Chapter-3

Stringed Instruments

Violin - Historical Facts

As Mysore T. Chowdaiah was an embodiment of music, and had created a special and unique niche in the instrumental music, and as he was innovative too in evolving his instrument, it is indispensable to discuss some matters on the development of Musical String Instruments in particular with some contextual references to such instruments in the international arena.


Stringed instruments are musical instruments that produce sound from vibrating strings. All stringed instruments produce sound by the vibration of one or more strings, often amplified by a resonance box in the body of the instrument.

The early man found that when an arrow was shot, the string of the bow gave a musical note. Hearing the musical note produced by the string, the inventive instinct worked in him and he experimented with strings of different lengths to the same bow and realised that different notes resulted. This discovery paved the way for the development of the harp. ie.
Thejya of the vedas and the yazh of South India. The volume of the tone increased by attaching a hollow resonator to a section of the bow. Thus we see that the main principles’ underlying the construction of stringed instruments was revealed to man thousands of years ago.

**Stringed instruments can be divided in three groups.**

I. Lutes - instruments in which the strings are supported by a neck and a bout ("gourd").

II. Harps - instruments in which the strings are set or arranged within a frame.

III. Zithers - instruments with the strings mounted on a body, such as a guqin, a cimbalom, an autoharp, or a piano.

It is also possible to divide the instruments in groups based on how the instrument is played. For example, they can be divided as stringed instruments that do not need a bow (plucked instruments) and stringed instruments that need a bow.

As the present work intends to concentrate more on the Indian instruments, I give below a short explanation of the western string instruments mentioned above before I proceed on to a detailed narration of the Indian instruments.

**Western Plucked Instruments:**

**Lute:**

**Definition**

Lute is defined as ‘A stringed instrument having a large pear-shaped body, a vaulted back, a fretted fingerboard, and a head with tuning pegs which is

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1 South Indian Music by Prof. Sambamurthy, book ii, p. no 140.
often angled backward from the neck.\(^1\)

Its first known use was in 13\(^{th}\) century. Later in Europe it became popular in the 16th-17\(^{th}\) century and became the preferred instrument for cultivated amateur musicians and acquired an extensive literature of song accompaniments and solo and consort music. It originated from the Arab ‘ud’, which reached Europe in the 13th century. Like the ‘ud’, the lute has a deep pear-shaped body with an ornamental sound hole, a fretted neck with a bent-back pegbox, and strings hitched to a bridge glued to the instrument's belly. In later years it acquired several unstopped bass strings. It became the preferred instrument for cultivated amateur musicians and acquired an extensive literature of song accompaniments and solo and consort music.

Lute can refer generally to any plucked stringed instrument with a neck (either fretted or unfretted), for instance, a guitar, a violin, a saz or more specifically to an instrument from the family of European lutes.

The lute is used in a great variety of instrumental music from the Medieval to the late Baroque eras and was the most important instrument for secular music in the Renaissance. It is also an accompanying instrument, especially in vocal works, or playing a written-out accompaniment. The player of a lute is called a lutenist, lutanist, lewtist or lutist, and a maker of lutes (or any string instrument) is referred to as a luthier.

Lutes are made almost entirely of wood. The soundboard is a teardrop-shaped thin flat plate of resonant wood. In all lutes the soundboard has a single (sometimes triple) decorated sound hole under the strings called the rose. The back or the shell is assembled from thin strips of hardwood (maple, cherry, ebony, rosewood, gran, wood and/or other tonewoods) called ribs, joined (with glue) edge to edge to form a deep rounded body for

\(^1\)The Webster’s dictionary.
the instrument. There are braces inside on the soundboard to give it strength; The neck is made of light wood, with a veneer of hardwood (usually ebony) to provide durability for the fretboard beneath the strings. The bridge, sometimes made of a fruitwood, is attached to the soundboard typically at 1/5 to 1/7 the belly length. It does not have a separate saddle but has holes bored into it to which the strings attach directly. The bridge is made in such a way that it tapers in height and length, with the small end holding the trebles and the higher and wider end carrying the basses. Bridges are often coloured black with carbon black in a binder, often shellac and often have inscribed decoration. The frets are made of loops of gut tied around the neck.

The lute's strings are arranged in courses, of two strings each, though the highest-pitched course usually consists of only a single string. In later Baroque lutes, two upper courses are single. The courses are numbered sequentially, counting from the highest pitched. Thus an 8-course Renaissance lute usually has 15 strings, and a 13-course Baroque lute has 24.

The courses are tuned in unison for high and intermediate pitches, but for lower pitches one of the two strings is tuned an octave higher. The two strings of a course are virtually always stopped and plucked together.
In the modern world the lute enjoyed a revival with the awakening of interest in historical music around 1900 and throughout the century. That revival was further boosted by the early music movement in the twentieth century. Important pioneers in lute revival were Julian Bream, Hans Neemann, Walter Gerwig, Suzanne Bloch and Diana Poulton.

During the early days of the early music movement, many lutes were constructed by available luthiers, whose specialty was often classical guitars. Such lutes were heavily built with construction similar to classical guitars, with fan bracing, heavy tops, fixed frets, and lined sides, all of which are anachronistic to historical lutes. As lutherie scholarship increased, makers began constructing instruments based on historical models, which have proven lighter and more responsive instruments.

**List of Composers for Lute:**

The earliest surviving lute music dates from the late 15th century. Lute music flourished during the 16th and 17th centuries: numerous composers published collections of their music, and modern scholars have uncovered a vast number of manuscripts from the era.

- Francesco Canova da Milano (1497–1543)
- Petrucci’s publications of lute music by Francesco Spinacino (1507)
- Joan AmbrosioDalza (1508);
- Alessandro Piccinini (1566–1638) revolutionized the instrument's technique and
- Johannes Hieronymus Kapsberger (1580–1651)
Harp:

"And I heard a voice from heaven, as the voice of many waters, and as the voice of a great thunder: and I heard the voice of harpers harping with their harps."¹

In the context of Christianity, heaven is sometimes symbolically depicted with saints and angels playing harps in it. This symbolism may derive from the account of the heavenly vision.

**Definition:**

The word Harp derives from old English haarde, of Germanic origin. The harp is a multi-stringed instrument which has the plane of its strings positioned perpendicularly to the soundboard. Organologically, it is in the general category of chordophones and has its own sub category (the harps). All harps have a neck, resonator and strings. Depending on its size, which varies, a harp may be played while held in the lap or while it stands on a table, or on the floor. Harp strings may be made of nylon, gut, wire or silk. On smaller harps, like the folk harp, the core string material will typically be the same for all strings on a given harp. Larger instruments like the modern concert harp mix string materials to attain their extended ranges.

A person who plays the harp is called a harpist or harper. Folk musicians often use the term "harper", whereas classical musicians use "harpist". A harpist uses only the first four fingers of each hand to play; the little finger

¹recorded in the Christian Bible in Revelation 14:2 reading.
is never in action. Various types of harps are found in Africa, Europe, North and South America and in Asia. In antiquity, harps and the closely related lyres were very prominent in nearly all cultures. And continued to grow in popularity due to improvements in their design and construction through the beginning of the 20th century.

**Harps in India: Ancient Tamil Harps:**

The works of the Tamil Sangam literature mention the ‘yaal’ harp parts and its types. Attestations of the yaal are as early as 200 BC in Tamil Sangam literature and the harp was the first musical instrument played by the Tamil people. The Tamil Sangam literature played a vital role in documenting the Tamil yaal harp.

Yazh (rooted from ‘yali’- vyala in Sanskrit) is one of the most ancient instruments. It was used both as primary instrument and also as an accompaniment to vocal music. yazh receded to the background after the fretted veena became popular. But it can even now be seen in Burma in the name of ‘Sawn’. During the time of ManickaVachakar, the veena and the Yazh were both in vogue, which is proved in this statement, ‘Innisai Veenaiyaryazhinarorupal’ in the Tirupalliyezhuchi of Tiruvembavai. TiruneelakanthaYazhpanar provided the yazh accompaniment to the sacred hymns which flowed as devotional outpourings from the mouth of TirugnanaSambandhar.

Yazh is an instrument belonging to the plucked group. It was played on open strings. The resonator was made of the wood ‘tanakku’. It was played with the fingers of both the hands. Sculptures of Yazh are seen in the

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1. South Indian music by Prof. Sambamurthy, Book ii, p. no. 158.
2. South Indian music by Prof. Sambamurthy, Book ii, p. no. 158.
temple in Tirumayam, Amaravati, NagarjunaKonda, Sanchi, Khajarao and other places. Thus the yazh may be said to be the purcursor of the later Eka raga melaveena. There were varieties of Yazh like the PeriYazh which had 21 strings, Magarayazh, which had 17 strings and Sakotayazh which had sixteen.

Well-known Harpists:

- Casper Reardon,
- Dorothy Ashby
- Alice Coltrane
- ForYazh-TiruneelakanthaYazhpanar

Zither:

Definition:

Zither is a musical instrument composed of a flat sound box with about 30 to 40 strings stretched over it and played horizontally with the fingertips, a plectrum, or a bow, or set into vibration by the wind, as in the Aeolian harp.

It is most commonly found in Slovenia, Austria, Hungary, northwestern Croatia, the Southern regions of Germany, alpine Europe and East Asian cultures, including China. The term "cithare" or "sitar", or "cithar" is also used more broadly, to describe the entire family of stringed instruments in which the strings do not extend beyond the
sounding box, including the hammered dulcimer, piano, santur, Swarmandal, autoharp and others. Zithers can be divided into two classes: fretted and fretless. They are played by strumming or plucking the strings like a guitar.

The earliest known instrument of the zither family is a Chinese Guqin, a fretless instrument, which is worth mentioning here as it is a seven-stringed violin. This is found in the tomb of Marquis Yi of Zeng dating from 433 BC.

In modern entertainment, the zither is perhaps most famous for its role in the soundtrack of the classic Noir film *The Third Man*. The music for the film was played by Anton Karas. The trailer for the film stated that "the famous musical score by Anton Karas" would have the audience "in a dither with his zither".

The bamboo zither is a small length of bamboo. The skin is spliced into two thin strips without detaching them from the body, raising them by two small strips of bamboo and striking these strings with a small stick. In our country this instrument, which might be the mother of all zithers, is known as the ‘gintang’ (Assam), the ‘ronzagantam’ (Andhra) and by other names.¹

¹musical instruments by B.C>deva p no.72.
Players who popularised the instrument:

- Shirley Abicair
- Ruth Welcome
- ChristophDientz

Types of Zither

In modern usage the term Zither most commonly refers to one of three specific instruments: the concert zither and the Alpine zither and the fretless or "guitar" zither. Like many other stringed instruments, acoustic and electric forms exist; in the acoustic version, the strings are stretched across the length of the soundbox, and neither version has a neck.

The concert zither may have from 29 to 35 strings, with 34 or 35 being most typical. The Alpine zither has 42 strings.

The fretless Zither may have from 12 to 50 (or more) strings, depending on the design. There are no frets or fingerboard, and all strings are played "open," in the manner of a harp. Strings on the left are arranged in groups of three or four, which form various chords; strings to the right are single melody strings. Tuning can vary widely from manufacturer to manufacturer and even from model to model, but the tuning is usually indicated on the instrument itself, in the form of a painted chart or paper chart glued under the strings.

A popular contemporary form of the fretless zither is the autoharp, on which all of the strings are placed singly, and a series of buttons activate dampers, which silence all but the strings in the particular chord named on the button.
Western Plucked Instruments:

**Guitar:**

The guitar is a stringed instrument of the chordophone family constructed from wood and strung with either nylon or steel strings. The modern guitar was preceded by the lute, vihuela, four-course renaissance guitar and five-course baroque guitar; all of which contributed to the development of the modern six-string instrument.

There are three main types of modern acoustic guitar: the Classical Guitar (nylon-string guitar), the Steel String Acoustic Guitar, and the Archtop Guitar. The tone of an acoustic guitar is produced by the vibration of the strings, which is amplified by the body of the guitar, which acts as a resonating chamber.

The classical guitar is often played as a solo instrument using a comprehensive finger technique. Both classical and Spanish guitars have six nylon strings against metal strings used in acoustic and electric guitars. The sound of a classical guitar is richer than an acoustic, as it has a deeper sound. The steel-string acoustic guitar is a modern form of guitar that descends from the classical guitar, but is strung with steel strings for a brighter, louder sound. It is often referred to simply as an acoustic guitar, though the nylon-strung classical guitar is also sometimes called an acoustic guitar.

An archtop guitar is a steel-stringed acoustic or semi-acoustic guitar with a full body and a distinctive arched top, whose sound is particularly popular with Jazz players.
Electric guitars, introduced in the 1930s, rely on an amplifier that can electronically manipulate tone. Early amplified guitars employed a hollow body, but a solid body was found more suitable. Electric guitars have had a continuing profound influence on popular culture.

Saz:

The terms "bağlama" and "saz" are used somewhat interchangeably in Turkey. Like the Western lute and the Middle-Eastern oud, it has a deep round back, but a much longer neck. It can be played with a plectrum or with a fingerpicking style known as şelpe.

The Electric Bass:

The electric bass is also called by the name ‘bass guitar’ or simply bass; it is a stringed instrument played primarily with the fingers or thumb, by plucking, slapping, popping, tapping, thumping, or picking.

The bass guitar is similar in appearance and construction to an electric guitar, but with a longer neck and scale length, and four, five, six, or eight strings. Like the electric guitar, the bass guitar is plugged into an amplifier and speaker for live performances.

Since the 1960s, the bass guitar has largely replaced the double bass in popular music as the bass instrument in the rhythm section. While the types of bass lines performed by the bassist vary widely from one style of music to another, the bassist fulfils a similar role in most types of music: anchoring the harmonic framework and laying down
the beat. The bass guitar is used as a solo instrument in jazz, fusion, Latin and in some rock and metal styles.

**Mandolin:**

A mandolin is a musical instrument in the lute family (plucked, or strummed). The mandolin soundboard (the top) comes in many shapes— but generally round or teardrop-shaped, sometimes with scrolls or other projections. A mandolin may have f-holes, or a single round or oval sound hole. A round or oval sound hole may be bordered with decorative rosettes or purfling.

Early mandolins had six double courses of gut strings, tuned similarly to lutes, and plucked with the fingertips. Modern mandolins, which originated in Naples, Italy in the late 18th century—commonly have four double courses of metal strings, which are plucked with a plectrum.

Variants of the mandolin include Milanese, Lombard, Brescian and other six-course types, as well as four-string (one string per course), twelve-string (three strings per course), and sixteen-string (four strings per course).

**Bouzouki :**

Bouzouki is a Greek musical instrument that was brought to Greece in the 1900s by immigrants from Asia Minor, which quickly became the central instrument to the ‘Rabetica’ genre and its music branches. A mainstay of Modern Greek music, the front of the body is flat and is usually
heavily inlaid with mother-of-pearl. The instrument is played with a plectrum and has a sharp metallic sound, reminiscent of a mandolin but pitched lower. There are two main types of bouzouki. The ‘trichordo’ (three-course) has three pairs of strings (known as courses), and the tetrachordo (four-course) has four pairs of strings.

**Ukulele:**

The ukulele sometimes abbreviated to uke; it looks very much like a guitar. It is a plucked nylon-stringed instrument usually played with the bare thumb and/or fingertips or a felt or a pick. It generally employs four nylon or gut strings or four courses of strings.

The ukulele originated in the 19th century. It gained great popularity elsewhere in the United States during the early 20th century, and from there spread internationally.

The tone and volume of the instrument varies with size and construction. Ukuleles commonly come in four sizes: soprano, concert, tenor, and baritone.

**Western Bowed String Instruments:**

The history of bowed string musical instruments in Europe dates back to the 9th century with the ‘lira’ the bowed instrument of the Byzantine Empire. In the 11th and 12th centuries European writers use the terms fiddle and lira interchangeably when referring to bowed instruments.¹ In the meantime, the Arab Rabab was introduced to Western Europe possibly through the Iberian Peninsula and both bowed instruments spread widely

¹(Encyclopædia Britannica. 2009.)
throughout Europe giving birth to various European bowed instruments.

Over the centuries that followed, Europe continued to have two distinct types of bowed instruments: the first type was held with the left arm like a modern violin and was known by the Italian term *lira da braccio*; the other type, with sloping shoulders and held between the knees like a modern cello, was known by the Italian term *lira da Gamba* and included the Byzantine Lyra. During the Renaissance, the gambas were important and elegant instruments; The violoncello da spalla was the first cello referred to in print by Jambe De Fir in 1556. Although the first bass violin, possibly invented as early as 1538, was most likely inspired by the viol, it was created to be used in consorts with the violin. The bass violin was actually often referred to as large viola. Wire-wound strings invented around 1660 in Bologna, allowed for a finer bass sound than was possible with purely gut strings on such a short body. Bolognese makers exploited this new technology to create the cello, a somewhat smaller instrument suitable for solo repertoire due to both the timbre of the instrument and the fact that the smaller size made it easier to play virtuosic passages.

Around 1700, Italian players popularized the cello in northern Europe, although the bass violin continued to be used for another two decades in France. Many existing bass violins were literally cut down in size to convert them into cellos according to the smaller pattern developed by Stradivarius, who also made a number of old pattern large cellos.

**Rebab:**

The rebab spread via Islamic trading routes over much of North Africa, the Middle East, parts of Europe, and the Far East. The bowed variety often has a spike at the bottom to rest on the ground, and is thus called a Spike Fiddle in certain areas. The spike-fiddle rebabusually consists of a small, usually rounded body, the front of which is covered in a membrane such
as parchment and has a long neck attached. There is a long thin neck with a pegbox at the end and there are one, two or three strings. There is no fingerboard. The instrument is held upright, either resting on the lap or on the floor. The bow is usually more curved than that of the violin. Rebab is valued for its voice like tone but has a limited range. It was gradually replaced by the violin and Kemenche.

**Double bass:**

The double bass, also called the string bass, upright bass, bass fiddle, bass violin, doghouse bass, contrabass, bass viol, stand-up bass or bull fiddle, is the largest and lowest-pitched bowed string instrument in the modern symphony orchestra. The double bass is a standard member of the string section of the orchestra and smaller string ensembles in Western classical music.

The double bass is traditionally aligned with the violin family. Like many other string instruments, the double bass is played either with a bow or by plucking the strings. When playing the double bass, the bassist either stands or sits on a high stool and leans the instrument against the bassist's body with the bass turned slightly inwards in order to reach the strings more easily. The double bass is a transposing instrument and sounds one octave lower than notated.

**Banjo:**

The banjo is a four-, five- or six-stringed instrument with a piece of animal skin or plastic stretched over a circular frame. Simpler
forms of the instrument were fashioned by Africans in America, adapted from several African instruments of similar design.

The banjo is usually associated with country, folk, Irish, traditional music. Historically, the banjo occupied a central place in traditional music, African and American music.

**Cello:**

The cello is a member of the violin family of musical instruments, which also includes the violin and viola. A person who plays the cello is called a cellist.

The cello is used as a solo instrument, as well as in chamber music ensembles, string orchestras, and as a member of the string section of symphony orchestras. It is the second-largest bowed string instrument in the modern symphony orchestra, the double bass being the largest.

Cellos were derived from other mid- to large-sized bowed instruments in the 16th century, such as the viola da gamba, and the generally smaller and squarer *viola da braccio*, and such instruments made by members of the Amati family of luthiers. The invention of wire-wrapped strings in Bologna gave the cello greater versatility. By the 18th century, the cello had largely replaced other mid-sized bowed instruments.

The cello is actually part of the viola, *da braccio* family, meaning "viol of the arm," which includes, among others, the violin and viola. Baroque era cellos differed from the modern instrument in several ways. Cello is tuned in the same intervals as the viola, but an octave lower. Unlike the violin or viola
but similar to the double bass, the cello has an endpin that rests on the floor to support the instrument's weight. The cello is most closely associated with European classical music, and has been described as the closest sounding instrument to the male human voice. The instrument is a part of the standard orchestra and is the bass voice of the string quartet, as well as being part of many other chamber groups. A large number of concertos and sonatas have been written for the cello.

The cello is typically made from wood, although other materials such as carbon fibre or aluminium may be used. A traditional cello has a spruce top, with maple for the back, sides, and neck. Other woods, such as poplar or willow, are sometimes used for the back and sides. Less expensive cellos frequently have tops and backs made of laminated wood.

The top and back are traditionally hand-carved. The sides, or ribs, are made by heating the wood and bending it around forms. The cello body has a wide top bout, narrow middle formed by two C-bouts, and wide bottom bout, with the bridge and F holes just below the middle.

The top and back of the cello has decorative border inlay known as purfling. While purfling is attractive, it is also functional: if the instrument is struck, the purfling can prevent cracking of the wood.

**Viola:**

The viola is a bowed string instrument. It is slightly larger than a violin in size and has a deeper sound. It is the middle voice of the violin family, between the violin and cello.
The viola is similar in material and construction to the violin. A full-size viola's body is between 1 inch (25 mm) and 4 inches (100 mm) longer than the body of a full-size violin (i.e., between 15 and 18 inches with an average length of 16 inches). Small violas for children typically start at 12 inches (30 cm), which is equivalent to a half-size violin. Unlike the violin, the viola does not have a standard full size. The body of a viola would need to measure about 20 inches (51 cm) long to match the acoustics of a violin, making it impractical to play in the same manner as the violin. For centuries, viola makers have experimented with the size and shape of the viola, often adjusting the proportions or shape to make a lighter instrument with shorter string lengths.

More recent and more radically shaped innovations have addressed the ergonomic problems associated with playing the viola by making it shorter and lighter, while finding ways to keep the traditional sound. Luthiers have also created five-stringed violas, which allow a greater playing range.

A person who plays the viola is called a violist. The technique required for playing a viola has certain differences compared with that of a violin, partly because of its larger size: the notes are spread out farther along the fingerboard and often require different fingerings. The viola's less responsive strings and the heavier bow warrant a somewhat different bowing technique, and a violist has to lean more intensely on the strings.

The viola is generally strung with heavier strings than the violin. The viola's bow has a wider band of horsehair than a violin's bow, which is particularly

![Dr. M. Balamuralikrishna accompanying on the Viola](image)
noticeable near the frog (or heel in the UK). Viola bows 70–74 grams are heavier than violin bows 58–61 grams. The profile of the rectangular outside corner of a viola bow frog generally is more rounded than on violin bows. Viola bows may be about 5 mm shorter and 10 gm heavier than that of violin bows.

Dr. M. Balamurali Krishna, well-known vocalist, is also a noted violist. He has mastered this instrument, though it is not popular in our country and given several concerts in it. He has also accompanied a number of musicians with this instrument.

**Violin:**

As this instrument belongs to both the Western Category and the Indian Category, and also because this instrument is the centre of this study, this is taken up and dealt with in detail later in this chapter.

**Indian Stringed Instruments:**

Indian stringed instruments are known not only for their astonishing visual beauty and musical beauty but also for their amazing sounds. The rituals associated with the making of each of these instruments include choosing an auspicious day for starting work on it and worshipping the emerging musical instrument with prayer, amidst the lighting of joss sticks. The rituals and symbolic acts associated with the making of these instruments speak of the high regard in which the music of this legendary instrument is held. All this is in addition to the technical work of seasoning the wood, fashioning it to fit the individual body structure of the artist who would use the instrument, decorating it, varnishing it, settling the strings on it and finally playing that first resonant note on it.
Some common Indian instruments of the string family taken for this study are Tambura, veena, Gotuvadyam, Sitar, Sarangi, Sarod, Santoor, Rudra Veena, Saraswati Veena, Sursagar, and Dilruba.

*String instruments used in Hindustani Music:*

*Plucked Fretless String Instruments without bow:*

**Tambura or Tanpura:**

The Tambura is invariably connected with the sages Tumburu and Narada.¹ A Tambura is a classical four (or five) stringed drone instrument, which is unequalled in richness. The number of overtones generated from each string and the combination of these are so great that the sound quality almost defies analysis. It is an essential part of every Indian concert. This instrument is used both in Hindustani and Karnataka classical music. Both in its musical function and the way it works, the tambura is unique in many ways. It does not partake in the melodic part of the music, but it supports and sustains the melody by providing a colourful and dynamic harmonic resonance field based on one precise tone, the basic note or keynote. It is plucked throughout the concert and serves as the reference point for performers to enable them to render all the other notes in their proper relative positions. One or more tamburas may accompany musicians or vocalists.

**Construction:**

A Tambura is made of wood (mostly jack wood). It has a long unfretted neck with bone / ivory inlays. The neck has a bowl shaped resonator at the lower end that vibrates and amplifies the sound. At the upper end of the neck are tuning pegs. The Tambura has four strings that run from the...

¹ musical instruments by B.C.Deva, p. no.77.
bottom of the bowl to the tuning pegs over a broad ivory bridge mounted on the resonator. Fine-tuning is done with the help of beads between the lower end and the bridge.

Tuning: Of the 4 strings that the Tambura usually has, the middle strings are tuned to the tonic note, Sa. The first string is tuned to the fifth perfect, Pa and the last, which is the bass string, to the tonic, Sa, an octave lower. When compositions in Madhyama Shruti are sung, the playing of the first string is tuned to Suddha Madhyama.

Posture:

The Tambura is normally held vertically on the right lap of the performer (usually not the main artiste), with the resonator being supported by the left hand. The strings are plucked in succession with the right hand, starting with the first string (usually plucked with the middle finger) and ending with the bass string, the last three being plucked with the index finger. The Tambura artiste usually sits behind the main artiste and plays the instrument throughout the concert, starting just before the concert starts and ending it after the concert ends. It can be tuned to any pitch, depending on that of the main artiste's.

Tamburas are designed differently for male singers and female singers. They are all designed in three different styles-Miraj (For Hindustani performers), Tanjore (Karnataka music) and the tamboori (small-scale instruments, used for accompanying instrumental soloists).
Vichitra Veena:

The vichitraveena is a plucked string instrument used in Hindustani music. It is similar to the Gotuvadyam. It has no frets and is played with a slide.

The VichitraVeena is the modern form of ancient EktantriVeena. 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.

There are four main playing strings and five secondary strings (chikaris), which are played openly with the little finger for a drone effect. Underneath them are 13 sympathetic strings tuned to the notes of the appropriate raag. The veena has a five-octave range. Two plectrums 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 instrument was often used to accompany the Dhrupad style of singing.

Sarod:

Sarod is an instrument which is derived from the Rabab. It is not an ancient instrument, probably not more than 150 to 200 years. It is essentially a bass
Rabab. It has a metal fingerboard with no frets. The bridge rests on a tautmembrane which covers the resonator. The Sarod has numerous strings, some of which are drone, some are played, and some are sympathetic.

The approach to tuning is somewhat similar to other stringed instruments. It is played with a pick made of coconut shell. It has sympathetic strings just like the sitar. But, it has a metal finger board.

**Surshringar:**

Surshringar is a lute-derived sarod, except that it is larger in size and produces a deeper sound. It precedes the sarod chronologically, but is now almost extinct.

Its neck has a metal fingerboard and the steel and bronze strings are played with a metal pick, while the bridge is made of a flat horn. It has two resonant boxes; the main box is made from a cut pumpkin, on which a wooden cover is attached. The main body is made of wood. The sound producing mechanism of the instrument is formed by a gourd. The gourd is attached to a hollow wooden handle. The handle is sometimes covered with a metal plate to facilitate the glissando. It has four main strings and four rhythmic drones (*chikari*). The strings are usually made of brass (instead of catgut used in earlier instruments). These
modifications resulted in the increase of resonance in the instrument and thereby in its popularity.

The instrument is supported by the left shoulder and is played with a plectrum (and sometimes with a bow). It is used to play music in the Hindustani style Dhrupad.

**Swarmanadal:**

The swarmanadal or Indian harp is an Indian zither that is today most commonly used as an accompanying instrument for vocal Hindustani Classical music in North India, Pakistan and Bangladesh. The name combines swara (notes) and mandal (group), representing its ability to produce a large number of notes; it is also known popularly as Sur-mandal.

Swarmandals measure from twenty-four to thirty inches in length and twelve to fifteen inches in width. The singer may choose to employ any number of strings from 21 to 36. The strings are hooked in a nail lodged in the right edge of the swarmanadal and on the left are wound around rectangular pegs which can be tightened with a special key. Wooden pegs were used instead of metal ones in the medieval period. A sharp half-inch ridge on both sides of the swarmanadal stands a little apart from the nails on which the strings are tightened. This ridge functions as a bridge on both sides. The swarmanadal is similar to the autoharp or zither in many respects.

It is also similar to an instrument from Iran, and has been used for many generations, dating back to the Mughal era. Some of the vocalists who have

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1. ‘Vadyalapa’ by Sadananda Kanavalli, p. no.61.

**Hindustani Plucked Instruments with Frets:**

**Sitar:**

Sitar is derived from the Persian word "Seh-Tar". "Seh" means three in Persian. "Tar" means strings.

The Sitar is a plucked stringed instrument used mainly in Hindustani classical music, which is believed to have been derived from the ancient Indian instrument Veena and modified by a Mughal court musician to conform with the tastes of his Persian patrons and named after a Persian instrument called the *setar* (meaning "three strings"). Since then, it underwent many changes, and the modern sitar evolved in 18th century India. It derives its resonance from sympathetic strings, a long hollow neck and a gourd resonating chamber.

Used widely throughout the Indian subcontinent, the sitar became known in the western world through the work of Pt. Ravi Shankar.

In his ‘Bharatiya Sangeet Vadya’ Dr. Lalmani Misra traces its development from the Tritantriveena through the ‘nibaddh’ and ‘anibaddh’ Tamburas. Construction of the similar tanpuras was described by Tansen. During the
time of Moghul rule Persian lutes were played at court and may have provided a basis of the sitar.

The sitar's curved frets are movable, allowing fine-tuning, and raised so that sympathetic strings can run underneath them. A sitar can have 21, 22, or 23 strings, among them six or seven played strings which run over the frets: the Gandhaar-pancham sitar (used by Vilayat Khan and his disciples) has six playable strings, whereas the Kharaj-pancham sitar, used in MaiharGharanato which Ravi Shankar belongs, and other gharânās such as Bishnupur has seven.

The instrument has two bridges; the large bridge (badaagoraa) for the playing and drone strings and the small bridge (chotagoraa) for the sympathetic strings. Its timbre results from the way the strings interact with the wide, sloping bridge. As a string reverberates its length changes slightly as its edge touches the bridge, promoting the creation of overtones and giving the sound its distinctive tone. The maintenance of this specific tone by shaping the bridge is called jawari. Many musicians rely on instrument makers to adjust this.

Materials used in construction include teak wood which is a variation of mahogany, for the neck and faceplate (tabli), and gourds for the ‘kaddu’ (the main resonating chamber). The instrument's bridges are made of deer horn, ebony, or very occasionally from camel bone. Synthetic material is now common as well. The sitar may have a secondary resonator, the tumbaa, near the top of its hollow neck.

Tuning depends on the sitarist's school or style, tradition and each artist's personal preference. The sympathetic strings are tuned to the notes of the raga being played. The player should re-tune the instrument for each raga. Strings are tuned by tuning pegs, and the main playing strings can be fine-tuned by sliding a bead threaded on each string just below the bridge.

There is a lot of stylistic variance within these tunings and like most Indian
stringed instruments, there is no default tuning. Mostly, tunings vary by schools of teaching (gharana) and the piece that is meant to be played.

**Playing Sitar:**

The instrument is balanced between the player's left foot and right knee. The hands move freely without having to carry any of the instrument's weight. ¹The player plucks the string using a metallic pick or plectrum called a ‘mizrab’. The thumb stays anchored on the top of the fret board just above the main gourd. Generally, only the index and middle fingers are used for fingering although a few players occasionally use the third. A specialized technique called *meend* involves pulling the main melody string down over the bottom portion of the sitar's curved frets, with which the sitarist can achieve a seven semitone range of microtonal notes.

**Rudra Veena (Been):**

*Rudraveena* is a large plucked string instrument used in Hindustani Classical music. It is an ancient instrument rarely played today. The rudraveena declined in popularity in part due to the introduction of the surbaharin the early 19th century which allowed sitarists to present the alap sections of slow dhrupad- styled ragas more easily.

The Rudraveena, also called the Been has a long tubular body with a length ranging between 54 and 62 inches made of wood or bamboo. Two large-

¹Vadyalapa by Sadananda Kanavalli, p. no. 41.
sized, round resonators, made of dried and hollowed gourds, are attached under the tube. Twenty-four brass-fitted raised wooden frets are fixed on the tube with the help of wax. There are 4 main strings and 3 chikari strings.

As Rudra is a name for the Hindu god Shiva, Rudra Veena literally means "the veena dear to Shiva."

The Rudraveena was modified as the ShRti Veena by Dr. Lalmani Mishra to establish Bharata's Shadja Grama and obtain 22 ShRtis.

Zia Mohiuuddin Dagar was one of the 20th century's foremost exponents of the instrument. He modified and redesigned the Rudraveena using bigger gourds, a thicker tube (Dandi), thicker steel playing strings and closed Javari that produced a soft and deep sound when plucked without the use of any plectrum.

Pt. Bindu Madhav Pathak from Hubli, Karnataka who died recently was a great exponent of been. This tradition has been continued by his son Shrikant Pathak.

One of the few women who play the Rudraveena is Smt. Jyoti Hegde.

This instrument is on the verge of extinct as the reason for the existence of this instrument, which is Drupaditself is on the verge of extinct.¹

¹vadyalapa by Sadananda Kanavalli, p. no. 32.
Surbahar:

Sometimes known as bass sitar, this is a plucked string instrument used in the Hindustani classical music of North India. It is closely related to sitar, but it has a lower tone. Depending on the instrument's size, it is usually pitched two to five whole steps below the standard sitar.

Surbahar is over 130 cm (51 inches). It uses a dried gourd as a resonator, and has a neck with very wide frets, which allow a glissando of six notes on the same fret through the method of pulling. The neck is made out of teak wood. It has four rhythm strings, four playing strings and 15 to 17 unplayed sympathetic strings. There are two bridges; the playable strings pass over the greater bridge, which is connected to the tabli with small legs, which are glued in place. The sympathetic strings pass over the smaller bridge which is directly glued on the tabli. The main bridge has a slightly bent upper surface which results in a droning sound, because the vibrating span of the strings quivers ever so slightly. The instrumentalist plays the strings using a metallic plectrum, the mizrab. Three plectrums are used to play the dhrupad style of alap, jor, and jhala on surbahar. Some researchers believe that surbahar was invented around 1825. Though the invention is generally attributed to Ustad Sahebdad Khan, recent research shows that Lucknow-based sitarist Ustad Ghulam Mohammed may have been the inventor.

Some notable performers of this instrument are, Ustad Imdad Khan (1848–1920), Ustad Enayet Khan, Ustad Imrat Khan, Hidayat Khan, Vidushi Annapurna Devi, Pandit Santosh Bannerji, Budhaditya Mukheji, Rajeev Janardhan, Ramprapanna Bhattacharya, Shubha Shankaran, Suvir Mishra, Rajendra Vishwaroop and Manilal Nag.
Bowed Instruments in Hindustani music:

Sarangi:

The word sarangi is derived from two Nepali words: saya (meaning hundred) and rang (meaning colour) hence meaning the instrument of 100 colours while the other one is that the word sarangi is combination of two Sanskrit words: saar (summary) and ang (form, herein different styles of playing instrumental music) hence meaning the instrument that can summarize every style of music or playing. Both the versions, though, point towards the same quality of Sarangi, that it can play any type of repertoire of music and still sound beautiful. Sarangi now enjoys the status of a solo classical instrument due to the single-handed efforts of Ram Narayan. However, Ram Narayan is considered unequalled in the 20th century for his skill and influence over the entire field of sarangi.

Carved from a single block of tun (red cedar) wood, the sarangi has a box-like shape with three hollow chambers: pet (stomach), chaati (chest) and magaj (brain). It is usually around 2 feet long and around 6 inches wide though it can vary as there are smaller as well as larger variant sarangis as well. The lower resonance chamber or pet is covered with parchment made out of goat skin on which a strip of thick leather is placed around the waist (and nailed on the back of the chamber) which supports the elephant-shaped bridge that is made of camel or buffalo bone.

The bridge supports the huge pressure of approximately 35–37 sympathetic
steel or brass strings and three main gut strings that pass through it. The three main playing strings – the comparatively thicker gut strings – are bowed with a heavy horsehair bow and "stopped" not with the fingertips but with the nails, cuticles and surrounding flesh. Talcum powder is applied to the fingers as a lubricant.

A.R. Rehman has used Sarangi for the song "Tum Ko" performed by Kavita Krishna Murthy in the feature film ‘Rockstar’, Sarangi being played by Dilshad Khan.

Well known sarangi players include Mamman Khan, Nathu Khan, Shakoor Khan, Sagiruddin Khan, Hanuman Prasad Mishra, Abdul Lateef Khan and Sultan Khan.

**Western Stringed Instruments adapted by Indians for Indian music:**

**Mohan veena:**

The Mohan veena is a stringed musical instrument used in Indian Classical music. It derives its name from its inventor Pt. Vishva Mohan Bhat.

The instrument is actually a modified archtop guitar and consists of 20 strings viz. three melody strings, five drone strings strung to the peghead, and twelve sympathetic strings strung to the tuners mounted on the side of the neck. A gourd (or the tumba) is screwed into the back of the neck for improved sound quality and vibration. It is held in the
lap like a slide guitar. The Mohan veena is under tremendous tension; the total strings pull to be in excess of 500 pounds.¹

Some of the popular performers include its inventor Pt.Vishwa Mohan Bhat fusion artist Harry Manx, former Counting Crows bassist Matt Malley, and Pandit Satish kanwalkar.

**Mandolin:**


U. Shrinivas runs a music school called the Shrinivas Institute of World Music. He has been awarded Padma Shree on April 12, 1998 by The President of India. He is also a recipient of Sangeeta Ratna and T. Chowdaiah Memorial National Award.

¹vadyalapa by sadananda Kanavalli, p. no. 57.
The Classical Guitar:

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 vichitravina. 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.

The guitar is a recent foreign introduction to the world of Hindustani music. Its best known exponent player is Brijbhushan Kabra. Brij Bhushan Kabra (born 1937) is an Indian musician who popularized the guitar as an instrument in Indian classical music. Kabra is from Jodhpur. He learnt the instrument by imitating records, and later studied under Ali Akbar Khan. He modified an archtop guitar, raising the guitar nut, and including "sympathetic" strings, drone strings which are tuned to the raga being performed. During the 1960s he was involved in the making of two significant albums through which he came to a wide international audience. The more important of the two was Call of the Valley, collaboration with santoor maestro Shivkumar Sharma and flautist Hariprasad Chaurasia. The second was Two Raga Moods on Guitar.

Kabra’s proficiency and skill in producing Indian classical music on a Western instrument have received acclamation from critics and listeners alike. Originally steel guitar seems to have been popularized through its use
in Hindi film music. And BrijBhushan was the first Indian artist to use a steel guitar within classical Indian music.

**Shatatantri Veena (Ancient Indian form of Santoor):**

It is the ancient name for the modern Santoor. There are hundred strings in it and hence the name Santoor. It is a hollow box on top of which there are 25 bridges. Each bridge used to have 4 strings resting on it. To play this instrument, two wooden mallets are used. This instrument had been in use in the Valley of Kashmir for many centuries, in a typical type of Music known as “SufianaMausiqi” which means music connected with Sufi philosophy.¹ In this style mostly Santoor is used as an accompaniment with the singers and sometimes played as a solo instrument also.

It was Pt. Umadutt Sharma, Father of Shivkumar Sharma, who was a very versatile Musician, a performing Vocalist, and Dilruba player but equally well versed in playing Tabla and Harmonium, who introduced this instrument in Indian Classical Music on Santoor. In early 50s, he did an extensive research on Santoor and taught his son, Shivkumar Sharma the intricacies of Santoor.

Later on Shivkumar Sharma carried on his experiments with Santoor for many years which improved in Tonal quality, in playing technique, in sitting posture of the instrument, in repertoire of music and emotional and spiritual expression of this instrument which has given Santoor its own distinct character. The modified Santoor which Shivkumar Sharma plays now has got 31 bridges,

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¹vadyalapa- Sadananda Kanavalli, p.no. 59.
total number of strings being 91. It has got a range of 3 Octaves and chromatic tuning. In Kashmir Santoor is kept on a wooden stand in front of the Musician while playing. Shivkumar Sharma changed that posture and started keeping it on the lap to cut the extra unrequired resonance which resulted in getting a very clear tone even while playing very fast passages like taan and Jhala.

**Other Indian Stringed Instruments:**

**Bulbul Tarang:**

This nice small music box is like a combination of a typewriter, a mandolin andadulcimer. Some 5 metal strings (usually all tuned the same) run over a square wooden box. They can be tuned on the left side with tuners (in this case with a tuning-key). At the right the strings can be strummed with a plectrum.

The keys press their arm onto the strings like it is a fret, shortening the strings to the appropriate note. The keys have the names of 1, 2, 3, 4, etc. (like do, re mi) according to the tonic.

**Tumbi or The Ektara or the Dotara:**

This simple and small folk instrument *tumbi* is used In North India, in Punjab. It is sometimes called *ektara* ("one string"); a similar instrument with two strings is called *dotara*. *Dotara* is used by the Baul people in Bangladesh.
The tumbi is made from a small piece of round hard wood, hollowed out, and covered with a thin animal skin; usually glued around the edge, but sometimes, nails are also used.

The neck is a simple rounded stick that goes all the way through the body. One metal string is fastened to a rather large tuning peg (from the front) in the neck extension that serves as tuning head. The peg serves as nut. The string runs over a rather large loose bridge on the centre of the skin, to the end of the stick, which sticks out of the wooden body. Some instruments are decorated with paintings, or with bits of metal stuck on, or made with different woods.

The tumbi is played by holding it almost horizontally and strumming the string gently with the forefinger of the right hand. With the left notes a few notes can be played. It is very popular in western Bhangra music.

**Gopichand:**

The gopichand is made from a coconut shell, with attached to it a "split" piece of wood, with two "arms". The top and bottom of the coconut shell are cut off, the top side is left open and the bottom side is covered with a thin skin. A thin metal string is fastened through the centre of the skin, which can be tuned with a friction peg on the end of the (split) piece of wood.
By strumming the string with a finger, a bright twanging sound can be produced, the volume increased by the skin. By pushing the two arms together the pitch of the tone can be changed. However it is not the intention to play a melody on this instrument - it is solely to provide rhythm.

This instrument is nowadays also made in Indonesia, in a stylish Asian design and sold via eBay as *Timor guitar*, or as *Borneo Zicadrum*.

**Other Bowed Instruments of India:**

Some of the other bow instruments include the Banam, Chikara, Dilruba, Esraj, Kamancha, Mayuriveena, Ravanahasta, Sarangi, Sarangda, Tar Shehnai, Viola, Cello and the violin. The Esraj, The Dilruba and The Sursagar, which are rarely used in concert performances. But in spite of the emotive tone of the Sursagar or the Esraj, they now belong to the vanishing species of instruments.

**Banam or Panam:**

The Banam is frequently mentioned in early Vedic literature. It can be called a cousin of violin as it closely resembles violin in construction. It is also known by the name panam. It is an instrument of Bihar.

**Chikara:**

The Chikara is a bowed stringed musical instrument from Bengal, India used to play Indian folk music. It is used by the tribal people of Rajasthan, Madhya Pradesh and Uttar Pradesh. The chikara is a simple spike fiddle played, similarly to the sarangi or saringda, by sliding
fingernails on the strings rather than pressing them to touch the fingerboard. It has 3 strings, two horse hair and one steel. There is also a smaller version of this instrument which is called Chakari.

**Dilruba:**

The dilruba is found in the north, where it is used in religious music and light classical songs in the urban areas. Its name is translated as "robber of the heart."

Dilruba can be called a cross between the sitar and sarangi. It is extremely close to the esraj and the mayurivina. It is so close that most people are unable to tell them apart. The difference is to be found in the shape of the resonators and the manner in which the sympathetic strings attach. Still they are so similar that a dilruba player has no trouble playing an esraj or a mayurivina and vice versa.

The construction is very interesting. The neck has approximately 18 strings. The approach to tuning is somewhat similar to the sitar. Like the sitar, almost all of the playing is performed upon only one string. There are a number of metallic frets, some of which will be moved according to the requirements of the rag. It has a series of sympathetic strings which are tuned to the notes of the rag.

The dilruba is popular in north-west India. It is found in Punjab, Uttar Pradesh and Maharashtra. In South India, the most famous exponent in the film industry to play Dilruba was Dilruba Shanmugam. A great dilruba player, he has been conferred with the Kalaimamani award by the Tamilnadu
Government. He has played innumerable scores on Dilruba for legends like MSV and Ilayaraja, A. R. Rahman is known as one of the composers in India who has used the Dilruba, in works like "Dil Se" and "Vande Mataram". Possibly the most famous exponent of the esraj has been Pandit Ranadhir Ray, who died in 1988. Kalipada Ghoshal (1906-1995). Ranadhir Ray was a student of Ashesh Bandopadhyay, and was on the faculty at the Music department of Visva-Bharati University in Santiniketan. Today, the best known exponent is Buddhadeb Das, also from Santiniketan. One of his leading students is Dattatreya Ghosh, reading in Nava Nalanda High School of there. The esraj was the favourite instrument of the spiritual Master Sri Chinmoy who used it as a meditation tool and outlet for emotion, not necessarily to create or reproduce traditional music from the region. Ravi Shankar (known then as Rabindra) played the Dilruba in the 1930s, as a member of the dance group of his older brother Uday Shankar. Wellknown physicist and mathematician S.N. Bose is also known to play it.

**Esraj:**

The esraj is a string instrument found in two forms throughout the north, central, and east regions of India. It is a young instrument by Indian terms, being only about 200 years old. The esrajis found in the east and central areas, particularly Bengal and Tripura and it is used in a somewhat wider variety of musical styles than is the dilruba.
Kamancha:

Kamancheh, also known by the names kamâncehand kamancha, meaning little bow in Persian, is a Persian bowed string instrument related to the bowed rebab, the historical ancestor of the kamanche and also to the bowed lira of the Byzantine empire, ancestor of the European violin family. The strings are played with a variable-tension bow. It is widely used in the classical music of Iran, Armenia, Azerbaijan, Uzbekistan and Turkmenistan, with slight variations in the structure of the instrument. In Kashmir, kamancha is known as saaz-ikashmir. Traditionally kamanchehs had three silk strings but modern ones have four metal ones. Kamanchehs may have highly ornate inlays and fancy carved ivory tuning pegs. The body has a long upper neck and a lower bowl-shaped resonating chamber made from a gourd or wood, usually covered with a membrane, made from the skin of a lamb, goat or sometimes fish, on which the bridge is set. From the bottom protrudes a spike to support the kamancheh while it is being played, hence in English the instrument is sometimes called the spiked fiddle. It is played sitting down held like a cello though it is about the length of a viola. The endpin can rest on the knee or thigh while seated in a chair.

Famous Iranian kamancheh players include Ali Asghar Bahari, Ardeshir Kamkar, Sayed Farajpouri and Kayhan Kalhor and Habil Aliev. Persian traditional classical music also uses the ordinary violin with Persian tuning.
The kamancheh and the ordinary violin are tuned in the same way and have the same range but different timbres due to their differing sound boxes.

**Mayuri veena:**

The Mayuri Veena is defined by its peacock shaped body. The word mayura means "peacock". This instrument is of the same class as the Dilruba and Esraj. Like the other members of this family the differences are so slight that one may move from one instrument to another with ease. This instrument was nearly extinct, but it seems to have made resurgence in the last few years. Its large in size like sitar. It has 28-30 strings. It resembles the Dilruba in the making as well as in playing technique. However, since Mayuri Veena has a bigger sound box, it can produce a much more resonant and mellow sound than what a player can expect from Dilruba.

Mayuri Veena was almost out of the scene until a few years back. But in last few years it has seen a somewhat healthy revival and has been seen in several concerts as an accompaniment instrument.

All these instruments that more or less belong to the same family can be played with ease by someone who can play at least one of these.

Mayuri Veena is played with the help of a bow and has a sound hole at the ‘tail’ end and stands on bird-feet carved in wood. It is tuned like Dilruba.
Ravanahasta:

Ravanahatha also known asravanastron or ravana hasta veena is a bowed fiddle popular in Western India. It is believed to have originated among the Hela civilisation of Sri Lanka in the time of King Ravana. The bowl is made of cut coconut shell, the mouth of which is covered with goat hide. A dandi, made of bamboo, is attached to this shell. The principal strings are two: one of steel and the other of a set of horsehair. The long bow has jingle bells.

Throughout the medieval history of India, kings were patrons of music; this helped in increased popularity of ravanhattaamong royal families. In Rajasthan and Gujarat, it was the first musical instrument to be learned by princes. The Sangit tradition of Rajasthan further helped in popularizing ravanhattaamong ladies as well.

According to legend, Ravana was an ardent devoted of the Hindu God shiva, and served him using the soulful music emanating from the ravanahatha. After the war between Rama and Ravana, Hanuman is said to have picked up a ravanahatha and returned to North India. In India, the ravanahatha is still played in Rajasthan. From India, the ravanahatha travelled westwards to the Middle East and Europe, where in the 9th century, it came to be called the Ravan strong.

Saringda:

Saringda is a bowed folk fiddle of the Sarangi class. It is found in Northern India, Pakistan, and Nepal. There is actually no consensus as to whether this instrument deserves to be considered a separate instrument, or just
another variation upon the sarangi. For those who are disposed to consider saringda to be a separate instrument, it is differentiated from the sarangiby its shape. The base of the saringda is rounded or pointed where the base of the sarangi is square. Furthermore, the neck has a different shape. The left hand technique for the saringda does not vary appreciably from the sarangi. As with the sarangi, it would not be fingered by pressing the string against a fingerboard, but would instead be fingered by sliding the nail of the index, middle, and sometimes ring fingers of the left hand against the string.

**Tar Shehnai:**

Tar shehanai is a small mechanical amplifier that has been added to an esraj. Since the tar shehanai is just a modified esraj there are really no significant differences in technique or tuning.

There were a number of instruments that were based upon this approach. The tar shehnai had great popularity in the early days of the film industry.

Even with the introduction of vacuum tube (valve) based electronic recording, the tar shehnai proved very easy to work with in the studio.

Furthermore, the very piercing sound quality of the tar shehnai gave a
certain "punch" to themusical interludes in film songs. Therefore it should be no surprise that the tar shehnai continued to be popular in films.

String Instruments of Karnataka Music: (with Frets)

The Veena:

If there is any instrument that has earned the status close to godliness and managed to mesmerize the audience with its soothing melodies, it is the Veena.

Veena is the instrument of Goddess Saraswati. She is the Goddess of all muses and is the 'Veena Pustaka Dharini.'

The best known of the vedic veenas was the vanaor mahaveena of one hundred strings.¹

The word Veena seems to have been first used in the vedas. In the Asvamedha sacrifice they used the veena as an accompaniment to chant and in the veda we come across these words:

'This, the veena is verily the embodiment of beauty and prosperity'.²

Veena is a popular instrument of Karnataka music that is said to be many centuries old. Western music scholars believe that the instrument has many characteristics that belong to European style lute.

The Veena has many discrepancies in sound and shape it has been customized and improvised over the decades to create a unique style from the lute. This 1.5 meter long instrument has two drones on both the sides to give it an even balance and is connected with four different strings along with frets that give different harmonics than any other music device. Veena

¹Musical instruments by B.C. Deva, p. no. 81.
²Musical instruments by B.C. Deva, p. no. 79.
being an age old musical instrument holds religious importance and also symbolizes ancient culture and heritage in southern India.

The origin of Veena can be traced back to the ancient yazh, a stringed instrument, similar to the Grecian harp. Bharata, in his NatyaShastra, explains the theory of the 22 sruti-s in an octave with the help of two experimental veenas.

The veena then went through several innovations and modifications. In its current form, the instrument can be attributed to RaghunathNayak(circa 17th century ) of Tanjavur in Tamil Nadu.

The veena is made from jack wood. It has a large, round body with a thick, wide neck, the end of which is carved into the head of a dragon. A small resonator is attached to the underside of the neck.

The veena has 24 metal frets embedded in hardened bees-wax, mixed with charcoal powder. Melody is produced on four metal strings that run above the frets. These are stretched over a wide bridge that sits on the body of the veena. Three other strings run alongside the neck of the instrument. These are used for maintaining time and for playing the drone. The performer, who sits cross-legged on the stage, rests the small resonator on the left lap. The fingers of the left hand are used to press, pull and glide on the frets, while the fingers of the right hand are used to pluck and twang the strings.

The veena is a complete instrument and provides the basic components:
sruti, laya and sahitya. Its main attraction is the mellow tonal quality which is capable of evoking a meditative atmosphere.

The history of Veena dates back to the Vedic period which is about 1500 BC.

**Types**

There have been many versions of the Veena. The Saraswati Veena is commonly played in many events even today. Rudra Veena which is said to be an instrument played by Lord Shiva according to scholars is now completely declined. Vichitra Veena like the name suggests is a distinctive kind of veena that does not have any frets and looks similar to the Gotuvadhyam. Kolkata craftsmen have been well known for creating the best Saraswati Veena and Tanjavur artisans are famous for producing some of the finest Rudra Veena and Vichitra Veena in the world. However, until date, Veena continues to undergo various changes. There are many modern day versions to it such as Ranjan Veena and Mohan Veena. While the former looks similar to the sitar, the latter has a close resemblance to the guitar.

**Occasion:**

The Veena performance in the ancient times used to be accompanied during the chants of the Yagya as a way to please the gods and goddesses. It soon became an important source of entertainment as many musicians were seen playing them in royal courts and in temples. With growing globalization, the influences of western music have diminished its importance in the country today. However, we still 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.

**Famous 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. Veenai Ranganayaki Rajagopalan, Veenai Dhanammal, Rukmini Gopalakrishnan, Veena Doraiswamy Iyengar, Veene Shyamanna, Veene Sheshanna, Veene Subbanna, Veena Venkatagiriappa, Emani Sankara Sastry, Chitti Babu, M.J. Srinivasa Iyengar, M.K. Saraswathi, Jayanthi Kuvaresh and so on.

**Swarabat:**

The *swarabat*, also known by the names swarbat or swaragat is a plucked string instrument of southern India. It is a primitive and rare string instrument used in Carnatic music. It has a body made of wood on which a skin is stretched. On top of this skin, a bridge is placed upon which silk strings pass, which are plucked with a plectrum. It produces a timbre similar to a bass rubab. Some personages who have played it have been Parmeswara Bhagavathar, Baluswami Dikshitar, Raja Swati Thirunal, Veene Seshana, and Krishna Iyengar.

As in most of the string instruments, there is a resonator and a stem, both
made of wood. The resonator is covered with animal hide. The frets are made from animal guts. The head resembles a parrot. Silk threads form the strings of this instrument, which are plucked with a plectrum carved out of a horn.

Although the Swarabat features a unique construction, the range of sound delivered by it is very limited. It is similar to the Bass Guitar in its sound quality.

**Plucked Instruments without frets:**

**Gōtuvādyam (The Chitraveena):**

Gōtuvādyam, a rare instrument, often misspelt as gottuvadyam, kottuvadyam, also known as chitravina (renamed so by Ravikiran), is a stringed instrument played in south Indian concerts. Unlike other traditional instruments like sitar, flute, violin, tabla, etc, Gottuvadhyam is not as popular. It is also known as Mahanatak Veena. It resembles the Saraswathi veena. Unlike veena, it is considered to be a complex instrument and is not easy to play. It takes years to master the instrument. It has 21 strings and is fretless. Chitravina is accompanied by violin, mridangam and ghatam. There are not many players who play this instrument. The chitravina was popularised by Narayana Iyengar, his son Narasimhan and Ravikiran, son of Narasimhan. Sakharam Rao, K S Narayana Iyengar, T. Brinda and Gayathri Kassebaum are some of the well-known and famous Gottuvadhyam players.
There are six main strings, three drone strings and 12 sympathetic strings in this instrument. The fingers in the right hand are usually used with a plectrum to pluck the metal melody strings while a cylindrical block, made of hardwood, held by the left hand is used to slide along the strings to vary the pitch. It is said that this instrument has been there for more than hundred years, though there are no exact proof regarding when it came into being. Sakharam Rao, making minor changes, actually re-introduced this instrument and named it Gotuvadhyam. Being a classical music lover himself, he made efforts to learn the art of playing this instrument and made several changes to this instrument.

This instrument is often said to be very similar to Sitar and Veena for mainly two reasons. The process of tuning required for this instrument is similar to Veena. Although there are similarities with the Veena, the sound that gets emitted from Gottuvadhyam is quite different; there are also dissimilarities with its composition and the position in which it is held.

Ravikiran is the undisputed master of the instrument and is responsible for the chitravina going global. He has refined the playing technique to suit contemporary taste and gayaki style without sacrificing the tonal quality. It is a versatile instrument and can bring out the intricacies even in a complex composition and Ragam-Tanam-Pallavi.
VIOLIN:

There is no instrument of music made by the hands of man that holds such a powerful sway over the emotions of every living thing capable of hearing, as the violin. The singular powers of this beautiful instrument have been eloquently eulogised by Oliver Wendell Holmes, in the following words:

Violins, too. The sweet old Amati! the divine Stradivari! played on by ancient maestros until the bow hand lost its power, and the flying fingers stiffened. Bequeathed to the passionate young enthusiast, who made it whisper his hidden love, and cry his inarticulate longings, and scream his untold agonies, and wail his monotonous despair.’ Such, indeed, has been the history of many a noble instrument fashioned years and years ago, in the days when violin playing did not hold the same respect and admiration that it commands at the present time.

The evolution of the violin is a matter which can be traced back to the dark ages, but the fifteenth century may be considered as the period when the art of making instruments of the viol class took root in Italy. It cannot be said, however, that the violin, with the modelled back which gives its distinctive tone, made its appearance until the middle of the sixteenth century. In France, England, and Germany, there was very little violin making until the beginning of the following century. Andrea Amati was born in 1520, and he was the founder of the great Cremona school of violin makers, of which Nicolo Amati, the grandson of Andrea, was the most eminent. The art of violin making reached its zenith in Italy at the time of Antonio Stradivari, who lived at Cremona. He was born in 1644, and lived until 1737, continuing his labours almost to the day of his death, for an instrument is in existence made by him in the year in which he died. It is an interesting fact that the art of violin making in Italy developed at the time when the
painters of Italy displayed their greatest genius, and when the fine arts were encouraged by the most distinguished patronage.

As the art of violin making developed, so did that of violin playing, but, whereas the former reached its climax with Stradivari, the latter is still being developed, as new writers and players find new difficulties and new effects. While there are many proofs that orchestras existed, and that violins of all sizes were used in ecclesiastical music, there is still some doubt as to who was the first solo violinist of eminence. The earliest of whom we have any account worthy of mention, was Baltazarini, a native of Piedmont, who went to France in 1577 to superintend the music of Catharine de Medici. In 1581 he composed the music for the nuptials of the Duke de Joyeuse with Mlle. de Vaudemont, sister of the queen, and this is said to have been the origin of the heroic and historical ballet in France.

The progress of violin playing can also be judged somewhat by the compositions written for the instrument. Eighteen sonatas composed by Giovanni Battista Fontana, and published at Venice in 1641, show a distinct advance in style.

Italy was the home of the violin, of composition for the violin, and of violin playing, for the first school was the old Italian school, and from Italy, by means of her celebrated violinists, who travelled and spread throughout Europe, the other schools were established.

Violin playing grew in favour in Italy, France, Germany, and England at about the same time, but in England it was many years before the violinist held a position of any dignity.

The fiddle, as it was called, was regarded by the gentry with profound contempt.
Butler, in "Hudibras," refers to one Jackson, who lost a leg in the service of the Roundheads, and became a professional "fiddler:"

*His grisly beard was long and thick,*

*With which he strung his fiddle-stick;*

*For he to horse-tail scorned to owe,*

*For what on his own chin did grow.*

Two celebrated violinists were born in the year 1630, Thomas Baltzar, and John Banister, the former in Germany, at Lubec, and the latter in London. Baltzar was esteemed the finest performer of his time, and is said to have been the first to have introduced the practice of "shifting." John Banoster, who was sent to France by King Charles-2 for improvement was appointed chief of the king’s violins. He established regular concerts at his house, "now called the Musick-school, over against the George Tavern in Whitefriars." These concerts began in 1672, and continued till near his death, which occurred in 1679.

one of the most eminent of English violinists was Matthew Dubourg, born 1703, who played at a concert when he was so small that he was placed on a stool in order that he might be seen. At eleven years of age he was placed under Geminiani, who had recently established himself in London. Dubourg was appointed, in 1728, Master and Composer of State-Music in Ireland, and on the death of Festing, in 1752, he became leader of the king's band in London, and held both posts until his death in 1767. Another very young English violinist was Thomas Linley, who exhibited great musical powers, and performed a concerto in public when eight years old. He was sent to Italy to study under Nardini, and through the mediation of that artist he became acquainted with Mozart, who was about the same age. These were the English violinists of note who were born previous to the nineteenth century.

The Violin that we see today is a triumphant symbol of centuries of history,
evolution, research and man's quest for perfection in simulating the human voice. The bow and the violin, though inseparable now, have independent histories of their own and interestingly, India has made its contribution to each of the above in some way.

**In India:**

Introducing his description of the bowed string instruments Sarangi, Sarinda, Esraj and Mayuri, Dr. A.M. Meerwarth says, ‘The number of exceedingly primitive fiddles found all over India. Many of them with only one string, seems to support the idea that the fiddle and the fiddle bow are indigenous to India’.¹

**Evidence in ancient paintings and sculptures:**

While it is Indisputable that many forms of bowed instruments were in use in India from time immemorial we find no mention whatsoever of the violin as much as indigenous to India. Our repertorie of stringed instruments sounded by means of bows seem to be limited to Sitars, Sarangi and so on with the little known Sarinda as the nearest approach. The Sarinda is like a violin with its top cut off and has only three strings; it is a very peculiar looking instrument on the whole.

¹Guide to the musical instruments in the Indian museum, Calcutta(1917)
We hear our vidwans and violinists today say that the violin is an Indian instrument indigenous to India, and not imported from outside. In the course of his lecture and demonstration on his seven-stringed violin and nineteen-stringed violin at the Music Academy, Madras, during its twenty first conference, T. Chowdaiah, who contended that the violin was an indigenous Indian instrument, said that in a temple in his native village Tirumakudalu there was the sculpture of a violin.  

- The sculpture is found in Agastiswaram temple at Tirumukkoodalu, the place of Chowdaiah. The probable dating of the sculptures would be about 12th century AD.

- In Karnataka, the first appearance of violin in its present form is found represented in a mural depicting a dance scene in which violin is shown as an accompaniment on the eastern wall of DariyaDaulat in Srirangapatna near Mysore. The paintings on this wall were first executed in 1784 A.D. during the reign of Tipu at Srirangapatna. The paintings have been renovated three times since, but have retained the originals with scrupulous accuracy.

- The violin again appears in a beautiful wooden carving on the right hand corner of the chariot of Lord Ranganatha. This chariot is dated about 1850 A.D.

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1The journal of the Madras Music Academy, 1958.
• And again In Halebidu we see the sculpture of a musician holding an instrument resembling violin, which is known by the name Nagaveena as one end of the instrument looks like the hood of a snake.

• The oldest part of Nataraja temple at Chidambaram has figures of musicians. One of the figures in the panel plays a bowed instrument resembling the violin. The sound box shaft and neck of the instrument can be distinctly seen. The difference from the modern violin is that the ribs are not marked out and the shape of the sound holes is not the same. The slides are represented by a smooth curve.

• "Found in the inner praharam of Chidambaram Natrajan Temple. According to Tibetian mythology dictionary by RamsonLamba, the violin in North India called as RavanHato and Dhanurveena in South India. Marco Polo, the Italian explorer carried the instrument to Italy during 15th century. Ref: David Butler and Keith Miles".

The panel in which the bas-relief occurs is about 20”X16” and the figures of the musicians are not more than about 10” in height. There are two figures in the panel, one playing a pair of cymbals and the other playing the violin. The violin itself would be about 4” long and is clearly marked off. The characteristic sound box, shaft and neck of the instrument can be distinguished. The shape of the sound box is to be noted; the only major difference from the modern violin we can find is the fact that the “ribs” are not well marked out. The sides are one smooth inward curve instead of the indentures met with in modern violins.

• This instrument is held and manipulated as it is today, a feature which
is noteworthy in comparison to the early forms of the violincello, which were held head-downwards between the knees. It contrasts also with the Sitar, the Sarangi and the Sarinda, in that these three also are held in a down-right position. The bow used is curved and is held as its modern counterpart. There can be no doubt that this is a violin.

- The Mallikarjuna temple at Vijayawada carries a sculpture portraying an instrument played with a bow amidst other musicians playing flutes, drums and cymbals as they accompany a 'Kolattam' dance by a group of women.

- In the Hoysala Scriptures of about thirteenth century A.D. We see a veena of bowing technique.

India has had some bowed chordophones too at very early times in art and folk music which could have been the forerunners of the modern violin.

**The bow:**

About the bow too, there have been several theories regarding its origin. As ‘That the origin of violin bow has been and still is a constant source of discussion, but it is becoming more and more evident that to India we owe its existence.’ ¹ In the beginning the bow resembled the bow of the viol. The latter was 32.5 inches long. Till about the 18th century A.D. the western violin bow was slightly shorter. Its evolution was marked by making the stick lighter, manipulating the space between the stick and hair. This led to greater clarity of musical intervals, speed, facility for staccato playing and the use of violin as a solid instrument.

The modern bow is characterized by the hatchet and inward chamber; the sear developed enhancing the volume of the tone. Violin and bow are inseparable-like the bow and the arrow. But when brought together, they create a new world altogether with their magic.

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¹ The Indian Origin of the violin’ by Dr. V. Raghavan, souvenir released on the occasion of the 60th birthday of Sri Anoor Ramakrishna.
Westerners also opine that bow is India’s contribution to the western countries. The oldest instrument played with the bow was Ravanastra, which dates back to five thousand years. For the resonation of this instrument, the peel of coconut was used. It was then rubbed well till it attained shining and then covered with the skin of a lizard and hooked up to a two-feet cane. Two corks were decked into the instrument for tuning the strings and the corresponding strings were tied up. Horsetail was used for the bow and thus, Ravanastra was born in which 4-5 swaras could be played. It is said this instrument was perhaps adopted by the westerners and took the formation of violin there.

In the same way, Sarangi and Dilruba used in Hindustani music are also the different forms of ‘Folk fiddle’. ¹

**Textual evidence:**

Textual evidence for the occurrence of the violin prototype can be found. Haripaladeva offers what is probably the earliest such reference in his ‘Sangeeta Sudhakara’ in the last quarter of the 12th century in describing the pInaka veena.² Music treatises like Shrangadeva’s ‘Sangeeta Ratnakara’ speak of the Pinakavina played by a bow,³ and also another similar instrument by name Nissanka Vina.⁴ As Sarangadeva was his better known name, this bowed veena devised by him might have gained the name Sarangadevi or more briefly Sarangi.⁵ This description in The Sangeeta Ratnakara has a special interest because in the entire instrumentarium of

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¹H.k.Venkataram’s article on violin published in ‘Surabhisinchana’April, 2010, p.no.4.
²Prof. R.Satyanarayana’s article,’violin down the hallowed ages’ in the souvenir released on the occasion of the inauguration of the Chowdaiah Memorial Hall in 1980.
³SangeetaRatnakara, shlokas 402-411.
⁴p.no 525, Anandashrama edition.
⁵Dr.V.Raghavan’s article ‘The Indian Origin of violin’, Madras Music Academy Journal, vol 19.
Indian music this is the only instance where only the bow is described in detail. This bow is undoubtedly the prototype of its modern descendant. It is about 30 inches long with two tufts, each about one inch from from the respective end.

Encyclopaedia Britannica talks of Rebec, a bowed instrument of the early middle ages and which is referred to as the predecessor to Viol. Viol again is the immediate predecessor to the Violin.

So it can be said that India also has had some bowed chordophones from very early times in both art music and folk music.

**Etimology:**

**Origin and Chronology:**

*In Europe:*

In Europe, the violin can be traced back to the 9th century, with its origin possibly in Asia. Not less than 450 years were required to bring it to its present form, representative of the experience acquired throughout the centuries by the makers of stringed instruments.

The primitive form of the stringed instruments is the musical bow, an arched stick held by a taut string tied to its two ends. The string is divided by a loop or bridge. In order to enhance its resonance, the primitive bow was held before the mouth. In the more evolved forms, resonance enhancers included coconut, calabash (a hollowed out, dried gourd generally used as a recipient), tortoise shells, wooden boxes or pig bladders that were thrust tightly between the strings and the bow.

The origin of stringed instruments played by rubbing the strings is linked to the appearance of the bow. Perhaps the bow was at first a simple stick before the hair-bow was adopted. As there is no trace of a bow instrument
in classical antiquity, it is freely admitted that the bow was imported from Asia by the Arabs or the Nordic tribes. But whether the evolution occurred in northern Europe, the Near East, India or Central Asia remains a mystery. The bow may have appeared in various places at the same time, as did several major discoveries in the history of mankind!

As from the 11th century we also find in Europe the two major types of bow instruments: first, the instruments with a pear-shaped or pyriform resonance box, no distinct neck, no pegs, and a flat belly; second the flat-bodied, oval or elliptic instruments, whose only slightly arched body was connected to the generally flat back by ribs. These instruments had a distinct neck. The Ravanastron, which is said to have belonged to a sovereign of India 5000 years before Christ, the Rabab or Rebab, an ancient instrument that was played in Persia, in Arabia and in North Africa, the Rebec, also called rubebe, rebel or rebec that was brought to southern Europe in the Middle Ages by Muslim merchants and artists and many other more or less rudimentary instruments dating back to ancient times are considered to be interesting - although distant - precursors of the violin.

In the Middle Ages in Europe, as from the 11th century, we can find the vielle and the rote (rotta), a simple reproduction of the ancient zither: in order to use it as a bow instrument and produce various sounds by shortening the strings, a fingerboard was placed between the sound-box and the upper transversal bar of the zither.

In the 10th and 11th centuries the rote was widely used in all of central Europe, as testified by iconography. It was superseded by the vielle in the 12th century.

As from the 12th century there appeared a slightly more deeply cut-out form similar to the modern guitar and representing the last phase of the evolution of the vielle. This instrument was already predominant during the Middle Ages, probably because it was easy to handle, it had a vast
sound range, and all the notes of the scale could be played relatively easily.

The number of strings soon grew from one or two to three or four. As early as the beginning of the 11th century the classical form of the five-stringed vielle came into being and remained until the 16th century. Little by little ribs were introduced to facilitate the use of the bow; the plaque to which the strings were fitted, characteristic of the plucked stringed instruments, was replaced by a separate tailpiece and bridge, more appropriate for bowed instruments. Thus gradually the transition was made from the stringed instrument of the Middle Ages to the ‘Renaissance viol’, equipped at first with a round opening that was eventually transformed into two crescent-shaped sound holes.

Following a series of combinations of the two primitive types, three other families of instruments appeared before 1500: the viola da gamba (viol held on or between the player’s knees), the lira da braccio (played with a bow) and the viola da braccio (held against the shoulder). It is from the viola da braccio that the VIOLIN evolved, as it is held against the shoulder.

Thus, with the passing of the centuries, the violin took form. the origins of the violin are several and varied; each of its parts is the outcome of a more or less complex evolutionary process whose beginnings are often difficult to determine; each of its parts, therefore, has its own history. An instrument with a rather chaotic family tree, the violin is an entity encompassing many destinies in a single instrument.
Amongst the instruments that bear a date are two violins by Andrea Amati (born between 1500 and 1505, died in Cremona in 1576), built between 1542 and 1546, that had only three strings in their primitive form. But as from 1555 several documents testify to the existence of the four-stringed violin: the first four-stringed violin by Amati that has come down to us is dated precisely 1555. Charles IX, King of France, placed a substantial order with Amati in 1560 for 38 instruments including 24 violins, 6 violas and 8 cellos; two of them can be found today at the Ashmolean Museum in Oxford. Northern Italy maintained close political relations with France since Francis I (1515-1547, dates of his reign), which explains the order with Amati and the rapid expansion of the violin in France.

The famous school of Cremona was established by Antonio Amati (1555-1640), Girolamo Amati (1556-1630) and Girolamo’s son, Nicola (1596-1684).

The pupils of Nicola Amati were Girolamo Amati II (1649-1740), Andrea Guarneri (1626-1698), G.B. Rogeri (1666-1696), Francesco Ruggieri (1645-1700), Paolo Grancino (1655-1692) and probably also Antonio Stradivari (1644-1737).

c. Jacob Stainer (ca. 1621-1683, Absam, near Innsbruck in Austria) emerged as ‘the first great violin maker north of the Alps.’

As late as 1774 a certain Lohlein indicated that Stainer and Amati’s violins, with their timbre similar to that of the flute, were preferred to those of Stradivarius. Unfortunately Stainer was to have no direct pupils and no companions.

Thus in the first half of the 18th century the school of Cremona was clearly dominant, especially in the person of Antonio Stradivari (1644-1757), who established the model of the violin for all his successors.

There are three distinct creative phases in the work of Stradivarius: that in which Amati was clearly influential (from about 1666 to 1690); that of the
"longish" models (1690-1700); and finally his golden age of maturity with its magnificent works.

The violins with inlaid-work such as the 1679 "Hellier" are rarer; however there are numerous drawings and sketches by Stradivarius for such pieces. During his long life he produced some 1000 instruments. His creations are representative of the apogee of the school of Cremona and the art of violin making in general. His sons Omobone and Francesco, as well as his pupils Carlo Bergonzi (1686-1747), Lorenzo Guadagnini (born ca. 1695, died ca. 1745), and many others perpetuated his tradition.

Violin making in Italy, however, gradually declined in the second half of the 18th century. The process of manufacture was later rationalized by dividing the work: isolated elements were produced by different artisans and assembled afterwards. Thus industrial manufacture came into being - and still exists in the 21st century.

**Construction and manufacture:**

The violin is a seemingly fragile instrument that is actually quite strong. Its combined tension of all the four strings is about fifty pounds, twenty pounds of which is directed straight down upon the instrument through the bridge and on to the detailed egg-shaped box. The actual sounding is made of a front plate and a back plate that is arched slightly forward to form a hour glass shape. The hourglass shape comprises two upper bouts, two lower bouts, and two concave C-bouts at the waist, providing clearance for the bow. A violin generally consists of a spruce top (the soundboard,
also known as the top plate, table, or belly), maple ribs and back, two endblocks, a neck, a bridge, a soundpost, four strings, and various fittings, optionally including a chinrest, which may attach directly over, or to the left of, the tailpiece. A distinctive feature of a violin body is its hourglass-like shape and the arching of its top and back.

**Analysis of the parts:**

A violin generally contains the following parts:

- **Scroll:**
  
  This is located at the top of the violin - a decorative part and mostly hand-carved. For Karnataka music scroll is held by anklebone of the right foot.

- **Pegbox:**
  
  This is where the pegs are inserted. The pegs are adjusted for tuning.

- **Nut:**
  
  Helps keep the distance of the strings and supports the strings so that it has a good height from the fingerboard.

- **Bridge:**
  
  The position of the bridge is essential as it directly relates to the quality of sound produced by the violin. The bridge is held in place by the tension of the strings. When the string vibrates, the bridge also vibrates.

- **Fingerboard:**
  
  It is a strip of wood on the neck of the violin where the strings are placed. When a violinist plays, he presses down the strings on the fingerboard, thus changing the pitch.

- **Sounding post:**
  
  Located under the bridge, it supports the pressure inside the violin. The bridge and the sounding post are directly related. When the violin
vibrates, the bridge, body and sounding post vibrate as well.

- **F holes:**

  It is located in the middle of the violin. It is called so because of the f shape. It allows sound to come out of the violin. Altering the f hole, such as its length, can affect the sound of the violin.

- **Tailpiece:**

  It holds the string so that it has good distance from the bridge.

- **Bass Bar:**

  It is used to steady the violin and help balance the instrument from weight components in the top and the bottom.

1. **Chinrest:**

2. **It is optional. And is found at the tail end where the artist rests his chin as a support while playing.**

The woods generally used in violin making are:

- spruce for the belly, the bass bar, and the sound post;
- maple for the back, the ribs, the neck and the bridge;
- ebony for the fingerboard, the pegbox, the nut and the saddle;
- rosewood for the pegs and the button.

Linings, blocks and corners can be made out of pine, willow, poplar or any other lightwood. The trees are carefully selected before being chopped down, and the violinmaker, or the expert woodcutter, can determine their sound qualities by tapping the trunk with a hatchet. By following established precise criteria, he can determine whether a pine tree, for instance, is apt to produce a high-resonance wood. There are several parameters that determine such quality with respect to the geographic location of the tree (slope, wind, altitude, climate, soil).
The voice of a violin depends on its shape, the wood it is made from, the graduation (the thickness profile) of both the top and back, and the varnish that coats its outside surface. The varnish and especially the wood continue to improve with age, making the fixed supply of old violins much sought-after.

The very great majority of glued joints in the instrument use animal hide glue for a number of reasons: it is capable of making a thinner joint than most other glues, it is reversible (brittle enough to crack with carefully applied force, and removable with warm water) when disassembly is needed, and since fresh hide glue sticks to old hide glue, more original wood can be preserved when repairing a joint. (More modern glues must be cleaned off entirely for the new joint to be sound, which generally involves scraping off some wood along with the old glue.) Weaker, diluted glue is usually used to fasten the top to the ribs, and the nut to the fingerboard, since common repairs involve removing these parts.

**Purfling:**

The purfling running around the edge of the spruce top provides some protection against cracks originating at the edge. It also allows the top to flex more independently of the rib structure. Painted-on faux purfling on the top is usually a sign of an inferior instrument. The back and ribs are typically made of maple, most often with a matching striped figure, referred to as flame, fiddleback, or tiger stripe.

The neck is usually maple with a flamed figure compatible with that of the ribs and back. It carries the fingerboard, typically made of ebony, but often some other wood stained or painted black. Ebony is the preferred material because of its hardness, beauty, and superior resistance to wear. Fingerboards are dressed to a particular transverse curve, and have a small lengthwise "scoop," or concavity, slightly more pronounced on the lower strings, especially when meant for gut or synthetic strings.
The bridge is a precisely cut piece of maple that forms the lower anchor point of the vibrating length of the strings and transmits the vibration of the strings to the body of the instrument. Its top curve holds the strings at the proper height from the fingerboard in an arc, allowing each to be sounded separately by the bow. The sound post, or soul post, fits precisely inside the instrument between the back and top, below the treble foot of the bridge, which it helps support. It also transmits vibrations between the top and the back of the instrument.

The tailpiece anchors the strings to the lower bout of the violin by means of the tailgut, which loops around an ebony button called the tailpin (sometimes confusingly called the endpin, like the cello's spike), which fits into a tapered hole in the bottom block. Very often the E string will have a fine tuning lever worked by a small screw turned by the fingers. Fine tuners may also be applied to the other strings, especially on a student instrument, and are sometimes built into the tailpiece.

At the scroll end, the strings wind around the tuning pegs in the pegbox. Strings usually have a colored silk wrapping at both ends, for identification and to provide friction against the pegs. The tapered pegs allow friction to be increased or decreased by the player applying appropriate pressure along the axis of the peg while turning it.

**Strings:**

Strings were first made of sheep gut (commonly known as catgut), or simply gut, which was stretched, dried, and twisted. In the early years of the 20th century, strings were made of either gut, silk, aluminum, or steel. Modern strings may be gut, solid steel, stranded steel, or various synthetic materials, wound with various metals, and sometimes plated with silver. Strings have a limited lifetime. Apart from obvious things, such as the winding of a string coming undone from wear, players generally change a string when it no longer plays true, losing the desired tone. The longevity of
strings depends on their quality and the intensity with which the artist plays.

**Bow:**

It is generally agreed that the earliest form of stringed instrument in India was some type of a musical bow that is a hunting bow on which a tightly drawn string was twanged by the finger or struck with a short stick. To increase the resonance either the back of the bow was held across the mouth of the performer or else the end rested on a hollow gourd.

The Violin indisputably owes its indomitable position to the bow. The bow, as acknowledged by Western musicologists, is the contribution of Hindustan. Engel (1874) has observed that bowling existed in India as far back as 2000 years ago. Sanskrit scholars inform that names for the bow, like Kona, Garika and Parivada existed in Sanskrit and are at least 1500 to 2000 years old. Evidence is also available of the fact that the musical bow was used in South Africa and China.

**The basic constituents of a bow are:**

1. A stick, generally made of Pernambuco wood (name of the state in Brazil where the essence comes from). One of the ends is called the head, the other, the nut. Pernambuco is a reddish wood, hard and flexible at the same time, possessing all the qualities necessary to make a good bow. It is said that the famous bow maker Tourte, called "Tourte the Elder", was the first to use this wood for making bows at the end of the 18th century.

2. Bowhair consisting of approximately 150 "thoroughbred" horsehairs fixed to the head in a groove and to the nut in a movable frog that slides along the stick thus allowing one to tighten or slacken the hairs. The frog is controlled by a button that
monitors a screw lodged in a cavity in the nut.

A violin is usually played using a bow consisting of a stick with a ribbon of horsehair strung between the tip and frog (or nut, or heel) at opposite ends. A typical violin bow may be 75 cm (29 inches) overall, and weighs about 60 g.

At the frog end, a screw adjuster tightens or loosens the hair. Just forward of the frog, a leather thumb cushion and winding protect the stick and provide a strong grip for the player's hand. The winding may be wire (often silver or plated silver), silk, or whalebone. The hair of the bow traditionally comes from the tail of a grey male horse (which has predominantly white hair), though some cheaper bows use synthetic fiber. Occasional rubbing with rosin makes the hair grip the strings intermittently, causing them to vibrate. Originally the stick was made out of snakewood, but modern day bows are now traditionally made of brazilwood, although a stick made from a more select quality (and more expensive) brazilwood is called pernambuco. Both types come from the same tree species.

**Manufacture of a violin:**

Usually in the month of January, the tree is cut and stored for about ten to twenty years in a dry and protected from the change of seasons. The violin maker then cuts the corners to join the ribs with the aid of a ‘mold ‘or ‘form’. The future rib is then made flat by means of a scraper.

An adequate curve is given to the rib and then Ribs, blocks, corners and linings are assembled around the mold. The back and belly of the violin are made of a single piece or sometimes two pieces.

The arching of the back is hollowed. The contours of the ribs are evened off. The back is then glued to the ribs, which is a delicate operation. The linings are placed and the f-hole is drawn and cut on the belly. The purfling is done using a purfling cutter all around the belly and back. The purflings, generally made of service tree wood or ebony, do not only play an aesthetic role, they
also reinforce the edges of the violin. The neck and the scroll are made and the neck is fitted with the fingerboard.

Once the violin making is finished, it is exposed to sunlight for at least one year before varnishing in order to eliminate a maximum of the humidity remaining in the wood. Once the wood has dried, it is covered with the preparazione (a mixture of natural substances to harden the wood). Then, following a particular method, various layers of varnish are applied until the desired consistency and hue are obtained. The violin must dry completely between each layer of varnish.

After making the pegs, the violinmaker uses a special device to give the pegholes the necessary conic shape. And the sound post is fitted in with the sound post -setter. After making the pegs, the violinmaker uses a special device to give the pegholes the necessary conic shape. The bridge is sculpted with a penknife, which requires special care, for, the sound and timbre of the instrument will depend a great deal on this little piece of wood. Lastly, the strings are fitted. The final step for the violinmaker is making the last adjustments; he tunes the violin before posing the chin rest and trying out his creation.

**Tuning:**

Tuning the violin, holding and playing it differ in each style. The tuning for the western music for the four strings would be pitch ‘E’, ‘A’, ‘D’ and ‘G’ according to a chromatic pitch pipe. ‘E’ string is the rightmost on the fingerboard, while ‘G’ is the leftmost on the fingerboard. A simple way to look at the tuning is to start from ‘G’ pitch. Fifth note of ‘G’ would be the next string, which is note ‘D’ (G-A-B-C-D). Similarly the fifth note starting from ‘D’ would be the next string, which is ‘A’ (D-E-F-G-A) and the last string is ‘E’ (A-B-C-D-E).

In Karnataka music, the second string from the right on the fingerboard determines the basic tuning. This string (A in western music) represents the
shadja and the next string (‘E’) is the PAnchama, equivalent of the first string. The first and the second string from the left of the fingerboard is exactly one octave lower (mandrasthayi) of the Shadja and the Panchama string. So the four strings starting from left of finger board represent Mandra Sthayi Shadja, Mandra Sthayi Panchama, Shadja and Panchama.

To use the violin as accompaniment, the violinist has to tune the shadja string to the pitch chosen by the main vocalist or instrumentalist. For a solo concert the violinist chooses any pitch starting from ‘D’ to ‘F’, which can bring out the richness of the sound.

**Playing:**

Mastering the violin is a complex job that requires years of intensive training. The violinist must be able to transmit his feelings to the listener while feeling perfectly at ease with the instrument, be it in the accuracy of each note as in the use of the numerous sound capacities of the violin!

**Sitting Posture:**

In India, unlike the western players, the player squats on a flat surface to perform. The late Pazhamaneri Swaminatha Iyer held his violin against the chin. But he was more a vocalist as he played the violin as an accompanist to his voice. The squatting posture which we have adopted looks necessary for certain fixity of the violin for production of Gamakas. The south Indian places the violin against the chest and the scroll should be near the ankle bone of the right foot. The right foot is stretched a little forward so that the violin is in an angular position from the body.

*Grip of the bow by the right hand*

The thumb should rest near the base of the nut, so as to avoid the movement or slipping of the stick up and down while bowing. The index finger should slightly press the bow and the little finger should relieve the finger. One ought to be in a position to bow the strings to the full length of the bow.
There are two main parts to the technique of violin playing: the left hand and the right hand (bow technique). The latter serves exclusively for producing sounds, while the former can influence not only the height of the different notes, but also the quality of their sound.

**Left hand:**

The fingers of the left hand should press down on the string forming a slightly acute angle towards the front; the rapidity with which the finger presses down on and then releases the string determines the clarity of the sound (in accordance with the laws of vibration). The fingers move not only vertically but also laterally, to produce, whether they are held closely together or separated from the other fingers, the half-tones and the full tones of the scale. Double strings, used for producing chords, are obtained by pressing down on two strings simultaneously and by rubbing them with the bow.

The violin technique numbers the fingers from one to four, the index finger being the first and the little finger, the fourth.

Changing the finger positions rapidly and smoothly constitutes a major difficulty in violin technique, the mastering of which greatly depends on the strength of the chin and shoulder, for they allow a "free hold" of the instrument and the hand to slide easily along the neck. The muscles should be supple to avoid any impediment in movement. For the higher notes, the position of the hand and fingers on the fingerboard is modified, and the spacing of the fingers to obtain a tone, considerably reduced - in accordance
with the laws of physics - in relation to the first position (starting position, near the nut).

The changing of position serves, on the one hand, to widen the sound span and therefore responds to purely technical demands; on the other hand, it plays an important role in conveying expression and consequently should be appreciated from an aesthetic point of view. As the notes of a same frequency sound very differently on the various strings, changing positions influences the timbre. The choice of fingering is indeed a fundamental means of expression in violin technique to present the various musical figures!

A slight oscillatory movement, the vibrato, enriches the sound by a very slight modification of the pitch of the note; it is a means of expression typical of violin playing.

**Right hand (bow):**

The job of the right arm is to rub the bow on the string in the right place (1), in the right direction and at the right speed (2), and with the necessary pressure (3).

The main job of the arm is to ensure that the bow remains as upright as possible, without any lateral deviation, to form and maintain a right angle with respect to the vibrating string. In order to achieve this, the hand holds the bow near the frog, and the index and second and third fingers rest on the stick while the thumb presses on the underside of the frog. The little finger is slightly spaced from the ring finger, which is slightly curved. In this position all the finger joints are ready to balance and compensate the larger arm movements; the palm of the hand is almost parallel to the stick.

The speed of the bow is essential for the dynamics of the sound. The faster the bow, the louder the sound. Thus subdividing the bow plays a major role
in violin technique, and in the manner of striking, the string with the bow les every violinist’s capital means of expression.

The passages between two neighboring strings are carried out by raising or lowering the wrist. The movement of the hand in rubbing the bow on the string does not follow a straight line, but rather a horizontal figure eight; thus, there is more pressure on the bow at the head than at the frog. The movement that leads from the frog to the head is designated by the term "pull" (Pull) and the contrary movement, from the head to the frog, by the term "push" (Push).

**Science :**

If we take a look at the violin from a more technical point of view: when a string is made to vibrate by rubbing or plucking, it communicates a frequency to the surrounding air. When these vibrations reach the tympanum (eardrum), they are perceived as sound. Without a medium (air or water), sound cannot be propagated...

1. Sound
2. Acoustics
3. Chords and noise.

**1. Sound:**

Sound is a wave characterised by over-pressure - i.e. an excess of particles - at one point and a lack of particles at another point. It is a longitudinal vibration of the air that is propagated step by step. For example: propagation of a sound emitted in the air by a bell.

The sound perceived depends on two main things:

The tension and the length of the string that determines the fundamental frequency at which the string vibrates. By "stopping" a string, i.e. placing a finger on it and thus changing its length, the violinist can modify the
vibrating frequency. If the finger is placed at a whole fraction of the length of the string, the vibration produces a note in harmony with the fundamental note. This principle was discovered by Pythagoras already two thousand years ago.

When a violinist rubs the string with the bow, the string not only undergoes a transversal and a longitudinal vibration by being tightened and then released, it also undergoes torsion according to the force behind the rubbing, which modifies the timbre of the instrument.

The violin is capable of generating a great variety of sounds. It can produce very sharp sounds when the length of a string is reduced by pressing a finger down on it.

Thus Violin has attained a prominent place in the world of music, be it Indian or western.

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