from the costumes and the daring hula routines, the greatest attraction was the beguiling, haunting, teasing music of the steel guitar. Those who heard it never forgot it.” (Ruymar, 1996)

Soon there was a boom in Hawaiian recordings, which outsold all other pop music records. Naturally, Hollywood movies with Hawaiian music themes followed. There was a huge demand for instructors for the Hawaiian steel guitar. Joseph Kekuku, apart from meeting this demand for recordings, proved a highly competent tutor as well. According to Ken Kapua, a contemporary of Kekuku, “Not only was Kekuku the inventor, he was a master and a musical marvel of his instrument.” (Bocchino)

In 1919 at the age of 45, the virtuoso Kekuku left the USA for an eight year tour of Europe with The Bird Of Paradise Show, during which time he played before kings and queens of many different countries. The Bird of Paradise Show had been on Broadway in New York City, with brilliant Hawaiian scenery, dazzling costumes, plus authentic Hawaiian music, which one critic had called “the weirdly sensuous music of the island people.” According to Lorene Ruymar, “All this time the guitar was not amplified. The wooden guitars sent their sound to the ceiling, because they were laid flat on the player’s knee. It must have been quite a challenge to make its voice heard sufficiently from the stage.” The Bird of Paradise show toured Europe for 8 years. Regarding the show, Lorene Ruymar further adds, “It was a total sell-

out and European hearts were captured by the sweet teasing sound of the steel guitar. No other instrument in history became the darling of so many countries so quickly. The show was so popular it was filmed in Hollywood as a movie "The Bird of Paradise" in 1932 and re-filmed in 1951." (Ruymar, 1996)

It was only a matter of time before many independent Hawaiian music bands formed, and soon started performing all over the world - China, Japan, Egypt, Australia, Africa, Central and South America, India, Indonesia, Tonga, Sweden, and Russia. Soon, radio shows followed. One of the most influential was the show "Hawaiian Calls", rated the most popular program in radio history. The broadcasts from Waikiki Beach were from 1935 –1975, and at its peak went to 750 radio stations around the world. Hawaii Calls was never broadcast without the sweet sounds of the steel guitar. It became recognized throughout the world as the signature sound of Hawaii. Just as the bagpipes signify "Scotland," so does the steel guitar signify Hawaii. (Bocchino)

1.2.1. Arrival of the Electric Hawaiian Guitar

True foray into mainstream was possible in the 1930s when the Hawaiian Guitar went electric. Different musical forms such as western, big band, jazz, and country began to embrace the electric Hawaiian Guitar, with the biggest breakthrough being made in country music. According to Lorene Ruymar, "Little Roy Wiggins was the first widely- known electric steel guitar player to back a Nashville artist; in his case, Eddie Arnold. His sound was somewhat

Hawaiian with a “crying” sound. After Little Roy, the genius of Jerry Byrd became apparent. Jerry backed most of the great country singers of his day on recordings and in personal appearances. He also produced many solo steel guitar recordings. He developed his own unique style, incredibly smooth and fluid. His recordings were sources of inspiration to steel guitarists around the world looking for someone to lead the way. Jerry the “Master of Touch and Tone” provided the leadership. (Ruymar, 1996)

Along with the electric steel guitar, the use of pedals where the player can produce a correct change in harmony by pushing a pedal or kneeing a lever had a huge impact in making the Hawaiian guitar a main instrument. According to Dr. Mantle Howard, an ethnomusicologist and an expert on the musical culture of Polynesia, “The human-voice like quality which complements the vocalist and beguiles the listener is what makes the steel guitar, especially the electric steel guitar, so popular in country music, and the blues[ix].”

The profound popularity of Hawaiian Steel Guitar gave rise to that instrument and style being integrated into other styles of music, particularly Country Music and Folk styles. By the 1930s, sliding the strings had developed into two distinct techniques: One was the Hawaiian Steel Guitar style, and the other was the Bottleneck style popular among Folk Guitarists, particularly Folk Blues Guitarists.

[ix] Blues is a melodic style popular in Western music, also said to evoke sadness and a mood of depression

By the 1940s, Blues Artists such as Robert Johnson and Hawaiian Steel Artists such as Sol Hoopii were popular on records playing the sliding style Guitar. This, along with the Moving Picture industry's use of both styles, guaranteed the promotion and success of both sliding styles. This method of playing Guitar was so moving that Sol Hoopii, already famous on records and movie sound tracks, was often called in by Hollywood execs to play his instrument aside-stage to help actors express emotions such as crying onstage! And even today, Robert Johnson is regarded by many, if not most, as the greatest Blues Guitarist of all time. (Slide History)

Figure 1: A slide guitar

The technique of using a slide on a string has been traced to one-stringed African instruments similar to a "Diddley bow". This style was subsequently popularized by African American blues artists.

The first musician to be recorded using the style was Sylvester Weaver who recorded two solo pieces "Guitar Blues" and "Guitar Rag" in 1923. Some of the blues artists who most prominently used the slide include gospel singer Blind Willie Johnson, Blind Willie McTell, Mississippi Fred McDowell, Son House, Robert Johnson as well as Casey Bill Weldon of the Memphis Jug Band. The sound has since become commonplace in country and Hawaiian

music. It is also used in rock, by bands and artists such as Canned Heat, The Allman Brothers Band, Led Zeppelin, Ry Cooder, Chris Rea, Bonnie Raitt, Lynyrd Skynyrd, Little Feat, Eagles, ZZ Top, Whitesnake, AC/DC and Metallica. The Rolling Stones featured a slide guitar as early as their 1963 recording of the John Lennon/Paul McCartney song "I Wanna Be Your Man". Guitarist Brian Jones played slide in a very blues-oriented style. His successor Mick Taylor also displayed his own slide guitar skills while with the band, using a bottleneck on studio recordings and during live performances. Many early Pink Floyd songs such as "See Emily Play" (played with a Zippo lighter for a slide), feature Syd Barrett's slide guitar performances, reflecting the band's original Chicago urban blues repertoire from musicians such as Bo Diddley and Slim Harpo. Canned Heat's Alan Wilson also helped bring slide guitar to the rock music industry in the late 1960s which he used frequently during concerts to create a buzzing delta blues boogie which can be heard on tracks such as London Blues, I Love My Baby, Sandy Blues, as well as their performances at the Monterey Pop Festival and at Woodstock. George Harrison experimented with slide guitar during the latter half of The Beatles' career, first using the technique on an early outtake recording of "Strawberry Fields Forever" in 1966. He later used slide extensively during his solo career on songs such as "My Sweet Lord", "Cheer Down" and the Travelling Wilburys' "Handle With Care", as well as on The Beatles' 1995 reunion single "Free as a Bird". (Slide Guitar)

1.2.2. Evolution of Slide in mainstream music concerts

Arguably the first influential classic electric blues slide guitarist is Elmore James, whose riff in the song "Dust My Broom" is held in particularly high regard. Blues legend Muddy Waters was also very influential, particularly in developing the electric Chicago blues slide guitar from the acoustic Mississippi Delta slide guitar. Texas blues musician Johnny Winter developed his distinctive style through years of touring with Waters. Slide player Roy Rogers honed his slide skills by touring with blues artist John Lee Hooker. John Lee's cousin Earl Hooker may have been the first to use wah-wah and slide together Like Alan Wilson, Duane Allman played a key role in bringing slide guitar into rock music, through his work with The Allman Brothers Band. Beginning in the late 1960s, Allman used an empty glass Coricidin medicine bottle, which he wore over his ring finger as a slide. This was later picked up by other slide guitarists such as Bonnie Raitt, Rory Gallagher, Gary Rossington of Lynyrd Skynyrd, and Joe Walsh, who used his middle finger and later in the mid 80s, switched to a brass slide. Such bottles eventually went out of production in the early 1980s, although replicas have been produced since 1985, including a copy of Allman's slide used by another Allman Brothers member, Derek Trucks, which was made of Dunlop Pyrex, giving the same sound as the glass slide, without the danger of shattering.

Allman extended the expressive range of the slide guitar by incorporating the harmonica effects of Sonny Boy Williamson II, most clearly in the Allman

Brothers' cover version of Sonny Boy's "One Way Out", heard on their album Eat a Peach. His playing on the original studio recording of "Layla" imparted a sublime quality. Most recently lap style slide has been reborn via artists like Jack White, Sean Kirkwood and Xavier Rudd - both players of Weissenborns[x], the former using original early 1900s instruments long with modern day variations such as his own co-designed Asher signature model, the latter using modern reproductions of the Weissenborn. (Slide Guitar)

1.2.3. India International Guitar Festival

Most recently, the India International Guitar Festival, organised by Pt. Debashish Bhattacharya was held in Kolkata during January 2015. The festival showcased the various styles of playing Hawaiian Guitar by artists from all over the world featuring Hindustani Classical, blues, jazz, bluegrass, Hawaiian, folk, etc. This is the first such event in Asia where concerts, seminars, contests, and interactive sessions incorporating the various styles and forms of guitar playing were held. Festivals like these can go a long way in throwing light on the unique musical possibilities of the Hawaiian Guitar, while encouraging more people to take up this art. Artists from Hawaii, Sweden, Holland, USA and India participated in the event.

[x] Weissenborn guitars (named after the maker) have the distinction of being carved from a single piece of wood. The instrument is fully hollow, right from the frets to the sound hole, unlike other guitars which have a separate solid fretboard, and a separate sound hole.

Figure 2: A performance at the India International Guitar Festival, 2015

Figure 3: Workshop in progress at the India International Guitar Festival, 2015

(Seated from Left: Debashsish Bhattacharya , Kamala Shankar , Prakash Sontakke
Behind from left: Jeff Peterson and Alan Akaka)

Standard Equipment used while playing Hawaiian Guitar

Figure 4: Fingerpicks of different varieties

Figure 5: Thumb picks of different varieties

Figure 6: Technique of wearing the picks on the finger and the thumb

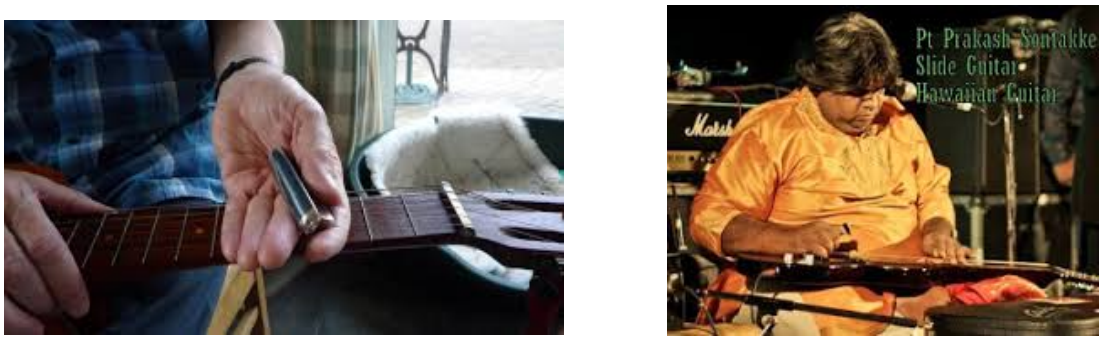


Figure 7: Holding the steel bar while playing

Figure 8: Bars of different materials

1.2.4. Equipment and Technique

An ordinary guitar, either electric or acoustic, can be used for playing slide. Often the strings are raised a little higher off the neck than they would be for ordinary guitar playing. This is done especially if the free fingers are not going to be used for fretting. An extension nut may be used to achieve the higher string height at the peghead end of the neck. This is just a normal nut, with the slots filed less deeply, and often in a straight line rather than following the radius of the fretboard. (Slide Guitar)

The lap steel and the pedal steel are guitars that have evolved especially for playing slide in the horizontal position. Resophonic or resonator guitars have often been employed for slide playing, typically held horizontally. They are sometimes known as Dobros after the Dopyera brothers, whose company first made them. National is another brand. In resonator guitars, rather than the sound being produced by the body's hollow, a special bridge transfers the

vibrations from the strings to a metal cone placed inside the body. Approximately in 1975, glass guitar slides started appearing in Music shops across America. Clear Glass Manufacturing Company and Clayton Products supplied the majority of the market. Both companies grew, though eventually Clear Glass was sold to Dunlop Manufacturing. Borosilicate glass (Pyrex) was developed by Corning Glass Works. Modern bottleneck slides are still manufactured by companies such as Dunlop Mfg., Steve Clayton, Inc., Mr. B's Bottleneck Guitar Slides, Bluemoon Bottleneck Company and Diamond Bottlenecks. A slide can be made with any type of smooth hard material that allows tones to resonate. The slide's weight (in terms of density and wall thickness) cause differences in sustain, timbre, and loudness, while the surface structure and material affect tonal clarity and timbre. Heavier bottlenecks usually can produce longer, warmer and louder tones, but they also require more mastery to play with. (Slide Guitar)

With the sliding technique originating from the cut off neck of a glass bottle, bottlenecks usually still have the same tubular shape and a length of one to three inches, and glass still remains a popular material. Borosilicate glass is often found in cheaper, entry-level slides. It is easier to shape as it can withstand higher temperatures. Soda-lime glass is heavier which helps produce a better sound, while lead glass improves tonal quality.[4] Glass colouring alters the timbre. The addition of iron oxide turns glass green and hardens it, causing a louder and sharper tone with a warmer sustain, while

cobalt oxide colours it blue and produces the sharpest, loudest tones. The structural properties of coloured glass promote withstanding mechanical shock, which allows for automated manufacturing.

In 1989, Terrie Lambert invented the Moonshine (ceramic) slide that produces a timbre in between that of brass and glass, and the Mudslide (porcelain) slide, which just as brass slides is quite heavy, producing richer, fuller and resonating tones with more harmonics. As a result, they are often used in blues music. (Slide Guitar)

The Moonshine and Mudslide slides are glazed on the outside but porous on the inside so that finger moisture is absorbed, preventing slippage. Metals such as stainless steel, chrome and aluminium cause a bright penetrating sound and are mostly used with electric guitars, among others for rock music. Less frequently used types of materials include stag antler, buffalo horn and bone, as the time and effort needed to create one is often too much when conventional slides are available. Segments of PVC piping can be used to achieve a slide, and is common among those who do not choose to buy a slide. Besides differences in material, many variations in bottlenecks exist.

Square, bevelled or rounded edges may allow a player to apply different techniques, while tapered rather than straight sides may help improve control and cause less damping. Pedal steel players may prefer using tone bars, which have one capped end. One recent development is the rise of hybrid slides.

Glass Moonshine slides are made of glass, but have a porous ceramic interior that helps prevent slipping; other slides have been designed to reduce the weight of brass or porcelain slides by using a lightweight interior, while still others are made of glass on the front and of metal on the back to allow easy switching. (Slide Guitar)

Although the use of hollow bottlenecks is preferred by many players because only one finger is required to hold it, leaving the other fingers free for normal fretting, sliding can be done in many ways.

Figure 9: Bottleneck slide

One alternative is to use a solid metal bar or rod, about the same size as a bottleneck slide, laid across the strings of the guitar and held by the fingers of the fretting hand being laid on it to either side, parallel to it. The slide is pressed against the strings—lightly, so as not to touch the strings to the fretboard, and parallel to the frets. The pitch of the strings can then be continuously varied by moving the slide up and down the neck. The usual limitation in fretted guitar playing of twelve pitches per octave does not apply. Indeed, in pure slide guitar playing the frets serve no purpose, other than as a

visual reference. The technique lends itself to glissandi[xi]; in addition it has the ability to evoke sounds of the human voice, crying, sighing or weeping, or natural noises. Another strength of the technique is its vibrato, which is easily achieved by oscillating the hand so that the slide goes quickly back and forth.

Overcoming limitations: The major limitation of slide playing is of course that only one chord[xii] shape is available: whatever the strings happen to be tuned to going straight across. Many slide guitarists will still use their free fingers to fret the strings if they want to employ that sound as well. Using the free fingers opens up the possibility of playing chord shapes other than the straight line given by the slide. One strategy is to use the free fingers for rhythm work, and intersperse this with lead phrases played with the slide. The guitar may be held in the normal guitar-playing position (that is, with the face of the guitar more-or-less vertical) or it may be held flat, with the face of the guitar horizontal. In the latter case the guitar may sit flat in one's lap or on a stool, face up, or held in this position by a strap, and played standing up. If holding the guitar in the normal vertical position, it is more common to use the tube type of slide. In the horizontal approach, solid bars or "bullets" are more commonly used, and the grip is overhand: the hand is not wrapped around the neck; the index finger is nearest the bridge, the little finger nearest the nut, fingers pointing away from the chest.

Usually, a slide player will use open tuning, although standard tuning is

[xi] Sliding up and down of musical notes based on a reference
[xii] Playing together of more than two notes in a harmonic fashion

sometimes used. In open tuning the strings are tuned to sound a chord when not fretted; sliding the bottleneck up and down the guitar neck gives that chord in various keys. The chord tuned to is most often major. Open tunings commonly used with slide include Open D or "Vestapol" tuning: D-Ad- f#-a-d; and Open G or "Spanish" tuning: D-G-d-g-b-d . Open E and Open A, formed by raising each of those tunings a whole tone, are also common. These tunings can be traced back to the 19th century through the banjo, predating the Hawaiian guitar. Another open D tuning is D-A-d-f#-a-d. Other tunings are used as well. Occasionally a bottleneck is used on only the highest two strings of a guitar in standard tuning, usually in live performance to introduce just a short passage of bottleneck effect into a piece which otherwise consists mainly of guitar played in standard fashion.

Slide guitar is most often finger picked, with or without plastic or metal picks on the thumb and fingers. However some players use a flat pick (plectrum). The bottleneck or tube type of slide is usually worn over the ring (3rd) or little (4th) finger. Wearing it on the 4th finger has the advantage of leaving one more finger free to fret notes if desired. However some players feel that they get better control using the ring finger. Most instructors recommend letting one or more of the fingers behind the slide rest lightly on the strings to help mute unwanted vibrations.

Double slide guitar system: A relatively new technique expanding the musical range and sonic capabilities of slide guitar, is the system of double

slide guitar. It was invented by Brian Cober, a Canadian blues musician. In double slide, the first slide is placed on the middle finger (usually a modified steel bar that can be put on the finger), and a modified thumb slide is put on the thumb that is able to cover two strings. Double slide is meant to be played on a six-string lap guitar (or a regular six-string guitar modified with the strings raised for high action like a lap guitar), usually tuned to open E tuning. The double slide guitar system enables the player to play chords not heard in open tunings, such as minor chords, dominant seventh chords, etc. and provides a greater use of technique in soloing. Will Ray of the Hellecasters uses a similar technique, wearing "stealth" little finger-type slides on either hand. In recent years, some guitarists have developed the bottleneck technique further by introducing other guitar effects. (Slide Guitar)

Figure 10: Finger slides

Figure 11: Playing slide on a bass guitar

A few musicians have used slides with bass guitar: slide bass. Mark Sandman was probably the best known proponent (with Morphine, he performed

primarily on a custom two-string slide bass guitar). Bill Laswell, Robert Weaver[disambiguation needed], Kevin Rutmanis, Marc Sloan, and Stefan Lessard have also played slide bass. John Paul Jones of Led Zeppelin has performed on a custom-made bass lap steel. Timo Shanko of G. Love & Special Sauce, incorporates slide playing on electric bass. Jazz bassist Victor Wooten occasionally uses a slide for soloing during his live performances. Similarly to Jones, Mark Robbins, bass player and song writer from Joan, plays a number of songs in the standing lap. (Slide Guitar)

Modern slide guitar has origins that can be traced back to Africa and a one-stringed instrument where a slide is used to move between notes, as well Hawaiian slack key guitar and the Vichitra Veena, a fret-less instrument of India where a glass ball is moved up and down the strings to achieve different tones. (Slide Guitar)

The most common slide materials used by players are glass, stainless steel, brass, or chrome. These slides are shaped like a tube. The player inserts one of his fingers---most commonly the ring finger---and moves it around the neck while applying gentle pressure to the strings. Ordinary guitars, either electric or acoustic can be played with this technique. There are special guitars however, such as resophonic guitars, lap-steel and pedalsteel guitars, where the instrument is played in a horizontal position with a bar known as “steel” is held between the fingers.

Many players use open-tunings where the the strings are tuned in a way that

will achieve a single chord when played without fretting. A common example of this is open G tuning, where the guitar is tuned D-G-D-G-B-D, instead of the standard E-A-D-G-B-E tuning. When strummed without touching the fret-board, a G chord sounds. This allows guitarists to play chords more easily while using a slide.

1.2.5. Early Pioneers

Blues slide guitar began in the Mississippi Delta region, where many of its originators worked on farms picking cotton and doing manual labor. Some of the pioneers of slide guitar are Willy Brown, Johnny Shines, Son House, Robert Johnson, Blind Willie McTell, Blind Willie Johnson and Sylvester Weaver--the first player ever recorded using the style (on his 1923 song "Guitar Blues"). In the latter part of the 1940s, the electric guitar was born. Many blues players like Elmore James and Muddy Waters helped to create a new, tougher sound that many artists still seek to mimic today. Use In Popular Music Popular rock and roll artists, such as Brian Jones of The Rolling Stones, and Syd Barrett of Pink Floyd, have incorporated the slide technique into their music with great success. Country artists like Johnny Cash, and Hank Williams Sr. have used the pedal-steel and lap-slide guitar as part of their songs since the beginning. (Slide History)

Pioneers in New Music: A new crop of younger musicians like Ben Harper, John Butler and Dave Hole continue to perpetuate the tradition of slide guitar.

Playing a variety of styles, including rock, pop, blues and country, the slide technique is not soon going to fade from the guitarists repertoire or popular music. Many of the songs, tunings, and playing styles of the early pioneers are still revered today and often are used as teaching tools.

There have been many claims to the origin of the slide guitar. Its haunting sound can be heard across the whole spectrum of musical styles, through blues, rock, country, Hawaiian and even jazz. A sound so haunting, that as fans of Robert Johnson might believe, was born from the devil himself. However, there are a few more 'earthly signposts' that musicologists have followed, to try and pin down the birth of the slide sound. Throughout the world musicians have created sounds by dragging objects across stringed instruments, for either effect or as an integral part of its sound. An example of this was discovered in W.Africa in the form of a musical bow. Still used today, this one stringed instrument was attached to a gourd resonator and held to the abdomen, while the player plucked the string and used a bone or metal to vary the pitch. (Payne)

Investigators into the popular form of slide playing associated with the blues, determined that this was probably why a more contemporary version of the bow called the Jitterbug came to be used by the black musicians around the southern states of America at the turn of the century. With the influx of slaves, years before, came a rich culture of music, and although the slaves were bereft of possessions, a musical bow would be a simple instrument to make. The

Jitterbug, like the bow, had one string, but this time simply attached to the floor or side of a shack. When plucked, an object would be dragged along the string to accompany simple songs. The sound, which could wail and moan like the human voice, became an ideal backing to the early blues and perhaps forerunner to the guitar's role in the slide style. (Payne)

In the early part of the 20th century, the guitar was becoming increasingly popular, as a cheaper alternative to the piano. Along with the banjo, it was more portable and could be ordered by catalog in the many rural backwaters. It is a safe bet to say, that knives, bones and glass, would have been used on the guitar as an extension to the Jitterbug. The guitar became more widely used with the slide, after Joseph Kekeku made a recording using this style. It was a flashy, eerie kind of tune, that became popular in the U.S, and gave the already established style more impetus. (Payne)

The Hawaiian influence on slide playing cannot be overlooked. The speed at which the music spread into the American culture at the turn of the century was evident in the increased production of guitars and lap steels. All the main makers were turning them out: National, Rickenbacker and Gibson. In fact, the Hawaiian style lap steel, far out sold Spanish style guitars. Since the early Kekeku recordings, the use of the slide began to seep into all styles of music, from the early blues, right into the mountain Hillbilly music of early folk and country. The Hawaiians have always laid claim to the invention of the slide guitar, but it is fairer to say, that it was a development rather than an

invention. Whatever the worldly origins of the slide guitar, this form of playing is best known for its partnership with the blues. The slide playing of Robert Johnson, Son House, Blind Willie Johnson, to name a few, has reached almost classical status. It is a style that has captivated, amazed and baffled guitarists of all kinds, and to my mind has become the most enchanting. The origins of slack key guitar on the Hawaiian Islands can be traced back to 1795, the year cattle were introduced to Hawaii as a "gift" of the British. The cattle quickly became a noxious nuisance, particularly around the Waimea region of Hawaii, breeding out of control and destroying native Hawaiian crops like taro.

Forty years later Hawaiian King Kamehameha sought a remedy to the problem. He enlisted the aid of the Mexican government which had extensive experience with cattle ranching. Vaqueros, the Mexican word for cowboys, were sent to help alleviate the problem. In addition to cattle-herding techniques the vaqueros brought with them the six-string guitar. Hawaiian cowboys, known as paniolo quickly adopted the guitar for their personal use. They slackened the strings to produce harmonies more in line with the human voice and less tuned to the keys of a piano which were rare on the islands. (Payne)

The gut string guitar brought to the islands by the vaqueros produces a much different sound than the steel string guitar introduced by the Portuguese around the 1860's. By the 1880's the steel string guitar had caught on and

slack key guitar playing had spread to all the Hawaiian Islands. It was during this time that slack key guitar received support from King David Kalakaua. He encouraged a resurgence of Hawaiian cultural traditions along with the use of imported instruments like the ukulele and guitar. King Kalakaua believed Hawaiian cultural traditions were necessary for the survival of the Hawaiian kingdom. King Kalakaua was succeeded by his sister, Queen Lili'uokalani, the last Hawaiian monarch. She became a famous composer, writing many classic songs still played today by slack key guitarists. (Payne)

Pioneers in Slack Key Guitar: Gabby Pahinui is considered the most influential slack key guitarist in history. (A Short History of Hawaiian Slack Key Guitar (Ki Ho'alu)) Born in 1921 he is credited with founding the modern slack key guitar era in 1947 with his recording of "Hi'ilawe" on Aloha Records. Gabby kept slack key guitar from dying out on the islands and led to it being recognized as a solo instrument with his prolific guitar techniques. Known for a virtuoso falsetto voice, Gabby Pahinui expanded the boundaries of slack key guitar. He used it as an instrument to interpret a wide range of traditional and popular Hawaiian standards. During the 1970's the Gabby Pahinui Band achieved fame with a complex, sophisticated, slack key guitar sound. Usually the band would perform with each guitarist playing a different C tuning that provided a rich, textured sound.

Keola Beamer born in 1951 is a Hawaiian slack-key guitar player, best known as the composer of "Honolulu City Lights" and an innovative musician

who fused Hawaiian roots and contemporary music. Beamer comes from a line of musicians five generations back, and can also trace his roots to the House of Kamehameha and Ahiakumai, 15th century rulers of Hawaii. His great grandmother was Helen Desha Beamer, an influential songwriter and hula dancer, and his mother, Winona Beamer ("Auntie Nona") has been one of the most important figures in the revival of Hawaiian culture since the 1940s: composer, dancer, educator, and coiner of the term "Hawaiiana," which describes the cultural-studies area she pioneered at the Kamehameha Schools. Beamer's debut recording was 1972's solo effort, Hawaiian Slack Key Guitar in the Real Old Style. The following year, he and his younger brother Kapono started performing as a duo, mixing traditional materials and styles with mainland pop influences. In the seven albums they produced over the next decade, they played an important part in establishing the style that came to be called "Hawaiian contemporary," rooted in Hawaiian language and tradition but open to influences from elsewhere: rock, pop, Latin, folk-revival singer-songwriter, Hollywood soundtrack, and so on. (Keola Beamer)

Chillingworth was born in Oahu in Hawaii, then a U.S. territory. He started playing the guitar at age twelve when he was living with his grandfather, Harry Purdy, on Moloka. He learned the Hawaiian style by listening, watching and imitating. One day his father brought him a Victrola and some records. One of them was Hi'lawe by Gabby Pahinui. Chillingworth was inspired. When Chillingworth was fifteen, he visited Honolulu and his mother

arranged a meeting with Pahinui. After high school, Chillingworth moved to Honolulu and joined Pahinui, Andy Cummings and others at clubs, lu'aus and all-night jam sessions. In 1954, Chillingworth made his first record, Make'e 'Ailana, with the legendary Vickie Ii Rodrigues. In 1964, Chillingworth released his first album, Waimea Cowboy, which earned a gold record. In the 1970s, Chillingworth began to share his knowledge with younger performers, such as George Kuo and Ozzie Kotani, and influenced others through his recordings. Chillingworth helped lead a revival of the slack key guitar style in the 1980s as one of slack key's elder statesman. (Sonny Chillingworth)

1.2.6. Origins of steel guitar playing in India

One of the people suggested as possibly inventing the method of playing guitar with a steel bar was an Indian-born sailor named Gabriel Davion. He is said to have based his playing style on two Indian instruments, the Gotuvadyam and the Vichitra Veena. Indian music lends itself well to the fluid sound of the steel guitar. The acceptance and integration of non-Indian instruments into the rich Indian musical culture has made the steel guitar one of a handful of Western instruments to gain prominence. [10]

The slide guitar developed in many cultures around the world, but there are many deep connections between Hawaiian guitar and Indian music. The earliest known report of anyone playing slide guitar in India dates from 1876, when Gabriel Davion, an Indian born Portuguese sailor, is reported to have

been playing slide guitar on his lap. Of course there are Indian instruments utilizing slide going back to earlier times, such as Vichitra Veena. However, the normal western Hawaiian guitar was first introduced to India by Bob's Hawaiian guitar guru, Tau Moe, in 1929. Mr. Moe also lived in Calcutta from 1941-1947 at which time he made many influential recordings for H.M.V. India. Tau Moe toured with his family for 57 years around the world before his retirement and subsequent re-discovery by Bob in 1988. Tau's star pupil in India was Garney Nyss, who became India's leading Hawaiian- style recording artist. Mr. Nyss influenced Sri Brij Bhushan Kabra, the first Indian musician to play Indian classical music on the Hawaiian guitar. His star student is Debashish Bhattacharya who has taken the instrument to new levels, both in the form and design of the Hindustani slide guitar, and also in his incredible playing.

1.2.7. Adaptation of Hawaiian Guitar techniques in context to Hindustani Classical

The Indian chapter of the Hawaiian Guitar is incomplete without mentioning the contribution of the Maestro Pt. Brij Bhushan Kabra. The very first few available recordings of audio featuring the Hawaiian Guitar can be heard in the soundtrack of the movie *Mahal* played by Hazara Singh. You can distinctly hear the strains of the slide guitar in the background. The only thing I would like to add is that the sound is that of the Electro Hawaiian Guitar. On the onset the instrument creates a kind of a melancholic tone and if not

observed carefully could sound close to many Indian instruments like the Sarangi, Dilruba or Tar Shehnai, sometimes even close to the Shehnai.

Though the Hawaiian Guitar was used widely in Kolkata and had a very prominent place in the Rabindra Sangeet, the very first time that Indian Classical music recording was published and heard on this instrument was on the acoustic medium when Brij Bhushan Kabra released his first LP. It was a very new sound and very attractive at that. The sound of the instrument was a little like Sarod. Only difference was that its sustain was twice as more than the Sarod. The Glides were even clearer than the Sarod and the overall tone of the instrument was very impressive though not as bright as the Sitar. The bass was having a certain boom but lacked sustain like that of the Sitar where the Bass has a certain growl and sustain both. Interestingly though the Bass exploration in Indian Classical Music has been a very limited area of exploration. The reason behind this might be the fact that the instruments operated more on the principles of Volume, and so the Treble and Mid range was very prominent. Furthermore, predominantly accompaniment instruments like Sarangi and Violin are bowed instruments, which means that they are instruments of infinite sustain. In terms of tuning this instrument sounded pretty close to the Sitar and as Kabraji used to also play the Guitar in keys of D or even D#.

1.2.8. Eminent Indian Guitarists

Originally steel guitar seems to have been popularized through its use in Hindi film music. The first Indian artist to use a steel guitar within classical Indian music was Brij Bhushan Kabra. He modified an arch top guitar, raising the guitar nut, and included "sympathetic" strings or drone strings which are tuned to the raga being performed. His student, Debashish Bhattacharya, has released several CDs and cassettes of his own performances. He has been favourably compared to the bluegrass player Jerry Douglas in terms of his mastery of the instrument, particularly the faster tunes where his amazing single string staccato technique really shines. Vishwa Mohan Bhatt uses a similar instrument, which he calls the Mohan Veena. Bhatt has probably gained the most attention within the Western world due to his collaborations - with Ry Cooder on the Grammy-award winning "A Meeting By The River", with Taj Mahal on "Mumtaz Mahal" and with Jerry Douglas on "Bourbon and Rosewater". Other eminent Indian guitarists include Sunil Ganguly, Nalin Mazumdar, Satish Khanwalkar, Kazi Aniruddha and Kazi Arindam. (Hindustani Slide Guitar, 1994)

Pt. Brij Bhushan Kabra

Pt. Brij Bhushan Kabra is one of the first musicians of India who played classical music on the Hawaiian guitar. He brought it into the mainstream and popularised it to a great extent.

Pt. Kabra is also well-known for the album *Call Of The Valley* in which he collaborated with Santoor maestro Pt. Shiv Kumar Sharma and flautist Pt. Hariprasad Chaurasia. Pt Brij Bhushan's father Goverdhanlal Kabra was very fond of classical music, and as a child, Kabra was exposed to the likes of Ustad Faiyaz Khan, Pt Omkarnath Thakur, Ustad Ali Akbar Khan, Pt Ravi Shankar and Ustad Vilayat Khan. Kabra's family was connected to Jodhpurs royal family, for whom Ali Akbar Khan regularly played. The first time that Kabra heard the Hawaiian guitar was at a Rabindra Sangeet function in Kolkata, which he describes as a life changing experience. "The instrument sounded clean and melodious, and I wanted to learn it," says Kabra. (Strings Of Fortune: Pt Brijbhushan Kabra and his modified guitar, 2002)

When Kabra told his father he wanted to learn the guitar, he asked why he didn't want to learn the Sitar or Sarod. "I asked him what was wrong with the guitar. I convinced him by saying I would only play classical music", he says. Kabra, who by then was staying in Ahmedabad, initially learnt by listening to

records and reproducing the melodies. When Ali Akbar Khan came to Ahmedabad, he would take further guidance. Kabra soon had his guitar modified, to add a bridge and chikari string. Slowly, he began playing concerts. (Strings Of Fortune: Pt Brijbhushan Kabra and his modified guitar, 2002)

Unlike other guitar players who wear conventional thumb and finger picks, Pt. Kabra wears wire sitar plectrums (mizrab), and plucks with his index and middle fingers. He uses light steel bars as slide, and prefers arch top guitars. Kabra plays a Gibson Super 400. (Volk, 2003)

Sunil Ganguly

Sunil Ganguly played the Hawaiian electric guitar and made a number of records of Indian film music during the 1940s to 1970s. He trained under the great Pt. Gyan Prakash Ghosh, also the guru of the renowned vocalist Pt. Ajay Chakrabarty.

As a result of his early training, Sunil Ganguly had a profound knowledge of Hindustani Classical music and had a unique gayaki style with which he played the guitar. Some of his remarkable records include 'Ghazal chedi usne', an album of ghazals by prominent singers such as Mehdi Hassan and Jagjit

Singh.

Nalin Mazumdar

Nalin Mazumdar can be called a guru or ustad of the Hawaiian Guitar, also known as the Slide Guitar. Born and brought up in the holy city of Allahabad, Nalinji made untiring efforts towards the teaching and recognition of the Slide Guitar. It was through his efforts that the slide guitar was finally introduced in the syllabus of the Prayag Sangeet Samiti as an instrument. As far as the adaptation of Hawaiian Guitar into Hindustani Classical Music is concerned, the credit goes to him, as he played Hindustani Classical Music on Hawaiian Guitar about fifty years back. He tried his level best to popularize Hindustani classical music on this instrument. Nalinji was the guru of Dr. Shivanath Bhattacharya of Varanasi and the disciple of Late Baba Allauddin Khan Saheb (of Maihar Gharana). Nalin Mazumdar's youngest brother Late Shri Dulal Mazumdar was also well known Hawaiian Guitarist.

Kazi Aniruddha and Kazi Arindam

Not much is known about Kazi Aniruddha, except that he was the youngest son of revolutionary Bengali poet and musician Kazi Nazrul Islam. He released about two dozen songs before his death in 1974. Most of Kazi Arindam recordings were of Tagore songs, many of which he did with violinist Debshankar Roy. Although, he did produce a couple of records by Dipankar Sen Gupta, another steel guitarist who records Bollywood tunes.

The song Main Hoon Pyar Tera by Kazi Aniruddha is included on the Bollywood Steel Guitar compilation on Sublime Frequencies.

Dr. Mani Sontakke

Dr. Mani Sontakke could be credited as the very first lady Hawaiian guitar artiste of the country. A disciple of Dr. Rajabhau Sontakke and Dr. Pt. Lalmani Mishra, she was adept at playing various instruments like the Jal tarang, Shish tarang, Kasht tarang, Loh tarang, Sitar, Surba, Sarod, Banjo, Violin, Sarangi, Tabla, Tar Shehnai, Shehnai and Hawaiian guitar. Dr. Mani Sontakke also had a flair for composing for classical orchestras. The orchestra of the Central Hindu Girls' School, Varanasi, was headed by Dr. Mani Sontakke. Their performance was a unique spectacle with over forty different classical instruments being played and was very popular in Varanasi and neighbouring cities.

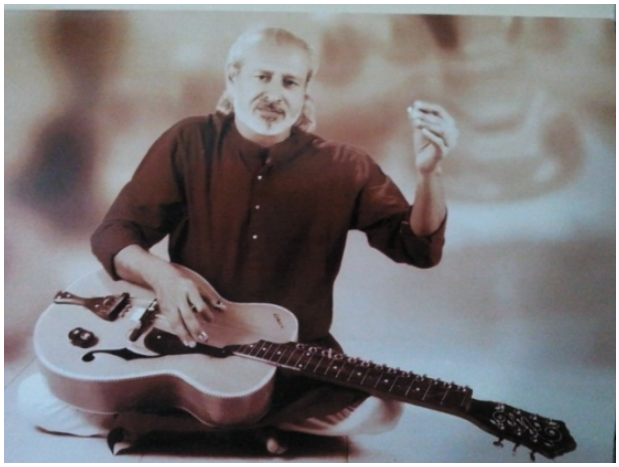
Style: She focussed more on the melodic content of the Hawaiian guitar and was an ardent follower of Kabraji's musical style.

Pt. Vishwa Mohan Bhatt

Creator of the Mohan Veena and the winner of the Grammy award, Vishwa Mohan was the foremost disciple of Pt. Ravi Shankar. Vishwa Mohan belongs to that elite body of musicians which traces its origin to

the Moughal emperor Akbar's court musician Tansen and his guru the Hindu Mystic Swami Haridas. (Vishwa Mohan Bhatt) Vishwa Mohan Bhatt has attracted international attention by his successful Indianization of the western Hawaiian guitar with his perfect assimilation of Sitar, Sarod & Veena techniques, by giving it a evolutionary design & shape and by adding 14 more strings helping him to establish the instrument Mohan Veena to unbelievable heights. With blinding speed and faultless legato, Bhatt is undoubtedly one of the most expressive, versatile and greatest slide players in the world. Outstanding features of Bhatt's baaj (style) are his natural ability to play the 'Tantrakari Ang' and incorporate the 'Gayaki Ang' on Mohan Veena which is the greatest advantage of this instrument over traditional Indian instrument like Sitar, Sarod and Veena. (Vishwa Mohan Bhatt)

Pt. Satish Khanwalkar

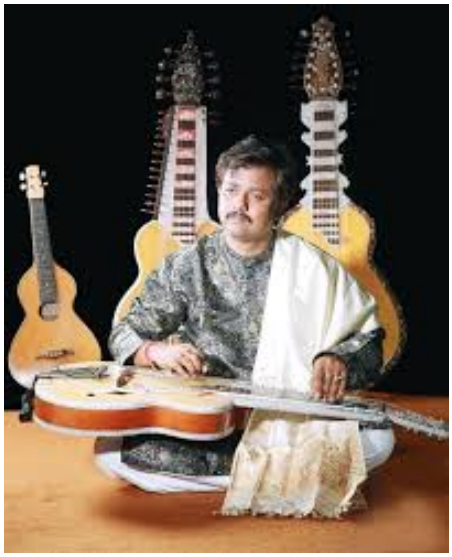


A disciple of Pt. Vishwa Mohan Bhatt, Pt. Satish Khanwalkar was born into a musical family. His initial training in vocal music was under late Pt. R.N. Musalgaonkar and Pt. B.N. Kshirsagar.

His first guitar guru was Pt. Suresh Bidwalkar. His guitar playing style is characterized by tuneful intricate glides and melodic phrases with aesthetic Meends and Gamaks.

Pt. Debashish Bhattacharya

Debashish Bhattacharya performs Hindustani classical music on lap-style guitar. Debashish became a disciple and student of Pt. Brij Bhushan Kabra, the father of Indian classical guitar, and trained under Pundit Ajoy Chakrabarty the eminent Indian vocalist, as well as Sarod master Ustad Ali Akbar Khan.



Debashish has evolved a unique style of playing guitar, synthesizing selected features of various other traditional Indian instruments such as the Veena, Sitar, Sarod and Kannur. (Volk, 2003)

Debashish first came across a guitar when his father was given a small round hole six-string guitar by a colleague. Debashish's mother found that by putting a steel bar over the frets she could play the Sa, Re, Ga, Ma, Ba, Dha, Ni, Sa in Indian form. Debashish latched on to this and that same evening was heard playing the national anthem on the guitar. Soon he was playing khyals and other compositions. Regarding his technique, Debashish says: "Well, I don't know how to speak about the technique because the technique always came to me as a blessing either by practicing or even in my sleep. I dreamt some techniques in my sleep and woke up and started playing. It was so electrifying, those memories of getting that information from someone whom I have never met in my lifetime. Talking about those blessings, those memories of power that somebody has given me from somewhere I tell you, the fingerstyle I am playing today was almost explored through an invisible power in myself."

Debashish practiced western lap-style guitar with Rajat Mandi, who was a great lap steel teacher in Calcutta. He were very rhythmic and tuneful songs. When Debashish played a small song, Bonanza, he discovered that the double pick with thumb and first finger is much easier than picking with the thumb and middle finger. This gave him the power of doing any staccatos on slide

guitar more powerfully than anymore can do with the first finger and middle finger.

Debashish wanted to improve the guitar so that he could get a resonance like sitar or sarod, called gunj. At that time, he was seeing some guitars in shops with back chikari on the body side. He was also seeing some of my future guru's followers who were playing slide guitar in that way in the back with the thumb. He says: "To engage the Chikari with the thumb was not my idea because if you engage the thumb in the chikari, you are playing all the other strings with your weaker first and middle finger. More than 60% of Indian classical guitar players in our country still play with those weaker fingers." So he went to a company called Gibtone in 1984 and asked them to make a guitar with a wood appendage parallel to the fretboard and put the chikari facing the audience. They also put the resonating strings in the back at my direction. That was the first form of the Hindustani slide guitar. It was a round hole guitar. (Volk, 2003)

Regarding tunings and ragas, Debashish says: "In India, there are thousands of ragas but I play mostly 150 to 200 ragas in which I feel comfortable to perform professionally, but I know many more than that. My innovation was to get a group of ragas in a particular tuning. In a given tuning I practiced many, many ragas. In another tuning, I play another group of ragas that have the commonality of the scale. Suppose I'm in E major tuning , the first open strings are: E, B, A, G# - an E major scale. If I have a raga in which B and G#

are dominant there may be other notes major or minor, it doesn't matter – my preference will be E major for that raga. But if the B and G notes are dominant – not G# - then my preference will be E minor. If E, A, and C# are the prominent notes, than I use A major. If A and C are prominent, then it will be A minor. This gives me enormous opportunity to play any Indian form of music and allows you to take more advantage of your open strings."

Debashish plays with a twenty-four string guitar. It has six "strum strings." He never changed his guitar from six to three strings because he felt if you take a single string from a 6-string slide guitar you lose many harmonics in your whole guitar's resonance. He says: "You have three octaves of E, two of A, and the 3rd string G# which is the 2nd harmony of E. Some musicians in India play 4-string or 5-string guitar. I don't believe in that. If you take a leg off the human body it is unbalanced so I never believed in taking string off the guitar. To me the guitar is like the human body and should be balanced." His improvisations within the framework of a Raga or within the limitations of the instrument he plays become a novel experience for himself as well as his listeners. (Volk, 2003)

Debashish has designed a trinity of new instruments for lap-style for lap-style playing because he wanted a deep Indian character into the sound of the Guitar. Mostly, we always got the voice of American, or German, or South American guitars. We never had our own culture in our guitar. It was always like we were importing foreign stuff into our music. In order to make the

sound closer to sitar, santoor and sarod, he designed three guitars. He is perhaps the only musician in the history of World Music and Indian Classical Music who created a **Trinity Of Slide Guitars**. Christened as **chaturangui**, **gandharvi**, and **anandi**, these, according to Bob Brozman are "the new arms and ammunitions to fight against ignorance".

The first is a 24-string guitar. This instrument is the sound of four Indian traditional instruments voices blended in one voice. The 6-string guitar sounds like the lower octave of the Veena. The 4th string are of the next lower octave gets the sound of Sarod. The other string areas in the other octave give a blend of Sitar, Santoor and Violin. Debashish believes that the slide guitar really lives in between bowing and plucking instruments. It relates to the piano and violin – the most known classical instruments in the west. Regarding his instrument, he says: “Because it includes all the instruments in one, I named it in a Sanskrit name, Chaturangui, which means a guitar with additional blend of four tones. The gui added because this is a Guitar, it is not a Veena. All over the world the guitar has its own voice, which is why it is so popular.” The second one is a double-string guitar like a 12-string. This is the first form of 12-sring guitar in which we hear a cry with more emotion and better sustain in sliding form. When we glide a bullet bar on double strings it sustains better. This is called the Gandharvi – a sound that belongs to the cosmic world. The sound portrays the beauty of the goddess of the Gandharva. The third of the

trinity is called Anandi, which sounds like a ukulele but again, in a slide form. (Volk, 2003)

He immensely influenced the imaginative ability of his fellow musicians. As a powerful slide guitarist he has already set a new trend among fellow musicians. The composer in him does not believe in the East and the West in music. Universal Human Music is his faith and he believes that it gives peace and joy to the believers. The performer in Debashish has the rare ability to communicate to each one of his listeners through his instrument in every performance. He has introduced a new finger style as well as playing style combining thumb and index finger. This produces finest bole variety, fastest Taanas, and strongest Jhala, which were technically impossible on a slide guitar earlier. A dedicated Guru and pathfinder Debashish has written a syllabus on Indian Classical Guitar, the first of its kind, which includes technical terminologies and abbreviations.

Dr. Kamala Shankar

Kamala Shankar (born in 1966 in the Tanjore district of Tamil Nadu), is a Hindustani classical guitar player. She was trained in music by her mother from the age of six, and went on to study with the khyal singer Pt.

Channulal Mishra and sitar maestro Pt. Bimalendu Mukherjee. (Kamala Shankar) She not only plays classical music but also the semi classical musical styles like Thumri, Bhajan, Kajari, Chaiti and light classical. She was deeply inspired by Pt. Brijbhushan Kabra and Shri Sunil Ganguly. She modified the Six stringed Hawaiian Guitar to make it more suitable for Hindustani Classical rendition, and thus Shankar Guitar came into existence. It has four main strings and three "Chikari" strings with eleven "Sympathetic" strings. It is made in such a way so as to produce a good tonal quality which can be soothing to our ears. It is made up of a wood known as "Cedar" and it has a flat bottom and it is fully hollow with a single piece of a wood. The first Shankar Guitar was made in the year 2001. (Shankar, Shankar Guitar)

Pt. Deepak Kshirsagar

Pt. Deepak Kshirsagar is a top graded senior instrumentalist from Rajasthan. He has trained under Pt. B.N. Kshirsagar and Shri Satish Khanwalkar. Deepak's style of playing embodies the 'gayaki' with 'tantrakari' ang.

Sharpness of swaras, purity of mood of raag and melodious presentation of traditional compositions are some of the features of his music.Pt Deepak

Kshirsagar has tried various types of wood to get the perfect sound out of the Hawaiian Guitar. He says, “Guitar used by me is slightly different compared to Mohan Veena or other guitar forms in a sense that I had thought of an instrument with the rounded sound with lesser treble. As far my understanding goes, I heard so many guitars those were played with the tremendous “Taiyyari” by the artistes, however, the sound was “itchy” to the ears, being treble part excessive. I found the reason that Pine wood, used in the guitars, played a significant role for the excessive treble part. I concluded that every wood is not musically fit. I then tried for Indian Mahogany for neck or fingerboard, Rosewood for sound hole, Fir or Pruce for finger-board and Ebony for Bridge and tuning keys (that absorbed the metallic sound). I also wanted a good look to the instrument so I suggested to hollow it completely by using single wood all within. I also used dark polish over the finger board for better tone and rounded resonance. Amazingly, after the one year of purchase of this guitar and continued practice, the guitar sounded exactly what I wanted to.”

Kshirsagar calls his instrument simply, “Indian classical lap style slide guitar”. He says, “Personally I feel if we want to establish it like Sitar or Sarod or other Indian instruments, the artistes of guitar need to be united and practically suggest a name for it, avoiding any personal ego. All these names confuse the common listener, hence blocking the opportunities for coming generations.”

Amano Manish

Amano Manish is a gifted slide guitar player trained in the Senia Maihar Gharana tradition, which was founded by Acharya Allauddin Khan sahib. In his early childhood at his hometown Jodhpur in Rajasthan, Manish picked up this unique instrument – the slide guitar after watching his father play popular melodies on it.

Later his serious nurturing in Indian classical music started with maestros like Pt. Basant Kabra, an eminent Sarod player, and Pt. Brijbhushan Kabra, hailed as the 'father' of Indian slide guitar. During this time he also made a documentary film called The Guitar Odyssey for Indian television, depicting the story of how Pt. Kabra came to adapt the guitar for Indian music. In 1997, Manish resumed his musical training with Pt. Shekhar Borkar. His renditions are now enriched with tuneful intricate glides and melodic phrases blended with various staccato patterns. He has also come up with a creative tuning pattern for the slide guitar which he has based on the tuning of the Sarod. This tuning opens up many previously unknown possibilities of exploring the Hawaiian Guitar.

About my instruments (author)

My instrument Swar Veena is an innovation on which both Indian ragas and Western tunes can be played. I also perform on a customized 'Tear Drop Weissenborn' by Bill Asher apart from the Paul Beard signature Dobro.

The playing of the Gayaki Ang (vocal style) recreates the emotion of the human voice on the slide guitar. Performing Hindustani Classical Concerts on the Weissenborn and Dobro open a totally new chapter owing to the different Textures and resonant sounds of these instruments.

Style: Technically a good combination of the Sarod and Sarangi, I have brought Hawaiian guitar to the mainstream by playing at the Coke Studio with popular Hindi music, and collaborating with international artists. My creative explorations in Jazz and world music are deeply underlined by my classical training.

Figure 12: Hybrid Hawaiian Guitars

FREE SPIRIT, w

Music i

Professional musician
with Pt Prakash Sontak

Kavvya Christopher
kavvya.christopher@
mid-day.com

There's something completely unassuming about musician Pt Prakash Sontakke.

For a guy whose music is known across the world, and is so much in demand that he's spending the next few months backpacking across Canada and the US to perform in as many as 40 shows in 55 days, he's way too down-to-earth.

However, give him his instruments and you'll see a completely different and a passionate side to him.

A lover of Sufi music, Prakash's compositions have a lot to do with world music and Indian-based fusion. While the performances across the world have been an honour, it is all this travel that has inspired him to think differently.

Figure 13: Playing the lap steel guitar

1.3. Popular techniques in Hindustani Instrumental Music

Most of the techniques popularly used in Indian Classical music are described below, along with a pronunciation guide.

Meend (*pronunciation: MEE-nd*): A musical ornament, somewhat similar to the glissando of western music. This is a glide from one note to another. It may be executed slowly or fast, and the rate of progressing from the first to the second note may be constant or changing (progressively increasing or decreasing).

The Meend is arguably the most important of ornaments in Hindustani music. It is a compulsory ornament in many Raga of Shuddha Geeti or Gaurhar Bani. Such Raga cannot be properly presented without the necessary Meend. The paramount thing to remember is that in Hindustani music, the ornament is

absolutely at least as important as the note itself. For example, the descending progression from Ma to Re is an essential element of any Raga belonging to the Malhar group. But, a mere movement from Ma to Re will not characterize a Raga as one of the Malhar family if the absolutely mandatory Meend from Ma to Re is absent.

Andolan (*pronunciation: aan-DOH-lun*): A musical ornament comprising the slow oscillation of the pitch of a note, back and forth from its true pitch to a pitch just a fraction higher.

This ornament is sometimes dictated by some Shuddha Geeti of Gaurhar Bani Raga, such as Bhairav (where Re and Dha are subject to Andolan) or Darbari kanada (where Dha and Ga are subject to Andolan).

Gamak (*pronunciation: GU-muck)*: A musical ornament that is a fast Andolan. There are many types of Gamak, some faster than others and/or "heavier" or more "full-bodied" than others. The word Gamak derives from the Sanskrit word Gaman meaning "to go". The reference here is to a movement away from true pitch and subsequent return to the true pitch.

Sparsha Svara (*pronunciation: SPUR-sha SVU-ra*): An acciaccatura or grace note. This term is mostly used in vocal music. The common term used in instrumental music, particularly stringed instrumental music, is Krintan. Another name used in vocal as well as instrumental music for this ornament is Kan Svar.

Krintan or Kan (*pronunciation: KRIN-ton (with a soft "t", about as "t" in "whither")*: Another name for an acciaccatura or grace note, usually used in stringed instrumental music Alankar and variations at fast speed - More complicated alenkar - permutations of three notes - combine jor-jhala with left hand patterns

Kampan (*pronunciation: COME-pun*): Equivalent to the vibrato of western music - a quiver on the note resulting in a tremulous effect that adds an emotional dimension to the sound.

Kampan, Gamak, Andolan compared:

Kampan (Vibrato in western music) – Here the note is articulated with a quiver so that instead of a steady or unwavering tone the note sounds tremulous or undulating, adding an emotional dimension to it. What is the precise mechanics of the ornament? Let us analyse it in detail:

(a) The ornament spans two distinct pitches – the note itself (we will call this the “true note”) and another tone (we will call this the “supporting tone”). The supporting tone is not in itself a true musical note (i.e., it is not a tone that qualifies to be a musically acceptable note by being related in frequency to a predetermined tonic note – ½, 2/3, ¾, 4/5, 8/9 etc.)

(b) The supporting tone is very close to the true note in pitch – so close that if the performer had sounded the supporting note in place of the true note the qualified listener would have justifiably commented that the performer played

the true note but erred very slightly in intonation while doing so (that is, was just a little bit “out of tune”)

(c) The supporting tone is higher in pitch than the true note.

(d) The ornament comprises sounding of the true note and the supporting tone alternately, starting with the true note.

(e) The speed of alternating between the true note and the supporting tone is rapid – varying between 5 or 6 times and 9 or 10 times a second, with an average of about 6 per second.

Gamak – Here too there are two tones involved, namely, the true note and the supporting tone, with meanings as above. As in vibrato, so in Gamak, the ornament comprises alternating between the two. However, there are differences:

(a) The supporting tone in a Gamak is farther away from the true note than it is in a vibrato or Kampan. The distance between the true note and the supporting tone is large enough to qualify the supporting tone as a distinct musical note, except that this is not possible because the supporting tone is of indeterminate pitch because it is not related to the tonic in a recognised musical relation – ½, 2/3, ¾, 4/5, 8/9 etc.

(b) The supporting tone may be either higher or lower in pitch as compared to that of the true note.

(c) If the supporting tone is higher in pitch than that of the true note, the ornament starts with the supporting note and descends to the true note ("Gamak from above"). But if the supporting tone is lower in pitch than that of the true note, the ornament starts with the true note ("Gamak from below".).

(d) The speed of alternating is slower than in a vibrato. In a Gamak the speed ranges between 2 and 8 times a second.

(e) The ornament can be executed with varying force or "weight" – slow Gamak are generally heavier and more guttural with more "body" while fast ones are much lighter and throaty.

Andolan – As in Kampan or in Gamak, so too in Andolan, there are two tones alternated – the true note and the supporting tone, with meanings as above. The distinguishing characteristics are:

(a) The distance between the supporting tone and the true note is either the same as that in a Gamak or even greater.

(b) The supporting tone is always higher in pitch than the true note – the distance may be as much as a full whole tone, on occasion. However, the supporting tone is always of indeterminate pitch.

(c) The ornament starts with the supporting tone.

(d) The speed of alternating between the supporting tone and the true note is much slower than in Gamak – a single set of supporting tone and true note in an Andolan may span as long as a good 2 seconds or may be as short as a ½ second.

(e) The supporting note is never held for the same time duration as the true note – the supporting note always acts as a grace note (Sparsha or Kan), with a glide down to the true note, which is held for a longer time.

(f) The supporting tone is never approached from the true note in a glide: each set of a single supporting tone followed by the true note is distinct from the next set – it is really sounding the true note repeatedly, each time starting anew from the supporting tone.

(f) Each supporting tone in the Andolan may be a different indeterminate pitch as compared with every other supporting tone in the same Andolan.

Kampit : (an oscillation or a vibrato on a single note)

Khatka : (cluster of notes embellishing a single note), Khatka can be described as a combination of a Kana and a fast Murkhi. The sound is a little jerkier. Ex: SaReSa, Pa Dha Pa, Sa Re Sa.

Zamzama : (addition of notes, with sharp gamaks)

Murki : (a swift and subtle taan-like movement). A murki is cluster of notes that sounds like a short Taan.

SaNiDhaSaNiNi MaDhaPaPaMaMa.

Microtones or Shrutis in Indian Classical Music

To understand the versatility and depth of Indian Classical music, we need to understand that it is based on Microtones or Shrutis. It is because of these Microtones that the notes in between the 12 known musical notes come to light. And slide instruments particularly gain prominence in these areas as they can access these microtones where fretted instruments cannot.

In the context of Hindustani classical music, the application of an ―Alankar is essentially to embellish or enhance the inherent beauty of a Raga.

For practical purposes, the world of music obtained only 12 notes but Indians music scholars hesitated counting notes beyond seven, therefore they named a scale as saptak, what is equivalent to an octave of Western music. In reality the eighth note/ 13^{th} tone is equivalent to the first one higher by doubled pitch/ frequency. If we keenly observe the practical music (vocal or instrumental), we will be surprised see that all the artistes use seven notes only with their undesired variations as no artiste can use the absolutely perfect pitch of each note throughout the recital, unless one is playing instruments like santoor.

Original Indian music never was after the staccato notes, the fixed tones that is produced by a piano (forget about the benders) or a harmonium, but the natural flow and the connected-ness of the notes. Because of the tonal continuity, there arose the practical concepts like meend-soot, ghaseet, gamak,

andolan, kamapan and tan (in the Sanskrit context) in Indian music. Because of these elements, Indian music sometimes sounds out of tune to the trained Western ear. These embellishments give more artistic freedom to the Indian performers for longer elaboration on a particular raag.

From the beginning itself, none of the art music scholars of India recognised more than seven notes. It means, they were after the notes that sounded appealing to ear. They were not too particular or pedantic while using fixed pitch of the notes but they recognised the notes with a range of pitch, each possessing a certain domain.

The musical note sa with a pitch-domain sounds excellent theoretically. Practically, it seems not only ridiculous but also quite perplexing according to the present standard of music. A similar thought also applies for the note pa too, which was also considered to be associated with variant pitches.

Though the music scholars of the past indicated no evolution process of the notes but strongly recommended the possibility of 22 micro-tones and seven particular tones (notes) between two sa-s. They also assigned how much pitch-domain each note should be associated with. Later, the musicologists, unanimously accepted the non-change-ability of the sa, to give birth of the term achal svar or achal sa (tonic sa, achyut shadja, adhar shadja, key note).

Olden folk and primitive songs perhaps did not undergo much scale change at the time of its single performance. It is observed that the sa or the tonic note

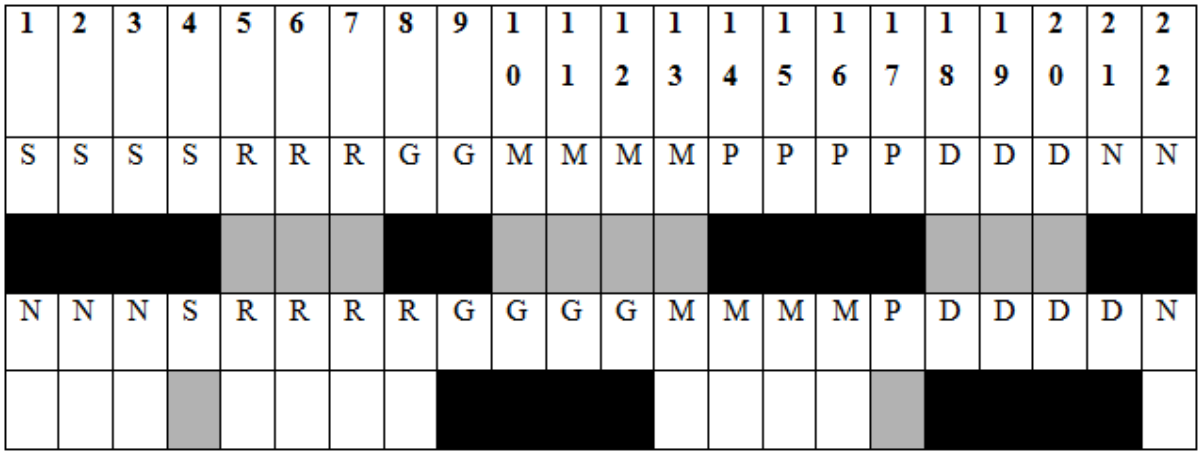
of a particular melody or a song of any place, is mostly fixed. Later, in India the pitch position of the sa probably was fixed because of the limitation of the accompanying instrument venu (flute), whose natural sa could not be changed easily at will. More over it is a valid point that an unchangeable reference point is a must for practical music, measurement, comparison and experimental verification. In the present times too, the music fails creating interest if a singer changes his reference pitch in a single composition while singing arbitrarily.

Here, it would be relevant to point out that the concepts of cents and savarts does not really help much in the understanding and the making of practical Indian music being just the values, calculated for showing the relationship of notes on the basis of their frequency ratio. It involves lengthy calculation with the help of logarithmic table and some minor assumptions too. According to my understanding of traditional music the concepts of pitch, frequency, timbre, harmonics, overtone and shruti are rather more importantly and directly related to the quality of musical sounds.

The concept of frequency is more than sufficient for the exhaustive study of the notes. For laymen, the frequency is the number of trembling of an object in a second. In fact, it is impossible to create a sound without vibrating an object like thin sheet, reeds, strings etc. The frequency is the measurement of number of oscillations per second or vibrations per second of an object. Its unit is hertz (Hz). If something vibrates 10 times in a second, the frequency of

that object will be just 10 Hz. The average natural voice of the adult males is approximately close to 220 vibrations per second, which is the frequency equal to the key A of a standard piano.

It may be relevant to point out a particular observation made by Matanga in his Brihat deshi, which may not be free from exception. He states that all the samvadi svars must be associated with same number of shrutis. According to his theory sa-ma-pa, re-dha and ga-ni are samvadi svars as they belong to the same shruti category like 4-4-4, 3-3 and 2-2. But in practice, ma-4 and ni-2 (shuddha ma and komal ni) creates a samvad or harmonious aural effect. The scholars are of the opinion that there should be difference of either 9 (S-M) or 13 (S-P) shrutis between two notes for the occurrence of their samvad. It shows that the relation of samvad is not solely dependent on shruti calculation but it is a function of avritti (frequency or pitch) too.



Classically the *shruti* domain of each note comes before it, shown in the third row of the above figure with the help of dark and grey bands alternately. But,

when we assume the frequency of *sa* and pa are fixed (practically, they encompass certain range of frequencies) following the present practice, the situation becomes different (ranges shown in the fifth row of the given figure with the help of dark, grey and white bands alternately).

Contemporary picture of the musical notes reveals that sa and pa lose their additional domains (If we are after tuneful and pleasing music, then in olden days too, the practising musicians must have followed the contemporary formalism of notes.). The domain of sa is then shared by ni and the domain of pa is shared by ma. The original domain of re also changes in the present music and it takes one shruti of ga (8^{th} shruti) to be consonant with pa. Thus ga loses one shruti of its own domain and acquires the domain of ma. Similarly, dha takes hold of its own domain as well as the domain of ni. This makes the frequency range of ga and dha larger than that of their own to become 4 shruti svars.

This fact leads us to conclude that the present vikrit svars can move or glide through the range of frequency shown in the figure but cannot stay for long anywhere to give rise to unpleasing tone (besurapan). The well-defined vikrit svars on which thehrao (lingering) is legitimate and pleasing to ear, are dependent on the function of samvad (consonance). From this deduction we can assume that the tunefulness or surilapan is very much dependent on some particular samvads and not on all samvads. The modern concepts of komal, ati komal, tivra tam komal svars, tivra, tivra tam and sakari (sahkari) notes can be

visualized from the above figure too.

It is obvious that there will be maximum 22 micro-tones/notes if there are 22 shrutis into consideration. All the 22 tones can be deduced and showed as in the following by starting with *samvad* of sa-ma relation (corresponding notes can be visualized from the above figure).

$^{4}S_{+9}=^{13}M_{+9}=^{22}N_{-13}=^{9}G_{+9}=^{18}D_{-13}=^{5}R_{+9}=^{14}M_{-13}=^{1}N_{+9}=^{10}G_{+9}=^{19}D_{-13}=^{6}R_{+9}=^{15}M_{-13}=$

$^{2}N_{+9}=^{11}G_{+9}=^{20}D_{-13}=^{7}R_{+9}=^{16}M_{-13}=^{3}N_{+9}=^{12}G_{+9}=^{21}D_{-13}=\ ^{8}R_{+9}=^{17}P$

The experimenter worked with his manually operable instruments and depended on the precision of his audibility. He could obtain many other finer notes provided that he could tune each of his instruments at a considerably higher pitch, especially the p1. It will not be much wrong if we think that the experimenter first discovered only seven notes from the *samvad* starting with *sa*-ma to get *bhairavi* notes (see above derivation of notes and *shruti* numbers). He might have obtained *kalyan* notes (*yaman*) when started with the *samvad* of *sa*-pa as the 22 notes given below.

$^{4}S_{+13}=^{17}P_{-9}=^{8}R_{+13}=^{21}D_{-9}=^{12}G_{-9}=^{3}N_{+13}=^{16}M_{-9}=^{7}N_{+13}=^{20}G_{-9}=^{11}D_{-9}=^{2}N_{+13}=^{15}M_{-9}=$

$^{6}R_{+13}=^{19}D_{-9}=^{10}G_{-9}=^{1}N_{+13}=^{14}M_{-9}=^{5}R_{+13}=^{18}D_{-9}=^{9}G_{+13}=\ ^{22}N_{-9}=^{13}M$

Now for the sake of example, if we consider sa at 22 Hz, then one octave (equivalent to saptak) higher tar sa will be at 44 Hz. It means, according to sangit shastra (music treatises) the frequency relation of the notes will be sa-

22, re-25, ga-27, ma-31, pa-35, dha-38, ni-40 and tar sa-44 Hz.

Scholars are of the opinion that the measures of the shrutis are equal as well as unequal. This paradox can be solved by noting the fact that within a saptak all the 22 shrutis are associated with equal number of frequencies. If the afore-stated saptak is treated as lower (mandra, udara) octave, then the corresponding frequency of the middle (madhya, mudara) octave notes will be like sa-44, re-50, ga-54, ma-62, pa-70, dha-76, ni-80 and tar sa-88 Hz. Similarly, frequency of the upper (tar, tara) octave notes will be like sa-88, re-100, ga-108, ma-124, pa-140, dha-152, ni-160 and tar sa-176 Hz.

It is worth noting now, that frequency-wise differences of each shruti in the three successive octaves are respectively by 1, 2 and 4 Hz. It justifies the statement that shrutis can be equal and unequal but in different octaves.

Techniques commonly used in the sitar

Ornaments	***Description***
Vistār	Expanding the gamut of rāga throughcomposition.
Bolkāri	The segments which has importance of strokesand krintans.
Laykāri	Implementation of various rhythmic designs.
Peshkār	Elaborating rhythmic variations between melodic Intonations
Tān	Master elaborationsof faster notes movements.
Todā-Paltā:	Patterns of breaking the composition and returning back.
Gamak:	Constructions of premento etc.

Ladi, Lad-lapet,Lad-guthāv Varieties of chain type melodic ornaments.

Jhālā: Creating melody and rhythmic speed patterns.

Tihāyi Mathematical patterns.

Sawāl-jawāb: Other type melodic experiments in treatments of compositions.

Jhālā: Jhālā makes up the climax of both ālāp-Jod and fast gat sections. Jhālā is sometimes refer to as Jara the which in Hindi means to a Stream of wader or water fall, (Jarā-Jari), to which the sound of the instrumental technique is couponed . Jhala is characterized by rapid strokes of the high drone strings and main strong, can also be developed though interpolating left hand techniques Few variations could be found in jhālā that performs in different gharānās.

i. Thonk jhālā; That mainly employs the strokes on first string where the chikāri strings hold the minor role.
ii. Sidhā Jhālā; that employs straight dividation of 4+4 beats.
iii. Kut-Jhālā; Mix of even and old rhythmic divisons.
iv. Ulta-jhālā; That employes mixed strokes on chikāri strings.

Ex 17. Jhālā types

i. Da - - - Da - - -| Da - - - Da - - -| 4+4 +4+4
ii. Da - - Da - - Da - | Da - - Da - - Da -| 3+3+2x2
iii. Da - - Da - - Da - - Da - - Da - - - | 3+3+3+3+4
iv. Da - Da - Da - - - | Da - Da - Da - - -| 2+4+2+4

v. RaDa - - RaDa - -| RaDa - - RaDa - -| Thonk

vi. DaRaDa -DaRaDa |-DaRaDa -DaRaDa | Thonk

vii. DiRDiRDiRDa-DiRDiRDiRDa|-DiRDiRDiRDa-|-DiRDiRDiRDa|

There are different models of improvisations at different level of music learning. Whereas the higher level improvisations are the results of skillful implements that made by an artist and are unbounded with any improvisation format and also highly difficult for transcription and analyze. Present study, focusing on improvisations of Sitar and Sarod, report two separate modules of treatments.

1.4. The Techniques and Sounds associated with the Hawaiian Guitar and an introduction to Music Theory

1.4.1. Important techniques used while playing the Hawaiian Guitar

Hammer-ons: As the name suggests, a hammer-on is a technique where we play a note on the guitar, and, while this note is ringing, fretting another note on the same string by 'hammering' on the string with another finger. The new note will then sound, even though the string is not plucked again.

The hammer-on needs to be quick and strong. If you pick the first note and then slowly press your finger onto the string for the second note, the string will be muffled and a musical note will not emerge. The string needs to strike the fretboard with strength and conviction. Hammer-ons are denoted with

an **H** above or below a slur (⌒ or ⌣) which joins the two notes (the original note and the hammered-on note).

Pull offs: A pull-off is the opposite of a hammer-on. Where a hammer-on allows you to play a higher note from the one originally played, a pull-off allows you to play a lower note than the one originally played. So we play a fretted note as normal, and then quickly pull this fretted finger off the string in a downward motion, sounding a second note without making a second finger (or pick) stroke.

The second note, however, will usually need to be fretted as well (unless it is an open string), so preparation for this requires us to fret a note behind the original note before the original note is played. Pull-offs are denoted with a Pabove or below a slur (⌒ or ⌣), similar to the hammer-on.

Arpeggios: Arpeggios are an important tool in slide playing. An arpeggio is simply when a chord is played by sounding some or all of its notes individually. Holding the slide across all of the strings at the 5th fret, pick each string individually, downwards from the 6th string to the 1st string. Some other important stuff An important consideration when switching between the D and G tunings is that any riff or lick played in the open G tuning can also be played in open D by moving the same pattern down one string. For instance if the riff starts on the 1st string at the 12th fret in open G, it can be played by starting on the 2nd string at the 12th fret in open D. Remember that if your guitar is tuned to an open major chord, when you hold

the slide across all the strings at one fret, you are playing another major chord. Keeping this in mind, practice sliding whole chords up the neck as well as individual strings. Applying vibrato to an entire chord produces a shimmering tone unique to this style of playing. The strings can either be played using a pick, your bare fingers, or using finger and thumb picks. Each method produces a different tone and requires a slightly different playing technique.

Alternate picking: This is a guitar playing technique that employs strictly alternating downward and upward picking strokes in a continuous run, and is the most common method of plectrum , Sitar Mizrab and Sarod Java.

Strumming: In music, strumming is a way of playing a stringed instrument such as a guitar. A strum or stroke is a sweeping action where a fingernail or plectrum brushes past several strings in order to set them all into motion and thereby play a chord. Strums are executed by the dominant hand, IN context to Indian music this is generally used during Alaaps to establish a Drone Like atmosphere

Natural harmonics: Natural harmonics are produced at specific locations, or nodes, that divide an open string into equal parts. The pitch is determined by the number of divisions. Dividing the string in half at the 12th fret produces the first harmonic; dividing the string into three parts at the seventh fret produces the second harmonic; dividing the string into four parts at the fifth fret produces the third harmonic; and so on. -

Artificial harmonics: To produce an artificial harmonic, a stringed instrument player holds down a note on the neck with one finger of the non-dominant hand (thereby shortening the vibrational length of the string) and uses another finger to lightly touch a point on the string that is an integer divisor of its vibrational length, and plucks or bows the side of the string that is closer to the bridge. This technique is used to produce harmonic tones that are otherwise inaccessible on the instrument.

Finger picking: Fingerstyle guitar is the technique of playing the guitar by plucking the strings directly with the fingertips, fingernails, or picks attached to fingers. In Indian traditions this is very rare because a lot of importance is given to the sharpness of the tone. I have worked specifically in this area

Octave playing: Using octaves is a useful way of reinforcing melody lines. When a melody is played simultaneously at different octaves; the ear interprets it as a single melodic voice. Octave lead playing stands out and is not that difficult to master. Any melody you know can be expanded to include octaves. Though very popular with the Karnatic Musicians its specifically found more in Vichitra Veena in the Hindustani Tradition

Legato: In music performance and notation, legato (Italian for "tied together") indicates that musical notes are played or sung smoothly and connected. IN Indian Context during Alaaps its easily seen

Pre bending: To create the impression of bending down, the guitarist uses a technique called pre-bending, that is, bending before the string is struck, then releasing the bend (either gradually or quickly, depending on the intended effect).

Bending: Bending is exactly as it sounds: bending the string to the side by pushing it (towards the sixth string) or pulling it (towards the first string), often while a fretted note is ringing. In case of the slide this is done with the string pushing towards the fretboard downwards.

Micro bending: As the name suggests this technique can be seen greatly in Indian Classical where we have 22 microtones and not just 12 notes. E.g., the Gandhar of Durbari or a Gandhar of Gurjari Todi.

Trills: On the guitar, a trill is a series of hammer-ons and pull-offs (generally executed using just the Slide on the fret hand but can use both hands).

Thumb thang: Not very specific to Indian Music because there is no finger style Instrumental concept in our culture .If used it could be a brilliant use on the slide for alternating between Base Strings.

Double stops: A double stop refers to the technique of playing two notes simultaneously on a bowed stringed instrument such as a violin, a viola, a cello, or a double bass. In performing a double stop, two separate strings are bowed or plucked simultaneously. Although the term itself suggests these strings are to be fingered (stopped), in practice one or both strings may be

open. Initially Pt Ravishankar did this Nowadays people like Debashish Bhattacharya Shahid Parvez use this technique at the end of a Tihai to give a dramatic flourish.

Vertical vibrato: Vertical Vibrato is produced by moving a stopped (held-down) string with the left hand in a direction parallel to its axis, which increases or reduces the tension on the string and thereby alters the pitch. This type of vibrato is typically used by classical guitarists, but can be performed on any kind of guitar, and is frequently used on steel string and electric guitars.

Sliding up: Place the slide over the 12th fret, then strike the 2nd and 1st strings in rapid succession. Now try this: Place the slide over the 10th fret, strike the 2nd string and slowly and gently move the slide up to the 12th fret. When you get to the 12th fret, immediately strike the 1st string, which the slide should now also be touching at the 12th fret. Remember, don't push the strings down onto the neck with the slide, just move the slide lightly over the strings.

Scratching: Scratching is where the strings are played while damped, i.e., the strings are damped before playing. The term presumably refers to the clunky sound produced.In Sitar and Sarod much less used but extensively used in Folk style as well as Modern Classical Musicicians.

Muting: Muting a string is simple: with the fretting hand, touch the string with a finger, but do not press it down, and strike the string. It is usually best to do this where a harmonic will not result, but strings can be muted at harmonics for special effect. In tablature, muted notes are often marked with an "x" instead of a fret number. It is also common practice to mute a string with the picking hand after striking a note to create a shortened "staccato" effect.

Banjo rolling: In Bluegrass music a banjo roll is an accompaniment pattern played by the banjo that uses a repeating eighth-note arpeggio - a broken chord - that keeps time by subdividing the beat. Each "standard" roll pattern is a right hand fingering pattern, consisting of eight (eighth) notes, which can be played while holding any chord position with the left hand In Indian Classical this is handy during Jhala time.

Chicken picking: Chicken picking is a sub-technique within hybrid picking. A chicken picker mutes the fingerpicked strings right after he plucks them, so that a dry 'tick' sound is created. This technique is very commonly used in country and bluegrass.

Volume swell: This is not a common technique in Indian Classical because largely acoustic instruments work on the reverse of volume swell, that is decay.

Tremolo picking: Tremolo means a modulation in volume; in the context of stringed instruments, usually refers to repeatedly striking or bowing a single string in a steady rhythm, especially the fastest rhythm the player can maintain. (This technique is particularly common on the acoustic mandolin.)

Slide: A slide is a legato guitar technique where the player sounds one note, and then moves (slides) their finger up or down the fretboard to another fret. If done properly, the other note should also sound.

Down stroking: Sometimes referred to as Downstroke picking, is the technique used by musicians that perform on plucked string instruments in which the plectrum, or pick, is moved in a downward motion, relative to the position of the instrument, against one or more of the strings to make them vibrate. If downstrokes are played without the addition of upstrokes (as in alternate picking), the tip of the pick never comes in contact with the strings during the time the hand is moving back up to repeat the downstroke.

Pinch harmonics: A pinch harmonic is produced when the thumb of the picking hand lightly touches against the string immediately after it is picked. This action is sufficient to silence the fundamental and all overtones except those that have a node at that location.

Tapped harmonics: Tap harmonic is a technique used with fretted string instruments, (usually guitar). It is executed by tapping on the actual fret wire most commonly at the 12th fret, but also can be executed by tapping any of

the fret wires with proper technique. It can also be done by gently touching the string over the fret wire instead of tapping the fret wire if the string is already ringing.

1.4.2. Music Theory in Western Notation

Music theory has a very specific and logical set of rules. Here are some important music theory definitions:

Interval - The distance between one note and another note.

Sharp symbol (#) - changes a note to one half step higher.

Flat symbol(b**)** - changes a note to one half step lower.

Natural symbol - takes away a sharp or flat symbol that was on a note written previously.

Music Alphabet- Letter A through G. When you get to G, you start over at A again(assuming you are not playing any Sharps or Flats).

Key - There are 12 of these in Western music. One for each of the 12 notes.

Half step- the interval between one note and the note next to it. On the guitar- the interval between one fret and the fret next to it (either up the neck or down the neck).

Whole step- the interval between 2 notes with one note separating them. On the guitar- the interval between 2 frets having 1 fret separating them.

Western Music: Music which originated in the Western hemisphere, mainly in Western Europe and North America. In Western music theory, there are 12 notes: B, C, C#, D, D#, E, F, F#, G, G#, A, A# - these notes are all a 1/2 step apart.

For us to understand the context we need to know the names of the Notes Used in the Western System and their counterpart in the Hindustani System.

Starting from C D E F G A B we can safely assume that the Western Standard System accepts

C = SHADJA (SA)

D = RISHABH (RE)

E = GANDHAR (GA)

F =MADHYAM (MA)

G = PANCHAM (PA)

A = DHAIVAT (DHA)

B = NISHAD (NI)

We also need to know that usually Hawaiian Guitars might not be tuned to C but they may be usually tuned to a D or an E in that case the whole co relation

WESTERN ----- HINDUSTANI (Major Scale – Shudh Saptak)

D = SA

E = RE

F# = GA

G = MA

A = PA

B = DHA

C# = NI

One has to keep in mind that as we have SA RE GA MA and that depends on each individuals respective choice like female singers ranges are from either G , G# , A , A# ,B and even rarely C (Parveen Sultana) and male singers nowadays starting from B , C,C# , D , D# , E . Whichever Pitch suits the individual they can take that as their adhar shadja (basic pitch reference). Ironically none of the Indian Instruments tunings are actually designed to accompany female pitch. Only in Violin you find the alternate tunings while accompanying. In case of a Sitar or a Sarod its very difficult to get a good accompaniment if a female will sing in keys like G or A. Female singers with ability to sing in C can usually get accompaniment of these beautiful string instruments.

1.4.3. Basic approach to play Hawaiian Guitars

The first thing you need to learn is how to use the picks and pick the strings. Nearly all players use 3 picks, and a few use 4 picks. I use 3 picks (1 plastic thumb pick, and 2 metal fingerpicks). Some people use an extra metal pick on their 3rd finger. Since everyone has different sized fingers, you will need to

adjust the fingerpicks by bending them to fit. The curve of the metal fingerpick should face upward, level with the top of your fingernail. I adjust the pick's curve to where the tip of the pick is even with my fingernail. Some players like to bend their picks up more to prevent the picks from clawing into the fret board. (Stewart)

1.4.3.1. How to Hold the Instrument

Like its name suggests, the lap steel is traditionally played across the player's lap. The headstock is to the player's left, and the pickups are to the player's right. You will want to sit in a chair that is at the proper height, meaning that your thighs are at a right angle to the floor so the guitar sits balanced and won't slip off onto the floor. Some players sit a bit to the right if it's a console steel (with legs), or else move the steel a bit to the left. This is for easily placing the right palm on the strings at the bridge for muting. It is awkward trying to reach over with the right hand if the player is not close enough to the bridge. (Stewart)

1.4.3.2. The First Steps

Playing slide guitar like the pros takes lots of practice, but getting started is pretty easy. First, you need a slide. Any glass, metal, or rigid plastic tube will do for starters--a bottle neck, a lipstick tube, a short piece of pipe. Music stores carry purpose-made metal and glass slides. Most players wear the slide on the little finger or ring finger. If you want to alternate between slide and

conventional play, the little finger is recommended.

- **Step 1:** Tune both of your guitar's E strings down to D and your A string down to G. Strum. You're playing a G chord in an open-G tuning.
- **Step 2:** Place the slide on the strings directly over the 12th fret and strum. You're playing the G chord an octave higher. Place the slide on the 9th fret, pluck the top four strings at once and slide up to the 12th fret. If you can reach fret 15, try the same thing sliding down.
- **Step 3:** Slide down to the fifth fret. Now you're playing a C chord.
- **Step 4:** Move up to the seventh fret and play a D chord. G, C, and D are the only chords you need to play the 1-4-5 blues progression in the key of G.
- **Step 5:** Play around with these chords while finger picking. Try sliding into individual notes from above and below as you pick.

1.4.3.3. Scales and runs

- **Step 1:** Put your slide over the third fret and strum. This is a Gm7 chord. It contains the minor-third (B-flat) and seventh (F) notes of the pentatonic (five note) blues (minor 7th) scale. If your guitar has a cutaway, play the octave of this chord on the 15th fret.
- **Step 2:** Play the open G note on the third string. Slide up to the third string, third fret and play the minor third. Play the C with your first finger

on the first fret of the second string, then slide up to the third fret and play the second string, then the first. Now, slide up to fret five and play the G octave. Do it all again, backwards, and get comfortable with it. This is your blues scale in G.

- **Step 3:** Play around with the Gm7 scale. Move up and down, start in the middle, repeat and alternate notes. See if you can work out runs and licks you've heard from your favourite players. Invent some of your own.
- **Step 4:** Try sliding up and down the neck into your notes. Try it with multiple strings. Wobble the slide above the fret when you hit each note.
- **Step 5:** Work with this scale in your octave, C and D positions as well. (Morse)

1.4.3.4. The Tunings

Slide can be played in just about any tuning. Open D (low-to-high D, A, D, F#, A, D); G (D, G, B, G, B, D); A (open G up a whole step) and E (open D up a whole step) are common but you can even play in standard. Open E has been used by guitarists such as Sonny Landreth and Duane Allman. (Slide Guitar)

All of the tunings below are listed from the high string (treble) to the low string (bass). Sol Hoopii Played in a number of variations on E major as well as a Low A Bass and High A Bass. Sol Hoopii switched to electric lap steel

around 1935 and developed a beautiful C# minor tuning, shown here from treble to bass (E, C#, G#, E, D, B) which allowed more sophisticated chord and melody work than the open A or open G tunings in use at the time.

STRINGS: 1 2 3 4 5 6

A Low Bass: E - C# - A - E - A - E

A High Bass: E - C# - A - E - C# - A

E Major: E - B - G# - E - B - E

C# minor: E - C# - G# - E - D - B

F# 9th: E - C# - G# - E - A# - F# (used by Dick McIntire, a beautiful strum tuning for Sweet Someone, Paradise Isle, etc.)

The development of the C 6th tuning is attributed to Jerry Byrd, one the most influential lap steel players of all times:

STRING: 1 2 3 4 5 6 7 8

A Major: E - C# - A - E - C# - A

E Major: E - B - G# - E - B - E

E 7th: E - B - G# - E - D - B

C# min: E - C# - G# - E - D - B

C6th/A7: E - C - A - G - E - C# - C - A

F#min9: E - C# - G# - E - A# - F# - C# - G#

C diatonic: E - C - B - A - G - F - E

B11th: E - C# - A - F# - D# - C# - A

Here are some more tunings used in Hawaiian style lap steel guitar.

STRING: 1 2 3 4 5 6 7 8

A6th: E - C# - A - F# - E - C# - A - F#

F Maj7th: E - C - A - F - E - C

D9th: E - C - A - F# - E - C#

A13b9th: E - C# - A - F# - E - C# - Bb - G

E6th: E - C# - B - G# - E - D - E - G#

E13th: E - C# - G# - F# - D - B - G# - E

C13th: E - C - A - G - E - C - Bb - C

And the most commonly used C6 string tuning. (Stewart)

STRINGS: 1 2 3 4 5 6

C6th: E - C - A - G - E - C

1.4.3.5. Learn Your Scales and Chords

A chord is 2 or more notes played together. Nearly all stringed instruments follow the same I, IV and V pattern. These Roman numerals are known as the "Nashville number system." It's quite simple. The purpose of the system is simplicity. In the open (no bar) position, you have a major C chord on all strings except the 3rd string (which is an "A" note and gives you the classic Hawaiian sounding 6th chord, or relative minor, which is an "A minor" chord). If you place the bar on fret 5, you have an "F major" chord. And finally, placing the bar across fret 7 gives you a "G major" chord. The following diagram illustrates this:

Note	Fret 0	1	2	3	4	5	6	7	8	9	10	11	12
E	I					IV		V					I
C	I					IV		V					I
A	I					IV		V					I
G	I					IV		V					I
E	I					IV		V					I
C	I					IV		V					I

In any musical key, the first, third and fifth notes of the scale give you a major chord. It is also true that in any key, the basic chord structure of 90% of all songs is the first, fourth and fifth notes. For example: In the key of C, the primary chords used in most songs are the C, F and G chord. In the Nashville numbering system we'd say the I, IV and V chord. If you include the 3rd note and strum all the notes together (across), you'll have a C6th chord (open fret). You'll have an F6th chord on the 5th fret, and a G6th chord on the 7th fret. (Stewart)

A common passing chord from a V to a I chord is V7 (or in the key of C, a G7 chord). Notice that the I chord repeats again on the 12th fret. This basic chord pattern is identical on banjo, standard guitar, bass and steel guitar. So in any song, just find the root chord and then apply the I, IV, V pattern to your song. In other words, you'll find the chords to your song mostly on the 1st, 6th and 8th frets in the key of Db (C#). In the key of G, you'll find your chords mostly

on frets 5, 10 and 12. (Stewart)

1.4.3.6. Palm Muting Technique at Bridge

You simply place the palm of your right hand near the bridge, and it mutes the strings. To do some tone swells, you slide the bar up into the desired chord while turning the tone control to bright at the same time. Then back off with the bar while turning the tone control to muddy at the same time. You do this quickly a few times and that's the effect. You just place the palm of your right hand at the guitar bridge. Then pick while your hand is muting the strings. (Stewart)

1.5. Choosing a guitar and perfecting the tunings for playing slide

1.5.1. Choosing a guitar

Slide can be played on just about any guitar, but some instruments are definitely more suitable for the purpose.

Acoustic guitars: For acoustic slide playing, the instrument of choice is the resonator guitar. These instruments, commonly known by the trade name of Dobro, where originally manufactured during the 1920's by two companies, Dobro and they are distinctive for their metallic, haunting, tone. This unique sound is the result of having a metal cone (sometimes more than one) inside the body of the guitar which was originally designed to increase the volume of the guitar. This is usually concealed by a round metallic plate on the front of

the guitar. Dobro and National guitars are produced both with timber and metal bodies. The wooden-bodied models generally have a warmer tone. These guitars, both vintage and new models, are expensive to buy. However a number of companies in Asia have been producing affordable copies for a number of years, of varying quality. Some of these companies include: Regal, Epiphone, Samick, Sakura and several other brands. These Asian copies are sometimes very hard to fault, although many suffer from having poor tonal characteristics due to their use of unseasoned timbers. Many of these guitars will improve tonally with age though. Non-resonator guitars can make excellent slide instruments. Generally speaking, with smaller bodies, as opposed to 'Jumbo' and 'Super-Jumbo' sized folk guitars have a tone more suited to slide playing. Also, as mentioned above, the age of the instrument's timber is an important factor in its tonal quality. Another important fact is that a guitar used primarily for playing slide should have an action (The distance between the strings and the fingerboard) higher than what would be regarded as ideal for normal playing. This is because when playing slide the strings are not pressed onto the fingerboard of the guitar.

Electric guitars: used for slide can be amplified either by placing a microphone in front of them or by putting a pickup in the body of the guitar. Either of these techniques can be used to amplify the natural acoustic tone of the guitar. The semi-solid or solid-bodied electric guitar is a different animal altogether. The output generated by an electric guitar's pickups can be

harnessed to produce tremendous sustain and howling, snarling tones that an acoustic guitar cannot produce. Because of this, electric slide playing styles, although based on acoustic styles, tend to take a different approach. Guitar pickups are usually either single-coil pickups (such as those usually found in Fender guitars) or "humbucker" pickups (as used in the Gibson guitars). In general, the single-coil pickups are preferred by slide players. The Fender Stratocaster guitar (the electric guitar of choice with players like Buddy Guy, Ry Cooder, Bonnie Raitt and Dave Hole) can produce an amazingly close tone to an acoustic guitar, and the harmonic overtones of this guitar produce a sweet, natural sound very much suited for slide playing. The Fender Telecaster, on the other hand, is famous for its sharp, biting tone. This, coupled with its simplicity of design, has made it a favourite instrument with slide players like Muddy Waters, J.B. Hutto and Roy Buchanon. Amongst Gibson's electric guitars, their instruments with single-coil pickups such as the semi-acoustic ES-125 and ES-330 (these guitars were also produced under the Epiphone label as the "Sorrento" and "Casino") as well as the solid-bodied "Firebird" are much prized by slide players such as George Thorogood and Johnny Winter.

1.5.1.1. How Do You Describe the Sound of a Guitar?

The physical characteristics of an acoustic guitar are easy to identify and compare. A cutaway, mother of pearl inlays, or wood binding are qualities that are easy to make decisions as to whether you like or dislike them. The

sound qualities of a guitar are much harder to discern and evaluate. In order to accurately describe the characteristics of a guitars sound, you must first be familiar with the nomenclature used to explain the sound qualities of a guitar. An acoustic guitar's sound has many facets. Here is a brief overview of the terminology most often used when discussing a guitar's sound. These explanations are for the most part paraphrasing of the descriptions given by Larry Sandberg in his (must-have) book, "The Acoustic Guitar Guide".

Tone: Tone is the quality that makes guitars from various makers sound different. When you set a string into motion, the string has a fundamental vibration, as well as many smaller vibrations, called overtones. Most guitars share some fundamental tones and overtones. That's what makes them all sound like guitars. But they each have their own unique combination of fundamental and overtones also. That's what makes guitars sound unique. The woods used for the back and sides of the guitar factor most into the characteristic tone of a guitar. Rosewood gives a soulful, darker sound. Mahogany is sweeter and softer, as well as rounder and nicely balanced. Maple is louder, like rosewood, but has less bass resonance and a more brittle tone. (Sandberg, 2000)

Volume: Volume is how loud your guitar is. But not just as measured by a decibel meter, but also how loud your guitar "seems". This is directly related to the quality of the top wood, the top bracing, and the rigidity of the back and sides. Heavier strings are louder, because they vibrate the top more than

lighter gauge strings. Also, larger guitars are generally louder, since they have more top to vibrate, and a larger sound chamber. (Sandberg, 2000)

Presence: Presence is a psychological factor that is very subjective. It is a gauge of how full your guitars sound is. A good measure of presence is how satisfying your guitar sounds when you play it softly. A strong presence means that the tone quality does not deteriorate with less volume. The efficiency of the guitars top plays a large part in the perceived presence. (Sandberg, 2000)

Balance: Balance is the relationship between the high and low notes in point of fullness and volume. In a balanced guitar, the notes have equal authority throughout the entire range of the instrument. Guitars that are overbalanced toward the bass are called boomy. Flatpickers and folk singers prefer this type of balance. Fingerstyle guitarists might prefer a guitar that is balanced toward the high strings. Balance is usually directly related to the size of the guitar. Balance is also affected by the body woods (Rosewood is boomier than Mahogany), and the size of the soundhole (a larger soundhole usually balances the guitar toward the high strings). (Sandberg, 2000)

Separation: Separation is the ability of an instrument to express simultaneously played notes so that they are perceived distinctly and individually, rather than as a homogeneous whole. In other words, when you strum an open E chord, is what you hear more like one glob of sound or six

separate ingredients? An analogy might be to the flavours that make up a fine sauce. Separation is related to the quality of the guitar, as well as the player's individual touch. (Sandberg, 2000)

Sustain: Sustain is the measure of how long a note keeps sounding after you initiate it. If the sound decays too fast, you have poor sustain. Sustain is directly related to the quality of the guitar. More specifically, it is the vibration of the top that gives you an honest, clean sustain that preserves all the components of the tone throughout its duration. (Sandberg, 2000)

Tonewoods: The type of wood used on a guitar is probably the single most influential factor to its tone. There are a variety of different woods to choose from. Below are many different wood descriptions and their general tonal properties.

Back and Sides

Brazilian Rosewood: (Dalbergia Nigra) Brazil. Sometimes referred to as "Jacaranda", this species of genuine rosewood ranges in color from dark brown to violet with spidery black streaks. The smell is like roses when freshly cut. Brazilian rosewood is considered nearly extinct and is extremely expensive if available at all. Extremely resonant producing full, deep basses and brilliant trebles. Brazilian rosewood is occasionally available in very limited quantities for custom or special limited edition orders only. (MacPherson)

East Indian Rosewood: (Dalbergia Latifolia) India. Typically richly grained with dark purple, red, and brown color, East Indian rosewood is resinous, stable and generally more consistent than most other rosewood species. East Indian rosewood is extremely resonant producing a deep warm projective bass response that is especially accentuated on large bodies guitars. (MacPherson)

Genuine Mahogany: (Swietenia Macrophylla) Brazil. Yellowish brown to reddish brown in colour, Genuine or "Amazon" mahogany is exceptionally stable and consistently clear. Mahogany is much lighter in weight than rosewood, koa, or maple. In spite of its weight, mahogany yields a surprisingly strong loud sound with an emphasis on clear bright trebles. (MacPherson)

Figured Mahogany: This beautiful and rare (often quilted) variety of genuine mahogany occurs in a very small percentage of mahogany trees. Though difficult to bend, figured mahogany shares the same tonal properties of the unfigured mahogany. (MacPherson)

European Flamed Maple: (Acer Campestre) Germany. Curly, flamed, tiger striped, or "Fiddleback" maple refers to the characteristic alternating hard and soft rippling which runs perpendicular to the grain in some rarer maple trees. This particular species of European maple is very hard and reflective, producing a loud powerful projective sound. Uniquely figured domestic "Birdseye" maple, used on the D-60 models, displays characteristics and tonal

properties similar to European Flamed maple. (MacPherson)

Koa: (Acacia Koa) Hawaii. Golden brown color with dark streaks and a lustrous sheen. Koa wood occasionally develops a curly or flamed figure. Regardless of any figuring, koa seems to have a bass response that is slightly less than that of rosewood and treble response that is slightly less than that of mahogany. The result is a very equally balanced instrument. (MacPherson)

Walnut: A great selection with bright woodiness of mahogany when played lightly, with much of the punchiness and power of rosewood when you dig in. When properly braced, a walnut backed guitar can have a unique warmth and tonal depth. This is a dark brown, highly figured specialty wood which is grown in a wide variety of locations. (MacPherson)

Morado: (Machaerium Scleroxylon) Bolivia. Also known as Bolivian or Santos "rosewood", morado ranges in colour from a light violet brown to reddish brown with occasional olive and black streaks. Finer in texture than most rosewoods, morado is a close visual substitute for East Indian rosewood, and has very similar tonal properties. (MacPherson)

Myrtlewood: The best way to describe Myrtlewood is that it has the powerful voice of rosewood coupled with all the clarity, brightness and balance of maple. Myrtlewood can be found in the coastal mountain regions of northern California and southern Oregon. With coloration anywhere from an elegant whitish/straight grained look (a blonde mahogany), to yellow/green with

flame, the tonal personality of Myrtlewood is consistent. Use of this wood on a guitar was first done by Breedlove and is featured on the Breedlove "Northwest" guitar. Prior to this, using Myrtlewood to build a guitar has never been done. (MacPherson)

Striped Ebony: Deeper and richer sounding than East Indian Rosewood, many would characterize striped ebony as very similar to Brazilian rosewood. It is dense, has similar reflective properties to Brazilian, and it also has a high specific gravity. It has a striking, distinctive vertical stripe pattern, variegated dark brown, black and green. It makes a truly exceptional twelve-string. Striped ebony comes from New Guinea, is exclusively government controlled, and is not an endangered species. (MacPherson)

Cherry: With a density and reflectivity approaching that of maple, cherry produces a rich, projective midrange and balance without favoring the bass or treble frequencies. White Ash White ash was utilized on a limited but extremely popular run of D-16A Martin guitars made between 1987 and 1990. The tonal character of ash is surprisingly loud and bright, with a strong midrange and a crisp bass. (MacPherson)

Top (Soundboard)

Sitka Spruce: (Picea Sitchensis) Canadian Northwest & Alaska. Sitka spruce is the primary topwood for Martin Guitars. It is chosen because of its consistent quality as well as it's straight uniform grain, longevity, and tensile

strength. Tonally, Sitka spruce is extremely vibrant providing an ideal "diaphragm" for transmission of sound on any size and style of stringed instrument. (Brochure)

Bear Claw Sitka Spruce: A specifically named variety of Sitka Spruce. A randomly figured Sitka, due to genetic or environmental factors. It looks like a bear has clawed across the grain of the wood. This particular variety is highly coveted for its unique patterns. From the Pacific Northwest. (Brochure)

Englemann Spruce: (Picea Engelmannii) United States. Englemann spruce is prized for its similarity in color to European (German) White spruce as well as its extreme lightness in weight which seems to produce a slightly louder and more projective or "open" sound than Sitka spruce. Englemann spruce grows in the alpine elevations of the American Rocky Mountains and the Pacific Cascades. It is considerably more limited in supply than Sitka spruce. (Brochure)

Adirondack (Red) Spruce: This legendary wood that Martin used for its tops throughout its golden years came from the East Coast, from the Southern Mountains into New England and upper New York State. Called both Appalachian and Adirondack spruce, it has a creamy white color. Similar to Sitka, Adirondack responds well to either a light or firm touch. It has more overall resonance than Sitka. Interesting grain color variations make this another visually desirable top. Adirondack has been unavailable since the

mid-1940's. Virgin growth has been (fortunately) preserved in National parks, the rest is all second growth, plentiful but too small to be usable for guitar tops until recently. Guitar makers have started finding second growth of at least 100 years old that is big enough to be used for tops again. (Brochure)

German Spruce: The "ringiest" of all spruce species. Extremely clear and bell like, with the versatility of Sitka. Exceptional sound for light to very firm techniques. Very white in color. (Brochure)

Western Red Cedar: (Thuja Plicata) United States, particularly the Pacific Northwest. Western Red Cedar has long been utilized as a soundboard material by classical guitar makers for its vibrance and clarity of sound. It is extremely light in weight compared to spruce and the tonal result is generally a slightly louder, more open response. Balanced, warm and rich with bright trebles. What is most characteristic of Red Cedar is that it sounds broken-in, even when new. Exceptional sound for light to very firm techniques. Coloration runs from light (almost as light as Sitka) to a very dark reddish-brown. (Brochure)

Redwood: A great choice for the fingerstylist with somewhat more richness in the bass than cedar. Redwood responds to subtle playing with a crisp balanced sound. The bass response is particularly round and full with a piano-like crispness. Lacquer and glue do not bond quite as well as the spruces. Because of this (as with Cedar), some Luthiers (Goodall) recommend light

gauge strings only on guitars with these tops. Originally from Northern California, many luthiers (i.e. Breedlove) get redwood from recycled lumber and timber salvage. (Brochure)

Western Larch: (Larix Occidentalis) United States. Western larch has clearly marked annual rings and a fine uniform texture. Larch is harder and stronger than most conifers including spruce. It bears a close visual resemblance to Sitka spruce and due to its increased stiffness; it is an appropriate choice for scalloped braced models yielding a projective and crisp response. (Brochure)

Koa: (Acacia Koa) Hawaii. Historically, koa tops have appeared primarily on small bodied 0 & 00 size Hawaiian guitars and ukuleles although recent koa Dreadnoughts and custom guitars have been popular. Koa produces a predominately bright treble response with less volume than spruce, but the slight loss in volume is overshadowed by the extreme beauty of the grain. Koa tops are available on special order and custom instruments. (Brochure)

Genuine Mahogany: (Swietenia Macrophylla) Brazil. Mahogany was first introduced as a topwood in 1922 on the lesser expensive Style 17 guitars. Tonally, mahogany is less projective than spruce, producing a subdued response that is crisp and delicate with emphasis on the midrange. Mahogany tops are usually available only custom instruments, but has recently become a standard top in the Baby Taylor travel guitars. (Brochure)

Walnut: Using a highly figured walnut for a top wood, matched with walnut

back & sides, was a first of the Breedlove company but is now offered by Taylor guitars and others. Rich and warm bass with plenty of crispness on the mid and treble side is typical of an all-walnut guitar. Walnut offers a lot of value for your dollar; with the beauty and visual impact of an all Koa guitar, but at a much lower price. Coloration is dark brown with a lot of figure and flame. (Brochure)

1.5.1.2. How Does a Guitar's Construction Affect Its Sound?

Bracing: Bracing adds strength to the top without (hopefully) killing too much of the top's vibration. A set of medium gauge steel strings on a normal dreadnought scale length (25.4") guitar exerts about 185 lb of tension. This would splinter a thin wood top if it weren't braced. A top thick enough to hold this much tension without bracing would be very quiet and tinny sounding. Another important function of the braces is to efficiently propagate the vibrations through a large area of the top. Bracing also plays a major role in determining the tone of a guitar. (Brochure)

Scalloped Bracing: In scalloped braces, wood is selectively removed from certain areas of the braces to weaken the top enough to allow it to vibrate freely without weakening it so much as to make it structurally unsound. Scalloped braces typically have a longitudinal cross-section reminiscent of a suspension bridge. (Brochure)

X-bracing: Martin steel-string guitars (and most of the multitude of guitars

that are copies of them) have X-bracing. This means that the two main braces under the top run in an "X" from the upper bouts to the lower bouts. The "X" crosses somewhere between the soundhole and the bridge (about which more below). There are several auxiliary braces other than the main X-braces. (Brochure)

High-X bracing: On most X-braced steel string guitars, the "X" crosses about 1.5 - 2" below the soundhole. On guitars with "high-X" bracing, the "X" crosses about 1" below the soundhole. The effect of this is that the bridge rests less directly on the main X-braces, and can thus transfer more of its vibration to the top. This is also called "advanced X-bracing" and "pre-war" bracing.

1.5.1.3. Why is split wood better than sawn wood for making guitar tops?

According to Jim Grainger, from Custom Fretted Instruments in Sparta, “tops are actually resawn out of split billets, so they are split & then sawn. The short answer is because it helps reduce runout. More specifically, many spruce trees tend to grow in a spiral, so if the log is simply sawn straight down the middle, as most sawmills saw lumber, the saw won't follow the spiral, and the wood sawn from the log will not follow the direction the tree grew. By splitting out "cants" or "billets" from the log, using wedges, the splits will follow the grain, and veneers cut from the cants will run in the same direction that the tree grew, so the grain runs straight through the top, instead of going through it at

an angle. You can tell if a top has runout, because it will reflect light differently from side to side, & will look lighter on one side than the other...until you turn it over. That's the light reflecting off the end grain on one side of the top & off the flat grain on the other. All this isn't necessarily bad, as there are some outstanding guitars that had tops with runout, & many tops have grain that changes direction within the length of the top, but tops with severe runout are usually relatively weak, because of the short grain that runs at an angle through them, and often tend to be problematic & tricky to repair." (Gannaway, 1998)

1.5.1.4. How to choose a Good Acoustic Guitar

One perspective from Tom Gannaway, Editor of Fingerstyle Guitar Magazine is presented here. "A particular player's approach is an extension of his or her personality. A soft-spoken, timid person might have a light, sensitive touch, while an aggressive, outgoing person might exhibit more volume and flair in their playing-pops, string snaps, bends, etc. Our technique and approach can evolve over time but the fact remains that what comes out of our guitars when in our hands is a basic expression of our personality. This being the case, you'll want to use an instrument that suits you and that you enjoy playing. You may prefer to play small-bodied instruments, such as a twelve-fret, or you may prefer a larger guitar, such as a Dreadnought. On some guitars, the sound may break up a bit when played aggressively, making them a good candidate for those with a lighter approach. Indeed, with some instruments,

the lighter you play them, the better they seem to sound. Undergirding these questions, of course, is the necessity of playing with a guitar that is playable, and possesses good intonation." (Gannaway, 1998)

1.5.1.5. How to assess the action on a Good Acoustic Guitar

According to Tom Gannaway, Editor of Fingerstyle Guitar Magazine: “Action that is either too low or too high can cause problems: excessively low action can create fret rattling, necessitating quiet playing, while excessively high action makes for uncomfortable and laborious playing. A good rule of thumb is: for classical guitar medium action, the bottom of the high E string should be 8/64" from the top of the fret wire at the 12th fret; for steel-string low-medium action, suited for fingerstyle players, the bottom of the high E string should be 5/64" from the top of the fret wire at the 12th fret.” (Gannaway, 1998)

1.5.2. Perfecting the Tuning Techniques

Although it is possible to play some slide guitar in the standard tuning (and this is a useful skill), slide guitar is best played in open tunings. Simply put, an open tuning is when your guitar is tuned so that strumming all the strings without holding any of them down on the fretboard will produce a chord. Open D (also known as 'Vastopol') and open G (also known as 'Spanish') are the most commonly used tunings for blues playing. These tunings have two advantages over other open tunings. Firstly, if a Capo (a clamp used to hold

all the strings down at one fret-position on the neck) is placed on the neck of the guitar at the second fret, the tuning is changed to E if using the D tuning and A if using the G tuning, which are very common keys for blues music. Secondly, both of these tunings have the string tension lower than in standard tuning, making it easier to fret notes with your fingers. This is a big advantage when playing an instrument which, being suitable for slide playing, has an action higher than normal.

Open E-tuning Tune up the 3rd string a half step to G# Tune up the 4:th string a whole step to E Tune up the 5:th string a whole step to B The Open E-tuning is the same as open D-tuning only that it is a whole step higher. On an electric guitar with very thin strings and low action it makes it easier to play slide if you tune up. I will not recommend this on an acoustic unless you have ultra thin strings on it. The risk is that the neck and top can´t take the much higher string tension. See D-tuning for more info. (Hagemann, 2012)

More Open Tunings

Major open-tunings give a major chord with the open strings. (Open Tunings)

Open tunings				
	Major triad	**Repetitive**	**Overtones**	**Other (often most popular)**
Open A	(A,C#,E)	A-C#-E-A-C#-E	A-A-E-A-C#-E	E-A-C#-E-A-E
Open B	(B,D#,F#)	B-D#-F#-B-D#-F#	B-B-F#-B-D#-F#	B-F#-B-F#-B-D#

Open C	(C,E,G)	C-E-G-C-E-G	C-C-G-C-E-G	C-G-C-G-C-E
Open D	(D,F#,A)	D-F#-A-D-F#-A	D-D-A-D-F#-A	D-A-D-F#-A-D
Open E	(E,G#,B)	E-G#-B-E-G#-B	E-E-B-E-G#-B	E-B-E-G#-B-E
Open F	(F,A,C)	F-A-C-F-A-C	F-F-C-F-A-C	C-F-C-F-A-F
Open G	(G,B,D)	G-B-D-G-B-D	G-G-D-G-B-D	D-G-D-G-B-D

Open tunings often tune the lowest open-note to C, D, or E and they often tune the highest open-note to D or E; tuning down the open-string from E to D or C avoids the risk of breaking strings, which is associated with tuning up strings. The most popular open-tunings have the open-string patterns

R-5-R-5-R-3 (Open C),

R-5-R-3-5-R (Open D and E),

5-R-5-R-3-5 (Open G)

where R, 3, and 5 represent the major triad's root, major third, or perfect fifth. In these tunings, the root is repeated thrice or twice, and the perfect fifth twice or thrice; the major third once. In repetitive open-tunings, the open major-triad's major third is doubled; in non-repetitive open-tunings, the major third is not doubled. A seventh chord is often played by omitting the highest perfect-fifth; when a perfect fifth or other notes are omitted from a chord, the major-third note is retained. (Open Tunings)

C6th Picking Patterns

There are certain string picking groups, which vary from tuning-to-tuning. Over time you'll learn to pick any combination of strings with ease. On the 6-string lap steel you'll need to learn to pick strings 4, 2 and 1 together (a major chord). This is known as an "inversion," i.e., the root note forming the chord is not the first note. If string 6 is tuned to a C note, then you can play a pure C chord by picking strings 6, 5 and 4 (which respectively is C, E, and G). You can play an inversion of this C chord by picking strings 5, 4 and 2 (which respectively is E, G, and C). And picking strings 4, 2 and 1 is still another inversion of the C chord (which respectively is G, C, and E). So here we see that there are 3 picking patterns for achieving a C chord on the C6th.

Alternate Tunings

DADGBE (Dropped-D) This is standard tuning with the 6 string E dropped to a D. Used mostly when playing in the key of D, so that one can have an open string for the tonic. Also used in the key of G, where the D rings open on the V Chord. No doubt, there are lots of other uses for this tuning also.

DADF#AD (Open D) Used extensively for fingerstyle and slide guitar. Very commonly used for blues. Good examples are Kottke's "Cripple Creek", "The Prodigal Grave" and "Watermelon".

DGDGBD (Open G) Used extensively for fingerstyle and slide guitar. Lots of the Turn of the Century country blues guitar players used this. Good examples are Kottke's "Jesu Joy of Man's Desiring", "Vaseline Machine Gun", "Crow

River Waltz".

CGCGCE (Open C) Fahey & Kottke use it alot. Kottke's "Busted Bicycle" is in open C, as is Fahey's "Sunflower River Blues" and "Revolt of the Dyke Brigade"

DADGAD (D Modal Tuning)

DGDABE (Cross-Tuning)

DGDGBbD (Open G minor): Used frequently by John Renbourn and Stefan Grossman.

EADEAE (E modal): Used extensively by Martin Carthy and other English guitarists. (Hanson)

1.5.3. Which strings should be used?

A string is constructed of a core, the centre around which the windings of the string are wrapped, and the windings, the wrap of wire around the centre core. The core is usually either round or hexagonal in shape, while the windings come in three shapes: round-wound, halfround (which are also known as polished or ground-round wound), and flatwound. Roundwound is the most common of all string types and produces the brightest and clearest sound. A half-round string is constructed from a round-wound string that has had the outer round wrap ground or burnished down to create a more even and flatter surface. The smoother surface allows the hand to glide more freely with less

squeaking as it moves across the string, and are generally not quite as bright as round-wounds. Flat-wound strings have a completely smooth outer wrap to provide the sleekest and most fluid surface for effortless sliding without squeaks. Flatwounds produce a flat and dark sound and are most frequently used by traditional jazz players. (Sharken)

Let's take a look at the differences between some of the materials used to manufacture guitar strings and the characteristics of their tone. What are some factors about the string that affect tone? The first is the alloy, which is the type of metal used in the string's construction. Material used for the windings on electric guitar strings must have stronger magnetic properties to be capable of working in conjunction with the guitar's pickups. For plain strings, Swedish steel is the most commonly used alloy for both electric and acoustic. However, strings made for acoustic guitar do not need magnetic properties since the tone is not created with a magnetic pickup. They do however, require strong resonant properties to project the tone and work in conjunction with the wood of the guitar. (Sharken)

Here's a general run-down of some of the most commonly used alloys. I've already mentioned nickel plated steel, which produces a bright and warm sound and is favoured by players of acoustic and electric guitar since it has excellent magnetic properties. Pure nickel is another alloy which is experiencing a bit of a "come back" as of late. It is not quite as bright as the NPS. Pure nickel is what most strings were made of back in the 60's. The

resurgence of surf music and 50-60's music is causing the comeback of the pure nickel. Stainless steel is an alloy commonly used for electric guitar strings since it has good magnetic properties and produces a very clear and bright sound. One advantage of stainless steel is that it's more resistant to oxidation than NPS or nickel. It's a favourite of pedal-steel players. Chrome is much flatter sounding than nickel or stainless steel and is commonly used for flat-wound electric guitar strings since it also has good magnetic properties. It's also often preferred by jazz and blues players. For acoustic guitar, the most popular alloy used for wound strings is bronze, which produces a bright, crisp sound. Phosphor bronze is the second most popular choice and produces a bright, but is slightly warmer and darker sound than bronze. Another common material is brass, which is brighter and more metallic sounding than bronze. Brass seems to work well to brighten up characteristically dark and muddy sounding acoustics. (Sharken)

Of course, we can't forget about the gauge of the string, the actual thickness, which is measured to 1/1000th of an inch. The gauge of a string affects the amount of tension the string creates and how difficult it will be to press down or bend. Heavier strings have more tension and are somewhat harder to play on, however they do produce a stronger and fatter tone than thinner strings. As a general rule of thumb, the bigger the string, the bigger the sound. (Sharken)

As you can see, there are several factors about strings themselves that affect their sound. It's the result of those characteristics of the strings working

together with the qualities of the guitar's wood, and the magnetic properties and tonal qualities of a guitar's pickups that truly define the instrument's voice. But it all begins with the string. Experiment with different kinds of strings; it's the simplest modification you can do. And remember, if you change strings, you may have to readjust the setup of your guitar to accommodate for the differences, especially if you change your string gauge. (Sharken)

No question, strings are an essential part of the sound of a guitar. With the exception of a rare few, the majority of players will agree that their guitars sound noticeably better with new strings. Though it's no secret, this fact is frequently overlooked and taken for granted. Changing strings is probably the cheapest and simplest way to improve your tone. So if you're not entirely happy with the sound of your guitar you may want to consider trying another type of string before replacing pickups, or blaming the amp or your new bass player, since different strings may give your guitar an entirely new sound and feel. Remember, the string is really where the sound of your guitar begins. It's the vibration of the string that initiates everything else. (Sharken)

1.5.4. Using the Slide on the Hawaiian Guitar

There are two main types of slide -- glass and metal. Glass gives you a warmer tone than metal and is lighter, however it can break if it is dropped. Metal has a brighter tone than glass and is heavier, but is practically

indestructible. There are different types of metals used for slides and each type will give a different tone. The thickness of the sides of the slide also affects your tone -- thicker sides give you a bigger tone and vice versa. There are also various lengths of slides and different diameters for the inside. (Slide Guitar)

Interesting point to note is that even a guitar with bad intonation and strings a mile off the fretboard, or one with a few bad frets will work fine for slide because you don't really use the fretboard for slide. In fact a great use for a guitar that is hard to play normally is to make it a designated slide guitar. This works fine if you just want to dabble in slide but for serious playing one should get a good guitar to set up just for slide. (Slide Guitar)

Picking. You can use a pick for slide but I'd recommend trying fingerpicking either with your bare fingers or using fingerpicks. Not only does this give you more tonal options but it also allows you to mute with your fingers. (Slide Guitar)

Tone. Tone is subjective but it is recommended to have tone all the way down (the least trebly possible). The reason for this is that slides normally will brighten up your tone and if you have your tone high up you'll get a really bright screechy tone. With your tone down you can get a really nice warm tone. (Slide Guitar)

1.5.5. Using a fingerslide to play Hawaiian Guitar

To get started put your slide on a finger. You can use whatever finger you find comfortable but I would recommend using your third or fourth and not using your first as this does not allow you to use a fret hand finger for muting. I find that the third finger gives me more control and better intonation but it doesn't allow me full use of my other fingers, which the fourth finger does. When you play slide you just lightly touch the strings. Do not press down. You do not want to touch the frets or fingerboard. (Slide Guitar)

Proper Intonation. One of the most painful things in the world is bad slide playing. Most of this is due to bad intonation (meaning not having your notes in tune). The thing to remember about intonation is play right over the fret. This is the single most important part of playing slide. The only way to improve your intonation is look at where you're playing and listen to whether or not your notes are in tune. (Slide Guitar)

Muting. Without plucking any strings rub your slide against the strings. You'll hear some strings sounding. You need to stop these strings from ringing out when you play. This is where muting comes in. There are two ways to do this and you should use a combination of both. Drag a left hand finger behind the slide. With your picking hand palm cover any bass strings that you're not playing (for maximum muting use a thumpick or your thumb and use your fingers to mute strings) (Slide Guitar)

Vibrato. Vibrato with a slide is very easy. Pretty much what you do is quickly

shake the slide ever so slightly over the note (i.e. move it slightly up the fretboard and slightly down the fretboard very rapidly). This will slightly raise and lower the pitch. There is really no way to say how much you want to modulate the pitch, just experiment 'till you get what you like. Many players have an almost constant vibrato as it can help cover up less than perfect intonation and it sounds good. (Slide Guitar)

1.5.6. Advanced Techniques

(a) Escape Notes. Start by having your finger resting on the string behind the slide. Quickly slide up to a note and as soon as you reach that note pull up the slide. Your finger will prevent the note from ringing after you remove the slide. You should hear a very short, staccato note. (Slide Guitar)

(b) Grace Notes. Grace notes on slide are very similar to what you do when you play standard. Basically what it is is you play one note and then very quickly play another note. The first note should not take up any time. You can do this through slides, hammer-ons and pull-offs, or bends when playing standard. With a slide this is only done through slides. (Slide Guitar)

(c) Fretting Behind The Slide. This technique was pioneered by slide virtuoso Sonny Landreth. It's self explanatory: when you have your slide down fret a note below the slide, the string will go down and will not be touched by the slide. The advantage to doing this is it gives you more complex tones (by mixing fretted and non-fretted notes) and just gives you

more freedom (for example it allows you to play a minor chord in a major tuning. (Slide Guitar)

(d) Microtones. A great advantage of slide is that you aren't limited to just playing the notes available in standard playing (A, C, E flat, F sharp etc). You can play the 'notes inside of notes' called microtones. To do this you simply place your slide in between two frets instead of right over one. (Slide Guitar)

(e) Going Beyond the Fretboard. Yet another great thing about slide guitar is that you don't need frets. That means that you can play beyond the fretboard for extra high notes. When you're doing this you have to be extra careful about your intonation because you have nothing to show you if you are in the right place. Another thing to remember is that you can't go beyond your pickup. (Slide Guitar)

(f) Behind the Slide Harmonics. An unusual sound is produced by plucking the strings behind the slide This works best at the 12th fret but also works at the 5th and 7th frets. (Slide Guitar)

Slide Guitar Blocking and Damping Techniques (Arlen Roth)

The single most important aspect of all slide guitar playing is the ability with the right hand to block and damp successfully to cut out the unwanted notes and noises.

Of course, the first thing to keep in mind is that slide guitar is like playing another instrument; it’s not just guitar with a slide on your finger. It must be

fingerpicked, and the right hand must also do the complex job of blocking and damping out of all those unwanted notes, especially as the lick is moving from one string to another.

The basic rule is that as the lick moves towards you, the very fingers that plucked the strings then serve to eliminate them … usually just as a new string is sounded, thereby keeping a smooth slide sound connected from one note to another. We then move the fingers in a group of three … so if, for example we were playing the top three strings, and then introduced the D string, those three fingers would now move in a group to cover the D, G and B strings. Simultaneously, the thumb – which is resting on the lower strings, and also acts to dampen out the lower strings – allows the new string to be introduced. It also acts as the dampening tool if the lick moves towards the high E string, as well. (Roth)

1.5.7. Slack Key

Slack key guitar refers to a Hawaiian guitar that is used with various alternate tunings.

1.5.7.1. Slack Key Guitar Techniques

It is often believed that the slack key guitar was the father of the Hawaiian Guitar because of its alternate tunings which made it possible to play straight finger bar chords, leading to the idea that even a straight bar could replace the finger. There are several common playing techniques and ornaments

important to the slack key guitar playing style. Hammering-on and pulling-off are used to mimic the yodels and falsettos found in Hawaiian singing.

Harmonics, or chiming, are where strings are lightly touched at specific vibration nodes without touching the fretboard. Slides are where one or two treble notes are cleffed and then slid (usually up) to sound another note. All these contribute to the unique slack key sound associated with the Hawaiian feeling of aloha. Like the blues guitar, slack key guitar is extremely flexible and reflects the individualism of Hawaiian culture. It is common for a guitarist to play the same song differently each time using different tunings and tempos. Each slack key guitarist will play the instrument and their repertoire differently than another, adding to the diversity of the sound. (Koppy)

1.5.7.2. Types of Slack Key Guitar

There are four types of slack key guitar. The first is the simple style, most often seen in older playing styles, like that of the late Auntie Alice Namakalua. The second is a sort of slack key jazz, noted for its use of improvisation by artists like Atta Isaacs, Cyril Pahinui, Ledwad Kaapana, Moses Kahumoku, George Kuo, and Ozzie Kotani. The third type of slack key guitar uses ornaments discussed above, like hammering-on and pulling-off, techniques used by Sonny Chillingworth, Ray Kane, and George Kuo. (Koppy)

The fourth type is the performance-oriented slack key style featuring visual as well as sound techniques. These include playing with the forearm, with a bag over the fretting hand, and the needle and thread technique where the guitarist dangles a needle across the strings hung from a thread held between the teeth. This creates a sound something like a mandolin or a hammered dulcimer. (Koppy)

1.5.8. Some General Techniques

At first you have to put the slide on your finger. Try different sizes and fingers and play a simple note or chord. You have to figure out what's best for you - no one else can. Usually the slide should reach from the middle finger knuckle to the end of the fingertip. No need for extra long slides, you should only cover the strings played. Secondly, you must mute the not picked side of the string. If not, it will vibrate also and produce unwanted sound. Depending on the slide finger, use the remaining fingers aside and press them gently upon the string. You need some time to adjust the pressure.

Now we come to the slide itself. Press it directly above a fret on a string, but don't press the string on the fretboard. Now pick the string and move the slide slowly up and down. Play around with this to get a feeling for it. Try to play slow licks you know already. It's no problem to play several notes on one string, in opposite to usual, box-based playing. Don't forget to mute the other side of the string.

In general, start playing the Blues in G and use the D and G string. Open string is G(I), 5th fret is C(IV) and 7th fret is D(V).

Sound example: first slide Play fingerstyle or use fingerpicks / a thumb pick. Most slide players do that. You get a better control, speed is not necessary - the slide is limiting you. Slide into the notes. Start with the slide a little bit under the fret and then reach the note above the fret. Don't forget the vibrato. Compared to a finger vibrato it's easy to play, just move the slide a little up and down.

Now we come to our first slide guitar lick in E. Noted in tab it looks like (standard tuning):

E

I------12----------I

I--/12--------------I

I---------/12--9~~~~-I

I--------------------I

I--------------root--I

I--------------note--I

Sound example: slide lick 1

We start with a slide into the B note, 12th fret and let it ring while picking the E note. We close the lick with the root note after a slide into the G note.

Variation in the style of Robert Johnson's "I believe I'll dust my broom", played like Elmore James:

E

I------12--12-----12-12-----12-12-----12-12----------I

I--/12-12--12-/12-12-12-/12-12-12-/12-12-12----------I

I--/12--9~~~~-I

I---I

I---root--I

I---note--I

Sound example: slide lick 1

Simple chords in the "Little Red Rooster"-style

E

I-------------------------------------I

I-/3--0---/12~~-----/3--0---/12~--(etc)----I

I-/3--0---/12~~-----/3--0---/12~----------I

I-/3--0---/12~~-----/3--0---/12~----------I

I-------------------------------------I

I-------------------------------------I

Sound example: slide lick 1

Now you're ready to play Muddy Water's Rollin' and Tumblin' (for example from EC's unplugged / Cream live or from Muddy):

G

I----------I

I----------I

I--------/12-12-12-12~~-/12-12\10----/10-------0-/3-0----0-/3-0--etc.--I

I-12-12----------12-----12~~---------/3----------I

I----------I

I----------I

1.5.9. Techniques for Improvement

Don J. MacLean has outlined a few techniques to improve guitar playing: (MacLean)

1. Put the guitar away for a day, week, or even a month.

Go for total and complete abstinence from guitar. You might even want to take it a step further and also avoid listening to music as well. When you take a break from playing guitar and music, you will usually start to get those strong "gotta play" urges. When you resume playing guitar you can look at it with fresh eyes. (MacLean)

2. Learn a song from a different style of music.

Let's say your favourite style of guitar playing is rock. Learn to play a jazz guitar song, a blues song, a country song, a reggae song, or a classical guitar song, etc. You can either find something in a very different style than you normally play or you can learn something that is in a similar or related style. If your ears are in good shape learn the song by ear. Otherwise, find some sheet music for the song. Bear in mind that a great underutilized source for sheet music is your local library. If you live in a small town visit the closest major city's library. Also don't forget about college and university libraries. (MacLean)

3. Learn some guitar theory.

I remember when I first started to play guitar. You couldn't have paid me to learn guitar theory. All I wanted to do was learn my favourite songs and improve my technique. But then I realized that my playing could only go so far if I didn't have a clue as to what I was doing. After more than 25 years of teaching, I can safely say that for most guitarists, the biggest breakthroughs and rut busters come from learning some guitar theory. The great thing is that you don't have to go hardcore on this. Just learning the basics of guitar theory will have a huge impact on your playing. When you don't know guitar theory, it's like wandering around inside a huge mansion with the lights off. With knowledge of guitar theory it's like you've found the switch and turned on the lights! (MacLean)

4. Focus on guitar technique.

Another great thing to do to catapult your guitar playing to the next level is to focus exclusively on your guitar technique. What you do is set aside either an entire practice session, or a whole week of practice sessions and do nothing but work on technique. So you would work on alternate picking, hammer-ons and pull-offs, tapping, sweep picking, finger-picking and stretching exercises. You don't work on any songs, or anything else—you just practice technique. (MacLean)

5. Do some string skipping exercises.

Still in the technique area, a great rut-buster is to work on string skipping exercises. These are exercises that most guitarists seem to forget to use. String skipping exercises will improve your pick-hand technique, fret-hand technique and coordination. (MacLean)

6. Learn to play horn parts on the guitar.

This is a great one. I'm not talking about learning to replicate the sound of car horns on your guitar, I'm talking about learning to play sax, clarinet, oboe, or trumpet parts on the guitar. This is a total eye-opener. The first thing you'll discover, especially if you learn some jazz pieces, is that most horn lines don't sit very well on the guitar. What I mean by this is that they don't sit very well under your fingers. So when you play a Charlie Parker sax solo on the guitar you really have to work! The other cool thing to do with horn parts is to try to

match the phrasing as much as possible. This will give you all kinds of fresh ideas for your lead guitar playing. (MacLean)

7. Learn a piano piece on guitar.

You have three options with this. You can learn the chords or melody for the piano part and arrange it for guitar, or you can create an arrangement in which you do both. When you do that later you are doing what is called "chord melody" style. You create an arrangement in which you play both chords and melody together. Classical guitarists do this all the time and you will also hear solo jazz guitarists use this technique. It's kind of like the "one-man-band" approach to guitar playing. It's fun to play and always sounds cool! (MacLean)

8. Learn a violin piece and arrange it for guitar.

This can also be lots of fun. Take a Bach, Mozart, or Paganini piece and arrange the violin parts for guitar. These pieces sound really cool on guitar and you'll get a great guitar technique workout. (MacLean)

9. Learn some new guitar scales.

If the only scale you know is the minor pentatonic, it's time to look at the larger world of guitar scales. As you learn new scales you will give your fingers some new challenges and most importantly you will give yourself some new tools for creating killer guitar solos. When you think about it,

a guitar solo is just a melody that uses one or more guitar scales that work well over the chord progression. So if you want more variety in your guitar solos, learn some new guitar scales. Also be sure to learn multiple fingerings for these guitar scales. Different scale fingerings will give you different melodic ideas. The other cool thing is once you know multiple ways to play the same scale on the guitar, you can link them together and cover the entire fretboard in the key. This is one way to create those long fretboard-burning licks. (MacLean)

10. Practice guitar scales new ways.

Learning new guitar scales is great but just practicing them forwards and backwards can be boring. Practicing scales in thirds, fourths, fifths, and sixths is good. But you should also practice scales using different and more elaborate melodic patterns and sequences. (MacLean)

11. Learn some new guitar chords.

In most popular songs, 80% of the guitar parts involve playing chords. This means that the vast majority of your playing, especially if you are in a band, is related to chords. So spend some time working on new guitar chords. Get a good guitar chord book if you don't already have one, and decide that you are going to learn 3 new chords every week. That means that you will learn 12 new guitar chords every month. As you can guess, this will add up fast. In a year you have added 144 new guitar chords to your vocabulary. The key when

you learn these new guitar chords is that you MUST find a way to use them. If you learn a new chord and have absolutely no way of using it, it's like learning a new word and never being able to use it in conversation. In a short period of time you will have forgotten the word. The same is true with chords, if you don't use them you will forget how to play them. (MacLean)

12. Learn more about rhythm and time signatures and compose something in 3/4, 5/4, 7/8, etc.

There are lots of great ways to improve your rhythm playing. And by this I don't just mean rhythm guitar parts. As you improve your sense of rhythm you'll also improve your lead guitar playing. If you are only comfortable playing 8ths and 16ths, then this is all you are going to do in your rhythm and lead guitar playing. If you have a wider rhythmic pallet to use, you will be able to create more interesting rhythm guitar and lead guitar parts. (MacLean)

So how do you improve your rhythm? First you should learn the basics of rhythm and time signatures. Grab a good guitar theory book for this. You may want to work your way through a drum book. I work all of my serious guitar students through a drum book called Progressive Steps to Syncopation for the Modern Drummer by Ted Reed. (MacLean)

All you do is set up your metronome and clap the rhythms. Work on a few pages a week and you will notice huge improvements in your rhythm. The other thing you can do after clapping the rhythms, is apply them to chord

progressions. Either compose your own or find one you can use with the rhythm. Also create a guitar solo that uses the new rhythmic figures you have just mastered. The other great thing you can do for your rhythmic skills is listen to a wide variety of musical styles. Listen to everything you can get your hands on—including music from different cultures—this will expose you to some really cool rhythms. Once you have started to experiment with different time signatures, you should spend some time composing pieces in these meters. Write something in 3/4, 5/4, 7/8, etc. (MacLean)

13. Dust off the metronome.

Another great rut-buster is to practice everything with a metronome. If you already practice with a metronome then turn it off for a week and practice everything without it. Another option is to use your metronome as a measuring stick. Let's say you are working on a new scale. Set up your metronome and practice the guitar scale with the metronome. Note the tempo that you are able to accurately play the scale. Make it your goal to increase the speed by one, two, or three beats per minute (bpm). Do this every practice session, or once a week, etc. Just make sure it's a realistic goal and be sure to remember that speed is a by-product of accuracy. If you play a scale or pattern faster than you can accurately play it, you are actually practicing your mistakes. (MacLean)

14. Get a DVD of your favourite guitar player.

There is probably nothing more inspiring than watching your favourite guitarist performing. Now it's easier than ever to do this. A quick search online and you should be able to find a concert DVD you will like. If you can't find your favourite guitar player, at least find a close runner up.

15. If you play mostly with a pick, focus on finger-picking. If you are mostly a finger-style player, spend some time learning some flat-picking songs.

16. Play some slide guitar.

17. Retrace your roots.

1.6. Social misconceptions regarding the guitar and the difference between the Spanish guitar and Hawaiian guitar

The guitar is, and has always been, a social instrument. In all its forms, it has always been a portable, multi-stringed instrument made for public hearing. Perhaps for this reason, there is a certain social misconception regarding the guitar, particularly in India. It is common to associate guitar playing with hippies, for instance, and to consequently accord it a much lower social standing. This extends to idea that only rock bands require a guitar and hence not much effort goes towards understanding the other styles including classical. When we look at mainstream classical instruments popular in India, be it veena or percussion instruments, we can see that gods and goddesses are portrayed playing these instruments. This naturally elevates these instruments to the higher stature. An instrument like Sitar has its reputation further

enhanced because of extensive literature available regarding it, both historical and mythological. Since nothing of this nature is available for the guitar, it is perhaps relegated to the fringe, and has yet to pick up as a classical instrument that can be used with great versatility while staying true to traditions and culture. The following section attempts to throw light on the different ways of perceiving the playing of the guitar, right from holding it and the posture involved to picking and using the fretboard.

Holding the Guitar

The guitar can be played in many positions, but some positions are clearly more efficient than others. The choice of position is personal, but clear guidelines exist. Some basic considerations in determining a chosen playing position include:

- The physical stability of the instrument
- Ensuring the freedom of both hands such that they have thorough access to the instrument and can meet all technical demands without having to support the instrument
- Elimination of general muscular tension in the assumed body position. While it is natural for a beginner to experience fatigue in the muscles of his hands and arms, you must be careful to sit straight and not cause damage to your spine and waist. If you do experience pain in those regions it is possible that the position is harmful and must be changed to prevent damage.

Many beginners try and turn the guitar towards themselves, so they can look down at the frets and sound hole. Curling the guitar towards yourself in such a way actually makes it more difficult to fret the strings efficiently, because you have to curl your wrist more. This tension can be harmful. Beginners are also often inclined to put their elbow too high or low, which leads to cramping. Ideally your arm and shoulder should be relaxed. (Guitar/The Basics)

Sitting: Classical Style

Sit up straight on a chair or stool, with your left foot on a footrest approximately 10-20 cm in height. Place the waist of your guitar on your left thigh. Rest your right forearm on the top front edge of the guitar's lower bout so that it is comfortable and allows you to easily strum the strings over the sound hole. The guitar headstock should approximately be at head level, which corresponds to an inclination of the guitar neck of about 45 degrees. Your left hand should be presented to the guitar neck and fretboard such that the thumb is behind the neck and all three segments of the fingers are forward of the edge of the fingerboard. Shoulders should be level and relaxed, and it helps to be leaning forward slightly. Most people should feel comfortable and able to stay in this position with little effort. If you cannot, something may not be right. As an alternative to using a footstool, you can use some sort of guitar support between your left leg and guitar. This also allows for good alignment of the spine and an efficient playing posture.

With your left hand, put your thumb so that it is behind the second fret. This is the most comfortable area for playing open chords. Your thumb should not extend over the edge of the fretboard and touch the E string. (Guitar/The Basics)

Electric Guitar

Many rock performers hold the electric guitar lower than the classical position. The neck is held horizontally, rather than at a 45 degree angle. This allows bends to be more easily achieved and also allow the same hand angle to be maintained when moving up the neck through box positions. playing in extremely high fret positions is also facilitated by this angle as the left hand twist to accommodate playing in the cutaway in a way that would be straining and more difficult in the classical position. (Guitar/The Basics)

Lapsteel or Hawaiian guitar

With these styles, the guitar is played horizontally, so the frets and strings point upwards. Some skilled players can fret notes and play chords by pressing down on the strings, but more often these guitars are played with a slide. (Guitar/The Basics)

Standing

If you have a guitar strap, available from any guitar store for a few dollars, then you can also learn to play standing. This is useful if you plan on playing in a band. If you have a heavy guitar a broad guitar strap is often more

comfortable than a thin strap. To attach a strap, there should be a hole in each end that you can put over two pins, usually fitted on the endblock of the guitar and where the neck meets the body. Many acoustic guitars only have one pin on the end block, and straps must be attached under the strings above the nut on the headstock. However, this sometimes makes it difficult for keep the guitar at an optimum height and can cause shoulder strain. You can usually install a second pin where the neck meets the body, but you should be careful or you might damage (and devalue) your guitar.

With the strap attached to the guitar, sling it so that it hangs around your neck on your left shoulder. You can usually adjust the height of the guitar, but the exact method depends on each strap. The length of the strap depends on your preferences, but you can use the same guidelines in found in the previous section. Some professionals have their guitar hanging down at their knees, and others keep it under their shoulders. Neither of these extremes are recommended for a beginner. (Guitar/The Basics)

Using the Picking Hand

Much of the "feel" of a guitar style comes from the way the strings are hit. Since there are many different techniques, and often they defy explanation, it is difficult to explain all but the most basic techniques. How a player hits the strings is something they must discover for themselves.

In order to advance with the guitar, it is very important to properly use your picking, or impact hand. This should almost always be your dominant hand,

so if you are right handed, you would use your right hand for your picking hand, and vice versa for left-handed people. This hand should always be loose, because if it is not, the strings can sound clunky.

Your hand should "float" at a comfortable height above the sound hole, and you should be keeping your wrist straight or slightly bent. You should always be ready for movement in either direction, and your wrist should not touch the strings as you are strumming (unless you are doing some sort of muting technique). You can use your fourth finger to brace against your guitar, but this is considered bad in the long term; this is like a crutch, and you are limiting the potential you can get from practicing with your whole arm. For example, even though the brace will let you pick notes faster, it sometimes limit your ability to play complex rhythms using chords. While it might be good to practice using your fourth finger for a brace sometimes, you will become a better guitar player if you don't brace yourself like that. It doesn't matter if you are using a pick or just your fingernails, whenever your impact hand hits the strings, the type of hit can be changed based on the tension of your upper finger joints. This is the area to pay attention, because slight variations in pressure and speed can make distinctly different sounds. (Guitar/The Basics)

Fingers

The fingers can be used in two main ways, through finger picking or strumming through chords like using a pick. There are several styles of finger

picking, such as Travis picking, where you only use the thumb and first finger, and other styles where you use three, four or all five fingers. (Guitar/The Basics)

Using a Pick

Hold the pick in between your first finger and your thumb. Don't pinch it, hold it firm but loose, with the pick flat in between the side of your first finger and the bottom of your thumb. Your thumb should be in line with the first segment of the first finger, with the pick firmly (but not tightly) between. When you pick, your wrist should be loose, and the main motion comes from your wrist for picking on one string, and you should use the Elbow for crossing strings. Similarly, when you strum, make sure to use your forearm and not your wrist for strength. Your wrist should be loose enough, but controlled, and the power should come from your forearm. It is helpful to imagine the pick like a small bird between your thumb and finger; you do not want it to fly away, and you do not want to crush it. (Guitar/The Basics)

Using the Fretboard

The most important things to remember when playing are to keep your hand loose, avoid unnecessary movements and finger spreading, and not to smother the strings. Having good flexibility in your hand is one thing, but trying to reach too far can be exhausting. Keep your fingers tight together, but not cramped. In general, when playing acoustic instruments you should always use the tips of your left hand fingers and not the pads to press the strings. If

you use the pads, you risk muffling the sound coming from adjacent strings, which may be required to be heard. The greater sustaining properties of electric guitars often requires that such strings be damped so this rule does not always apply. Ideally your left elbow should be extended from your body, and your left hand should curl in towards your body. Your fingers should be like little hammers hitting down on the strings, and this way you will use the tips to push the strings down into the frets.

Regardless of where you are playing on the fretboard, you always have to make sure that you're pressing down in the best spot to get the best sound. You should always be fretting down the string slightly behind the fret of the note you want to play. Press the string down firmly to the fretboard, close to the metal fret. If the finger is too far away from the fret, then the pressure is not sufficient to press the string down completely on the frets, and the note will buzz. If you are pressing too close to the fret you will sometimes accidentally play a note too high. You'll have to practice to get the right amount of pressure to use and the right distance at which to hold your arm. (Guitar/The Basics)

Chords: A chord is defined as three or more different notes sounded at the same time. Ability to play chords is a basic requirement of most guitar music. There are many different types of chords, and each type has its own sound. Other things about the guitar affect how a chord sounds. Generally, playing chords involve pressing several (and sometimes all) the strings down on the

frets. Sometimes this can be very tough for beginners until their muscles develop. Often a beginner will find that when playing a chord, not all the strings are being pressed down properly, and some strings sound dead. It is important to make sure that all the strings ring out, which can be tested by picking up and down a chord, and adjust your fingers when needed. Some players use their thumbs to play the low E string. They do this by turning their fretting hand slightly out and squeezing the thumb down on the string. Players with long thumbs can play on the low E and A strings. This technique compromises efficient left hand function as the wrist and hand have to undertake significant re-adjustment in order present the thumb to the string in such a manner and then to return the hand to its standard presentation. Additionally the tips of the fingers can no longer be presented vertically to the strings. The technique is not recommended for beginners who wish to maximise their technical abilities. Your hand is in a different position depending on whether you are playing an open chord or a barre chord. (Guitar/The Basics)

Melody

When a player is first starting out, it is not their ability to make melodies causing problems, it is a lack of skill in their hands. Many people can whistle or hum a melody, but have difficulty translating that to the fretboard. Learning the sound of different intervals between notes takes time and patience.

The best way to learn how to carry a melody on the guitar is simply to keep practicing. Unfortunately there is no secret to being a good player, you simply have to practice and learn for yourself. This is good though, because even if there was some secret, if everyone did the same thing, then all the music would sound the same. (Guitar/The Basics)

Differences in construction

The first Hawaiian guitars were converted from Spanish guitars with the following adaptations:

1) A nut installed to raise the strings higher off the fretboard.
2) The use of a steel bar and finger and thumb picks
3) The changing of the strings from gut to steel. (Bocchino)

Hawaiian guitars are not held like a regular guitar, but are played lying flat. Because they lie flat on the lap, their neck could be square and sturdy.

When manufacturers realized that Hawaiian guitars were here to stay, they began making a special Hawaiian model. Raised fretmarks were also no longer necessary, so they were creatively inlaid into the fretboard or decoratively painted on. Over the years, beautiful woods, different shapes, elaborate decorative features and designs, double necks and even triple necks evolved. (Bocchino)

Difference in playing technique

Standing vs. sitting, volume control, tuners, amplifiers, strings, memorization vs. reading music, tab vs. notation, harmony – and practice, practice, practice – all things to consider when learning steel guitar.

But Jerry Byrd says: The most indelible impression I want to leave with you is that the Hawaiian steel guitar must be played not only with the head and hands, but with the heart. As with any instrument, a musician plays with his head and hands, but an artist plays with head, hands and heart. That is even more so with the steel guitar, one of the most versatile and expressive instruments in the world. (Bocchino)

Difference in tuning

Lacking capos which allow the same guitar fingerings in a higher key, Hawaiians developed tunings in six keys. The different tunings of the guitar were given names, such as taro patch, and manua loa. Taro patch is a popular G Major tuning that retunes the standard Spanish tuning (E-A-D-G-B-E) to D-G-D-G-B-D. (Koppy)

Manua loa is where the top two pitches are tuned a wide fifth interval apart. Wahine tuning contains a major 7th note. In all, the different tunings developed by the Hawaiians are divided into five basic categories: Major, Wahine, Mauna Loa, Nihau/Old Mauna Loa, and miscellaneous. In the past, slack key guitar players often guarded the secret tunings they had developed, handing them down to family or friends. Today it is not unusual for slack key

guitarists to turn away from the audience while tuning so no one will be able to copy their style. These individual slack key tunings produce melodic and harmonic patterns called runs or vamps, and become a starting point for improvisation and composition. (Koppy)

For the sake of completeness here are some common slide (open) tunings:

Note that for example Ab is G#... There are always more than one open tunings for a key! Never tune a string above standard tuning, at least with an acoustic guitar and heavy strings. It can break the neck. Tune down if possible.

Reference: Standard tuning E-A-D-G-B-E (Eric And Duane's Guitar Beats Everything)

Open G: D-G-D-G-B-D (the most common slide tuning, EC's favourite Dobro tuning).

Open E: E-B-E-G#-B-E (Duane's favourite tuning, Delta Blues, stress for the neck) or open D with capo at 2nd fret.

Open D: D-A-D-F#-A-D (also with capo for open E)

To play a chord we need at least 3 strings for a good sound.

Which major chord has three open strings? The G major chord uses the open D, G, B strings. That means, for any major chord in standard tuning we can use these strings. For example to play the A major chords simply put the slide

above the second fret and pick these strings.

Often used major chords with these strings are:

G: open strings

A: 2nd fret

C: 5th fret

D: 7th fret

E: 9th fret

F: 10th fret

Now we can do the same for the minor chords. E minor uses the open strings G-B-E, so we get the other chords in a similar way:

Em: open strings

Fm: 1st fret

Gm: 3rd fret

Am: 5th fret

Cm: 8th fret

Dm: 10th fret

Difference in learning Spanish Guitar compared to Hawaiian Guitar: Most slide guitar instructions start like "and now we use the open xyz tuning". That means you can forget what you know about the fretboard and forget both your left and right hand techniques. You have to learn everything new. To avoid this, I'll first explain slide guitar on standard tuning, so all you need is a

slide. Open tunings give a different sound and have their advantages, but they are not better in every case. The late Muddy Waters for example played in standard tuning, also Duane and EC on some songs. Open tuning is often used for Delta Blues on acoustic guitars, because you need the bass strings in correct tuning. For soloing on electric guitars it's not that important, so you can play in standard tuning. However, you have to damp some strings, which is usually done with the picking hand. That's why most slide players prefer fingerstyle. Damping is more important in standard tuning, because you get dissonant intervals when the strings with all their overtones ring out. (Madsen, 2005)

2. The Hawaiian Guitar and the Popular Instruments in Hindustani Classical like Sitar, Vichitra Veena, Rudra Veena, and Santoor - A Comparative Study

The present study intends to bring out the characteristics of Sitar, Vichitra Veena, Rudra Veena, and Santoor in Hindustani Classical Music and make a comparative analysis of how all those elements can be also explored and developed in the Hawaiian guitar. In brief the focus is on

- The Historical existence of the stringed instruments.
- The basic techniques and approach of playing.
- Analysis of the growth of the Gayaki style in Sitar playing and its impact on other stroke instruments in the Classical stream.
- How the growth and development of the Gayaki style on Sitar corresponds to that of the Hawaiian Guitar, the similarities and differences.

It is a fact that a nation is progressive and developed in true sense when people are proud of being its citizens. India has rich culture and has eternal values that has been cherished and developed since the time immemorial. Her culture is a living one rooted in a living past and based on undying spiritual foundation, which in spite of its ups and downs, has kept the lamp of the spirit burning. She has established the principle of spiritual oneness under the great

variety found in the world, the world of thought as well as physical world. The study of one's cultural heritage leads one to the appreciation of beauty and wisdom in life.

Music is an integral part of India's culture. Natyasastra, a 2000 year old Sanskrit text, describes five systems of taxonomy to classify musical instruments. One of these ancient Indian systems classifies musical instruments into four groups according to four primary sources of vibration: strings, membranes, cymbals, and air. According to Reis Flora, this is similar to the Western theory of organology. Archaeologists have also reported the discovery of a 3000 year old, 20 key, carefully shaped polished basalt lithophone in the highlands of Odisha.

According to Indian Scriptures, music originated in the hands of Lord Brahma who also created the Vedas. This knowledge was subsequently imparted to Lord Shiva who in turn blessed Goddess Saraswati with this supreme form of art. Goddess Saraswati is known and worshipped as "Veenapustakdharini" which may be interpreted as the one holding a veena - which is a musical Instrument - and pustak meaning book and representing knowledge. Goddess Saraswati taught this form of art to Narada - a well known sage in the service of Lord Vishnu - and he passed this wisdom on to the all the heavenly deities and apsaras. Later, revered saints like Bharata, Hanumant etc. brought it to the mortal world. Some musicologists of ancient India believed that as reward for an infinitely long period of meditation, Narada was blessed with music by

Lord Shiva. Lord Shiva was said to have created the Rudra veena (stringed musical instrument) simulating the lying posture of his consort Goddess Parvati and through his five faces or mouths five ragas originated. The sixth raga was created by goddess Parvati herself. Of the five faces of Lord Shiva the eastern face gave birth to raag Bhairav, the Western Face to Raag Hindol the Northern face to Raag Megh, the Southern face to Raag Deepak and the fifth face which was directed towards the sky gave birth to Raga Shree. Goddess Parvati is said to have created the Raga Kaushik. Since the range of our music was not restricted merely to India but was also influenced by places like Persia and Afghanistan let us take into consideration the opinion of Persian Musicologists as well. According to hem when Hazrat Musa (Moses) was wandering amidst nature he received a divine command - "ya Musa haquiqi tu apna asa" - that is "O Moses" strike this particular stone with your stick. The stone, when hit, disintegrated into seven parts and from each part different springs spouted. Each of these have different sounds which are Sa, Re, Ga, Ma, Pa, Dha, Ni. Other Persian musicologists say that there is a rare bird whose beak has seven holes and it is from these holes that the seven notes originated. (Vaz)

2.1. The Sitar

Sitar is the most popular stringed instrument in India and has also become synonymous with India and Indian culture throughout the world. It is a Persian (Iranian) word meaning three strings (she-three and tarstrng).

Though it is attributed that the Sitar was an invention of Amir Khusru who was a great personality and an Icon of Hindustani Sangeet (North Indian Classical Music) it is believed to have evolved in to its present form in the year 1700's as a marriage between the Persian Setar and the South-Indian Veena, while using the characteristically resonant bridge of the Tampura. Amir Khusru lived around 1300 AD and there is no historical reference its invention by him. The Sitar was clearly nonexistent until the collapse of Moghul Empire. Sourindro Mohun Tagore has confused matters further by attempting to trace the name of the modern sitar to Vedic times. Iconographic images of instruments similar to the modern sitar appeared only around 1800. Several additional innovations during the turn of the twentieth century have been made to the instrument giving form to the current standard sitar. It may be said that it is a fusion of Persian and Indian lutes, and less than three centuries old. It is believed that Sitar evolved from the ancient veena like Rudra Veena, none the less veena is a stick Zither while Sitar is a Lute and the materials used are also different. There is a possibility that Sitar is derived from Saraswati Veena but there are questions raised, where did the Saraswati Veena come from? Why does this class only begin to show up in India about 800 years ago? The Sitar in its present form was invented by a Fakir Amir Khusar in 18th century referred in the "Sangeet Sudarshana" and not by Amir Khusar who lived in 1300AD. It is developed in the Indo- Pakistan subcontinent at the end of Moghul era and is evolved from the Persian lutes

and had been played in the Moghul courts. The roots of Sitar can be traced to an instrument first built under Medieval Muslim influence from the tanbur, a Middle Eastern lute with a distinctive long neck as well as from the Veena, a narrow, intricately crafted Indian Zither. Although images similar to the Sitar date back to 1800, the more well-known form of the Sitar had become prominent by the mid nineteenth century. The long heavy neck and gourd body produce a rich resonance and harmony, and is the dominant instrument used in Hindustani classical music and is played as an accompaniment to dance throughout India and Pakistan. Sitar music is universal in these and other Middle Eastern countries. More intricately added design innovations made during the mid-twentieth century have given form to the standard Sitar made popular by musicians such as Ravi Shankar who is the utmost popular Sitar player, and rock acts such as The Beatles, looking to infuse their music with the exotic sound that emanates from the intricately crafted instrument. (Sitar Ratna)

2.1.1. Design of the Sitar

Masti Khan the grandson of Amir Khusar one of the most influential musicians composed numerous slow gats in Dhrupad style which was in vogue in those days and called Mastikhani Gat. It was further popularized by his son Bahadur Khan. Masti Khan was a resident of Delhi and therefore Mastikhani Gat referred as Dilli Ka Baaj.

Sitar has two layers of strings made of steel, brass and copper. The bottom layer has approximately 13 steel strings called taraf (Persian for excitement or joy)and is placed on a small one inch long bone bridge and in height a fraction of an inch. When the top main strings are plucked these strings resonate the rag performed .The top layer of seven strings, used to create the melody and drone, rest between three bridges on one end of the neck and a main bridge that rests on the gourd section. Two of these three bridges anchor tow of the three chikari strings that serve to extend notes and punctuate the rhythm. The remaining five strings lie on a bridge that spans the width of neck. All seven strings converge in a parallel manner on the main bridge that sits on the gourd section. The main bridge is about three inches long, and one inch in both height and width. (Sitar Ratna)

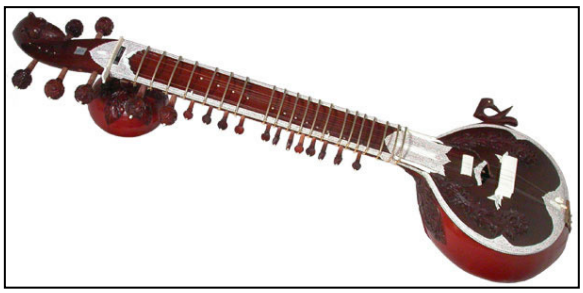


Figure 14: Sitar

The tonal quality of the instrument will be increased by slightly curving the bridges usually made of antelope horn and optionally a layer of wood on the surface.

The melodic strings cut into the bridge and require it to be reshaped over time, two hooks are attached to the frets to lower the height of two bass strings of the instrument so that they do not undermine the playing of jhala or other fast passages. Using of 13 small wooden pegs for the tarafs and seven large pegs for the melody and drone – chikari strings give rise to Coarse tuning of the

sitar strings. Fine tuning of the melody strings is accomplished by using small beads. High quality sitars are hand-crafted by a few well reputed instrument makers. At the right hand of the instrument the resonating chamber made of gourd balances the instrument. The thumb of the right hand rests at the side of the neck joining gourd. A mizrab (derived from Arabic word zarb meaning strike) made of wire plectrum is worn on the right index finger to pluck the top layers of strings.

The Ravi Shankar Sitar: It has been named after the musical legend as well as an extremely talented sitarist Pandit Ravi Shankar. RV sitars feature 12-14 sympathetic strings and are equipped with bass melody strings. This type of sitar also boasts of a second small pumpkin that is attached near the top of its neck. The Ravi Shankar Sitar is constructed with two extra bass strings. As a result, these types of sitars produce a deep, bass-filled sound. Often, RV sitars serve as works of art and music. These sitars are usually decorated with a good deal of extra carving and penwork. (Exploring the Types of Sitars)

The Vilayat Khan Sitar: It is slightly smaller than the RV style and features just one gourd, and is equipped with fewer sympathetic strings and features absolutely no bass strings. This kind of Sitar is constructed with an additional rhythmic accompaniment string, known as a "chickaree." This additional feature enables the Vilayat Khan version of the instrument to produce a fuller and more chordal sound quality. This particular Sitar is played by those who belong to the "Etawa Gharana" and the performers embrace a minimalist

approach to decoration. (Exploring the Types of Sitars)

The Bass Sitar: Besides the two main types of Sitars, there's another option for music lovers. The "Surbahar," or bass sitar, is a larger type of sitar that typically employs very thick strings and a much wider neck. The surbahar sports a broader fret-board, as well. This type of sitar offers a deeper tonal quality, as well. Among sitar enthusiasts, this type of sitar is considered much more difficult to play than other types. (Exploring the Types of Sitars)

The Electric Sitar: Electrical Sitar came in to existence during late 1960s. Most resemble the electric guitar in style of the body and headstock, though some have a body shaped to resemble that of the sitar such as a model made by Danelelectro. The electric sitar with its standard guitar fret board and tuning, is more familiar fret arrangement for a guitarist to play. The twangy sitar like tone comes from a flat bridge adding the necessary buzz to guitar strings. It is configured so that the six playing strings typically located on the left side of the instrument having their own pickups, like typically lipstick pickups are used for both sets of strings and are usually tuned with a harp wrench. Buzz bridge developed by musician Vincent Bell, a unique type of bridge gives the instrument a distinctive sound. Some electric sitars have drone strings in lieu of sympathetic strings. The sympathetic strings on most electric sitars do not resonate strongly enough to match the effect of an acoustic sitar. There are resonant chambers in the solid body instruments that have Masonite tops however it is not enough to excite the 13 strings into true

sympathy. (Exploring the Types of Sitars)

2.1.2. Prominent players of Sitar and their approach

Annapurna Devi

One of the foremost sitar players in the country, she is the daughter and disciple of Ustad Allauddin Khan, founder of the Maihar gharana. She is highly regarded for her traditional or "dhrupadi" approach.

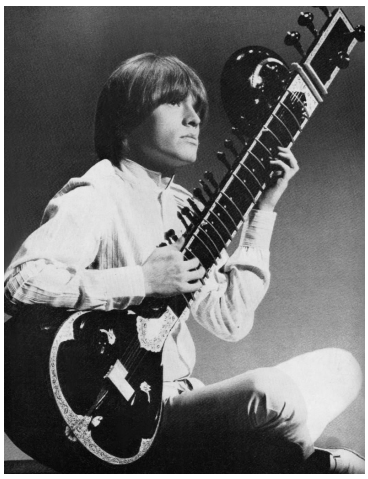
She followed her father's grammatical contributions namely: A very slow and elaborate alap, a comprehensive jod and jhala, and compositions of bandishes or gats in various taals. She has trained many musicians, notably, Pt Hariprasad Chaurasia, Pt Nikhil Banerjee, Amit Bhattacharya, Ranu Majumdar, among others.

George Harrison

George Harrison was the lead guitarist for the Beatles and Traveling Wilburys, as well as a best-selling solo artist. He was one of the world's most famous sitar players, and was a devoted to Indian music and culture, in general. He trained under Pt. Ravishankar in India.

His introduction of sitar in popular music helped increase awareness of the instrument in the west. One can hear the distinct strains of the sitar in many of the Beatles tracks such as *Norwegian Wood, Revolver* and *Sgt. Pepper's Lonely Hearts Club Band* as well as Harrison's solo releases such as *Within You Without You*.

Brian Jones



Brian Jones was the founder and original bandleader of the Rolling Stones. Jones was a multi-instrumentalist, with his main instruments being the guitar, harmonica and keyboards. His innovative use of traditional or folk instruments such as sitar and marimba was integral to the changing sound of the band. He grew interested in the sitar after hearing George Harrison play. His sitar is heard prominently in his song *Paint it, Black*, and in tracks of *Between the Buttons* and *Their Satanic Majesties Request.*

The Khan Family: This multi-talented musical family comprises some of the most exceptional and famous sitar players in the world. They include: Kirit Khan, Chhote Rahimat Khan, Enayat Khan, Hidayat Khan, Imdad Khan, Imrat Khan, Irshad Khan, Nishat Khan, Shafaatullah Khan, Shujaat Husain Khan, Vilayat Khan, and Wahid Khan.

Ustad Shahid Parvez: A member of the Khan family of famous sitar players, he is renowned for pushing the boundaries of sitar music.

Anoushka Shankar: The daughter of Pt. Ravi Shankar, she is a talented sitar player and composer, known for her international collaborations with a mix of classical sitar and electronic beats.

Pt. Nikhil Banerjee

A child prodigy revered as one of the 20th Century's greatest traditional sitarists, Nikhil Banerjee began playing at the age of five, learning all the intricacies of the musical scale and also the system from his father Jitendranath Banerjee. He continued his training under Baba Allauddin Khan, mastering the alaaps, meends, gats and taans to emote the rare rhythmical tonal quality typical of the Maihar gharana.

Nikhil Banerjee`s Sohini and Megh deserve mention. Sohini being a raaga, whose emphasis falls on the upper octave (uttaranga), requires the musician to emphasise the high octave notes. It is played in the madhya laya, with unfailing melodic sense and sustained exhilaration. And, Nikhil Banerjee renders each note with such precision that each glows with diamond-fire. His Megh offers the innumerable beauties of his art and style within a short scope. (Pt Nikhil Banerjee)

Mushtaq Ali Khan

Born on 20th June 1911 in Banaras he was a sitar, surbahar, and pakhawaj player. His father Ashiq Ali Khan was a renowned sitar player. His musical ancestor tree includes Masit Sen, the originator of Masitkhani Baaj, a slow tempo instrumental composition. Mushtaq Ali Khan was recognized as the foremost representative of the Senia gharana of sitar playing in the mid-20th century. He was the only surbahar player of India who used to play the been-ang with three mizrabs and that too, with the pakhawaj as an accompanying instrument only in pure dhrupad style. Khan Sahab had his lineage with fifth vani, called Dhandvani named after one of the forefathers, the famous dhrupadiya of Shah Jahans Court, Nayak Dhundhu. It is also called Rasal Vani for its beauty. (Mushtaq Ali Khan)

Pt. Ravi Shankar

Described as the best-known contemporary Indian musician, Ravi Shankar studied under court musician Allauddin Khan. After finishing his studies in 1944, Shankar worked as a composer, creating the music for the *Apu Trilogy* by Satyajit Ray, and was music director of All India Radio, New Delhi, from 1949 to 1956. In 1956, Ravi Shankar began to tour Europe and the Americas playing Indian classical music and increased its popularity there in the 1960s through teaching as well as performance, and his association with violinist Yehudi Menuhin and rock artist George Harrison of The Beatles. Shankar engaged Western music by writing concerti for sitar and orchestra and toured the world in the 1970s and 1980s. Through his contact with musicians of different cultures, Shankar was the first to introduce Indian music to western, mainstream audiences. Over his eight-decade career, he became a worldwide musical icon, especially through his work with the Beatles, and was labeled the "godfather of world music" by George Harrison.

The American jazz saxophonist John Coltrane named his son Ravi Coltrane after Shankar. Shankar played his first U.S. concert in 1956, introducing the western audiences to ragas, a complex Indian musical form often enhanced with drums and other instruments. He explained how each raga has its own

personality, whether happy, sad, erotic or devotional. Shankar believed that to effectively play a raga, a musician must have harmony within himself, follow the musical structure, and join in harmony with others. "The basis of the system that's known as the raga is the melody forms -- hundreds and thousands of them," said Shankar. "They have their own ascending and descending structure. They're pentatonic, hexatonic or using all the seven notes, and different permutations and combinations. But the question of spirituality is something else. It is being trained from the very beginning to be at peace yourself when you perform." (Ravi Shankar)

Shankar developed a style distinct from that of his contemporaries and incorporated influences from rhythm practices of Carnatic music. His performances begin with solo alap, jor, and jhala (introduction and performances with pulse and rapid pulse) influenced by the slow and serious dhrupad genre, followed by a section with tabla accompaniment featuring compositions associated with the prevalent khyal style. Shankar often closed his performances with a piece inspired by the light-classical thumri genre. Shankar has been considered one of the top sitar players of the second half of the 20th century. He popularized performing on the bass octave of the sitar for the alap section and became known for a distinctive playing style in the middle and high registers that used quick and short deviations of the playing string and his sound creation through stops and strikes on the main playing string. Narayana Menon of The New Grove Dictionary noted Shankar's liking

for rhythmic novelties, among them the use of unconventional rhythmic cycles. Hans Neuhoff of Musik in Geschichte und Gegenwart has argued that Shankar's playing style was not widely adopted and that he was surpassed by other sitar players in the performance of melodic passages. Shankar's interplay with Alla Rakha improved appreciation for tabla playing in Hindustani classical music. Shankar promoted the jugalbandi duet concert style and introduced new ragas, including Tilak Shyam, Nat Bhairav and Bairagi. (Ravi Shankar)

Pt. Balaram Pathak

Pandit Balaram Pathak learnt Sitar from his father Pandit Ram Govind Pathak and his uncle Shri Rameshwar Pathak. Besides the Sitar he also plays Surbahar and Sursingar instruments. Balaram Pathak's style contained a distinctive blend of the characteristics of originality and precision in the elucidation of the Indian ragas. His alap, meends, mukris, gamaks, zamzamas, ulta zhala produced an ambience of inspiration and emotion which was at once thought provoking and poignant. Founded on his far reaching and intense research of the Carnatic and North Indian styles of music he presented colossal inputs to classical music by way of his musical masterpieces and launching of new Ragas like Latangi, Charukeshi, Sanmukh-priya etc.

He pioneered the use of harmonics on sitar with meend, and recorded this arrangement on his CD. This exclusive custom was advanced further by son Ashok, who uses it considerably, along with conceptual performance on the consonant strings.

Abdul Halim Jaffer Khan

Abdul Halim Jaffer Khan is perhaps best known for his innovation,

Jafferkhani Baaj. He describes it as, "a synthesis of precision in technique, systematic thought" with a vigorous playing style. Of ragas such as Kirwani, Abdul Halim Jaffer Khan has been credited with bringing Carnatic ragas into the sitar repertoire: Kanakangi, Latangi, Kirwani, Karaharapriya, Manavati, Ganamurti, etc. but rendering them through a Hindustani sensibility and in the Jafferkhani style. He was the first Hindustani musician to collaborate with Carnatic music in a performance with renowned Veena player Emani Sankara Sastry. His early experimentation with polytonality in Indian classical instrumentation (which is largely solo performance) was achieved in his sitar quintet.

2.1.3. Comparison of Sitar with Guitar

An initial observation is that the Sitars sound quality is Javaridar sound which makes much more audible compared to the sound of a guitar. This is because the external sound of the Sitar is more powerful when compared to its internal sound. The long stem of the fret board and not so hollow design adds to the Sitar having a rich and Vibrant tone on the outside whereas the Javaari tone (mild overdrive) helps in the sharpness of the Sound.

The Guitar on the other hand has a much mellow sound absolutely no Javaari and because of a large hollow body the sound of the Guitar rings more on the inside .The Internal Sound is more than the external sound and the sound has a certain roundness to it .Though the tone is wonderful and sounds very

sonorous, for the dedicated classical listeners the sound of the Sitar holds a greater appeal because of treblish quality of the sound. As the New Generation Sitar players come up with more and more advanced techniques one can clearly observe the influence of the Sitar on the Hawaiian Guitar.

The Single Mizrabs striking power stands over the Guitar because it is downward and upward while as Hawaiian Guitar picking is only unidirectional but then combinations of thumb and pick are yielding good results. In particular, when the Hammer-on section during Jamjama, krintan and the Jhala (in Drut) is played on the Hawaiian Guitar, it sounds so much like the Sitar. Pandit Ravishankar had a unique style of muting all other strings while playing the jhala – this is similar to the Hawaiian guitar technique.

Many hybrid Hawaiian Guitars use the Chikara which gives a similar sound like the Sitar. One can see the inspiration of the Sitar very clearly in the playing technique of Pt Vishwa Mohan Bhatt, especially in his playing of jamjama and krintan. He has used this learning from the Sitar perfectly on his hybrid model which he calls Mohan Veena[xiii]. Where the Guitar is more appealing over the Sitar is its sustain quality and also the factor of endless meends and khatakas and gamaks so in production of Gayaki there is no doubt that the Guitar comes true to the traditional Hindustani Classical.

[xiii] Mohan Veena is a hybrid guitar with 13 sympathetic strings and 2 drone strings apart from the regular strings. The first 3 strings are sa pa sa.

2.2. The Vichitra Veena

As the name itself suggests this instrument is something unusual and not often heard, but is perhaps the most beautiful and most musical of all instruments. The invention or origin of Vichitraveena dates back to Vedic Period developed form of ancient “Gheshwati” or :Ghoshika” or “Brahma Veena”. This instrument was known as “Batta-been” till 20th century played with a round smooth mass of stone called “Batta”. Since it s technically difficult to play the instrument the descendents of Tansen preferred to play “Rudra Veena” and “Rabab” which made Vichitraveena almost vanish from the scene of Indian classical music. However there have been efforts to revive this instrument by the interested players and music lovers of today.

Though no one is aware of its time of origin it is largely believed that Vichitraveena was invented by Ustad Abdul Aziz Khan of Patiala. However Ustad Abdul Aziz Khan was a basically a Sarangi player and Vichitraveena was mostly known to be played by Goswsami Gokulnath of Bobmay “Pushti Sampraday” earlier to Ustad Abdul Aziz Khan. Later he adopted the Vichitraveena as his main instrument and popularized it, and did not allow it to be confined only to conservative traditions of Indian classical music. In the past “Veena” was the name used for all stringed instruments. Vichitraveena is a developed form of “Ghoshwati” or “Ghoshika”. Our upanishads, samhitas and several shrutis refer to the veena using different names like “Khond-Veena” (kathank samhita-34-35), “Marud- Veena” in Rigveda samhita. It also

finds place in several sutras, “Alabu-Veena” is mentioned in shraut sutra. Shankhayan shraut-sutra (17-1-3) mentions Shata-Tanti-Veena consisting of hundred strings. It was also called as Van in Vedic Period.

2.2.1. Design of the Vichitra Veena

The Vichitra Veena is the modern form of ancient Ektantri Veena. It is made of a broad, fretless, horizontal arm or crossbar (dand) around three feet long and six inches wide, with two large resonating gourds (tumba), which are inlaid with ivory and attached underneath at either end. The narrow ends of the instrument are fashioned into peacock heads, the national bird of India.

Figure 15: Vichitra Veena

There are four main playing strings and five secondary strings which are played openly with the little finger for a drone effect. Underneath them are thirteen sympathetic strings tuned to the notes of the appropriate raag.

The vichitra veena has a five-octave range. Two plectrums (mizrab) identical to those used for sitar are worn on the middle and index fingers of the right hand to pluck the strings, and a glass ball (batta) is moved with the left across the main strings to create melody (there can be a distance of up to two inches between notes). Coconut oil is put on the strings to minimize the friction of

the sliding hand holding the batta.

The veena was often used to accompany the Dhrupad style of singing and this did not allow for much intricacy or embellishment around the notes. It was rescued from oblivion by Lalmani Misra who developed technique of playing and created Misrabani compositions. It has, like the Rudra Veena, two large pumpkin resonators, however does not have a resonant tube across which the strings are running. Instead, it has a fretless, very wide neck-body, on which the resonant strings, the pegs and the bridge are positioned. The player puts the Vichitra Veena on the floor in front of himself for playing and plucks the strings like the Rudra-Veena with picks on the index and middle fingers. The drone strings are played with the little finger. The pitch is varied, like the bottleneck technique of the Hawaiian guitar, by moving a smoothly polished stone across the playing strings.

2.2.2. Eminent players of Vichitra Veena

Dr. Mustafa Raza

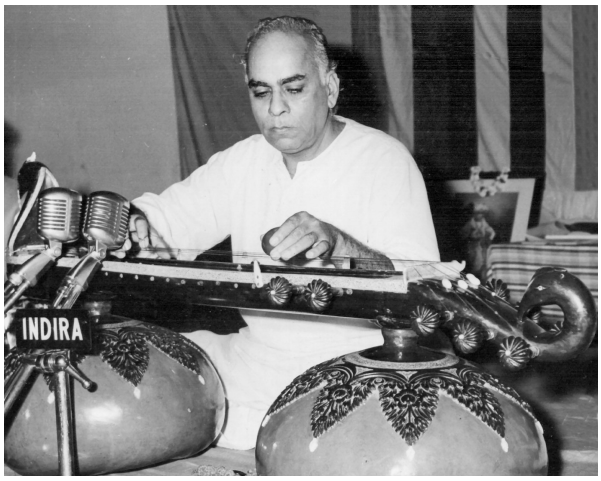
Dr. Mustafa Raza of the Patiala-Moradabad beenkar gharana, grandson of the legendary Ustad Chajju Khan and son of Ustad Ahmad Raza Khan, Dr. Raza has strong ties with both the

Moradabad and Patiala gharana.

He might have become a Rudra Veena exponent, but for his grandfather, who was so bewitched by Ustad Abdul Aziz Khan's Vichitra veena, that he became his disciple, and thereby started a beenkar tradition of the Vichitra veena.

The credit of bringing the Vichitra veena into Patiala Hindustani classical music belongs to Abdul Aziz Khan. But before he took up playing the veena, the ustad was a sarangi player. Unlike the Rudra veena, played mainly in the dhrupad style, the Vichitra veena is played in the khayal gayaki ang. His admirers and disciples hail from countries as distant as Estonia, Finland, Egypt and England. And he strives so that this been may continue to be heard, till at least the next generation.

Dr. Lalmani Misra



Dr. Lalmani Misra was Dean and Head of Faculty of Music and Fine Arts at Banaras Hindu University, Varanasi. An eminent Indian classical musician, he was known as much for his art and his scholarship.

He learnt Dhruvapada Dhamar in the tradition of Pt.Shankar Bhatt and Munshi Bhrigunath Lal. He learnt Khayal singing with Ustad Mehndi Hussain Khan, disciple of Ustad Vazir Khan of Rampur Seni Gharana. He received

training in Dhruvpad, Bhajan and Tabla from Swami Pramodanand; in sitar from Shri Shukdev Roy. Under the tutelage of Ustad Amir Ali Khan he perfected several other musical instruments. He was always experimenting and soon his innovations in technique, style, and orchestration brought him repute and regard. He was the music director for the troupe of renowned dance maestro Pt. Uday Shankar and travelled with the troupe composing scores for the innovative dance presentations and ballets on mythological and contemporary themes. Apart from being adept at playing several types of musical instruments, he also had a knack for orchestration that served the needs of an innovative Dance troupe. The experience with the troupe made him try his hand on stage as well. He created Meera opera that was staged in 1956 at Kanpur.

Works on music: Multi-faceted Dr. Misra, apart from secretly perfecting the technique of Vichitra Veena after having heard a performance by Abdul Aziz Khan of Patiala, had carried out research on history and development of Indian musical instruments. His thesis published by Bharatiya Jnanpith, New Delhi in 1973 (second edition 2002, reprinted 2004) under the title Bharatiya Sangeet Vadya dispelled the existing myths about the origin of Indian instruments and serves to this day as the primary reference work for identification, authentication and classification of Indian musical instruments. He wrote several other books. The first part of four-part treatise on techniques of strings was published as Tantri Nad. After his death in 1979 his son Dr.

Gopal Shankar Misra, internationally renowned Vichitra Veena artiste and Professor, Faculty of Music and Fine Arts, B.H.U., Varanasi was working on the remaining volumes, aided by hand-written notes by Lalmani Misra when on 13 August 1999 he succumbed to heart-attack at a five day function organised in memory of his father at Bhopal. A book on essays written by Dr. Misra -- Sangeet Aur Samaj (Music and Society) were edited by his daughter Dr. Ragini Trivedi and published by Madhukali Prakashan, Bhopal in 2000. His biographical sketches and writings have been printed in several books and journals. Dr. Ragini Trivedi is working on books planned by Dr. Misra which could not be published during his lifetime and first of such collection of his compositions has been published as Rag Vibodh: Misrabani by Hindi Madhyam Karyanvaya Nideshalaya, Delhi. Another set of compositions has been presented in a symbol-based notation system, Ome Swarlipi.

Research and inventions: Carrying out research on the music of Vedic age, he unravelled the mystery of Samic scale. To re-establish the lost notes of that period he created a Raga Sameshwari. Dr. Misra also first made it possible in history of mankind, the twenty two Shruti-s (not to be confused with śruti, the genre of Vedic literature) to be distinctly heard on a single Veena. The invention and key to its function has been explained in “Shruti Veena” published on 11-02-1964 by Vikram Singh, Narendra Printing Works, Varanasi.

He had created several other Ragas like Shyam Bihag, Jog Todi, Madhukali,

Madhu-Bhairav, Baleshwari etc., all in strict adherence with rigid classical norms for creation of new Ragas. Unesco released a compact disc of his Vichitra Veena entitled The Music of Pandit Lalmani Misra in 1996. True inventions are seldom noticeable. Early on, Dr. Misra found use of Teen Tal in slow and medium compositions ubiquitous. He realized that it was the possibility of Chhands that made this Tal a favourite of most instrumentalists. He experimented and created equally alluring Chhands in other Tals. Legendary percussionists were enamoured by his compositions because of their complex, oblique rhythm pattern and called it 'Koot ki Taan'. Later this style came to be known as Misrabani.

His Disciples: Dr Mani Sontakke (First Lady Hawaiian Guitar Artiste of the Country), Dr. Gopal Shankar Mishar, Ragini Trivedi

Ragini Trivedi

Ragini Trivedi was born in a family where routine revolved around study and practice of music – she is the daughter of Vichitra Veena virtuoso Dr. Lalmani Misra.

As exponent of Misrabani, Ragini has worked towards understanding and practice of technique and style involving a new form of Gatkari (rhythmic

stroke patterns) in Vilambit Jhoomara Tal, Vilambit Jhap Tal and Madhya-laya Ada Char Tal. In this new style, Dr. Misra has introduced Mizrab Bol DA RDA -R DA. Especially in Vilambit pace, the oblique rhythm patterns – Da Rda -R Da manifest a new dimension of Raga. Enabled by three decades of practice, Ragini creates and plays complex Misrabani compositions on all three instruments in Audav, Shadav and Sampoorna Ragas. Ragini has designed and conducted various workshops on teaching this style at Jaipur, Pune and Bhopal.

Ragini developed a new notation system, Ome Swarlipi, based on amalgamation of Bhatkhande and Paluskar notation systems. It incorporates several features suitable for digital adaptation and features symbols to annotate complex Misrabani compositions. This digital notation-writing is available on Writer portal. She also developed digital tools to illustrate inter-relationship of notes, Sruti-s, Bharat Chatuh Sarana to serve as a teaching-aid.

Pt. Gopala Krishna Sharma

Nand Kishore, noted surbahar player and a vocalist , student of Pt. Vishnu Digambar Paluskar was the father and first teacher of Pt.Gopala Krishna Sharma. Pandit Gopal Krishan was an exponent of vichitra veena, After his father's death, he continued his training in music under the able guidance of Pt. Khubchand Bramchari of the gwalior school of music. He further learnt the intricacies of Senia- Maihar gharana under the tutelage of Pt. Ravi

Shankar.

Gopal Krishan was a versatile musician. His musical expertise was not restricted to the vichitra veena. He was also a good vocalist and played several other instruments such as taltarang, tabla, guitar and a folk instrument called iktara. Iktara is a one stringed instrument used for devotional music for keeping the musician attuned to the pitch. Gopal Krishan used two strings on his instrument and played it in the classical style of vichitra veena. His music has crossed the barriers of his country and the magic of his Veena has reached several other countries such as Nepal, Pakistan and Afghanistan in Asia, England, France, Italy, the Netherlands, and Germany in Europe, Mauritius, Reunion Islands besides America and Canada. A deep understanding of the raga and depth presentation by weaving of various intricate musical patterns and their rhythmic synchronisation was his speciality. Keeping the traditional innovations in the Vichitra Veena, he gave new dimensions to this otherwise technically limited instrument. He specialised in a technique called "Jhala" (very difficult to play on this instrument),which gives a climactic effect to the performance for the grand finale.

Other notable players of Vichitra Veena include Pandit Shri Krishan Sharma: (son and disciple), Pt. Murli Krishan Sharma (sitar player, son and disciple), Sh. Nishendra Kinjilk (Sitar), Sh. Umesh Sharma (sitar), Anubha Sharma(sitar), Sh. Rajan Swaroop Rajan (Vocal), Durjoy (vocal), Smriti Madan (sitar), Shruti Kalra (sitar), Smriti Minocha (Vocal), Sh. Umakant Saxena

(guitar), Vinay Jain (guitar), Rakesh Jhori (guitar), Sh. Jugal Kishore Jain (jaltarang), Sh. Narendra Lahad (sarod), Sh. M.C.Gotan (violin), Ronald Simpson US (Vichitra Veena), Doug Bartel (Vichitra Veena), Gianni Ricchizzi (Vichitra Veena) to name a few.

2.2.3. Comparison of Vichitra Veena and Hawaiian Guitar

An initial observation is that the Veenas sound quality is Javaridar sound which makes it more audible than a Guitar. In other words, the external sound of the Vichitra Veena is more powerful when compared to its internal sound. The hollow design aided by the two Majestic Tumbas, along with long stem of the fretboard, adds to the Vichitra Veena's rich and vibrant tone on the outside while the Javaari tone (mild overdrive) helps in the sharpness of the Sound.

The overall Javaari is so much more in the Vichitra Veena that it can sometimes be boomy and shrill at the same time A very interesting point here is that though the techniques of the Vichitra Veena as well as the Hawaiian Guitar appear similar there is a huge difference in the approach of playing techniques. The only place where the match can be seen is the Dhrupad Ang Jod section where the two adapt a similar pattern – here, one can clearly observe the influence of the Vichitra Veena on the Hawaiian Guitar .The strike techniques are very similar in the way the same two fingerpicks are

unidirectional. During the Jod Ang you can observe that the little finger plays a dominant role in creating complex patterns very easily .

The factor of compactness in Hawaiian Guitar is very convenient over the Vichitra Veena. Playing fast phrases and hammer-ons are difficult on the Vichitra Veena. Also the factor of range stands out in the Hawaiian Guitar where almost 5 octaves are easily available on a Hawaiian Guitar whereas a Vichitra Veena has roughly 3 octaves musically enriching.

It is such a beautiful phenomenon to see small design changes make such big differences in sound. The Hawaiian Guitar stands testimony to the fact as a much modern instrument handling such a traditional art form with such ease. Its sustain quality and also the factor of endless meends and khatakas and gamaks in the production of Gayaki can leave no doubt in anyone that the Guitar can be true successor to the Vichitra Veena in the true tradition of Hindustani Classical music.

2.3. The Rudra Veena

Rudra Veena, in the historical context, was a privileged instrument that not all had access to. Rudra Veena was the reigning instrument of Hindustani classical instrumentalists until a few years ago, before the Sitar grew in popularity. It is a descendent of the ancient fretted instrument kinnari. Like the kinnari, the fingerboard is of a wide and smooth bamboo. One end of this holds a flat bridge typical in our instruments and beneath the dandi are two

very large pumpkins. There four main strings for melody, under which stand straight and thin, frets attached to the bamboo tube with wax. While the fingers of one hand pluck the strings the other stops them over the frets. Besides the main wires there are two drone strings on one side and one more on the other side of the dandi. The veena was played by men and women in royal courts and rural settings as can be seen from innumerable miniature painting of north India. In one class of such pictures, known as the raga mala miniatures which personify ragas and raginis as well as in their literary symbolization, the veena is invariably a companion of ragini Todi, a lady with the zither[xiv] whose music enchants deer. (Deva, Indian Musical Instruments: Stringed Instruments)

Rudra Veena was one of the premier instruments in the court of Akbar and Abul Fazl names Shihab Khan of Gwalior and Purbin Khan as the two court beenkars (players on the veena). The other prominent musicians who are revered as the fathers of instrumental music in the north were Bilas Khan and Surat Sen, sons of Tansen, as well as Misri Singh, his son-in-law. Bilas Khan is considered to be the one who popularized the rabab and the other two the Rudra veena. The Rudra veena is now sadly neglected and there are not many competent players of this instrument. (Deva, Indian Musical Instruments: Stringed Instruments)

2.3.1. Comparison between Rudra Veena and Hawaiian Guitar

[xiv] A collective name for all stringed instruments that are played using fingers and a plectrum

Rudra Veena is a great inspiration in terms of its bass quality in a long sustaining way . It is a definite sound but then the fixed fret system in my opinion cannot do much of justice to the Microtonal Shruthis in Indian Classical Music. The right hand techniques of the Rudra Veena are also an inspiration to the Hawaiian Guitar but the application is totally different.

2.4. The Santoor

The *santoor* is characteristic of the Kashmir valley and is neither seen nor played anywhere else. In the West it is known as the dulcimer or the cymbalon. Some scholars are of the opinion that this instrument can be traced to the *vedic vana veena*. It may be remembered that the vana had a hundred strings (of spun grass) and was probably played with sticks. This was later called the *sata tantri veena*-the *veena* with one hundred strings-which name, they say, got modified to *santoor*. Etymology apart, the modern santoor does have a large number of strings and it stuck with sticks. The instrument is made of a box of wood, trapezoid in shape. Over this there are thirty bridges, arranged in fifteen rows, two in each row. A set of four strings of metal tuned to the same note is stretched over each pair of bridges; thus the total number of wires is sixty. The musician sits with the *santoor* in front of him and strikes them with a pair of flat wooden pieces curved at the striking end. Kashmiri musicians commonly play *maqams*, somewhat like the Persian modes, on the dulcimer. However, it has also been used to play Indian *ragas* and is now much in demand with film musicians. (Deva, Indian Musical Instruments:

Stringed Instruments)

The other box polychord still found in India is the *svaramandal*[xv], the Indian psaltery. This like the *santoor*, is also a wooden box on which are mounted strings. In dimensions it is much smaller than its sister and has no bridges. There is only one string for each note, whereas the *santoor* has four tuned to one; and the strings pass over ledges, instead of bridges, onto tuning pins. They are plucked with fingers wearing metallic wire plectra. Today there are perhaps no more than three or four who can play ragas or even simple tunes on this instrument; but there are quite a number of Hindustani vocalists who strum it along with their singing to give a rich tonal background. This psaltery seems to be the ancient *matta kokila* which later on began to be called as the *svaramandal*. References to the *svaramandal* itself commence from about the fifteenth century A.D. and Hindi poets of later times often mention it; so does the Ain-i-Akbari. The polychord may also be the qanoon known to West Asia and to the Syrian as qithoro from about the eleventh century. Indeed the Ain-i-Akbari definitely states that the *svaramandal* is similar to the *qanoon*. "The *Svaramandal* is like the qanoon. It has twenty-one strings, some of steel, some of brass, and some of gut." (Deva, Indian Musical Instruments: Stringed Instruments)

2.4.1. Comparison of Santoor with Hawaiian Guitar

[xv] Swarmandal is basically the Indian Harp where the strings are arranged from ascending to descending, and can be played either way. It is usually used for strumming along as an accompaniment for the vocalist when tuned to a Raga

The Santoor comes with a definite tuning and can be tuned as per the Raaga, with the microtonalities factor also being present.The factor of “meend” being absent is surely a challenge and can come up when you handle slightly tricky melodies. What the Hawaiian Guitar could take as an inspiration from is the “Ati” Drut section from the Santoor which can really play at very high tempo. Also the Layakari angle (mathematical formulae) can be very beautifully handled by the Hawaiian Guitar, just like the santoor.

3. An additional study to explore how stroke instruments in Carnatic music such as Tanjore Veena and Gotuvadyam compare with the Hawaiian guitar

When we study slide instruments in the context of Indian music, it is impossible to ignore the Carnatic instruments such as Gotuvadyam and Tanjore Veena. The Gotuvadyam is so similar to the Vichitra Veena that it is impossible to pinpoint the precise time period when the two instruments branched into distinct styles. Similarly, we can compare the Tanjore Veena of Carnatic music and Rudra Veena of Hindustani music, and study their characteristics. This additional study has therefore been carried out to venture into elements of Carnatic music and understand how some of the techniques can be developed in the Hawaiian Guitar. Some points of exploration are:

- The historical origin of the Tanjore Veena and its presence in Indian religion.
- The similarity of playing techniques in the Tanjore Veena in Carnatic style and Rudra Veena in Hindustani Style.
- The differences in the playing techniques on the Tanjore Veena in Carnatic style and the Rudra Veena in Hindustani Style.
- Analysis of techniques adopted by a few prolific players in the two traditions.

3.1. The Tanjore Veena

The history of Tanjore Veena dates back to the Vedic period which is about 1500 BCE. The legend states that it all began when a hunter first discovered a different sound from his bow when it began to vibrate. The curious hunter tried various grass roots and animal fibre to create music, which in turn gave birth to the formation of Veena. Once the basic structure of the Veena was formed, further changes took place to bring about a distinctive sound. In the olden days this instrument had very few frets but today the Veena is said to have 24 frets on it. Besides this, the instrument also has religious association, as it has been described in many sacred texts that as goddess Saraswati playing this instrument. (Veena)

Figure 16: Tanjore Veena

Also known as Saraswati Veena, this is considered as the queen of all Veenas because of its elegant beauty.

In a way, it is the only self-contained veena today: it has strings to play the *raga* and that too in a wide range of pitch, it has the drone so necessary for Indian music, and these drone strings are also placed on them. In other words, the veena has in itself *swara*, *raga* and *tala* – a potentiality which no other

instrument has. The present structure of the lute seems to have come to fruition at Tanjore in Tamil Nadu by about the seventeenth century, during the reign of Raghunatha; it is, hence often referred to as the *Tanjore veena*.

The instrument is made entirely of wood. The resonator or kudam is a deep vessel carved out of wood and covered with a wooden plank. This soundboard protrudes into a neck to which is fixed the long fingerboard that ends in the mythical figure of the yali. The bridge which stands centrally on the sound box is a complex unit. The principal section is a wide wooden piece slightly sloping in the direction of the strings, a construction so typical of many of our Veenas. On the upper surface of this is glued a brass lamella which seems to be a continuation of the traditional structure present in the ancient eka tantri. Attached to-rather growing out of-the main bridge is a curved auxiliary part of wood, which is also a bridge. Four strings of metal go over the main bridge and they are used for playing the melody; three, called the sarani, pass over the side bridge and these are employed as the drone and for striking the tala. All strings are tuneable by pegs and by special minute coiled wire pieces. While the melody strings are plucked downwards with the first two fingers, the sarani are flicked with the little finger of one hand. The strings are pressed with the fingers of the other hand just over the brass frets that are fixed to the danda with wax. Beneath the danda, at its yali end, there is a secondary gourd or a metallic imitation of it.

The most common way of holding the veena is 'horizontal'. The musician sits

cross legged on the floor; the large *kudam* is placed on the ground with the subsidiary gourd resting on the tap. However, a generation ago there were vainikas (veena players) who used to hold it vertically-a practice that was seen sometimes in Andhra and Mysore. The veena technique, having attained such a subtle sophistication, has developed into different styles. One major style is the Tanjavur style where great stress is laid on certain slowness of tempo and on gamakas; the Andhra and Mysore approach relies more on variations in plucking, staccato phraseology and simultaneous playing of more than one string. One important fact, not confined to the veena but including all instruments, is that in Carnatic music there are no special instrumental compositions apart from songs meant for singing; all playing relies heavily on vocal music. (Deva, Indian Musical Instruments: Stringed Instruments)

The Veena performance in the ancient times used to be accompanied during the chants of the Yagya as a way to please to the gods and goddess. It soon became an important source of entertainment as many musicians where seen playing them in royal courts and in temples. With growing globalization, the influences of western music diminished its importance in the country. Today however you can find several musical festivals such as the National Veena Festival in India and the Thayagraja Concert in Chicago and in Thanjavur to promote and encourage aspiring musicians. The music concert does not only help retain an ancient culture but also cater to a global audience. (Veena)

3.1.1. Design of Tanjore Veena

Veena instruments developed more like a tree which is branching out into instruments as diverse as the exotic harp-like Akasa (a veena that was tied up in the tops of trees for the strings to vibrate from the currents of wind) and the Audumbari veena (played as an accompaniment by the wives of Vedic priests as they chanted during ceremonial Yajnas). Veenas ranged from one string to one hundred, and were composed of many different materials like eagle bone, bamboo, and wood and coconut shells. The Saraswati Veena is nearly about four feet in length and consists of a big round resonator that is carved out of hollow log and Jack wood. It has a hollow neck (fret board) that is lined with 24 brass frets, set in black wax on wooden tracks. At the tapering end of the neck is a tuning box that concludes in a downward curve and a beautifully carved dragon's head. There are four main playing strings that are attached to the end of the resonator. Three secondary strings cross the curving side bridge and are wound like the lower strings of a modern day guitar. (Indian Mirror)

"The current form of the Saraswati veena with 24 fixed frets evolved in Thanjavur, Tamil Nadu, during the reign of Raghunath Nayak and it is for this reason sometimes called the Tanjore veena, or the Raghunatha veena. Prior to his time, the number of frets on the veena were less and also movable. The Saraswati veena developed from Kinnari Veena. Made in several regions in South India, those made by makers from Thanjavur in the South Indian state of Tamil Nadu are to date considered the most sophisticated. Sangeeta Ratnakara calls it Ekatantri Veena. Each physical portion of the veena is said

to be the seat in which subtle aspects of various gods and goddesses reside in Hinduism. It is believed that instrument's neck is Shiva; the strings constitute his consort, Parvati. The bridge is Lakshmi, the secondary gourd is Brahma, the dragon head Vishnu. Upon the resonating body is Saraswati, the bridge Lakshmi. Thus, the veena is the abode of divinity and the source of all happiness according to Musicologists. The Veena has a double base and is rested on the ground while it is played. It produces sound similar in character to the sitar but is favored by many because of its ease of playing style and its impressive designing. (Indian Mirror)

3.1.2. Playing Technique

The Veena is held tilted slightly away from the performer. One has to sit cross legged and place the Veena on the lap. A small gourd is placed on the left thigh of the player. The left arm of the Veena player comes curving from below the fret board and rests on the frets. The right hand is placed on the edge of the top plank in order to pluck the strings. The frets are played with the fingers of the left hand while the right is for plucking the strings. The lower strings are played using the little finger. The Veena produces a beautiful and enigmatic sound that is often used to relax the mind and help in meditation. (Indian Mirror)

3.1.3. Eminent Players of the Tanjore Veena

The distinctive style of presenting Carnatic music has grown largely around

the veena, and its many noted musicians, musicologists and composers have been veena players. The list of Veena players in our country is exceptionally long, but the list below has a few renowned names that have not only earned a reputation for being one of the best players, but those who have given a difference to this art form. Muthuswami Dikshitar, Veenai Ranganayaki Rajagopalan, Veenai Dhanammal, Rugmini Gopalakrishnan, Doraiswamy Iyengar, Veena Sheshanna, Veena Subbanna, Veena Venkatagiriappa, Emani Sankara Sastry, Chitti Babu, Karaikudi Sambasiva Iyer, S Balachander, Ranganayaki Rajagopalan, Rugmini Gopalakrishnan, Rajhesh Vaidhya, D. Balakrishna, N. Ravikiran, etc.

3.2. The Gotuvadyam[xvi]

The Chitravina is one of the most exquisite musical instruments in the world today. Also referred to as Gotuvadyam, it is a 21-stringed fretless Indian lute, quite similar in its playing technique to the Vichitra Veena of North India. It is also one of the oldest instruments in the world, enjoying a history of nearly 2000 years. It is the forerunner of many instruments like the fretted Veena and the Hawaiian Guitar. It has also been referred to, at various times, as Mahanataka veena and Hanumad veena. (Ravikiran)

[xvi] Gotuvadyam is also known as Chitravina

It was Sakha Rama Rao of Thanjavur who brought this ancient instrument back to the concert scene and it started to be called by the name Gotuvadyam.

Figure 17: Gotuvadyam or Chitravina

In Bharata's Natya Shastra it was mentioned as a seven string fretless instrument. Gotuvadyam now is a prominent instrument among solo instruments. This instrument has undergone numerous developments and is today among the more prominent solo instruments in Carnatic music. It is also often seen in collaborative world music concerts and north-south Indian jugalbandis. The fretless nature of the instrument makes it the closest instrument to vocal standards. There are six main strings used for melody that pass over the top of the instrument, three drone strings, and about twelve sympathetic strings running parallel and below the main strings.

3.2.1. Early History

The earliest reference to Chitravina is in Bharata's Natya Shastra, placed by scholars between 2nd century BC and 2nd century AD. It was referred to as a seven-stringed instrument played with fingers and a cylindrical device (kona). The Natya Shastra also refers to a similar instrument with 9 strings, Vipanchi Veena. The next main treatise, Sangita Ratnakara by Sarangadeva (written a

few centuries later), also refers to both instruments in exactly the same manner, suggesting that there was no real change in between. The Chitravina has obviously undergone many modifications since then though not much has been documented clearly. There are scholars who hold that the instruments mentioned in the Natya Shastra and Sangita Ratnakara were harp type instruments and not lute type but it is very important to note that today's Chitravina is a combination of the two. While the top layer 6 strings form the lute part, the Chitravina sports the harp part by way of bottom layer sympathetic resonance strings. Over a period of time, fretted instruments were gradually tried and held sway for many centuries. The reasons are not difficult to fathom. The advantage of an instrument with frets is that the margin of error is considerably reduced, as the notes are fixed by means of the frets and the artiste can place fingers almost anywhere between two frets and get the right note. Thus, an artiste playing an instrument like the Veena, Sitar and Guitar, has at least a few centimetres to an inch and more to play the note correctly. (Ravikiran)

3.2.2. Prominent Players of Gotuvadyam (Chitravina)

Srinivasa Rao

One of the major contributors to the re-incarnation of the chitravina was Srinivasa Rao, a Marathi who had migrated to the Tanjore district in Tamil Nadu. He was an ardent music lover and an amateur artiste himself. He started experimenting with a slide on the Tanpura. His son Sakha Rama Rao was

drawn to this since his childhood as he perceived its tremendous potential to produce high class music. (Ravikiran)

Sakha Rama Rao

Sakha Rama Rao, son Srinivasa Rao, is credited with having re-introduced the south Indian Chitravina (or "gotuvadyam") to the concert scene, after his father made the pioneering effort towards its reincarnation in modern times. Sakha Rama Rao was an ardent music lover and an amateur artiste himself. He started experimenting with a slide on the tanpura (a four-stringed instrument, usually used as a reference drone in Indian music). He was able to perceive its tremendous potential to produce high quality music. He re-designed this instrument as a fretless veena with its usual set of seven strings - four strings on the top and three in the side for drone and rhythm. He put in arduous practice on this instrument and gave occasional performances. Since he was not aware of the history of the instrument, he gave it a new name - gotuvadyam. This is because he used to casually refer to the slide as 'gotu'. 'Vadyam', in Sanskrit and many other Indian languages, means instrument. Thus, 'gotuvadyam' was a literal name for an instrument played with a slide.

Several decades later, Ravikiran, along with a few other scholars, studied about the origins of the instrument and eventually restored the more traditional name, Chitravina. Sakha Rama Rao was a "musicians' musician" and trained many great artists like Gotuvadyam Narayana Iyengar and Semmangudi Srinivasa Iyer. Soon there were several others who started

performing on the gotuvadyam.

Gotuvadyam Narayana Iyengar

Narayana Iyengar was initially trained under guru Kodaganallur Subbaiyya Bhagavatar, a fine vocalist who could also play the gotuvadyam. He was enchanted with the beauty, challenge and scope of the gotuvadyam. Narayana Iyengar requested Sakha Rama Rao to draft him in as his pupil. Sakha Rama Rao, a highly principled artiste, who never cared about money, name or fame, was impressed with Narayana Iyengar's talent and attitude and agreed to teach him. Narayana Iyengar practised with an obsessed rigour, sometimes up to 18–20 hours a day, and reached great heights in a very short time, which led to people giving him the prefix of the instrument of his choice.

His innovations on this instrument were responsible for taking it to tremendous heights and most of those have come to stay. He changed the string arrangements almost totally, giving it a unique tonal depth, hitherto never heard before. A performer of the highest order, he enjoyed tremendous popularity, but was constantly working to refine and improve this instrument all through his life. He experimented ceaselessly and added 3 more strings to the 4 main strings and also brought in 12 resonance strings in a special layer below the main strings. His instrument had 22 strings (which has since become 21 as one of the 7 main strings have been discarded later on). (Ravikiran)

The Narayana Iyengar method of tuning the Chitravina is very unique. He was among the earliest to make use of the concept of Octave strings. The main strings use an arrangement of 3 tonic notes (Sa) plucked simultaneously, one of which is an octave lower than the other two, 2 notes in the fifth (Pa), again in two octaves and 1 string which is tuned to the lower octave tonic (Sa). This gives such a wonderful singing quality to the instrument. (This particular tuning of octave strings was emulated by the Indian violin maestro Mysore Chowdiah who tried 7 to 19 strings on his violin.) Narayana Iyengar's resonance strings were, again, very unique. He arranged them in such a way as to give a built in Tanpura effect. Also the use of the jivalam (a small thread on the bridge which contributes to a qualitative and quantitative enhancement of the tone) to each of the 12 resonance strings made it vibrate much more readily when music was played on top. This in turn added to the overall richness of the tone of the Chitravina. (Ravikiran)

Narayana Iyengar also designed the instrument very efficiently with fine-tuning provision for each of the strings. The Chitravina is one of the very few instruments in the world with more than 20 strings, and the only one in India which has such fine-tuning provision for each of its strings. Narayana Iyengar also standardised the pitch, the types of strings and the many other things on the instrument. His overall contribution to the growth of Chitravina is unparalleled. (Ravikiran)

Musically, the real edge of the fretless instrument was highlighted by

Narayana Iyengar who proved that a fretless instrument could best emulate the vocal (gayaki) style because of the almost total continuity that enables infinite micro tones to be rendered with accuracy and impact. Thus, Narayana Iyengar literally made his instrument sing. But he was also a great artiste who could bring to fore the instrumental delights when he ventured into improvisations such as Tanam (jod and jhala) and Kalpana swaras. (Ravikiran)

Chitravina Narasimhan

Son and disciple of Narayana Iyengar, Narasimhan carried on along the lines of his father but also brought in his own mind when it came to modification of string arrangements, the length of the slide and other such minute details. A wonderful performing musician himself, he popularised this instrument all over the country. His other great contribution was to spread the name and fame of this instrument among many other fellow musicians and train many successful disciples, several of whom made headlines as child prodigies. (Ravikiran)

Semmangudi Srinivasa Iyer

Semmangudi Srinivasa Iyer, the uncompromising traditionalist, in widely regarded as the ultimate authority in the theory and practice of Carnatic music. In his 90 years, Semmangudi has seen Carnatic music emerge from temples onto sabha stages and to the farthest shores. He has also seen the music, or rather its practice, metamorphose - from being the preserve of professional families to being a shared cultural experience of common people. When was

15 or so he went to hear the famous gotuvadyam exponent Thiruvadaimaruthur Sakharama Rao at a wedding concert. Under Sakharama Rao, Srinivasa Iyer underwent rigorous training; he would scold, and even beat, Srinivasa Iyer if made a mistake. The traditional gurukula way of instruction - where learning was direct and based on oral instruction, rather than from notations and cassettes - enriches music. It was an all-round, complete training, starting very early every day.

Other stalwarts: Some of the notable exponents of this instrument include Budalur Krishnamoorthy Shastrigal, Mannargudi Savithri Ammal, A.Narayana Iyer M V Varahaswami, Gayatri Kassabaum and Allam Koteeshawara Rao. Of these, Budalur Krishnamoorthy Shastrigal (who was an outstanding vocalist as well) was steadfast in sticking to the tuning and string arrangement of the Veena save for an extra string he added at the top, but only to rest his fingers on! He was not keen on the sympathetic resonance strings at all and many of his disciples still follow his pattern. (Ravikiran)

Chitravina Today: Today, quite an amount of effort and energy has been invested towards getting effective true quality amplification with much research carried out using contact mikes, magnetic pick-ups, mixers, equalisers and amplifiers. This has enabled the Chitravina to be presented effectively to audiences of over a hundred thousand people at times in major indoor or outdoor events. Another advance has been towards bringing out vocal style nuances without sacrificing the instrumental quality and playing

compositions or improvisations as good as any other instrument, including voice. Ravikiran designed the **Navachitra Veena** in January 2001 and the first prototype was specially made as a collaborative venture with the well known instrument makers, Rikhi Ram in Delhi. A few structural modifications have been made to the traditional Chitravina, to produce a sharper tone in higher pitches, making this much easier for jugalbandis or collaborative concerts with other instruments such as the sitar and the guitar. The sleek shape and size of the Navachitra Veena also facilitates easier transportation. The internal design has been kept much the same with just one resonance string less than the original, making this 20-stringed instrument. The Navachitra Veena has already won much acclaim in various cities in India and USA. (Ravikiran)

3.2.3. Comparison between Tanjore Veena, Gotuvadyam and Hawaiian Guitar

According to some historians such as Dewitt Scott (Senior) and Chris Morda, the Gotuvadyam was a major factor of influence for the origin of the Hawaiian Guitar. It is said that the gotuvadyam was taken to America by 1880s by Gabriel Davion, in a modified form, laying foundation for the Hawaiian Guitar.

Today, the Carnatic Tanjore Veena and the Gotuvadyam are high inspirations for Hawaiian Guitar as they have a lot of similarities in the right hand

technique of stroke production. However, the usage of the small finger by Veena players to play the Taal strings is a challenge for Hawaiian Guitar players to emulate. This is because the thumb pick of Hawaiian Guitar replaces the small finger technique of Tanjore Veena, making it difficult to achieve the same effect. The major similarities in all three instruments, namely Gotuvadyam, Tanjore Veena and Hawaiian Guitar, is the use of two finger picks and down strokes. The striking patterns are pretty close but differ because the Guitar is placed almost horizontally on the lap whereas as the Veena is used at a unique slant of 50 degrees enabling better grip. The stroke production however is similar in all three. All three instruments use the Hammer-on and the pull-off techniques (refer Section 1.5.1) and the bends in a very similar fashion. The Taalam Section is pretty similar and the two uniquely different traditions and are reflected in the playing styles.

The Veena and the Gotuvadyam can be called as the ‘True Traditional link’ for the Hawaiian Guitar and its sound production styles. The size is an advantage over the Veena as we now see all traditional Veena players are also coming up with new instruments because of its size restrictions. Gotuvadyam Ravikiran now plays the Chitravina the other famous player Allam Durga Prasad also plays a hybrid model.

4. The Hawaiian Guitar and Sarod - A Comparative study

The study attempts to bring out the characteristics of the string instrument Sarod in Hindustani Classical style and make a comparative analysis of how all those elements can be explored and developed in the Hawaiian Guitar. In short

- The Historical existence of the Sarod.
- The basic techniques and approach of playing the Sarod.
- Analysis of the growth of the Gayaki style in Sarod playing and its impact on other stroke instruments in the Classical stream.

4.1. Origin of Sarod

The Sarod is believed to have originated in central Asia and Afghanistan, probably descended from the Afghan Rubab - an instrument similar to Sarod which means “beautiful sound” or “melody” in Persian. Although the sarod has been referred to as a “bass rubab” its tonal bandwidth is actually considerably greater than that of the Rubab. The Sarod is a combination of the ancient Chitravina, the medieval Rubab and modern Sursingar as opined by Lalmani Misra in his “Bharatiya Sangeet Vadya”. There is also speculation that the “oud” may be the origin of the sarod. There has also been an attribution to the family of Sarod maestro, Amjad Ali Khan, in particular his ancestor Mohammad Hashmi Khan Bangash, a musician to the King of Rewa

in Madhya Pradesh now, who travelled from Afghanistan carrying with him the Rubab. His grandson Ghulam Ali Khan Bangash, a court musician in Gwalior, is said to have changed the Rubab into the sarod. A parallel theory credits descendants of Madar Khan, Niyamatullah Khan in particular, with the same innovation circa 1820. The sarod in its present form dates back to approximately 1820, when it started gaining recognition as a serious instrument in Rewa, Shahjahanpur, Gwalior, and Lucknow. Allauddin Khan, the performer pedagogue from Mahihar (and the guru of sitarist Pt Ravi Shankar) gave finishing touches in the 20th century.

This Gharana or school had its roots in the Bangash tribe of Afghanistan, three of whom migrated to India some 200 years ago bringing with them the Afghan Rabab. The Bangash tribesmen eventually settled in Rewa, currently in the state of Rajasthan in north-western India, after taking up positions as soldiers under various ruling lords and kings. Eventually, they became court musicians. All of the members of the Bangash families, descendent from the original three Afghan tribesmen, were Rabab players, and Ghulam Ali Khan, along with his cousins (or nephews) Enayet Ali and Niyamatullah Khan, laid the foundations of the Gharana. The Bangashes became significantly influenced by Indian music through one Zafar Khan, a descendant of the legendary court musician Tansen, who is believed by some to have given instruction to the Bangash family. (History of the Gharana)

Zafar Khan and other descendants of Tansen used to play a form of Rabab

that had become known as the Tanseni Rabab. The Tanseni Rabab was different in both structure and tonality from the Afghan Rabab and this influenced the Bangashes to make them experiment with their Rabab. Elsewhere, other members of Tansen's family, referred to as the Seni Gharana, specialized in the Dhrupad style of singing and playing the Veena, another existing stringed instrument, from which they took the name of 'Veenkar'. (History of the Gharana)

Story has it that Zafar Khan heard Nirmal Shah Veenkar playing the Veen at a music conference in Varanasi and was impressed by the instrument's ability to sustain notes and play both long Meends (slides) and Gamaks (repetitive slides). Khan then made some modifications to the Tanseni Rabab his family played, replacing the skin covered drum of the Rabab with a wooden covered drum, similar to the Sur-Bahar (also similar to the Sitar), the alabaster fingerboard with a metallic one, and the silk strings with metallic ones. Meanwhile, the Bangash students or 'disciples' of Zafar Khan saw their master make changes to the Tanseni Rabab and also started to experiment with the Afghan Rabab they had been playing. The disputed son or grandson of one of the original Bangash tribesmen, Ghulam Ali Khan, replaced the wooden fingerboard of the Afghan Rabab with metal, and the existing strings with metal ones, thus initiating the development, which would later earn him the credit as the father of the modern-day Sarod. The shape of the Sarod also started to evolve from the Afghan Rabab moving from its original elliptical

shape to a round drums shape, however, both are seen today. The alternate elliptical drum together with the hollow neck most closely tie the Sarod to its origins in the Afghan Rabab. Ghulam Ali Khan had three sons – Hussein Ali, Murad Ali and Nanne Khan. Nanne Khan's son was the great Sarod maestro Ustad Hafiz Ali Khan who also had three sons – Mubarak Ali, Rehmat Ali, and the world-renowned living legend, Ustad Amjad Ali Khan. However, the middle son of Ghulam Ali Khan, Ustad Murad Ali Khan, is considered by many to be the most talented of the three brothers. He, like his forbearers, had received musical training from the descendants of Mian Tansen and is said to have greatly improved the technique of Sarod playing. Ustad Murad Ali Khan is also said to have provided basic training to his nephew, the great Hafiz Ali Khan. (History of the Gharana)

Since this Gharana evolved primarily from the Rabab, the playing style initially developed with the heavy right handed strumming of the strings. Later on, with the influence of other instruments such as the Veena and Sur Shringar, as well as vocal music, the Gharana included the use of the 'Meend' and 'Gamak'. The influence of Sur-Bahar and Sitar as well as vocal classical music on this Gharana led to the creation of Ekhara Taans, where each note is played alternatively by upward Da or downward Ra strokes. Ekhara Taans allow the artist the ability to play a rapid sequence of notes, similar to that of a Sitar or a vocalist. Another notable feature of this Sarod Gharana is the Larant. The Larant is normally played either at the end of the Alaap, Jod

section or at the end of the Gatkari section, prior to the Jhaala. In a Larant, the chikari strokes of the Jhaala are replaced by Da-Ra-Di-Ri strokes of the tonic (or the Sa). The Larant is a unique movement where the Rababiya style of Sarod playing is probably best demonstrated. Using this technique, the artist can combine the melody of the Alaap with a rhythmic, fast-paced movement, to paint a more complete picture of the Raga. (History of the Gharana)

4.2. Design of Sarod

The Sarod is lute-like instrument has 17 to 25 strings, four to five main strings used for playing the melody, one or two drone strings, two chikari strings and nine to eleven sympathetic strings. It is said that Niyamatullah Khan of Lucknow School (Gharana) and Ghulam Ali Khan of Gwalior school designed the early model of Sarod. Among the contemporary sarod players, this basic design is kept intact by two streams of sarod playing. Amjad Ali Khan and his disciples play this model, as the followers of Radhika Mohan Maitra. Amjad Ali Khan and Buddhadev Dasgupta have made minor changes to their respective instruments which have become the design templates to their followers. The both use sarods made of teak wood, and a soundboard made of goatskin stretched across the face of the resonator.

Allauddin Khan and his brother Ayet Ali Khan designed another type of sarod referred to by David Trasoff as the 1934 Maihar Prototype, is larger and longer than the conventional instrument, though the fingerboard is identical to

the traditional sadrod. This instrument has 25 strings in all. These include four main strings, four jod strings (tuned to Ni or Dha, R/r, G/g and Sa respectively). Two chikari strings tuned to Sa of upper octave and fifteen tarab strings. The main strings are tuned to Ma(“fa”), Sa(do), lower Pa (“so”) and lower Sa, giving the instrument a range of three octaves. Sarod strings are made either of steel or phosphor bronze. Roslau (Germany), Pyramid(Germany) and Precisio (USA) are most used by the contemporary players. The strings are plucked with a triangular plectrum (java) made of polished coconut shell, ebony cocobolo wood, horn, cowbone. Early sarod players used plain wire plectrums, which yield a soft, ringing tone.

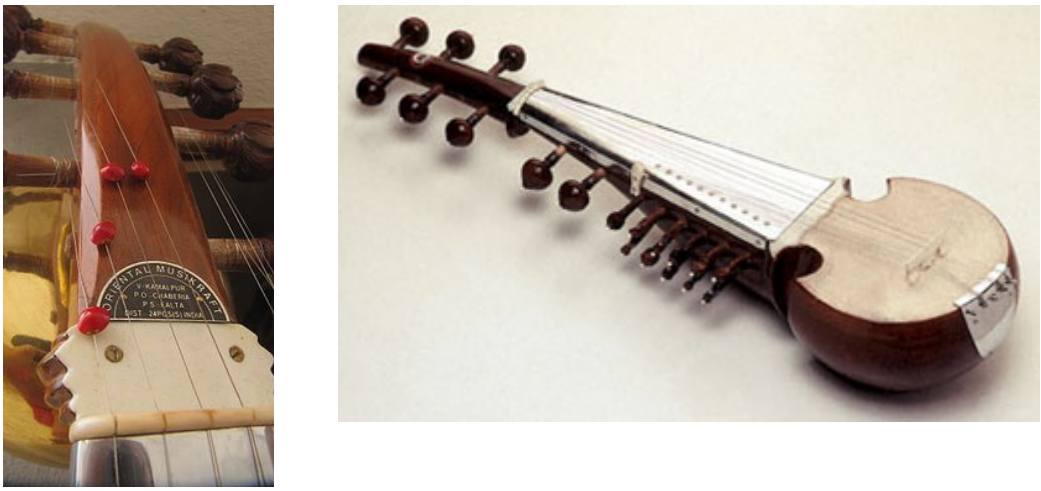


Figure 18: Sarod

The sarod is much smaller than the sitar. It sits comfortably in the player’s lap and is leaner and cleaner in sound, without that predominant jangling of sympathetic strings. The sarod has resonant sympathetic strings, but they are fewer and far less prominent in the soundscape. Still, it is no less demanding

to play. Amjad Ali Khan, born in Gwalior (Madhya Pradesh) in 1945, is the sixth-generation sarod player in his family and his ancestors have developed and shaped the instrument over several hundred years. “You could say it’s my family instrument”, he says with justifiable pride. “Whoever is playing the sarod today learned directly or indirectly from my forefathers.” (Broughton)

Some sarods, like the Afghan rabab, are made from mulberry wood, but most are made, like the sitar, from teak. According to Amjad Ali Khan, teak gives a fuller, richer sound. The front of the wooden belly is covered with goat skin. It was Amjad Ali Khan’s forefathers that effected the most important development in the instrument and replaced the wooden, fretted neck of the rabab with a smooth polished-steel fingerboard which permits the characteristic slides (or meend) which are used extensively at the beginning of a composition to establish the raga. Just as a tabla player will always have his bottle of talcum powder to sprinkle on his drums, Amjad Ali Khan has a small, decorated box of palm oil to help his left hand slide effortlessly around the fingerboard. The rabab’s gut strings have also been replaced by steel ones – piano strings in fact – which give a much more ringing, and singing tone. Amjad Ali Khan uses 11 sympathetic strings (tuned to the notes of the raga), although other players use more which increases the reverberant effect. The four melody strings are generally tuned (from the top) doh, fa, doh, mi. The lowest string is made from bronze and has a deep, powerful sound, “full of passion”. (Broughton)

The strings are not plucked with the fingers, but with a java or coconut-shell plectrum. “This plectrum can be a hammer or a feather,” says Amjad Ali Khan. “You can play very loud, or give it just a feather touch, skimming gently across the strings.” The range of colours that a player like Amjad Ali Khan can get out of the instrument is quite incredible and is certainly why it has found such an important role in classical Indian instrumental music. (Broughton)

4.3. Eminent players and techniques

Ustad Amjad Ali Khan

Ustad Amjad Ali Khan, following in the tradition of his ancestors, plays the Sarod, and is one of the foremost Sard players in the world today.

The sound of the sarod is dominated by the singing, vocal tone of its melodic strings. Many instrumentalists - including violinists, clarinettists, sarangi and sitar players - like to compare the sound of their instruments to the human voice. And sarod players are no exception. Amjad Ali Khan learned about applying the vocal traditions of dhrupad and khayal to his instrument from his father.

One of the principal modifications of the sarod from the Afghan rabab is its long metal fingerboard, which allows swooping melismatic slides between the melody notes. This is something you can't do on fretted instruments. As well as this lyrical, vocal style, Amjad Ali Khan is renowned for his fast staccato passages up and down the instrument - something he has made very much his own. This is the latest addition to a long tradition of sarod playing and Amjad Ali Khan's two sons, Amaan Ali Khan and Ayaan Ali Khan, are now taking it forward to the next generation. (Broughton)

Nail-biting technique

Like many musicians who play an instrument that's been 'elevated' from folk to classical status, Amjad Ali Khan can talk quite dismissively of the rabab. "It's not a very expressive instrument," he says, "and quite limited." Using the soft tips of his fingers, he imitates the duller, more gutty sound of the rabab and contrasts it with the clear, ringing tone of the sarod. There are actually two schools of sarod playing – one in which the strings are stopped by the fingertips and the other in which the strings are stopped by the finger-nails of the left hand (as practised by Amjad Ali Khan). This is what makes the clear ringing sound and is one of the things that makes it so difficult to play. "These two nails I never cut," says Amjad Ali Khan, showing the first and second fingers of his left hand. "They just get worn down. I have to file them after every concert. People might think I am just beautifying my nails, but it's essential maintenance. They get little grooves cut into them from the strings."

I get a vivid picture in my mind of the ridges worn into wells in India by the continuous pulling of ropes. It is nails on steel that gives the sarod its clear, muscular sound. “In Hindi we say ‘Swara hi ishwar hay’ - ‘Sound is god’ and whilst you are playing you can feel god. I often have my eyes closed to feel the sound.” (Broughton)

Amjad Ali Khan shows how he can play melodies just using his left hand. “My father used to play like that for five minutes at a time,” he says. “Many years ago, a sarangi player at the court challenged my grandfather. ‘You must play anything that I can play’, he said. My grandfather took up the challenge and copied everything the sarangi player could bow on his instrument. Then my grandfather said: ‘Now you see if you can imitate me’ and asked the sarangi player to tie-up his right hand. My grandfather played beautiful melodies with one hand, but the sarangi player could do nothing without his bowing hand and lost.” (Broughton)

Mohammed Ameer Khan

One of the greatest contributors to the development of the style of playing of the Shahjahanpur Gharana, Mohammed Ameer Khan was born in 1877, in Shahjahanpur.

Ameer Khan started learning Sarod when he was just four or five years old

from his father, Ustad Abdullah Khan.Around 1916, Ameer Khan came to the court of the Zamindar of Talanda in Rajshahi (now in Bangladesh) to perform and teach music.

He started teaching music to Brojendra Mohan Maitra, father of Radhika Mohan Maitra. When Radhika Mohan was four, he started teaching him as well. As a composer, he was prolific like his father Abdullah Khan and uncle Murad Ali Khan. Between the three of them, they composed over 500 Gats. The compositions were mainly in the style of Ghulam Reza, known popularly as Rezakhani Gats, and those of Feroze Khan, called Ferozekhani Gats.

Ameer Khan produced a very rich line of musicians proficient in Sarod, Sur-Shringar, Indian Banjo, Sitar, and the ancestral Dhrupad Rabab. Amongst his disciples were some well-known musicians such as Timir Baran Bhattacharya, Nirendra Krishan Mitra, Ashutosh Kundu, Nani Gopal Motilal, Hafiz Ali Khan, and Radhika Mohan Maitra.

Pandit Buddhadev Dasgupta

One of the finest Sarodias of modern times, Buddhadev did not hail from a family of musicians. In fact, his grandfather was a lawyer and totally averse to music.

Pandit Buddhadev Dasgupta started learning the Sarod from Pandit Maitra.

Buddhadev's style is firmly anchored in the tradition of the Shahjahanpur Gharana and combines the Rabab style beautifully with the Gayaki (vocal) style. He has made a pioneering contribution in incorporating extensively a variety of khayal based Ekhara taans and Bandishes (Gat compositions) on the Sarod. Like his illustrious Guru, he has strived to discover new frontiers while staying within the boundaries of tradition.

During the 1970's he started to experiment with Rabindrasangeet, or songs composed by Rabindranath Tagore. Buddhadev examined the movements of the Ragas in some of the songs and started to develop Bandishes, adopting the core melody from these songs and forming subtle movements using Sarod vocabulary. He has taught a number of talented disciples including his two sons Bhavani Shankar and Anirban, Debashish Bhattacharya, Sugato Nag and Prattyush Bannerjee, to name a few.

Sharan Rani Backliwal

Sharan Rani Backliwal was the first woman Indian classical instrumentalist and music scholar, best known for her expertise with the sarod. She was India's first woman sarod exponent and came to be popularly known as Sarod Rani (Queen of Sarod) paved way for a generation

women to play of Hindustani instrumental music.

She was a disciple of Ustad Allaudin Khan and Ustad Ali Akbar Khan of Maihar Gharana school of Hindustani classical music. Her private collection of 370 musical instruments ranging from the 15th to the 19th century is now part of the "Sharan Rani Backliwal Gallery of Musical Instruments" at the National Museum, New Delhi.

As a young girl, Sharan Rani learned to play the sarod from the master musicians Allauddin Khan and his son Ali Akbar Khan. During this period in Indian history, a career as a musician was seen as something for gharanas (families where music was a hereditary profession) or was the profession of nautch girls or baijis, not something appropriate for the daughter of a respectable, non-musician family. Concerned that the rich Dhrupad tradition was fading away, she was also the only artist keeping alive the tradition of playing Sarod with both Pakhawaj and Tabla. Hence, in many concerts, she also presented her solo recitals accompanied by both Tabla and Pakhawaj, besides her usual concerts wherein she was accompanied only by the Tabla.

Abhisek Lahiri

Abhisek Lahiri was initiated in Sarod at an early age of five and trained under the tutelage of his father as well as Guru, eminent Sarod artist Pt. Alok Lahiri, becoming one of his premier disciples. Abhisek's sarod recital has a blending of different styles of gharanas like Shahajanpur, Maihar & Seni Beenkar.

Abhisek's playing reflects the subtlety, aestheticism & nostalgic spirituality while combining it with resonant power and intensity to captivate the listener with the beauty and originality of his playing.

Sudeshna Bhattacharya

Sudeshna began to learn at the age of four from her father Pandit Shri Krishnamohan Bhattacharya, who is respected not only because of his sarod, but also because of his vocal knowledge in dhrupad style. According to the tradition, Pandit Shri Krishnamohan Bhattacharya learnt from his father, who was a great esraj player. Sudeshna plays the rich tradition of north Indian classical music. She has been under the tutelage of one of the greatest and most well known sarod maestros of India, Ustad Amjad Ali Khan.

4.4. Comparison between Sarod and Hawaiian Guitar

As the new generation of Sarod players come up with more and more advanced techniques one can clearly observe the influence of the Sarod on the Hawaiian Guitar in some sections very clearly.

The Jod Section – When the Hawaiian guitar is played during the Jod section , that is, when the Alaap section is over, and we are moving into percussive elements being fused into the Alaap section, the Hawaiian guitar sounds so much like the Sarod. Many hybrid Hawaiian Guitars use the Chikara which gives a similar sound like the Sarod .On closer observation of Pt Debashish Bhattacharya’s technique one can see the inspiration of the Sarod very clearly

in his playing. He uses a good combination of the Index finger and the Thumb in producing fine DIRA DIRA patterns like the Sarod, and it has worked fantastically for him. His playing style was a true revolution of the Hawaiian Guitar Chapter in Classical music. He however has several designs of his own like the Chaturangi, Gandharvi and the Anandi. The Sarod technique has indeed helped the Guitar in the formative elements, helping artists create true classical music with the Hawaiian Guitar.

5. A Comparison of the 'Sustain' achieved by Bow Instruments such as Violin, Sarangi, Dilruba and Esraaj with that of Hawaiian Guitar

The bow instruments have an advantage of infinite sustain compared to stroke instruments. However, it is interesting to observe that the usage of the Volume control aspect on the Hawaiian guitar could make it sound like much closer to the Sarangi, Violin, Dilruba and Esraaj[xvii].

Bowing as an act of sound production on instruments, and bowed instruments themselves have posted very complicated organological questions regarding their origins. Many hypothesis and conjectures have been advanced, discussed, accepted and rejected. The three principal seats of culture which are the scholars' favourite choices are the Nordic region in Europe, India and central-west Asia. In India particularly, many tribal bowed instruments date back to ancient times. The *Ravana hatta* or the *Ravana hasta veena* of Gujarat and Rajasthan are vital links to the very ancient bowed instruments which might have existed before the violin.

The *sarangi* is considered to be the most important of Indian bowed instruments. The concert model is made of one block of wood and is about sixty centimetres in height. The hollow body is wide but waisted at the bottom and this extends into the flat fingerboard. The lower portion is covered with

[xvii] Dilruba and Esraaj are instruments that have an interesting combination of bow and frets

parchment and acts as the main sound box, while the upper portion has a wooden cover. The principal strains, four in number, are of gut usually and as is characteristic of north Indian instruments there is a *tarab*. The most notable aspect is the finger technique not used in any other case: the fingers are stopped with the sides of the finger nails and not by the balls of fingers. While the folk types are very much like the concert one and nearly of the same construction, there is a giant variety known as the *mandar bahar* which gives a brass sound and is sometimes met with in classical ensembles. (Deva, Indian Musical Instruments: Stringed Instruments)

The *sarangi*, more than any other stringed instrument, is at once a typical folk and a concert lute. But strangely, it has not been used much in Carnatic music, while the violin, a more alien instrument, has been embraced. This only goes to show that once we are released from mental shackles, instruments from beyond our borders can make their place in Indian Classical Music, enriching musicians and listeners alike. In fact, there are a number of folk *sarangi* found in Rajasthan and contiguous provinces, whose peculiar fingering methods are known as far away as in Yugoslavia and Greece.

An interesting combination of the *sarangi* and the *sitar* is the *dilruba* (or the *esraj* in Bengal). This has a resonator very much like in the former: it is also held and bowed like it. But the *dandi* is long and has frets tied as in the latter. Though, in a way, the sound is more mellow than that of the *sarangi*, it has really been used in concerts of classical music; and while it is not a folk

instrument either, the *dilruba* is employed in light music and is a favourite with Bengali musicians as *esraj*. (Deva, Indian Musical Instruments: Stringed Instruments)

Sustain on Hawaiian Guitar: All these bowed instruments have the quality of infinite sustain, which is not possible to produce in other stringed instruments. However, in the Hawaiian Guitar, usage of the Volume control could result in sounds similar to that of bowed instruments. Also the fact that with just one pluck, we can produce close to 3-4 octaves of musical flourish is itself the proof that the techniques of sarangi, violin and dilruba can be adopted on this instrument. In a very small and limited way the plucking of the Hawaiian guitar could be made invisible largely by the use of volume control.

6. Advanced Approach to Hawaiian Guitar Techniques

In this section the attempt is to make a comparative analysis of the already existing techniques of playing and some popular and known artistes of this instrument both in Indian Classical as well as western music styles. Specifically

- To study the techniques of western music players of this instrument and which of those techniques could be adapted to Hindustani Classical style. We explore the presence of the Hawaiian Guitar in Blues, Country style and even mainstream musical styles like Funk, Rhythm and Blues Rock and Jazz and see how the Hawaiian Guitar has added a creative niche to the already existing styles.

- To observe how in Carnatic Music some of the techniques of the Western Guitar were adapted and made a part of their own style, in other words added to the previously existing rich repertoire.

This study considers the techniques in all the different forms of music, encompassing styles from all over the world, mainly because of the similarities that exist among all these various styles, in spite of having established traditions of their own. For instance, the common factor in Hindustani and Jazz music, although they may sound very different, is improvisation. Similarly Hindustani music and Carnatic have many similarities, especially with regard to techniques of playing Hawaiian Guitar.

Many scholars opine that this divide in Indian classical music was mainly due to the difference in styles following the Persian/Mughal invasion of Northern India, which brought a lot of influence into Hindustani Music. Though Hindustani and Carnatic Music share a lot of common aspects (phrasing techniques, similar ragas, etc.), each one has a distinct structure of its own. These systems have continued to live over the centuries and are still performed with traditional expertise, and at times also incorporating modern music elements into them. (Harry)

6.1. Techniques of western instrumentalists in various styles such as Jazz, Country, Hawaiian, Rock and Classical

Sol Hoopii: Solomon Hoopii Kaai was the first steel guitarist to combine Hawaiian music with American jazz; Potent combination that had a profound influence on the first generation of Dobro and lap steel guitarists in both Hawaiian music and western swing. Born in Honolulu in 1902, Sol was one of 21 children. As a teenager, he stowed away on a Matson liner to San Francisco along with two compatriots. After they were discovered, so the story goes, their fellow passengers paid their fares upon hearing them play. Adept at ukulele and standard guitar, as well as steel guitar, Sol formed a highly successful trio with Lani McIntire and Glenwood Leslie. The trio was in great demand in clubs, theatres, and movie soundstages where Sol made many film appearances throughout the early 1930s. Sol's recording career extended from 1925 until the early 1950's and included traditional Hawaiian

standards, contemporary Hawaiian songs and hot jazz. His style was inspired by the jazz players of his era, specially clarinet and horn players, such as jazz legend, Bix Beiderbecke. His many recordings, while sounding very much of their era, nevertheless radiate a certain timelessness in no small part due to the audacity of Sol's steel technique and the creativity he brought to the instrument. (Volk, 2003)

After a successful career in commercial music, Sol left secular music behind in 1938 to become a disciple of evangelist Aimee Semple McPherson, and his last recordings were almost all religious songs.

Sol's earliest recordings were in low-bass or high-bass A major tuning. He also played in a number of variations E major tuning and innovated the C# minor tuning, which afforded him the close-voiced swing sound that so caught the ear of other players.

Sol Hoopii's Tunings						
Strings	1	2	3	4	5	6
A (low-bass)	E	C#	A	E	A	E
A (high-bass)	E	C#	A	E	C#	A
E major	E	B	G#	E	B	E
C# minor	E	C#	G#	E	D	B

Beyond his innovations in Steel technique and tunings, Sol was a trendsetter in his use of the metal-bodied National Tricone and later in his career, the Rickenbacher Bakelite and Dickerson electric steels. Even today, more than

half a century after Sol last recorded, his tone and technique remain virtually unrivaled on acoustic steel. His stamp on American popular music remains indelible even though many musicians remain unaware of the Hawaiian wellspring of the tunings and licks they're playing. (Volk, 2003)

Ralph Kolsiana: Because he recorded only a handful of 78 RPM records and never played live radio dates, Ralph Kolsiana is unjustly forgotten as a pioneer electric lap steel player. Born in Hawaii of Dutch, Brazilian and Peruvian heritage, Kolsiana was raised in Philadelphia, PA and died in Los Angeles in 2002 at age 90. His swinging approach to the instrument was equally influenced by traditional Hawaiian music and hot jazz. He remained a lifelong jazz fan who appreciated Charlie Parker and Dizzy Gillespie as well as Laurindo Almeida and Barney Kessel. (Volk, 2003)

In an interview to Steel Guitar World Magazine, Ralph Kolsiana talks about his early influences: "My earliest influence was, of course, Sol Hoopii. After hearing Sol, every Hawaiian band wanted to use a steel guitar. Not many people know that Hoot Gibson, the famous cowboy movie star, brought Sol out here to Los Angeles to play with his western group. That's how the western guys got into using the steel guitar. I don't think anybody's ever covered that story. This was way, way, back as I recall, in the early 1920s. There weren't very many players during those days and nobody had a native Hawaiian steel player except Hoot Gibson." At first, Ralph Kolsiana was using a steel guitar that he converted from a Spanish guitar. He cemented a

post in the center under the sound hold and attached the top from an old hand-cranked brass doorbell. Later he got an electric bell and screwed that onto the post and found he got quite a resonance out of that. He even played electric mandolins with a hold of black Backelite steel with chrome plates and the frypan. Now he plays a 1950 double-8 Fender. Regarding tunings he says, "F9th tuning has been my favourite for a number of years. I used E9th before I even knew what E9th was because, being an ear player and not a music reader, I discovered this tuning for myself way back around 1940. I had been using the old E7th [technically, E13th] I kinda stuck with it and it's the one I still use most today on my inside neck. On the outside neck, I've experimented with a lot of other tunings like D9th and B11th, but since I played at the Hula Hut in Santa Monica in the 50's, I've been using C13th on the outside neck." (Volk, 2003)

Ralph Kolsiana's Tunings								
Strings	1	2	3	4	5	6	7	8
E13th	E	C#	G#	F#	D	B	G#	E
C13th	E	C	A	G	E	C	Bb	C

Regarding using the pedal, he says, "I think the pedal steel has great potential but could be played to sound a little more natural, Joaquin Murphy, for example, has a real human touch. Some other pedal steel playing I've heard has a mechanical edge to it that you can't get away from. It's partly the nature of the instrument but there are some players I hear who don't have – the only

thing I can call it is soul – in their playing. It's harder to put expression into a pedal steel because of the mechanical make-up of changing chords with pedals. A steel player should try to know the song they're playing so well they're able to put a little more of themselves into it. You can take two or three players, even on lap steel, with the same songs; they'll sound like themselves and not anybody else. Andy Iona didn't play like Eddie Bush and Eddie didn't play like Danny Stewart and Danny Stewart didn't play like Dick McIntire. When you're playing a number that you know, you kind of project yourself into playing what you feel and hear, what it is you're trying to say to the listener. You're trying to tell it in your own way." (Volk, 2003)

Dick McIntire: Dick McIntire Dick pioneered a smooth, legato approach to electric steel guitar that had a profound impact on Jerry Byrd in his formative years as well as on many other Hawaiian-style steel players. McIntire was noted for his use of the E7th, C#m and F#9th tunings. (Volk, 2003)

Dick McIntire's Tunings						
Strings	1	2	3	4	5	6
E7th	E	B	G#	D	B	E
C# minor	E	C#	G#	E	B	E
F#9th	E	C#	G#	E	A#	F#

David "Feet" Rogers: David "Feet" Rogers' style on the Hawaiian steel guitar was unique and transcendently beautiful. He could spin a gossamer thread of melody played entirely in harmonics that seemed to float above the

rhythm. His style represents a folksy, back porch kind of playing, much closer to Hawaiian music as it was played by the people at family gatherings and informal luaus and jam sessions than the music found at the nightclubs of Waikki. Born in 1935 in Kalihi, Hawaii, Rogers grew up in a home he described as having "plenty music plenty Hawaiian food, plenty love." Feet came from a line of steel players who included his father George, and Uncle Benny Rogers. For many years, the unique tuning they all used was family secret. According to Feet: "How we tune the steel is kind of like a chant or a family song, you know. It belongs to us and we have to take care of it or else it will change like everything else." (Volk, 2003)

David "Feet" Rogers' Tuning						
Strings	1	2	3	4	5	6
D major	F#	D	A	F#	D	D (low)

In 1960, when he was playing with Eddie Naeole, Feet was approached by slack key master, Gabby Pahinui, Ukulele virtuoso Eddie Kamae, and bassist, Joe Marshall to join their new group called the *Sons of Hawaii.* Their approach to Hawaiian music proved a tremendous hit with audiences and the *Sons of Hawaii's* albums remain among the best selling Hawaiian music of all time. David Rogers died in 1983. (Volk, 2003)

Billy Hew Len: His style is characterized by lush, throbbing chord work

alternating with very fast arpeggios and volume swells using the knob on the face of the guitar, all informed by a very Hawaiian sense of swing.

Regarding tunings, he has said the following: “My main tuning is A6th. The reason why I use A6th is because you can play the sweet Hawaiian way or get jazz sounds. Because of the tuning Feet Rogers uses, everything’s harder – not as pretty. Feet Rogers learned from his uncle, Benny Rogers. They play the way they do because of the tuning they use. There’s another reason I use A6th. I used to play a C6th a long time age, but I couldn’t play in the low register in the key of F. The advantage of this for ad libbing is you’re in a lower register in A6th than C6th in the key of F. In C, you don’t have the lower register. As you go higher up the neck, it doesn’t tend to sustain as well in the higher register. Changing tunings is a matter of plucking certain strings and knowing the tuning you’re using. Where we play, you don’t have time to start tuning all over the place, when you’re on a job. So, you have to be there right away. You want a fast action by having melody notes close together. (Volk, 2003)

“Very few people know about this [A13b9] tuning – it’s got fantastic 7^{th} chords; very pretty but it takes time to learn to play. You have to pluck your strings and really listen to the harmony that you hear. You can play diminished chords with this tunings. It’s hard to play diminished chords without pedals. You usually have to play two-part harmony. With this tuning, you can get diminished chords in four part harmony. F major 7^{th} is a good

tuning. The sound that Gabby [*Pahinui]* makes is similar to this. I heard Alvino Rey play E6th one time. He hit this one chord and I grabbed my guitar and tuned it the same way. I never had an 8-string or a pedal guitar back then. It's good tuning for background sounds. If you have two guitars, this is the one you use for playing background. You get a real Hawaiian sound. To play this tuning solo, you would have to really concentrate because the harmonies are not close – they're wide apart." (Volk, 2003)

Jerry Byrd: Born in 1920 in Lima, Ohio, Jerry Byrd is undoubtedly the single most influential electric lap steel player in history. Along with Don Helms, Billy Robinson and Howard White, Jerry Byrd created the foundation for the Nashville steel guitar sound. His initialy identifiable touch and tone feature impossibly perfect intonation and slant bar technique with a trademark vibrato and mastery over harmonics. He has been an innovator with his development of the C6th and C-Diatonic tunings as well as a composer of lap steel standards, such as *Steelin' The Blues and Steelin' the Chimes.* (Volk, 2003)

His career has been almost equally divided between country and Hawaiian music. His work in the country music field can be heard in his legendary recordings with such artists as Hak Williams, Chet Atkins, Jethro Burns, Marty Robbins, Hank Snow, Roy Clarke, Ernest Tubb, Red Foley, Burl Ives and numerous others. His influence on professional steel players is incalculable and his recordings have set an Olympian standard for the steel

guitar faithful. A lifelong exponent of Hawaiian music, Byrd grew tired of the pressure of commercial country music and moved to Honolulu in the early 1970s. Since then, he has become revered for his efforts to teach native Hawaiians about steel guitar, to the extent that some credit him with single-handedly saving the steel guitar from extinction in Hawaii. Byrd's style has been so influential, it has arguably, become the most-imitated way to play Hawaiian music. He is also the pioneer of the C 6th tuning. (Volk, 2003)

In an interview aired in 1973 on Canada's CBC Radio Network, Jerry Bird says, "The first steel guitar that was played on a country record was by Lani McIntire who later became famous in the Hawaiian music field – he wrote the song *The One Rose.* He had two brother, Dick and Al. Dick was a great steel guitar player. Al played bass and they all joined the navy and left Hawaii together and ended up in California. Lani played on Jimmy Rogers' first records. I listened to the Hawaiians because they were really the only ones who were playing the steel guitar at that time. Dick McIntire was my particular favorite although there were so many great ones: Andy Iona, Sam Koki, Sol Hoopii – all of them contributed to steel guitar." (Volk, 2003)

Jerry Byrd has always believed that steel guitar belongs in Hawaiian music, and that is what identifies Hawaiian music the world over. Regarding pedals he has said the following: "I saw my first pedal steel guitar in 1939, believe it or not. Back then you didn't have the mechanical know-how, machine tools and what have you they have now. They had all kinds of things to pull strings,

they were very ingenious but they just didn't work. You were forever out of tune if not breaking strings and I couldn't stand that. So I said they're going to have to come a long way with these things before I'll play one. Pedals raise and lower the strings but I'm not sure they get the same effect that I can by using the bar. I can do it more relaxed, more natural. It's a hard thing to describe. I think I can sit down with a pedal player and have him move one string in harmony like a two-part or three-part harmony and he can do it with pedals and I can do it without pedals and it wouldn't sound the same at all. After much deliberation I decided I'd just continue with what I was doing. I still think it was the right decision. A lot of people think everybody should sound pretty much alike and I don't agree – especially with steel guitar. It's the most individual instrument in the world. You can take fifty steel guitar players, especially on non-pedal, and they would *all* sound different. I would like to see some of the pedal guys get away from the conformity – sounding too much the same tone, the same licks. I know there's more than that can be done with a pedal guitar. A little more melody playing, maybe that's old fashioned – a lot of guys are afraid to sound old fashioned but I think they'd realize, if they just play the melody, play it with some feeling and some coloring here and there that it would be a whole new thing. It'll never be out of style – not ever. (Volk, 2003)

"You know, a guitar has never played itself. They just stand there or lay there. It's up to you to play them. The number of strings and the number of pedals

will not make a player – not ever. Another thing I've never agreed with is making steel guitar a chord instrument. I don't hear it as a chord instrument. I near it as a lead instrument. You can take a chord on a steel guitar – a 9th, a 7th, whatever you want – and play the same inversion note-for-note on the Spanish guitar and it doesn't sound anything alike. Steel guitar to me is really not a great chord instrument, even with all the possibilities today for pedals, and that was the reason they invented pedals, of course, to get more chord possibilities and to eliminate a lot of work with the left hand as far as slant bar techniques. But they're all too much influenced by what everybody else is playing." (Volk, 2003)

Jerry Byrd is also credited with creating the "Nashville sound" – that was to become the definitive sound of country music for decades.

Jerry Byrd's Tunings								
Strings	1	2	3	4	5	6	7	8
A major	E	C#	A	E	C#	A		
E major	E	B	G#	E	B	E		
E 7th	E	B	G#	E	D	B		
C# min	E	C#	G#	E	D	B		
C6th / A7th	E	C	A	G	E	C#	C	A
F# min 9th	E	C#	G#	E	A#	F#	C#	G#
C Diatonic	E	C	B	A	G	F	E	
B11th	E	C#	A	F#	D#	C#	A	B

Jerry Byrd on Harmonics: The technique of playing steel guitar harmonics involves picking the strings with the right the strings with the right hand at specific points or nodes to produce a bell-like tone (using an octave or a 5th above the node point). Many Hawaiian steel guitarists have made extensive use of melodic lines played in harmonics in their music to change mood and texture or "draw in" the listener. Jerry Byrd has been recognized for many years for his remarkable ability at playing harmonics or "chimes" which requires great technical control as the player must keep his picking hand either 12, 5, or 7 frets away from the bar hand at all times. Jerry Byrd shared some of the secrets behind his techniques for playing harmonics on the Steel Guitar Forum:

"Most of the time, although I can do three string strums occasionally, where it fits, mostly I do either single or two string harmony. Now, there is one way I do it that the leader of the two strings, like playing the first and second string, the second string would be harmonic and the first string would be open. So you get a different sound then, but the way I do it with my hand when I want both strings to be harmonic, I just tilt my right hand (picking hand) down a little bit to where I use the thumb pick on those two strings, as the second string is picked first and the top string last. So by moving my hand over a little bit I can get both strings as harmonic if I wish. Now, I do another thing that I discovered during a session in Dallas, Texas. I can pick the top string by using my first finger pick (index finger pick) and picking backwards with that

pick. The top string is harmonic and the bottom two open; I can pick three strings much easier. The bottom strings are either open or harmonic. I did this on *La Golondrina* on the *Hi-Fi Guitar* album. I just stumbled on it that day during the session, and it came out beautifully. But the top string are harmonic and the bottom strings are open, or the other way, the bottom strings are harmonic and the top strings are open. And they are a lot easier to do this way than the other, I can play in real high register as on that record and I can get every one of them just as clear as a bell. So that's the deal on harmonics." (Volk, 2003)

Billy Robinson: In the late 1980s, Billy Robinson was greatly drawn to Hawaiian music, and Jerry Byrd in particular, but he started off by playing steel guitar the wrong way, which resulted in a rotator cuff injury which took years off his playing career. He says, regarding the injury: "Part of it was adjusting to the Hawaiian vibrato, which is a lot more prominent and like many country players, I was lazy about my left hand. When I finally got in gear I sort of traumatized it, plus I was doing it incorrectly, doing it from the shoulder rather than from the whole arm and I just trashed it. I also played with hunched shoulders. So twenty years of playing incorrectly basically caught up with me." (Volk, 2003)

Regarding the Hawaiian style, this is what Robinson says: "To me, the single biggest factor is that most Hawaiian musicians play all the instruments and sing. They just tend to play the steel guitar the way they sing so it has very

lyrical quality to it. You never find the left hand faltering. When you listen to good singer hold a note, there's something very steady in the way they hold a note and in the way the vibrato moves. When you hear the Hawaiians play, this singing quality seems to be built into the style. It just grabs me more and has a real emotional quality to it. Many Hawaiian players also block differently than country or western swing players. A lot of the blocking is done with the left hand and many Hawaiian players perfected this way of moving the bar between strings to imitate the sound of the voice breaking. Right hand blocking is still used, but not as much as in country steel guitar. Also right hand blocking tends to cut off the sound. Hawaiian players can block with the left hand and create continuous sound as a singer would do. This is done by lifting the bar off of one string at the instant you pick another string. When you use your right palm to block, you're actually cutting off the tone slightly. Blocking with the left hand is closer to pick blocking, but really, it's a different kind of a sound." (Volk, 2003)

Regarding tuning, Robinson says: "In general, the importance of tunings is overblown. 80% of everything I play I could probably play on any mainstream tuning. That said, I'm still kind of a tuning junkie. My main tuning is a C6th in Hawaii, but it's really a C13th. Most mainland C6th tunings don't have the 7^{th} tone in there. To me, it's the best all round tuning because you get every major chord inversion, every minor inversion, and most of the important 7^{th} chords and there's just a ton of stuff in the slant position. One glaring

omission from the C13th tuning is a real fat 9th chord and the B11th tuning really fills the bill. It's real common to switch between tunings in the middle of a song. Some guys do it in the middle of a solo. Guys like Jules Ah See were known for that. The Leon McAuliffe E13th is one of my favorites. There's a ton of chord stuff you can get on there but you have to use a fourth fingerpick to select it out. You can get a lot of basic jazz guitar voicings, 4-note chords instead of 3-note chords, that are really, really cool." (Volk, 2003)

Robinson also played a lot using Jerry Byrd's diatonic tuning, but mentions that it is not possible to strum with this tuning. For someone who likes to pick strings individually, this is suitable, but Robinson plays with different textures that he can get out of strumming. Interestingly, Robinson cannot read sheet music. He just came up with creative licks for intros, outros and turn arounds all off the top of his head for all his recordings.

Billy Robinson's Tuning (1940s)								
Strings	1	2	3	4	5	6	7	8
C6th / 9th	E	C	A	G	E	C	A	F#

Regarding use of pedals, he says: "I did get involved with pedals on and off for 20 years and I absolutely sounded like everybody else and got tired of it. So I started back on a little 6-string non-pedal guitar, then I went to a 7-string guitar, an 8-string, then a 9-string and then a 10-string guitar with a D-string on Top. That's been something I've really enjoyed doing. At age 71 I'm still

learning guitar and haven't even begun to do all the stuff that can be done on it." Interestingly, Robinson is well known for his advanced pull string technique - sharpening the pitch of a string by pulling the string behind the bar with the left hand. In his own words: "I pull every string on the guitar except the small G string. I pull strings the most with the finger next to the pinky. I pull strings a half tone, sometimes a full tone and I also pull a string with a bar slant – a back bar slant where there's a 4-note chord that I'm hitting. I love for people to watch me play because my bar hand is backwards, forwards, sideways, string pulling and all. That's what makes it fun. A lot of people say, "You sound like a pedal steel." Well, anything that I can get out of that guitar I'm gonna get out of it. I don't care if it sounds like a pedal or whatever else it sounds like. It doesn't *all* sound like that. Some of it I do just for the fun of it." (Volk, 2003)

Billy Robinson's 10-string Lap Steel Tuning										
Strings	1	2	3	4	5	6	7	8	9	10
C6th / 9th	D	G	E	C	A	G	E	C	A	F

Robinson's 10-string Lap Steel guitar was specially made according to his specifications: "I wanted the strings to be perfectly parallel and I had a 10-string guitar spaced out on a 12-string neck so that I'd have more space between the strings. I use a large bar and this allows me to get bar slants all the way down the neck pretty well evenly. As the frets get closer your slants

get closer and as you go down the neck toward the keys, the slants are more dramatic. A lot of the steel guitars are not parallel. They slant toward the tuning keys." (Volk, 2003)

Robinson's advice to improve the pull string technique: "My advice is to get a guitar with parallel string spaced far apart. If you want to pull strings, don't use tight strings. The diameter of the string needs to be slightly smaller than normal in string pulls. You'll find that pulling the wound string is a little more difficult. I'll occasionally pull more than one string at a time but not too often. (Volk, 2003)

Bob Dunn: Bob Dunn had been exposed to the fiddle tradition as a youngster, and later on was heavily influenced by the jazz styles of players like like Jack Teagarden and Louis Armstrong. His virtuoso, horn-like soloing in a simple A major tuning was unprecedented for a steel guitar player at that time. Like Django Reinhardt on guitar, or Louis Armstrong on trumpet, there was simply nobody else who could do what Dunn could do on his instrument. His imprint on musicians of the time, as well as on subsequent generations of steel players, remains indelible. When he played with the band Milton Brown and the Brownies, he introduced many concepts that would become standard for western swing bands: jazz-inflected singing, jazz piano, hot fiddle and steel soloing, and a wide ranging repertoire that cross-pollinated numerous regional musical styles. Dunn was a great standard guitar player as well as a steel player. He also played trombone and he copied what he did on the trombone

on the steel guitar. He was also one of the first guitarists to use a magnet on the strings to get a better sound.

Bob Dunn's Tuning						
Strings	1	2	3	4	5	6
A major (high-bass)	E	C#	A	E	C#	A

Leon McAuliffe: Leon McAuliffe has experimented with a number of unusual guitars with double, triple, and even four necks with eight strings on each neck. In 1940, he got a Rickenbacher double-neck guitar and later switched to a Fender double neck. The challenge was to tune all the necks, especially the fourth neck with the bass string. Says McAuliffe, "With the bass strings, I have a lot of low notes I would not have had before – that's how I use it. When you reach that far – for that neck – you're really a little out of position, you know. It's a little awkward. You have to lean way over and get back. So you don't use it a whole lot but it's a very good effect and for playing parts with a band. If I had the front line playin' a whole bunch of notes, I could get bass notes on the bottom and really fill it up." (Volk, 2003)

Leon McAuliffe's Tunings								
Strings	1	2	3	4	5	6	7	8
A6th	E	C#	A	F#	E	C#	A	F#
E13th	E	C#	B#	G#	F#	D	G#	E
Diminished	E	C#	A	F#	F	Eb	Ab	D
Bass tuning	D	B	G	E	D	C	B	A

The Ab string in the diminished tuning is tuned ½ step below the third string. The low A in the bass tuning is tuned to the same pitch as a bass guitar.

Joaquin Murphey: When Earl "Joaquin" Murphey arrived on the Los Angeles music scene in the early 1940s, listeners were captivated by the effortless fluidity, drive, and creativity of his improvised solos. Steel players were dumbfounded. He was so far ahead of his contemporaries, it was twenty years before any other steel guitarists came close to matching him. The technical aplomb of Sol Hoopii, the guitar arpeggios of Django Reinhardt, the block piano chords of George Shearing and most importantly, the fluid clarinet runs of Benny Goodman, all found voice in the western swing music Murphey played with Spade Cooley, Tex Williams, Roy Rogers, *Andy Parker and the Plainsmen,* and a host of other Los Angeles –based groups. A jazz musician disguised as a cowboy, his picking on solo features like *Three Way Boogie* and *Oklahoma Stomp* had a huge influence on steel guitar greats such as Buddy Emmons and Speedy West, who wore out the grooves of their 78 rpm records in an effort to copy Murphey's licks. The stories surrounding Joaquin are legion. He'd de-tune his steel guitar when he left the bandstand so others couldn't learn his tunings. (Volk, 2003)

In an interview in 1995, he had explained how he liked his guitar set up: "The string spacing is gonna be 3/8ths at the nut and all the way up to the tailpiece – the strings will be perfectly parallel all the way down so I can synchronize

myself better, especially with the tip of the bar on single strings around the first two frets. I like to try and comp block chords like Shearingj did on piano and that should be ever easier with that new pedal guitar cause I won't have to jump around so much. I like an amp that don't sound too bright in the high register – that's good from say, the tenth fret on down. It should be pretty mellow, you know, a little more body. When I got into steel, I started out with F#9th. Then on the other neck I used a C6th with E on top." (Volk, 2003)

Joaquin Murphey's Tuning								
Strings	1	2	3	4	5	6	7	8
C6th / C major 7th	G	E	C	A	G	E	C#	B
The 8th string B is a .020 gauge plain string.								

Cindy Cashdollar: Variety, consistent quality, and unerring taste have been the hallmarks of Cindy Cashdollar's career as a professional steel guitar and Dobro player. Her five Grammy Awards are testament to both her wide-ranging musically and her status as a first-call sideperson for leading country, folk, rock, blues, western swing, and American roots music artists such as Bob Dylan, The Dixie Chicks, BeauSoleil, Dwight Yoakam, Grahm Parker, Lyle Lovett, George Straight, Reba McIntire, and Roise Flores, to name just a few. She started on guitar when she was twelve years old. She took the regulation folk guitar lessons and got into Delta-style blues picking on a standard guitar. Then a few years later she heard a John Fahey record which

had him doing bottleneck style in open tunings and that was her first introduction to slide. (Volk, 2003)

When she heard someone playing Dobro she thought, what a great instrument for covering both the things I loved at the time – country & blues. So she started taking Dobro lessons. When she heard Mike Auldridge's *Eight String Swing* that came out on 8-string Dobro, she got into the swing tuning – the 6th tuning. Then from there, she wanted more strings and a fatter sound so she got a double-neck Fender with one neck in G6th tuning. When that didn't sound great, she had to change her whole approach – "Going from Dobro to lap steel was like going from a manual typewriter to an electric typewriter!" (Volk, 2003)

On the role of the steel guitar, Cashdollar says: "Because of the richness of the instrument, the steel guitar serves as a part of a section – like saxophone, fiddle and steel – or it can simulate the sounds of a horn section by itself. It's great for all those horn-like hits and pads. The other role is the musical colorizing that it can do. And as far as lead playing, it's like any other instrument. So steel guitar has got a sound that, for western swing, seems to lend itself to all three roles perfectly." Cashdollar plays a Remington Steel triple-neck and a Fender triple and double-neck. She also has a Rickenbacher 6-string lap steel, a custom Frank Campbell lap steel, and a Flying-V Melobar. On the scoustic side she has a Paul Beard resophonic guitar, a Gibson Dobro and a 1937 round-neck Dobro that was converted for lap playing. She also has

a Danelectro baritone guitar that I had converted for slide, which has a great baritone. She keeps it in a low A tuning. She had the bridge raised and a nut built for it. She also uses a Danelectro tremolo pedal for greater control. (Volk, 2003)

Cindy Cashdollar's Tunings								
Strings	1	2	3	4	5	6	7	8
C6th	G	E	C	A	G	E	C	A
E13th	E	C#	B#	G#	F#	D	G#	E
E6th	G#	E	C#	B	G#	E	C#	B
G major	D	B	G	D	B	G		
G6th	D	B	G	E	B	G		
D major	D	A	F#	D	A	D		

Herb Remington: Herb Remington is one of the most famous of the steel guitar alumnai of Bob Wills' *Texas Playboys.* His playing on the late 1940's *Tiffany Transcriptions* is notable for the way it combines traditional Hawaiian stylings with hot, swing-based soloing. In 1978, Herb began over-the-counter retail sales of steel guitars. In 1986, he started building his own line of pedal and non-pedal steel guitars, known respectively as the *Sustainmaster* and the *Steelmaster.* (Volk, 2003)

When he was with the Texas band he says he usewd these tunings: "It was either A6th or I had a tuning I put together I called an F#13. I had little strings on the bottom instead of the big strings. The 8th string on that 8-string guitar

was tuned to a higher note than the first string. The 7the string was tuned to Eb or D# - which is a half tone lower than the 1st string. You had to be careful of how you played them. I could get everything – I could get a diminished chord, 6th, minors, I could even get 10ths on it. But I could not play a major triad and that used to worry me to death. I couldn't get G major, C major or any of the vanilla major chord sounds. I could get root and 5th or root and 3rd but I couldn't get all three of them. The A6th on the other neck, there's where I got my major chords. Usually, I had a triple-neck with an E13th on the third neck. (Volk, 2003)

Herb Remington's Tunings								
Strings	1	2	3	4	5	6	7	8
A6th	E	C#	A	F#	E	C#	A	F#
E13th	E	C#	B#	G#	F#	D	G#	E
F#13th	E	C#	G#	E	Bb	F#	D#	F#
The 8th string F# is a plain string 1 whole step *above* the 1st string. The 7th string D# ½ step *lower* than the first string.								

Remington began playing with a Fender pedal steel, but later moved to Sho-Bud, Emmons and MSA which gave the option of either flattening strings or raising them or have a combination. Regarding tuning and playing the guitar, he says: "The Nashville sound is not as versatile a tuning as 6th tuning whereby you can get chords if you want and still play a melody line. E9th is

pretty much for sound effects, backing up singers or playing country music with three or four chords. I had enough sense to realize that if I try to learn everything that's on one tuning I've got my hands full. I experimented with one tuning or the other to find out what it was that I wanted. I didn't want to play what somebody else played. I wanted to play what I like to hear and I never got really wild with it; major chords, major *9ths,* 13ths, diminished 7ths – the standard chord that are used in pop and big band music. That's what I still play when I play a pedal steel. If I'm going to play country, I'll use my bar to acquire that sound. I know how to make those crying sounds that they demand sometimes. Execution is the most important aspect to playing. I guess it's true with all instruments, but there are habits that you must learn at the beginning of playing steel. If you do not learn correctly you can never conquer bad habits that develop. Blocking with the right hand, getting a clean note with no noise and good tone was terribly important for me. I never was a fanatic about amplifiers. I would take an amp and work with it 'til I got the best out of that amp and never worried about it again. A lot of guys keep trading guitars, trading amplifiers in order to get the sound that's mostly in the way you play and how you adjust what you've got." (Volk, 2003)

Remington also builds guitars. Regarding construction of a guitar he says: "Non pedal instruments are much better than any guitar in the past because I use stainless steel instead of chrome plate. Stainless steel is a hard material and lets the strings sustain. I use ash like Fender did. If you play my guitar at

the 1st fret you have plenty of finger room. With the old Fenders, you would bump into the tuning keys as you plated at the 1st fret. Little things that mean a lot. There's an area, where you play with your right hand, carved into the wood to allow you to have more space between the necks without making the guitar any bigger. It just gives you more space without bumping into the neck ahead of you. There were guitars I didn't think were built correctly. I did and I've got one of the better ones on the market. The big hullabaloo, the excitement around pedal steel has wanted. It's not like it was in the 50's, 60's and 70's. Even the recording industry doesn't use steel as much as they did." (Volk, 2003)

Ed Gerhard: Ed Gerhard is an acoustic guitar soloist of poetic sensibilities and impeccable musician ship. On both originals and traditional songs down to its essentials serves to communicate a deep understanding of the intent of the song. He has also collaborated with Breedlove Guitars on an *Ed Gerhard Signature Model* guitar. The guitar became a best seller for Breedlove and won the *Player's Choice Award* in 2000 from *Acoustic Guitar Magazine.* Increasingly, Ed has used lap steel guitars in his music. His 2002 release, *House of Guitars* was based upon locating forgotten instruments in pawnshops and used guitar dealerships and recording them with the same care and meticulous attention to sonic detail that he uses on his high-end custom instruments. He was influenced by Andres Segovia as a child and he took up guitar playing. (Volk, 2003)

Regarding his guitar and tunings he says: “I heard great players like Mississippi John Hurt, Dave Van Ronk and John Hammond and that just totally changed my direction. Very early on, I was playing slide guitar and I guess my steel and Weissenborn playing is really an extension of my slide guitar playing, not really from hearing Hawaiian music or anything like that. My first steel was a National Dynamic, which is just a gorgeous, really sweet sounding steel. I’ve got two Oahu electric steels: a Tonemaster and a Diana, as well as a Supro double-neck - all 6- string guitars. I have a Weissenborn Style-1 and Style-2. The Weissenborn copy that I tour with was made by a company called K&S. It basically serves to hold the strings and pickups; it’s useless beyond that laughs). Acoustically, it doesn’t sound like much for some reason, it’s just like magic with a Sunrise or a Rare Earth pickup. The Rare Earth is a really nice, high output pickup. I use a Humbucker Rare Earth in the Weissenborns but sometimes I’ll put a single coil in if I’m recording and I want to get a slightly rounder sound out of it. I’m not going too far afield with tunings though I’m starting to experiment more – like with the C#minor tuning and D6th. DADGAD is a nice tuning for steel guitar. [*D suspended tuning is commonly called DADGAD, low to high, the reverse of this book’s format]* The Weissenborn that I tour with is in open D tuning but harmonically, it’s pitched to B or sometimes to C.” (Volk, 2003)

Ed Gerhard’s Tunings

Strings	1	2	3	4	5	6
D major	D	A	F#	D	A	D
D suspended	D	A	G	D	A	D

Ed Gerhard uses a thumb pick with the Weissenborn, but doesn't use any fingerpicks. The bar he uses is a Shubb SP2. The SP1 is the longer one. He is well known for the lush beauty of your tone and the sonic richness of all your recordings, and he attributes this not to equipment but to the tone that comes from the musician's hands.

Pete Grant: Pete Grant is a steel guitar, dobro and banjo player, who has also designed a unique instrument in the history of resonator guitars: the 10-string Zephyr resophonic. It evolved from a 10-string Dobro which had an 8-string wide neck and little outriggers for the other strings. In 1977 he had a custom 10 string steel guitar built to his specifications with a metal body and wide neck. Later he designed a 10-string guitar with a wooden body and that was the prototype for a series of 8-strings and 6-string steel guitars.

Freddie Roulette: Predominantly a blues player, Freddie Roulette has command of many other musical idioms including rock, soul, funk, latin and pop, which he fuses together in a melting pot of virtuo licks and runs that create a new hybrid that's his alone. He plays a single-neck 8-string and also a double-neck. The bar he uses is not a standard steel guitar bar. He had special bars made by an aircraft precision tool manufacturer in Oakland, made out of

Dacron plastic. This is the toughest type of plastic used in space where they can't oil the gears. It comes in tubes and put it in a cold press, where hot lead is poured thorough it. Once cut off, a pure lead bar covered with Dacron plastic is manufactured. He says, "The reason for using plastic is because it's a silent bar – no noise at all. It takes the high end off and gives you a warm sound. You just kick the high end up on your amp a little bit and that's it. It's a mellow sound. I have been using it for the last seven years and there is hardly a nick in it." (Volk, 2003)

Regarding tunings he says: "I use an A7th and A9th mixture on my double-neck. My main tuning is the A7th – or sometimes *[a variation with]* A-E-G or A-E-A in the bass. I'll make little changes here and there in the studio to get what I want. I use that double A string 'cause it gives me a bassier sound without overdriving the bass. I use it for little techniques I have when I'm playing rhythm guitar. I'm a good rhythm steel guitar player, by the way. I do rhythms on steel that regular guitarists can't do plus playing all the chord structure at the same time – makes it unique." (Volk, 2003)

Freddie Roulette's Tunings								
Strings	1	2	3	4	5	6	7	8
A7th	E	C#	A	E	C#	A	A	G
A7th #2	E	C#	A	E	C#	A	E	G

For a slide guitar player, Freddie Roulette says that he hardly ever slides. Instead he plays slant bar. He also does not use finger picks as his style is more classical. Roulette is known for his "audio illusion", where he can use the steel guitar to mimic a conversation. He says, "The steel guitar is a sine wave instrument – same as the human voice. You know we talk in notes – da da, da da. So you have to be conscious of the notes that you're producing when you're talking. People talk in notes and don't even realize it. I did a lot of experimenting with my own voice. I said a word, then I got my guitar and saw that "I m talking a G …that's a C# … going way up to an A flat and … hey, I'm going to a B flat." (Volk, 2003)

Clarence "Junior" Martin: Junior Martin is recognized by his peers as a master of the pedal and non-pedal steel guitar in traditional Cajun music. His use of bar bouncing coupled with pick blocking technique works well for the fast pace and note flurries characteristic of the Cajun style. He has been a sideman to many leaders over the years, most notably accordionist Jo-El Sonier. A master craftsman, Junior is as well known in Cajun music circles for his superbly crafted, custom Cajun accordions as his steel guitar prowess. (Volk, 2003)

Regarding tunings, he says: "The open G tuning is the most popular tuning today. Dobro tuning is D, B, G, D, B, D. The steel guitar tuning we play for Cajun music is G,D,B,G.D,B all the way up. On a 6-string, it was G,D,B,G,D,G. But now, on the 10-string steel guitars, it's G,D,B all the way

up-all major.

Clarence Junior Martin's Tunings										
Strings	1	2	3	4	5	6	7	8	9	10
G major	G	D	B	G	D	G				
G major	G	D	B	G	D	B	G	D	B	G

Martin uses a BJS bar, which is a specially made custom bar. The back is drilled out to take some weight off, because it needs to be bounced, which would not be possible with a heavy bar. It's tapered on the right and left and it has special chrome. According to Martin, the hardest thing about learning to play steel guitar is mastering the left hand techniques. "You can pick with the right hand and do decently but that left hand is so critical. Any good player doesn't watch the right hand; they watch the left hand all the time. The tone comes from the left hand. Of course, the pick blocking is important to keep it clean. If you can't mute it clean, you're going to be muddy and sound terrible. Some people are good muting with the palm of their hand. I wasn't fast enough so I had to find another way." (Volk, 2003)

Influence of steel guitar in Rock and Roll: The contributions of early blues musicians like Robert Johnson, and lap-style guitar, Black Ace remain indelible and form the palimpsest on which much of rock & roll was written. A postwar Chicago blues scene without the magnificent contributions of Muddy Waters is absolutely unimaginable. From the late 1940s on, he

eloquently defined the city's aggressive, swaggering, Delta-rooted sound with his declamatory vocals and piercing slide-guitar attack. In the world of country music, Hank Williams and the western swing of Bob Wills, along with thousands of other better or lesser known combos, melded country music with the blues to help kick-start the revolution known as rock & roll. Bill Haley's first band, *The Saddlemen,* ultimately became the very first wildly popular rock & roll band in history – *The Comets.* With Al Rex on bass, Billy Williamson on steel guitar, and Johny Grande playing piano and accordion, Haley fronted the group wearing a ten-gallon Stetson covering his trademark curl, a hair style he developed to take attention away from his blind eye. *The Starlight Wranglers,* Scotty Moore's band before Elvis, featured non-pedal steel player, Millard Yow. Yet despite this early visibility, by the late 50s, the lap steel was largely passe' in most rock music. Its last gasp likely was Santo & Johnny's landmark recording of *Sleepwalk.* David Lindley is the musician most responsible for re-introducing lap-style guitar into rock music in the 1970s. His playing on Jackson Browne's early recordings introduced a generation of lap steelers to the magic of the instrument. The re-popularization of non-pedal steel has slowly grown over the years. Today, steel guitar can be heard in rockabilly bands, country rock bands, surf bands, and many other roots-oriented rock sub-genres. (Volk, 2003)

Steve Howe: Steve Howe is a legend in rock music. In his work with the classic 1970s supergroup *Yes,* Steve brought influences from jazz, ragtime,

country, and classical music into the world of arena rock. His versatility on standard guitars extends to his use of non-pedal and pedal steel guitars, which he often plays in unconventional ways. While best known for his trademark Gibson ES-175 hollow-body standard guitar, Steve's use of steel guitar in his music forms a consistent thread throughout his career as a professional musician. Regarding tunings, Howe says: "Normally I use an E major tuning which doesn't go down, it goes up again on the bottom. It's [*hit to low]* E-B-G#-E-B-E but the bottom string is an octave above what it should be for a regular guitar so you get a kind of doubling effect. I like a root on the bottom. I use other tunings as well. In the old days, I used to have a minor tuning so I could go from major to minor. Then I decided that if I really wanted to improvise like I was doing on *Going for the One* [Relayer album with *Yes*], the other neck was actually in regular guitar tuning – normal, everyday tuning: E-B-G-D-A-E. That meant I could go on there and play without actually thinking about normal steel positioning like I do when I'm in a chordal tuning. Then I discovered that a lot of steel players are playing in A and I felt a bit alien because I could never quite see things from an A perspective. I'm more comfortable in E." (Volk, 2003)

Regarding picking style and bar he says: "I don't play with fingerpicks. I hold my plectrum with my first finger and thumb and pick with my third finger and a bit with my 2nd finger. Doing that on a steel guitar came very naturally because I can get lots of the effects that guitarists get with fingerpicks. I don't

get all the sounds that are possible but I get my own distinctive sound – a bit like I do on Spanish guitar because I've never really had nails. Even there, I'm playing a sound that's quite unorthodox because most classical players are used to that nice, sharp sound you get with nails. I found a very unusual steel bar. It looks like Bakelite but it's much harder. It looks kind of like tortoise shell – a very unusual small, round bar. It's unlike the kind I usually use, where it comes up a bit so you've got a gripping surface. I use a bullet bar on the pedal steel. I can't play with it on a 6-string though." (Volk, 2003)

Harry Manx: Harry Manx brings the sounds of India to the blues. Combing bluesy lap-style guitar played on lap guitar or the Mohan Veena (a 20-string member of the guitar family created and named by Indian musical guru Vishwa Mohan Bhatt) with his distinctive vocals, Harry creates a new musical experience. In the mid-70's, he traveled to Europe and spent the next ten years performing in café's and bars, honing the musical skills that would provide the foundation for his later musical experimentation. By the mid-80s, Manx was touring regularly in Japan and living in India. During Manx's stay in Japan he came across a recording of the legendary Indian slide guitarist Vishwa Mohan Bhatt. Manx was so moved by the musician's work that he contacted Bhatt and made arrangements to join him in India. There, he became a student of Bhatt's, studying with him for five years. The two traveled together in India, performing in front of large audiences with Manx playing the tambura, a four-stringed instrument used to provide a drone. Bhatt

would not allow him to play the mohan Veena live at the time, as he was still a student. Years later, having successfully mastered this complex instrument, Manx now incorporates the mohan Veena into his own shows. He has been called an "essential link" between the music of east and west, creating musical short stories that fuse the essence of the blues with the Indian raga tradition. (Volk, 2003)

Says Manx: "One of the things when you play a lap steel guitar, you're sort of limited with the chords that you can actually produce. That's the reason, I guess, that they have pedal steel guitars that have all sorts of other options for getting a lot of notes so you can make complex chords. But on a six-string, in open D, you're limited to major chords and one or two minors. You have to work with that limitation on the chords. You can't play every kind of song on the instrument unless you figure out a particular tuning to do that. I play only one or two different tunings. I play D major, D minor and D major 7^{th} and then I capo to change my keys." Regarding his major 7^{th} tuning, he says: "From the bass, D-A-D-F#-A-C#. I just drop that high D note down to C#. That's how I play the song *Coat of Mail [on Wise and Otherwise]*. Another variation I'm working with now is dropping the A's in D-A-D-F-A-D tuning down to G, giving you D-G-D-F-G-D which gives you a very interesting tuning. I've recorded a new album with Kevin Breit who plays on the new Nora Jones record and with Cassandra Wilson. I used that tuning for at least one of the songs and we got some great tones out of that." (Volk, 2003)

Since the standard Dobro tuning seemed limiting, Manx discovered another tuning. “I found the Dobro tuning, D-B-G-D-B-G, a little limiting for a self-accompanying singer songwriter. The D-A-D-F-A-D works for me mainly because I can do a rotating bass between the two Ds and there are a lot of nice rolls – similar to banjo rolls – that you can play in that tuning. It’s very rich tuning. Kevin Breit showed me a very cool thing. He plays a National, bottleneck style. He had an open D tuning and he took the lowest D string and dropped it down to a G – a lowdown, nasty, way-too-low G. It rattled against the neck and it sounds wonderful.” (Volk, 2003)

Regarding the bar, he says: “I have been using a Tim Sheerhorn bar but lately I’ve used a Dunlop *Lap Dawg,* it’s like a Sheerhorn copy but shorter. I find that little extra weight nice. I never play with a slanted bar. I learned that a little in the early days, but I didn’t do anything with it so I always play pretty much in a straight line. Vishwa Mohan Bhatt uses the axle from a Honda scooter as a slide bar. He holds it like a pen in a raised position. He never touches more than one string at a time. He gave me one of those and I used it for a few years.” (Volk, 2003)

Manx was also influenced by Pt Brij Bhushan Kabra and Debashish Bhattacharya. He says: “One of the more obvious differences in the way many Indian players approach playing melodies, as opposed to Western players, is to play many notes with a great deal of the bar movement and a single strike of the string. Brij Bhushan Kabra, the great Indian slide player, is famous for

taking one strike from the right hand to play four notes; a very lovely style. The other thing they do with the left hand is to play in circles. If you can imagine playing from A to B back to A [*it sounds like]* Ah-Ah-Ah- without stopping when you reach the next note, but heading immediately back. This circular motion is what gives them the imitation of the human voice with the slide. There are note steps there. In Indian music, it's called the *meend* – how you approach a note. That's something that you study very intensely. Do you approach a note from below it, above it, or can you approach it directly from another note or do you have to go through several notes? This kind of thing they've studied a lot and they know a certain approach will give a certain effect: some may sound exciting, some extremely beautiful. They pay a lot of attention to the *meend."* (Volk, 2003)

Bob Brozman American guitarist and ethnomusicologist, Bob Brozman began playing the guitar when he was 6. He performed in a number of styles such as gypsy jazz, calypso, blues, ragtime, Hawaiian music, and Caribbean music. Brozman also collaborated with musicians from diverse cultural backgrounds such as India, Africa, Japan, Papua New Guinea and Réunion. He has been called "an instrumental wizard" and "a walking archive of 20th Century American music." According the Brozman: "One of the stylistic flags and the salient feature of Indian guitar playing is to play many notes with a single pick attack. That act alone really makes you a better Western steel player too. You start with two notes, then three, then four notes with one

stroke. It really improves your bar work." (Volk, 2003)

Regarding tunings, Brozman says: "I started in low bass open G as my first open tuning. I think there's fascinating story behind that tuning. Basically, the guitar came with colonialism all over the world. In my work, I'm collaborating with cultures that are victims of colonialism 'cause that's where all the interesting music happens. The western view is that its music is considered the legitimate music and everything else is "world music" or "folk music." In point of fact, if you make Europe's musical culture of equal size to any other musical culture, you will quickly find that the bizarre culture on the planet is the European one. They have a really strange way of looking at music. For one thing, the temperament system of tuning is so unnatural. The Greeks figured out the modes by taking a string and dividing. You divide a string in half and get an octave higher, you divide in 3rds, you get the 5th, you divide in 4ths, and you get the octave again, and so forth. All of these divisions of the string generated notes in what we call the modes. A seven-note major scale, for example, is a mode. All of those seven notes, whether major or minor, Arabic mode or whatever, are all comprised of simple. So therefore, these beautiful, simple whole number ratios got detuned with a bunch of decimal mathematical noise added to them. To me, one of the ugliest sounds in the world is the equally tempered major third on a piano. It sounds like a car horn. This is why guitarists struggle with their B string. If you're in standard tuning, your B string should read 7 cents flat on a tuner in order to

sound natural. So, basically, the whole European tuning system is unnatural. I began with low bass G as a blues player and moved into it for Hawaiian as well. In all my guitar playing, I play the following families of tunings: standard, open G major, G minor, G add 2^{nd}, and G suspended – G with a 4^{th}." (Volk, 2003)

6.2. Guitar Tuning: Western vs. Indian Tuning

Although all examples of ragas discussed in this article will relate to the standard western tuning, this tuning is not the ideal guitar tuning for Indian music. The ideal guitar tuning for classical Indian Music has alternate strings tuned to the tonic and the dominant (perfect 5th) notes. The Tonic is normally taken as D or E due to feasibility issues on the Guitar.

These 2 tunings are typical for Indian music:

D A D A D X

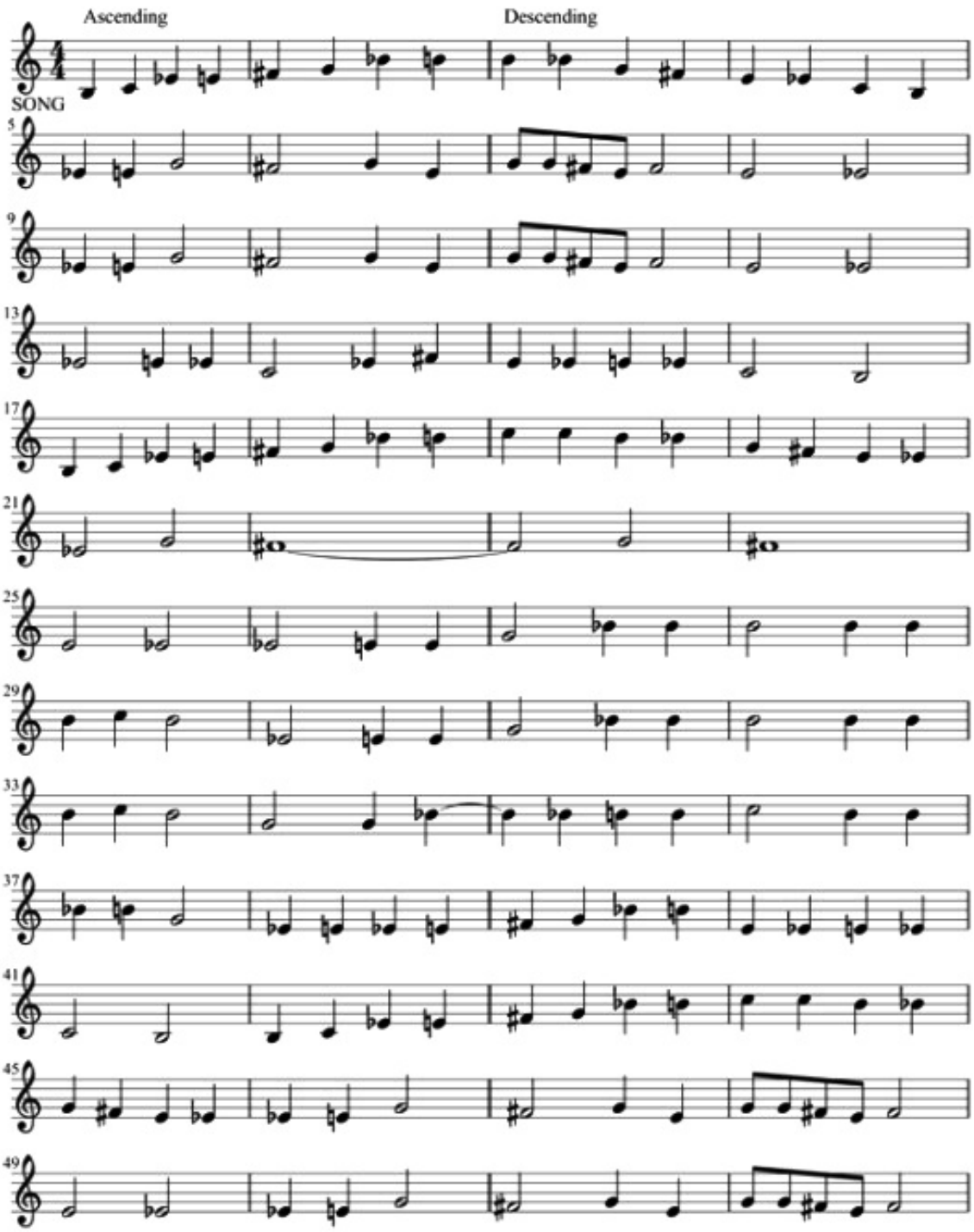
B E B E B E

In the first tuning, the first (highest) string on the guitar is omitted. The reason to use this tuning is because the tonic and the dominant notes are the least complex to play in a system that involves playing defined microtonal slides called 'Gamakas'. Gamakas are the main phrasing technique in Indian Music and it explains how different notes are phrased relative to each other for different ragas. (Harry)

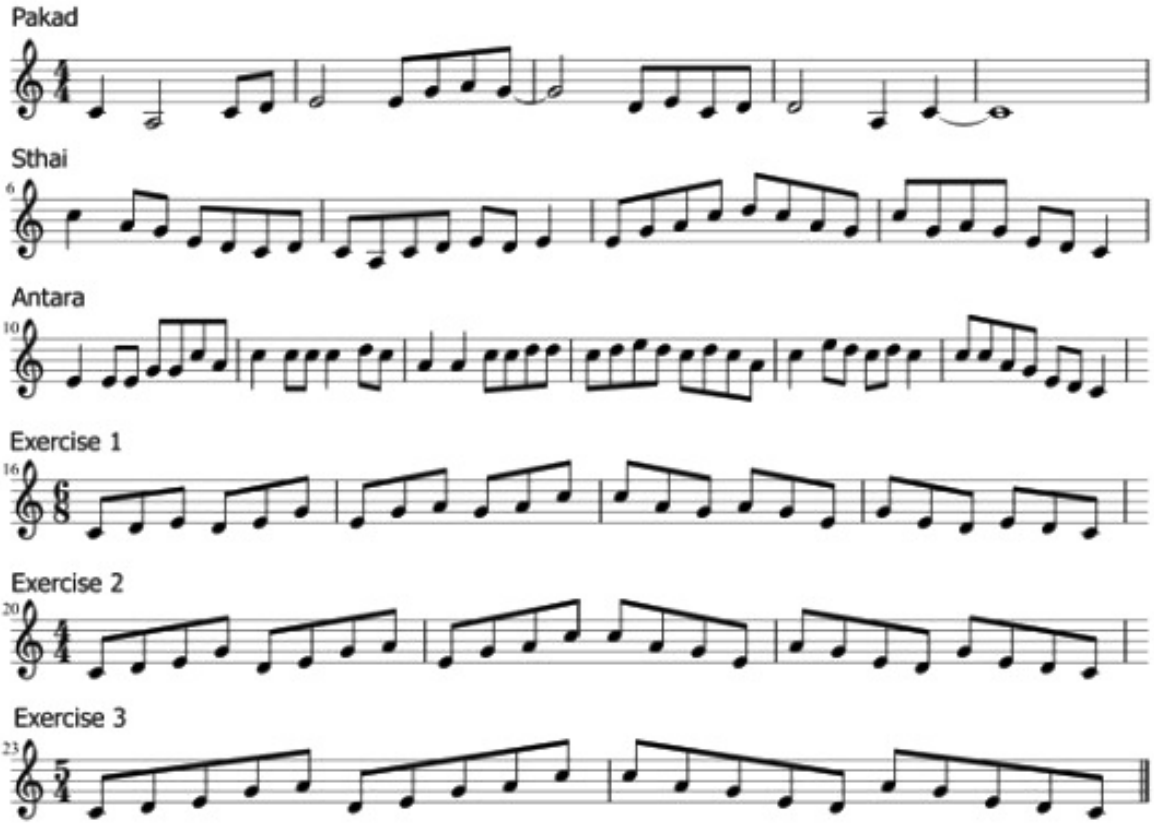
6.3. What Are Ragas and How are They Different From Scales?

Ragas form the basis of the Classical Indian Music system. A raga maybe defined as a specific collection of notes (semitonal values), played together with a specific grammar of Gamakas (microtonal slides). Ragas and scales are quite common at the top level. In effect, both ragas and scales are merely a specific collection of musical notes played in a specific order, in ascent and descent. However the grammar of the Gamakas and its phrasing brings a completely different identity/texture to a raga and it cannot be musically compared to its equivalent scale, played as a collection of plain notes. The raga therefore, is purely dependent on the specific Gamakas phrasing applied to it (which differs for each raga), in the absence of which it is merely a collection of notes aka a scale. (Harry)

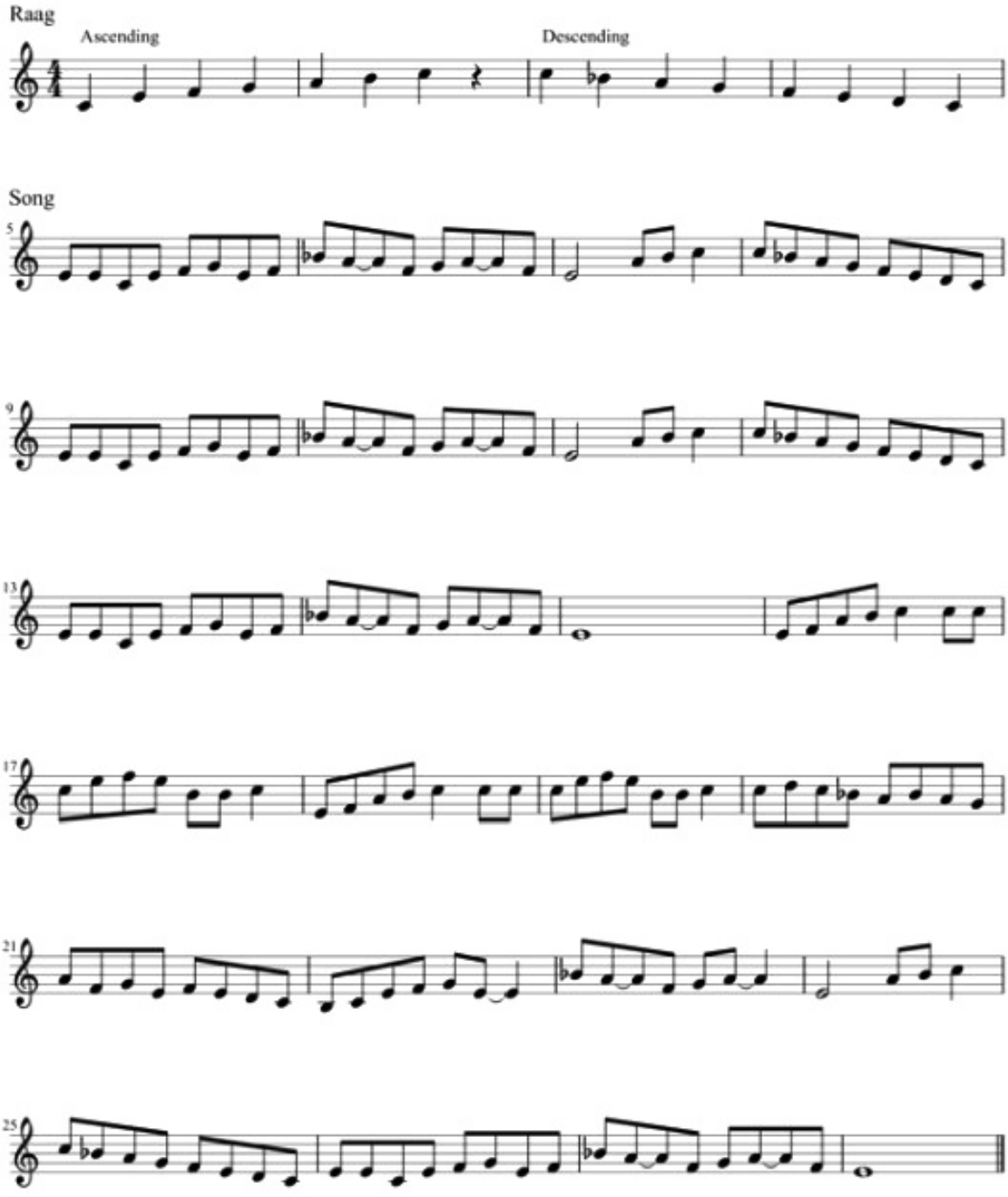
Song in Bhairav



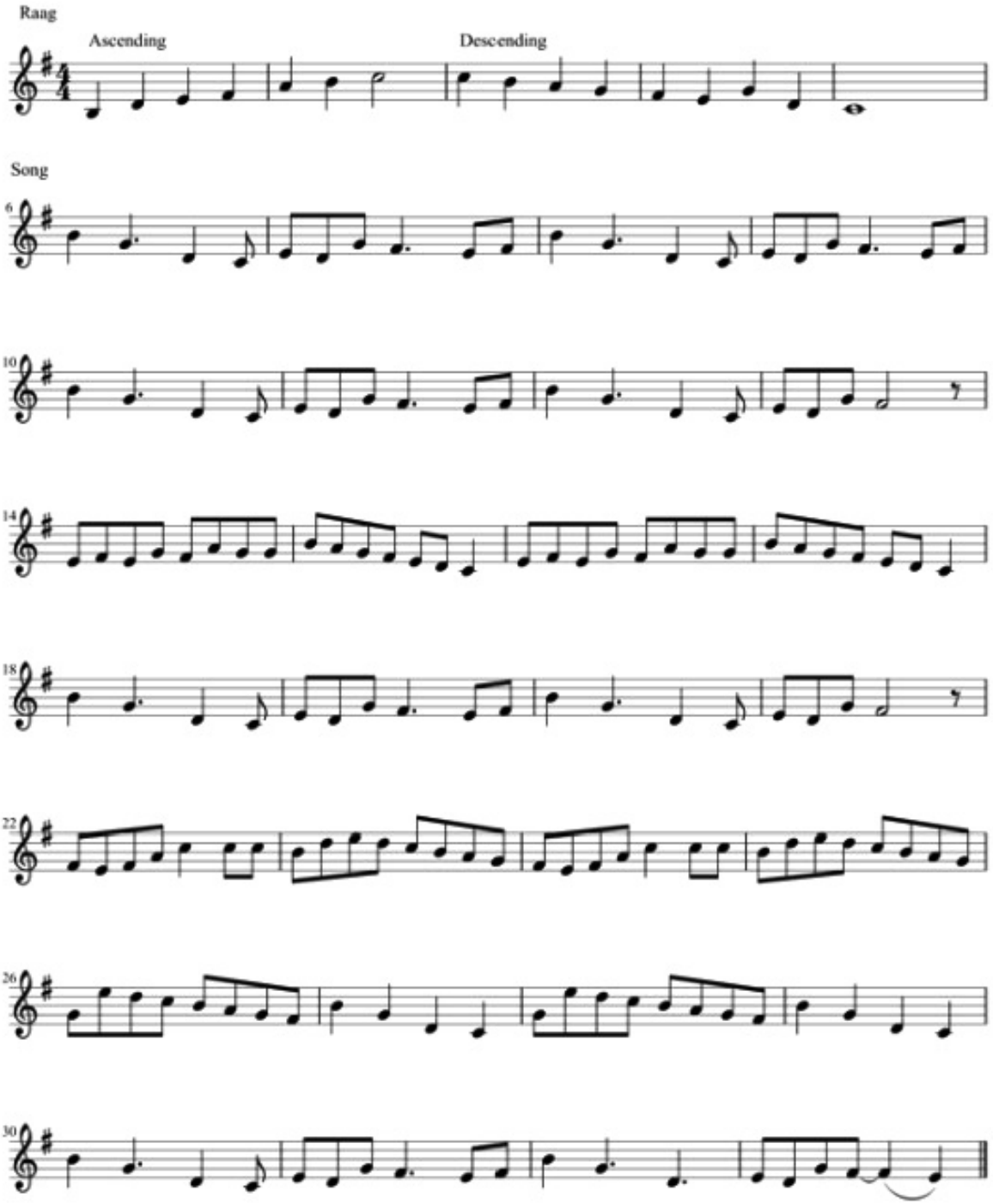
Song in Bhoop



Song in Khamaj



Song in Yaman



6.3.1. The Indian Equivalent for the 12 Semitones

The following table relates the 12 semitone savailable to us in the Western tuning system to its Indian equivalent name references (Swaras). Indian music notes are not absolute values like their western counterparts. They are all relative to the tonic note (Shadjam), which is fixed to a reference value namely C or D or any other semitonal value.

Here we assume our tonic to be D, for easy reference while playing.

Table 1 (Harry)

Semitones	**Indian Swara**	**Equivalent Tone Value**
D (tonic)	S - Shadjam(Sa)	
D#	R1 - Suddha Rishabham(Ri1)	
E	R2 - Chatusruthi Rishabham(Ri2)	G1 - Suddha Gandharam (Ga1)
F	R3 - Shatsruthi Rishabham (Ri3)	G2 - Sadharana Gandharam (Ga2)
F#	G3 - Anthara Gandharam (Ga3)	
G	M1 - Suddha Madhyamam(Ma1)	
G#	M2 - Prati Madhyamam (Ma2)	
A (dominant/ perfect 5th)	P - Panchamam (Pa)	
A#	D1 - Suddha Dhaivatham (Da1)	
B	D2 - Chatusruthi Dhaivatham (Da2)	N1 - Suddha Nishadham (Ni1)
C	D3 - Shatsruthi Dhaivatham (Da3)	N2 - Kaisiki Nishadham (Ni2)
C#	N3 - Kakali Nishadham (Ni3)	

This table classifies the 12 semitones of the Western tuning system, to relative Indian Swara names. The **basic seven notes are** Sa, Ri, Ga, Ma, Pa, Da, Ni with variations:

Sa – 1 Ri – 3 Ga – 3 Ma – 2 Pa – 1 Da – 3 Ni – 3

The manner in which they are named as (Ri/Ga) and (Da/Ni) for same values, depends on the relative notes occurring in the raga, and differs from case to case. (Harry)

6.3.2. Melody vs. Harmony

The beauty of the Indian Music system lies in its complex melodic structure, brought out with the well defined phrasing technique of Gamakas. In Western music scales are built with a strong foundation in harmony. Carnatic music focuses on permutation of all available semitonal values (swaras). This gives rise to the foundation of the family of ragas, called the *Melakartha System* (in Carnatic Music). (Harry)

The Melakartha system is a set of 72 parent ragas. Each of these ragas contain all seven notes (swaras) of the octave in both ascending and descending order. These 72 ragas (parent) along with their derived ragas (child) exhaust all possible melodic combinations available to us through all music forms across the world. (Harry)

That brings to light the depth in melodic structure in Carnatic Music. Hence it

is important to understand that melody and phrasing of Carnatic music is very complex compared to the Western music system, which in turn shows its complexity in harmony of musical notes. (Harry)

6.3.3. How to Play Pentatonic Scales

In this section we explore the possibility of playing the well known pentatonic scales, as equivalent Carnatic ragas. The Ragas we will take for reference are *Suddha Dhanyasi* and *Mohanam*. The swaras for *Suddha Dhanyasi* are:

Sa (D) Ga2 (F) Ma1 (G) Pa (A) Ni2 (C)

The notation for these ragas can be found below. The tabs demonstrate the ascent and descent playing for *Suddha Dhanyasi* & *Mohanam* in order.

- The notes in ALL CAPS are the syllable of the swara played
- The bold-italic notes are the notes to be plucked (on right hand)
- The arrows depict the slide flow of notes from one to another (without plucking the string)
- A point after a swara means one octave higher: Sa.

The first line (ascent) is given in the notation below:

- Play an open D on the 4th string
- Then strike the open D again, and slide all the way up to G and come back to F on the same string, all in one flow, without plucking any more notes

- Strike G and A on the same string
- Now, Strike A on the open-G 3rd string, and slide all the way up to D and come back to C on the same string
- Strike D on 3rd string again (Harry)

Suddha Dhanyasi Raga

Ascent

Carnatic Notation:

SA | ***Sa*** –> Ma –> GA | ***MA*** | ***PA*** | ***Pa*** –> Sa. –> NI | ***SA*** |

Western Notation:

D | ***d*** –> g –> F | ***G*** | ***A*** | ***a*** –> d –> C | ***D*** |

Descent

SA. | ***Sa*** –> NI | ***PA*** | ***MA*** | ***Ma*** –> GA | ***Ga*** –> SA |

Western Notation:

D | ***d*** –> C | ***A*** | ***G*** | ***g*** –> F | ***f*** –> D |

Mohanam Raga

Ascent

SA | ***Sa*** –> Ga –> RI | ***GA*** | ***PA*** | ***Pa*** –> Sa. –> DA | ***SA.*** |

Western Notation:

D | ***d*** –> f# –> E | ***F#*** | ***A*** | ***a*** –> d –> B | ***D*** |

Descent

SA. | ***Sa.***–> DA | ***PA*** | ***GA*** | ***Ga*** –> RI | ***Ga 3*** –> Ri –> Ga2 –> SA |

Western Notation:

D | ***d*** –> B | ***A*** | ***F#*** | ***f#*** –> E | ***f#*** –> e –> f –> D |

6.4. Hawaiian Guitar techniques that can be adapted in Hindustani Style

Most of the techniques of the Hawaiian guitar such as Hammer-on, Pull-off, Vibrato, Damping, Alternate picking, Strumming, Natural harmonics, Artificial harmonics, Finger picking, Octave playing, Legato, Bending, Micro bending, Trills, Thumb thang, Double stops, Scratching, Muting, Slapping, Popping, Banjo rolling, Chicken picking, Tremolo picking, Slide, Down stroking, Palm muting, Pinch harmonics, Tapped harmonics, Hybrd picking, String skipping etc. can be effectively adapted in the style of Hindustani Classical music.

Because slide guitar is traditionally a **fingerpicking** style, as a general rule we use the right-hand thumb to pluck the fourth, fifth, and sixth strings and the other fingers for the first, second, and third strings. We avoid resting the little finger on the soundboard as it is easier to pick with four fingers (thumb, index, middle, and ring) if the little finger is kept up. A "floating" right hand also makes it easier to get different tone colours at various points along the string length-ranging from sharp and bright near the bridge to round and mellow near the left side of the soundhole.

The **slide and the damping finger** have to work together as a unit, in order to

change from an open note to a fretted note. This includes situations where the left hand must be lifted to play an open string and replaced to play a closed note. Guitarists often ornament notes by placing the slide anywhere from one to four frets above or below the desired note, plucking the string, and sliding up or down to the note as quickly as possible. This is called a **grace note slide**, and is indicated by a straight line in between the grace note and the main or "graced" note. Another basic technique is picking a closed note and then moving the slide upwards or downward to a different fret without using the right hand again.

In slide guitar, **hammer-ons and pull-offs** are done in combination with open strings only. Hammers are done by plucking an open string and lowering the damping finger and the slide onto the string. Pulls can be done by plucking a closed note and pulling the slide and the tip of the damping finger laterally off the string. In other words, we don't lift the slide and the finger straight up-pull them off to the side, catching the string with the tip of the left index finger. Pulls are easiest from the first string, but they can be done from the others also.

By playing the bass the treble together right away, without playing the treble alone beforehand, we can produce **octaves** with the following string combinations: sixth and fourth, fifth and second, fourth and first.

Vibrato is an essential technique in Hindustani classical and is done with long

notes or chords to give them a singing, shimmering quality, but it's also used with shorter notes when the slide is being held in place. To play with vibrato, the thumb is kept in place on the back of the neck and used as an anchor; and we quickly shake the left hand back and forth from a point just over the fret to about halfway down the fret toward the nut. The slide should not go up over the fret bar, because the vibrato won't sound right if the pitch goes sharp-it has to range from flat to normal. When adding vibrato, the hand must be loose and relaxed. It is also possible to vary the speed of the vibrato.

6.5. Some techniques of Carnatic musicians that can be adapted to Hawaiian Guitar

Some techniques of Carnatic musicians, especially of Sri S. Balachander, Mandolin U. Srinivas, and Chitravina Ravikiran can be beautifully blended with the Hawaiian guitar techniques.

The playing technique of **Chitravina**, or Gotuvadyam, in particular is very similar to the Hawaiian Guitar One has to pluck the melody strings with the right hand while a cylindrical block, made out of ebony, bison horn (which has now been replaced by the smoother Teflon), is glided over them with the left hand. **Chitravina Ravikiran** introduced a smother Teflon slide in place of the bison horn which resulted in minimizing the unwanted noise that is inevitable in slide instruments when other materials such as ebony, bison horn, steel or glass slides are used. He uses techniques of plucking the melody

strings with the index and middle fingers of the right hand and damping them with the third finger when required. The drone strings are activated using the little finger. A cylindrical block made of ebony wood or bison horn is held in the left hand and glided over the main strings. The resonance strings are rarely activated by the artiste as they will vibrate in sympathy to the music that is played on the other string. Ravikiran has made certain modifications to the Chitravina, calling his instrument the Navachitravina. A few structural modifications have been made to the traditional chitravina, to produce a sharper tone in higher pitches (such as B and C), making it easier to use in jugalbandis or collaborative concerts with other instruments, such as the sitar and the guitar. The sleek shape and size of the navachitravina also facilitates easier transportation. However, the internal design has been kept much the same as that of the traditional chitravina, (except for eschewing one resonance string), making this a 20-stringed instrument.

The Late **Mandolin U. Srinivas** adapted the instrument to Carnatic classical music, made some structural modifications and introduced ingenious playing techniques to take Mandolin to its present enviable position in music. In order to facilitate playing Gamakas and to increase the sustain, he made two very important modifications: (a) He chose the electric solid block (Mandolin) as the basis; (b) He used single strings instead of pairs, and (c) He also added a fifth string (on the suggestion of his father U Satyanarayana), which enhanced the acoustic range of the instrument. As such the acoustic range of the

instrument is now three complete octaves and a half octave. These modifications have opened up gates which were hitherto thought impossible. The inevitable fallout of these modifications is that the Mandolin, in this new design, has lost its characteristic plink-plunk sound (attributable to the pairs of strings) and the playing style of continuous, fast up-down plucking as a means of sustaining notes.

The legendary Veena player **S. Balachander**, with the genius of his unparalleled musicianship, and almost demoniacal obsession with perfection and aesthetic fulfilment, overcame the shortcomings of a plucked, 24, fixed-fret instrument with rare artistry. His major contribution was to ensure that the Veena was recognized and accepted as a solo concert instrument other than as an accompaniment to a vocalist He developed a radical technique of pulling the main strings laterally to its utmost limit to sweep an entire octave on a single fret. His approach was that the veena should be and has the capacity to be able to produce the same nuances that the human voice can produce. He would not reduce the tempo of a song in the Veena just because it is tough to play speed in the instrument due to the lengthy fretboard. He therefore followed the Gayaki style wherein the instrument replicates the human voice so much so that plucking is done only in respective places where words or syllables are stressed.

A word about technique: All these techniques discussed above can be played on the Hawaiian Guitar. However, one must bear in mind that technique used

in isolation without any melodic value is not impactful. The ultimate purpose of perfecting any technique is to enhance the melody and elevate the experience of the listener by bringing out the emotions and the soul of the raga. By making use of its inherent closeness to the singing voice, the various styles of Hindustani, Carnatic and Western players can be beautifully played on the Hawaiian Guitar, and a whole new dimension can be created for the listener.

7. Conclusion

Many experts have put forward their own interpretation of music and defined it as they understood it, some scientifically, some technically, some emotionally and some literally - all appropriate in their own rights. In layman's terms, the most concise definition of music can be summarized as: Aesthetically pleasing harmonious or melodious or rhythmic sounds.

In today's world of disharmony and strife, it is up to the artists to go beyond narrow thinking, and embrace the good that is in all cultures through music. The Hawaiian guitar particularly lends itself to such universal expression because of its versatility and its adaptability to a wonderful array of styles, covering the globe from west to east, enhancing tradition, and embracing the modern, while leaving ample scope for personal expression and improvisation.

In the Hawaiian Guitar scenario of Indian Classical music, one can perceive a certain trend to customize or personalize the instrument for various reasons, to which we cannot take a critical view. Every musician or artist has a right to bring out their expression through any modification to any instrument. This is perfectly acceptable. In fact, this is how instruments were born. However, an interesting point to observe here is that most of the innovation to the Hawaiian Guitar are done are keeping in mind the playing of the sarod and the sitar. The modifications are aimed at making the Hawaiian Guitar sound closer to these

instruments. So the question naturally arises: Is this the right approach, considering that the Hawaiian Guitar has its own distinct sound? Why cannot the Hawaiian Guitar have a totally independent vocabulary of its own? In the hands of a talented musician, this instrument can sound close to sarod, to shehnai, to sarangi, even to bowed instruments such as violin, and to blow instruments such as flute. It has such a versatile range that it is not necessary to limit it to sound only like the sarod or sitar.

Secondly, the Hawaiian Guitar lends itself spectacularly well in representing the lyrical value, i.e., when we are gauging how close the instrument sounds to the original singing, we find that the Hawaiian Guitar is the one instrument that greatly evokes the singing voice, and sounds closer to it than even the sarangi

Particularly when exploring the techniques of kaku bhed in vocal music, such as usage of volume concepts, we can see that the Hawaiian Guitar has tremendous scope to completely bring out the expressions through volume control. This was put to great use by Pandit Omkarnath Thakur whose hallmark presentations were the best examples of the usage of volume in his technique.

Today with development of technology and usage of several electronic mediums, usage of instruments has also undergone lot of changes, especially with regard to techniques. The last fifteen years have been witness to drastic

changes in stroke production concepts. Whereas stroke making used to be *hard and clear* earlier, there has been a shift to *soft and gentle* since technology enables the sound to be heard perfectly well. The changes entire application. Keeping this in context, the usage of Electro-Hawaiian Guitar becomes even more relevant. A case in point is its usage in the Rabindra Sangeet concerts of Kolkata, where the Hawaiian Guitar becomes almost a parallel to the human voice. In fact, it is the sound of the Hawaiian Guitar presenting familiar songs that appeals to the listener the most. From here, one can definitely think of presenting Classical music in the same way, to make it more accessible to the people.

The many forms of Hindustani classical – dhrupad, khyal, chota khyal, bada khyal, geet, kajari, chaiti, thumri, dadra, sadra – can all be played and as a musician I have performed all these on the Hawaiian Guitar. Apart from sounding beautiful to the listeners, it created a sense of inquisitiveness as audience members frequently asked me about the sound and the instrument. The sound of the Hawaiian Guitar has also stood out equally well for folk music, popular filmy music, fusion of western and Indian melodies, fusion of middle-eastern music, and the fusion of *Erhu* (popular Chinese instrument), the last of which has been done by Pt Vishwa Mohan Bhatt. I had a chance to play with the Hardanger Fiddle – a traditional Norwegian folk instrument – and found that the Hawaiian Guitar is not only a great instrument to play duets but also a great accompaniment instrument – where one can explore what can

be played to highlight and even provide beautiful ornamentation to the idea produced by the fellow musician. This angle plays a vital part while playing duets in traditional Hindustani style.

Mentions must be made also of bringing bass frequencies to the forefront, an area in which I have done extensive work. After the Rudra Veena, Surbahar and the Sitar's mandrala, (seen in hands of Pt Balram Pathak and Pt Abdul Halim Jaffer Khan) the factor of bass has not been given its due in Indian classical music. Exploring that chapter provided immense opportunity of developing the entire gamut of the expression of the raga. The expression of the raga can get so much more attractive and presentable with the use of bass frequencies. Additionally, a keen observation of drut exploration in violin, sarangi, and flute can provide inspiration to the Hawaiian Guitar because of the fact that none of these instruments use any high drone/chikari strings. In spite of this nothing is lacking in the drut exploration. When we observe the same in sarod, sitar, and other stroke instruments, they rely heavily on chikari string which is like a constant reminder of the higher octave note apart from the note being played since the sustain is of the higher octave. This is of course, not present while singing, and hence this is another aspect where the Hawaiian Guitar comes closer to the human voice.

Because of its versatility, the Hawaiian Guitar can swing to any genre or any sound depending on the skills of the musician, and this has the potential to draw much bigger audiences for appreciation. When the natural form of this

instrument is so versatile and acceptable, there is no need to make more veenas out of it. The term Veena creates confusion in the mind of the audience that it has come from ancient tradition, but the fact is it is a modern instrument that can do a lot of justice to tradition. As more people take to this instrument, it can be a powerful force employed to preserve and popularize our tradition.

In all ancient cultures, be it Indian or Greek, music has been linked with a higher spirituality. The ancient Greeks believed that music and astronomy were two sides of the same coin. Astronomy was seen as the study of relationships between observable, permanent, external objects, and music was seen as the study of relationships between invisible, internal, hidden objects. Music, they say, has a way of finding the big, invisible moving pieces inside our hearts and souls and helping us figure out the position of things inside us.

In Indian heritage, we see that all our instruments and all forms of music and art are necessarily linked to a divine purpose and origin. Since the most ancient times, music in India has been practiced as a spiritual science and art, a means to enlightenment. Sangeeta, which originally meant drama, music and dance, was closely associated with religion and philosophy. At first it was inextricably interwoven with the ritualistic and devotional side of religious life. The recital and chant of mantras has been an essential element of vedic ritual throughout the centuries. According to Indian philosophy, the ultimate goal of human existence is moksha, liberation of the atman from the life-cycle, or spiritual enlightenment; and nadopasana (literally, the worship of

sound) is taught as an important means for teaching this goal. The highest musical experience is ananda, the “divine bliss.” This devotional approach to music is a significant feature of Indian culture.

According to Dr. Karl Paulnack, pianist and director of music division at The Boston Conservatory (Paulnack), “If there is a future wave of wellness on this planet, of harmony, of peace, of an end to war, of mutual understanding, of equality, of fairness, I don't expect it will come from a government, a military force or a corporation. I no longer even expect it to come from the religions of the world, which together seem to have brought us as much war as they have peace. If there is a future of peace for humankind, if there is to be an understanding of how these invisible, internal things should fit together, I expect it will come from the artists, because that's what we do. The artists are the ones who might be able to help us with our internal, invisible lives.”

Tradition can never be destroyed, can only be added to, and enriched. The Hawaiian Guitar has no doubt added so much value to classical music. With more number of people playing this instrument, discovering themselves, and bringing more techniques to this will only enrich it further. In time, the Hawaiian Guitar will contribute in uplifting Indian classical music to a more globally acceptable and appreciable level because of its Universal appeal.

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APPENDIX – IV: LIST OF LAP STEEL GUITAR RESOURCES

Georgeboards

Web: www.georgeboards.com

George Piburn has produced a series of CD-Rom and DVD training discs for C6th lap steel that covers blues, jazz and country styles.

Homespun Tapes, Ltd.

Web: www.homespuntapes.com

Happy traum's Homespun Tapes was one of the earliest companies to use video-based media to teach music. Their products are uniformly well done. They include lessons by world-class players like Bob Brozman, Cindy Cashdolloar and Jerry Douglas.

HotIlicks Productions

Web: www.hotlicks.com

Well-produced instructional videotapes.

Mel Bay Publications, Inc.

Web: www.melbay.com

Publishers of a number of fine instructional books for non-pedal steel.

Jeff Newman/Jeffran Music

Web: www.jeffran.com

Oriented toward pedal steel guitar.

Denny Turner

Web: www.homestead.com/dennyguitars

Details a comprehensive method for modal improvisation on C6th lap steel.

Joe Wright

Web: www.pedalsteel.com

Extensive instructional material oriented toward pedal steel, also applicable to non-pedal.

Websites for General Information

www.steelguitarforum.com

www.well.com/user/wellvis/steel.html

www.hsga.org - The Hawaiian Steel Guitar Association's site.

www.hawaiianstell.com - John Ely's helpful site has tuning and string gauge info.

www.users.voicenet.com/~vanallen/hcoahome.html

www.notecannons.com - Extensive information on National string instruments.

www.horseshoemagnets.com

www.billchaviers.com - Bill chavier's non-pedal steel tablature site

www.wideopenwest.com/~steelgtr - Educational materials for building your own guitar.

www. allmusicguide.com - Essays by: Sandra Brenan (Leon McAuliffe), Eugene Chadbourne (Papa Cairo), Charlotte Dillon (Tom Morrell), Craig Harris (David Lindley), Don Helms (discography) Ritchie Unterberger (Shirley Bergeron)

www.mikeauldrige.com

www.bluebookinc.com

www.bobbrozman.com

www.campbellbrother.com'sacredsteel.html

www.well.com/user/wellvis/steel.html

www.cajunculture.com (key source for intro to Cajun music section)

www.dancingcatrecords.com

www.davidlindley.com

www.elderly.com

www.horseshoemagnets.com

www.kenemerson.com

www.gruhn.com

www.hawaiiansteel.com

www.hsga.org

www.home.earthlink.net/~chrisknutsen

www.marcrecords.tripod.com

www.notecannons.com

www.rhull.freeserve.com.uk (Bill Haley)

www.rockville-international.com (copyrighted interview with Scotty Moore)

www.scottysmusic.com

www.steelguitarforum.com

www.uhpresshawaii.org

www.wideopenwest.com/~steelgtr/stringmaster.html

www.users.voicenet.com/~vanallen/hcoahome.html

APPENDIX – V: LITERATURE AVAILABLE ON HAWAIIAN GUITAR

Smith's Hawaiian Guitar Duets

Smith was one of the large publishers of Hawaiian guitar methods. This is copyright 1925. The interesting thing about this arrangement of "Oh Susanna" is the notation. It's standard musical notation with hints about the fret number. The string number is left as an exercise for the player.

5 Minute Hawaiian Guitar and Steel Guitar

A thin booklet with the rudiments of Hawaiian guitar playing, it ends with simple arrangements of "The Old Oaken Bucket" and "Home Sweet Home". The cover has the three standard elements for a Hawaiian guitar method book (guy, hula dancer and palm trees). Published in 1926.

Smith's One Hundred Hawaiian Guitar Solos

"Twinkle, Twinkle" has an interesting "finger picking" arrangement. Note all of the fat major chords in the other tunes. "Carnival of Venice" is an example of the more complex tunes in the book. Published in 1932.

Gibson System for Hawaiian Guitar

This course stands out because it was well written and more sophisticated than the other instructional books. The books use standard musical notation instead of tablature. The first excerpt is an example of the inspirational messages that are scattered through lessons. The second excerpt shows the location of the notes in a Dominant 7 chord and discusses how they relate to one another. The third excerpt is an arrangement of "Liebestraum" with some examples of how to play minor chords by using open and fretted strings. Published in 1937.

NIOMA Aloha Oe and NIOMA Technical Studies for Hawaiian Guitar

Two from the National Institute of Music and Arts (i.e. a chain of Hawaiian guitar schools). Copyright 1939 and 1940 respectively.

Nick Lucas Hawaiian Guitar Method

Nick Lucas was a famous star of stage and radio. He was better known for being a Spanish-style guitar player rather than a Hawaiian-style player (Gibson produced a Nick Lucas model Spanish-style guitar in the 30's). Nevertheless he came out with this Hawaiian guitar method. Published in 1940.

Everybody's Favourite Hawaiian Guitar Solos

First time that a Strauss waltz has been arranged for lap steel. Published in 1946.

Bronson Aloha Oe

Lap steel aficionados will recognize the bakelite lap steel on the cover. They were made by Rickenbacker and sold under the Bronson name. Published in 1947.

Oahu Modern Piano Accordion Course

Oahu got its start as a Hawaiian Guitar school and was one of the biggest. At one point they branched out into accordion instructions.

Other Books and Magazines:

Charles Alexander & Nick Freeth, *The Acoustic Guitar,* Quadrillion Publishing, 1999

Keoki Awai, *The Superior Collection of Steel Guitar Solos,* Sherman Clay & Co. SF, 1917

Tony Bacon & Paul Day, *The Ultimate Guitar Book,* Alfred Knopf, 1991

Jim Beloff, *The Ukulele, A visual History,* Miller Freeman, 1997

Julius Bellson, *The Gibson Story,* Self-published, 1973

Bob Brozman, *History & Artistry of National Resonator Instruments,* Centerstream, 1994

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Walter Carter & George Gruhn, *Gruhn's Guide to Vintage Guitars,* Miller Freeman, 1991

Richard Chapman, *Guitar: Music, History, Players,* Dorling Kindersley, 2000

Kevin Coffey, *Steel Colossus, the Bob Dunn Story,* Published in The Country Reader

Twenty Five Years of the Journal of Country Music, Vanderbilt Univ. Press, 2000

Jim Ferguson Ed., *The Guitar Player Book,* GPI Publications, 1978

Tim Gracyk, *Popular American Recording Pioneers: 1895-1925,* Haworth Press, 2000

Hugh Gregory, *1000 Great Guitarists,* GPI Miller Freeman 1994

George Gruhn & Walter Carter, Acoustic Guitars & Other Fretted Instruments: *A Photographic History,* Miller Freeman, 1993

Kamiki Hawaiian Guitar Method, William J. Smith, 1928

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Robert Oberman, *A Century of Country,* TV Books, 1999

Stacy Phillips, *The Dobro Book,* Oak Publications, 1996, *The Complete Dobro Player,* Mel

Bay Publications, 2002, *The Art of Hawaiian Steel Guitar,* Mel Bay Publications, 1991

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Richard Smith, *The History of Rickenbacker Guitars,* Centerstream, 1987, *Fender – The Sound Heard 'Round The World,* Garfish Publishing, 1995

Jim Washburn & Richard Johnston, *Martin Guitars: An Illustrated Celebration of America's Premier Guitarmaker,* Rodale Press, 1997

Forrest White, *Fender: The Inside Story,* Miller Freeman, 1994

Eldon Whitford, David Vinopal & Dan Erlewine, *Gibson's Favulous Flat-Top Guitars,* Miller Freeman, 1994

David Winters, *Artificial & Natural Harmonics for the Guitar,* Self-published, 1985

Catalogs

Carvin 1956

Fender 1953 & 1972

Gibson 1937, 1940, 1951

Magazines

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Acoustic Guitar Magazine, 1992-2003

Frets (out of print), 1980s

20th Century Guitar, 1990s

Vintage Guitar, 1990s

The Hawaiian Steel Guitar Association Newsletter, 1984-1990

Hawaiian Guitar Music Review, Fred Gagner, Self-published, 1988-89

APPENDIX – VI: SELECTED DISCOGRAPHY

The following list contains some of the best lap steel guitar-related recordings currently available on compact disc. This list is by no means all-encompassing or definitive but rather, represents a sampling of the music of some of the artists discussed here.

Hawaiian Music

Jerry Byrd

- By request (Mountain Apple)
- Steel Guitar Hawaiian Style (Lehua Records)
- Master of Touch and Tone (Midland)
- Jazz from the hills (Bear Family)

John Ely

- How the west was swung, vol.7, No Peddlers allowed(W.R. Records, Tom Morrell/Producer)

Billy Hew Len

- Steel Guitar Magic Hawaiian Style(w/Barney Isaacs (Jack de Mello)
- Hawaiian Songbird: Lena Machado (Billy is on eight of the cuts from 1962) (Cord International)

Sol Hoopii

- Master of the Hawaiian Guitar Volume 1
- Master of the Hawaiian Guitar Volume 2

Andy Iona

- At Night, By The Ocean – Andy Iona and His Islanders #1 (Cumquat)
- South Sea Lullabies – Andy Iona and His Islanders #2(Cumquat)
- Hula Girl – Andy Iona and His Islanders #3 (Cumquat)
- Songs of Old Hawaii – Andy Iona and His Islanders#4 (Cumquat)

Ralph Kolsiana

- Several cuts with the Waikiki Swingsters appear on the MP3 CD Compilation: Waikiki Is Good Enough For Me (Beer Records)

Dick McIntire

- Honey, Let's Go For Broke – Dick McIntire & His Harmony Hawaiians #1(Cumquat)
- Trade Winds – Dick McIntire & His Harmony Hawaiians #2(Cumquat)

- South Sea Moon – Dick McIntire & His Harmony Hawaiians#3 (Cumquat)
- Royal Hawaiian Hotel – Dick McIntire & His Harmony Hawaiians#4 (Cumquat)

David Feet Rogers

- Sons of Hawaii: The Folk Music of Hawaii (Panini)
- The Best of the Songs of Hawaii – Volume 1 (Panini)

Hawaiian Compilations

- Vintage Hawaiian Steel Guitar Masters (Import on P-Vine Label)
- Hawaiian Steel Guitar Classics: 1927-1938(Arhoolie)
- Waikiki Is Good Enough For Me: 188 tracks of Hawaiian style steel guitar spanning the years from 1921 to 1940.
- Hawaiian Steel Volume1 (Cord International)
- Hawaiian Steel Volume2 (Cord International)
- The History of Hawaiian Steel Guitar (Cord International)

Indian Classical

Brij Bhushan Kabra

- Call of the Valley (Shiv Kumar Sharma and Hariprasad Chaurasia)
- Two Raga Moods For Guitar (World Pacific)
- The Magic of Music (with Zakir Hussain)
- Exotic Sounds on Guitar (Oriental records)
- Raga Puriya Alap (Celluloid)

Debashish Bhattacharya

- Beyond the Ragasphere (Riverboat)
- Hindustani Slide Guitar (India Archives)
- Raaga Saraswati (India Archives)
- Debashish Bhattacharya with Bob Brozman: Sunrise (Sagarika)
- Calcutta to California (Indian American Folk Assemble)
- Remember Shakti (With John McLaughlin, Zakir Hussain, U. Srinivas)
- Madeira (Tridev Music India Pvt Ltd)

Vishwa Mohan Bhatt

- Guitar A La Hindustan, Magnasound (India)
- Saradamani, Water Lily Acoustics
- Gathering Rain Clouds, Water Lily Acoustics
- A Meeting by the River (with Ry Cooder), Water Lily Acoustics

- Bourbon & Rosewater (with Jerry Douglas & Edgar Meyer), Water Lily Acoustics
- Mumtaz Mahal (with Taj Mahal & N. Ravikiran), Water Lily Acoustics
- Saltanah (with Simon Shaheen), Water Lily Acoustics
- Tabula Rasā (with Béla Fleck & Jie-Bing Chen), Water Lily Acoustics
- Indian Delta (with Sandeep Das), Sense World Music, U.K.
- Desert Slide, Times Music, India
- Mohan's Veena II, Times Music, India
- Groove Caravan, Deeksha Records, Canada

Prakash Sontakke

- Winds of Samsaara (Ricky Kej and Wouter Kellerman)
- Crossroads (Thimothy Wisdom Remix)
- Food - Mercurial Balm (With Thomas Strønen and Iain Ballamy)
- Mangal Dhwani (With Pravin Godhkindi)
- Bhakti: Kannada Devotional Songs
- Moments of Melody (With Pravin Godhkhindi)
- Thunder (With Narada Michael Walden)
- Ballad of Maya – World Music
- Electric Sky – Babu Chaudhary

Western Swing

Cindy Cashdollar

- Tribute to the Music of Bob Wills – Asleep At The Wheel (Liberty)
- Wheel Keeps on Rolling' – Asleep At The Wheel (Capitol)
- Ride with Bob – Asleep At the Wheel
- Dance Hall Dreams – Rosie Flores (Rounder)
- Bob Dylan: Time Out of Mind (Columbia)
- Lyle Lovett: Pearls in the Snow (Kinajou)
- Leon Redbone: Up a Lazy River (Private Music)
- Artie Traum: Cayenne (Rounder)
- Artie Traum: Letters from Joubee's (Shanachie)

John Ely

- Western Standard Time – Asleep At the Wheel (Sony)
- Keepin' Me Up Nights – Asleep At The Wheel (Arista)

Leon McAuliffe

- Take it away the Leon Way! Leon McAuliffe and His Cimarron Boys (Jasmine)
- Hillbilly Boogie (Compilation) (sony)
- Bob Wills and His Texas Playboys – The Kind of Western Swing: 25 Hits 1935-1945 (ASV Living Era)

Tom Morrell and the Time Warp Tophands:

(Vol. 1-11 on WR Records)

- Volume 1 – How the west was swung
- Volumes 2 and 3 – Let's Ride With Bob & Tommy (With Bobby Koefer)
- Volume 4 – Pterodactyl Ptales
- Volume 5 – Go Uptown
- Volume 6 – Smoke A Little Of This
- Volume 7 – No Peddlers Allowed
- Volume 8 – On The Money
- Volume 9 – Son of No Peddlers Allowed
- Volume 10 – Win Place and Show
- Volume 11 – Jugglin' Cats
- Wolf Tracks (Shanachie)

Joaquin Murphey

- Murph (Class Act Records) recorded just before Joaquin's death – available from Scotty's Music.
- Tex Williams On The Air (1947-1949) (Country routes)
- Ex Williams Vintage Collections Series (EMD Capitol)
- Spade Cooley: Spadella! (Sony)
- Spade Cooley: Shame on You (Bloodshot Records)

Herb Remington

- Bob Wills and His Texas Playboys: The Tiffany Transcriptions : Vol. 3&5

On Pedal Steel:

- Steeling Memories (Glad Music)
- Steeling Dreams (Glad Music)
- Herb Ellis: Texas Swings(Justice)

Vance Terry

- Billy Jack Wills and his Western Swing Band
- Billy Jack Wills and his Western Swing Band

On pedal Steel:

Brisbane Bop (with Jimmy Rivers) (Joaquin)

Country

Marian Hall

- Town Hall party: 1958-61 (Country Routes)

Don Helms

- Hank Williams Instrumentals: Original Drifting Cowboys Band (Landmarks)
- Hank Williams Sr. – 40 Greatest Hits (Polygram)
- Hank Williams Sr. – The Ultimate Collection (Universal)

Kayton Roberts

- The Cox Family: Everybody's Reaching Out for someone (Rounder)
- The Derailers: Here Come the Derailers (Sony)
- Riders in the Sky: Cowboy Songs (Easydisc)

Billy Robinson

- Lap steel Guitar (CRF) (available from Scotty's Music or Steel Guitar Nashville)
- Lap Steel Instrumentals Volume 1&2 (Cassette) (available from Scotty's Music or Steel Guitar Nashville)

American Roots Music

Masters of the Incredible lap Steel Guitar

- Compilations of recordings by a diverse group of contemporary players

Jody Carver

- Jody Carver and Johnny Cucci: the Hot Club of America

Ed Gerhard

- House of guitars (Virtue)
- Live Album (Virtue)
- Counting the Ways (Virtue)

Pete Grant

- Might as well: The persuasions Sing the grateful dead (Artista)
- Hoyt Axton: Free Sailing (Edsel Records UK)
- Chuck McCabe: Bad Gravity Day (Blah Blah Woof Woof)
- Jay Howlett: Jay Howlett (Blah Blah Woof Woof)
- Paul Edward Sanchez: Yesterday's Clothes (Wynema Music)

Lee Jeffriess

- Big Sandy & His Fly-Rite Boys: Jumping from 6 to 6 (HighTone)

- Big Sandy & His Fly-Rite Boys: Swinging' West (HighTone)
- Big Sandy & His Fly-Rite Boys: Feelin's Kinda Lucky (HighTone)
- Big Sandy presents The Fly Rite Boys (HighTone)

Greg Leisz

- Bill Frisell: Good Dog Happy Man (Nonesuch)
- Bill Frisell: The Intercontinentals (Nonesuch)
- Bill Frisell: Blues Dream (Nonesuch)
- K.d. lang: Ingenue (Warner Brothers)
- K.d.lang: Absolute Torch and Twang (Warner Brothers)
- Joni Mitchell: Taming the Tiger (Reprise)
- Joni Mitchell: Turbulent Indigo (Reprise)
- Mary Black: Shine (Curb)
- Dave Alvin: Public Domain: Songs From the Wild Land (Hightone)
- Dave Alvin: Blackjack David (Hightone)

Kelly Joe Phelps

- Lead Me On (Burnside)
- Roll Away the Stone (Ryodisc)

Freddie Roulette

- Back in Chicago (Hi Horse Records)
- Spirit of Steel (German release available only from www.indigo.de)

Jeremy Wakefield

- The Hot Guitars of Biller and Wakefield (HighTone)

Sacred Music

Darick Campbell

- None But The Righteous: The Masters of Sacred Steel (Ropeadope)
- The Campbell Brothers: Sacred Steel for the Holidays (Arhoolie)
- The Campbell Brothers: Pass Me Not: Sacred Steel Guitars Volume 2 (Arhoolie)

Aubrey Ghent

- None but the righteous: The Masters of Sacred Steel (Ropeadope)
- Can't Nobody Do Me Like Jesus (Arhoolie)
- Traditional Sacred African-American Steel Guitar Music in Florida (Arhoolie)

Cajun Music

Clearance "Junior" Martin

- Jo-El Sonnier: Cajun Pride (Roudner)
- Vin Bruce: Cajuns of the Bayou (Cajun Sounds)
- Cajun Heat Zydeco Beat (Sampler) (Easydisc)

Rock & Roll

Gary Brandin

- The Vanduras (Pascal Records)
- The Blue Hawaiians: Sway (Pascal Records)
- The Blue Hawaiians: Savage Night (Interscope Records)

Ben Harper

- Live from Mars (Virgin Records)
- Fight for Your Mind (Virgin Records)
- Burn to Shine (Virgin Records)
- Welcome to the Cruel World (Virgin Records)
- The Will to Live (Virgin Records)

Steve Howe

- Skyline (Inside Out Music)
- Natural Timbre(Spitfire)
- Homebrew 2(Cleopatra)
- Yes: Relayer (Atlantic)
- Masterpiece Guitars: Steve Howe & Martin Taylor (Limited edition available oly from 20th Century Guitar: (phone): 631-273-1674

David Lindley

- Win This Record (Elektra Asylum)
- El Rayo-X (Electra Asylum)
- Very Greasy (Electra Asylum)
- A world out of time: Henry Kaiser & David Lindley in Madagascar (Shanachie)
- The Sweet Sunny North: Henry Kaiser and David Lindley in Norway (Shanachie)
- El Rayo-X Live (Pleemhead)
- Twango Bango III: David Lindley & Wally ingram
- Twango Bango Deluxe: David Lindley & Wally ingram
- David Lindley & Hani Nasar Live in Tokyo playing real good
- David Lindley & Hani Nasar #2 – Playing Even Better

Santo & Johnny

- The Best of Santo & Johnny (Stardust)
- I Grandi Successi Originali (Italian import)

World Music

Harry Manx

- Wise and Otherwise (Northern Blues)
- Dog My Cat (Northern Blues)

Bob Brozman

- DigDig (with Rene' Lacaille; La Reunion Island) (World Music Network)
- Live Now in the USA and Australia (available from www.bobbrozman.com)
- Nankuru Naisa with Takashi Hirayasu (Okinawa) (Riverboat)
- Jin Jin Firefly with Takashi Hirayasu (Okinawa) (Riverboat)
- Ocean Blues with Djeli Moussa Diawara(Guinea) (Celluloid/melodie)
- Tone Poems III with Mike Auldridge & David Grisman (Acoustic Disc)
- In the Saddle with Ledward Kaapana (Dancing Cat)
- Four hands sweet and hot with Cyril Pahinui (Dancing cat)
- Kika Kila Meets Ki Ho'Alu with Ledward Kaapana (Dancing Cat)