# Chapter 4

# Desired Features of Sitar to make it Competent in Utility of Contemporary Music

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### 4.1 Relation of Music, Musician and Instrument

Musical instruments have a very close relation with the music[1]. Musical instruments are made in accordance with the music prevalent in a particular era and so also the music is shaped in accordance with the instrument as well as its instrumentalist influencing each other.

Thus, what we might call mutual interaction, results between the instruments, instrumentalist and the music.

Every age has its own difficulties and limitation. Our times are no exception.

The main purpose of this research is to find out the short comings, of Sitar and difficulties playing it, to make amendments in it, for its utility in live concerts of contemporary music.

[1] Seminar on "Instrument makers" Sangeet research academy page 1

Now a days there is a craze in the young generation to adopt the western instruments, even though there is a big treasure in the ancient history of all kind of the instruments, so we have to look in to the tradition, and bring those instruments in front of the people with necessary changes.

This is the time to match our pace with the technology and we have to show the world that this is the place where technology meets the tradition.

For fulfillment of the desired features in Sitar while playing in live concerts of contemporary music, first we have to make a list of the problem which we face during its utilization.

After a long research , study and getting the opinion of the learned Sitarist and musicologist, researcher has listed the following points where there is a scope of improvement in the traditional Sitar to make it competent in accordance with contemporary Indian as well as Western musical instruments.

Here is the list of the features which can be attained by doing the changes internally or added externally to the main instrument.

## 4.2 List of Desired Features

Researcher will distinguish these features in three categories viz.

- Electronic features
- Physical features and
- Aesthetical features.

### 4.2.1 Electronic Features

- **Amplification**
- **Changeable Tonal Quality**
- **Changeability of Sustention of the Sound**
- **Tuning**
- **Recording of Sound**
- **Retrieval of Sound**
- **Monitoring of Output Sound**
- **Volume Control**
- **Mute**

### 4.2.2 Physical Features

- **Portability**
- **Durability/ Unbreakable**
- **Light Weight & Compact**
- **Foldable**
- **Standardisation**

- **Pitch / Scale Changeability**
- **Fine Tuning of Pegs Using Digital Press Buttons**

### 4.2.3 Aesthetical Features

Now scholar will take each of the point in detail

### 4.2.1 Electronic Features:

Electronics is a branch of electrical engineering which developed after 1950, and became popular gradually. It is an engineering branch dealing with the smaller amount of current and power governing higher power or micro power application with a great precision and high efficiency. Some of its examples are television, space shuttles, computers, mobile, home appliances, radars, telecommunication products, weapons, medical instruments etc. The development in the field of electronics has changed the lives of human being. Every aspect of life is influenced by the development happened in this field. Musical instruments can not be the exception.

It is seen that synthesisers are being used in place of harmonium, electric guitars are replacing regular guitars, electronic tanpura is replacing manual tanpura, and taalmala has started assisting instrumentalist by replacing tabla player at least in the practice sessions, and so on.

**The presence of all these instruments are seen in the contemporary music. Electronic musical instruments have some advantage over the traditional musical instruments are as follows:**

- They don't require tuning. Or can be tuned easily if required.
- They can change their pitch easily.
- They are made as per the standardisation. So easily available across the world with a uniform quality, performance, and price.
- Their sound can be easily connected or picked up by the microphone. It is comparatively easy to process, and amplify the sound signal produced by them.
- These instruments are carrying the facility of the sound recording and sound reproducing.
- They are having the compatibility with the computer so sound signal produced by them can be easily edited or processed, or can be mixed with the other sound, which is the basic necessity in the age of digital sound.
- Most of them are machine made having good quality control in manufacturing process hence dependency on instrument maker is almost nil.
- These instruments are made of the fibre or plastics with a good long life.
- Aesthetically these instruments are very attractive and colourful. They are light in weight, less bulky, not very fragile, portable and fascinating the musicians.
- Being designed by big companies their up gradations and technical amendments are continuously happening with the new technological development.
- They are available with their manual and technical details. So one can understand its scientific facts easily and learn its playing with the basic learning books available for them.

Presence of electronic musical instruments affects and influence the performance of our traditional musical instrument Sitar.

**While making the use of Sitar in contemporary music we find the difficulties as follows:**

- In orchestra or live concerts Sitar has to be tuned sometimes in the pitch other than standard C, C#, or D.
- Even this tuning has to be altered frequently during a single show.
- A quite noise free environment is not available to tune the Sitar.
- Sitar timbre is of a typical type its voice is not picked up by a normal microphone. A special arrangement is required for picking its sound.
- Its tone gets supressed in the presence of the other instruments.
- If a special care is not taken its tonal quality also gets changed and hence affecting the performance and hence the response of the audience.
- The success of the Sitar performance mainly becomes dependent on the sound operator.

So here it is clear that “In recent years a lot of development has taken place in the field of electronics related to all musical instruments but it has not happened up to the mark for Sitar”.

So some steps are required to make Sitar more competent in accordance with contemporary Indian as well as Western musical Instruments.

Now the various amendments listed in the beginning of the chapter will be discussed in detail.

### 4.2.1.1 Amplification


**Fig.4.1 Amplification**

It is known that the sound is a kind of wave. And it can travel only up to the definite distance depending upon the energy contained by it. When it travels in the media its energy decays with the distance so once its energy goes below the audible range human ears cannot sense it. So to cover the larger area of audible range the sound wave is amplified by various methods.

We need to take care of all above factor for good quality reproduction of the sound.

It is observed that when improper mics are used then, lower frequency does not get amplified properly. Practically we can observe that in case of Sitar the sound produced by Laraj and Kharaj strings does not come up. So the output at receiving end is different than the original one. Because the originally generated sound is the wave, mixed of all of these notes.

So amplification should be proper which can take care of full audible range of frequency with no nonlinearity in the process of amplification.

#### 4.2.1.2 Changeable Tonal Quality

It is equally important to propagate the produced sound in the right manner once a good tonal quality sound is produced. This becomes essential to reproduce the sound at other end without any change in the quality of the sound and should be able to change it if desired by the Sitar player.

Timbre: Many time it is experienced that when the Sitar is played directly without any kind of amplification then the tonal quality is sufficiently good but when it undergoes process of amplification, the tonal quality is changed.

"I wish to impress upon you learned people that in your music, the tone is a major factor" by Ut. Vilayatkhan[2].

This quote by Vilayatkhan shows the importance of tonal quality in the music.

Sometimes it is observed that the success of whole the program of instrument player is dependent on the sound engineer who sets the various equipment for amplification. Here the expectation is, when we enrich the instrument by value added features timbre should not be affected in any manner. But if an artist wishes it can be varied as per requirement of an artist.

[2] Sangeet research academy, seminar on instruments. Page 19

#### 4.2.1.3 Changeability of Sustention of the Sound

The primary contributors to the quality or timbre of the sound of a musical instrument are harmonic content, attack and decay, and vibrato/tremolo[3].

The sound of the note is affected not only by volume but by its attack, sustention and decay or tone contour. This is important because the contouring of the note is more important than its basic tonal quality in determining 'instrumental effect'.

The illustration below in fig. 4.2 shows the attack and decay of a plucked type string instrument guitar. The plucking action gives it a sudden attack characterized by a rapid rise to its peak amplitude. The decay is long and gradual by comparison. The ear is sensitive to these attack and decay rates and may be able to use them to identify the instrument producing the sound.

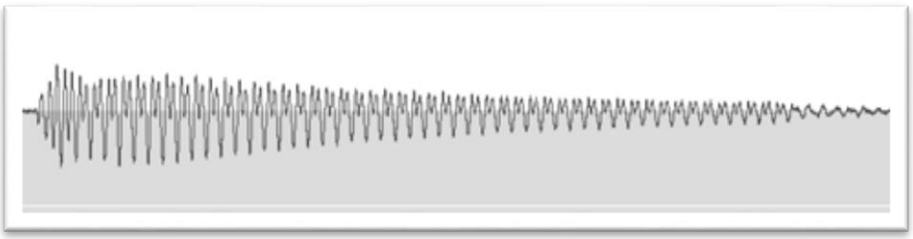


**Fig. 4.2 Attack and Decay of the Sound of a Plucked Type String Instrument Guitar**

**Fig. 4.3 Sound Envelope of Striking a Cymbal with a Stick**

[3] http://hyperphysics.phy-astr.gsu.edu/hbase/Sound/timbre.html

Above figure 4.3 shows the sound envelope of striking a cymbal with a stick. The attack is almost instantaneous, but the decay envelope is very long. The time period shown is about half a second. The interval shown with the guitar string above is also about half a second, but since its frequency is much lower, you can resolve the individual periods in that sound envelope.

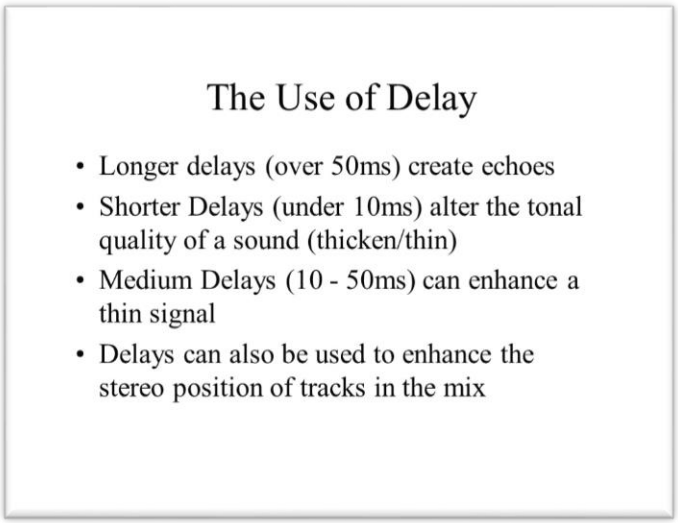



**Fig. 4.4 Use of Delay**

The sound produced by the string instrument may be sustaining one like bowing instrument, or may be producing a spike like in the plucked type string instrument. Sitar is a plucked type string instrument which produces a shiny spiky sound for a shorter duration, vanishing very fast. Sometimes the need arises to vary this duration of the sound for which it exists which is referred as the sustainability of the sound.

Famous Sitarist Vidushi Annapurna Devi used to play a Surbahar in the beginning of the recital of raga during the session of the alaap to get the longer sustainable sound of an instrument, because when length of string increases, sustention time of the musical note increases, but as the raag progresses, she used to change the instrument and have traditional Sitar for zala vadan where there is a need of shorter time of sound sustention.

So researcher believes that there is a need of a feature which should be added to the traditional instrument Sitar by which an artist can vary the time of sustention of the sound depending on its application.

### 4.2.1.4 Tuning


**Fig. 4.5 Symbol of Tuning of Sound[4]**

"I want to stress that if two tanpuras are tuned perfectly, then half the necessary ambience for music is ready. If good tanpuras are found and are tuned by experts than half the 'music' is as good as achieved." [5]

Sitar is made of the seven main strings and thirteen other resonating strings. Before playing the Sitar, first step is to tune all these strings in reference of each other fixing some pitch as a standard reference.

Sitar learners do not have the adequate knowledge of the sur, pitch and relevancy of various notes, it is difficult for them to tune the Sitar. And if the Sitar is not tuned

[4] https://www.pinterest.co.uk/pin/584342120371541395/
[5] Pt. K.G.Ginde Sangeet research academy seminar on instrument makers

properly, it will not be sounding sweet and the learner may lose the affection of learning the Sitar. In this case he has to depend on the teacher or someone who can tune his Sitar.

Once the Sitar is tuned it does not stay tuned for a longer time so it is to be monitored continuously while playing.

A discrepancy of pitch is seen sometimes among two artists performing together from a same stage.

In a performance if there are more than one Sitar and if a tuning device is used, which can standardise the pitch, will save the time of tuning.

In recent times, Sitar is also used in orchestra, which comprises of various types of the percussion, string, wind and electronic instruments. At this time, to tune the Sitar in the presence of other sound of ongoing program of orchestra, is difficult.

From all above mentioned points we can come on the conclusion that if a feature of tuning or monitoring is added in Sitar, will be a great boon to the learners and very useful feature for the professional players.

#### 4.2.1.5 Recording of Sound

In the Indian classical music the raga is not played as per the fixed predefined notation like in the western music. In classical musical recital presentation will be different every time even if the raag, place, and even an artist remains the same. Not only the notation but rhythm and duration of play also may change. This is one of the speciality of our music over the western music.

Indian classical music is also known for the instantaneous creation of composition (‘Upaj’) which is a result of long time rigours hard work (Riaaz) by learned artists. Students are always keen to note down such kind of upaj during their practice session. Because such creation may not be available again, even if desired.

So a thought comes in mind that if a feature is developed in the instrument itself so that by pressing a single button if the whole recital can be recorded then it will create a great treasure of Taans, Aalaps, and combination of various composition.

#### 4.2.1.6 Retrieval of Sound

The way recording of the sound is useful retrieval will be also a useful feature in the instrument. If in an instrument a recorded sound is retrieved or played, it gives a chance to play the same pre-recorded composition and correct it while playing. This feature is commonly seen in the newly developed electronic instruments like synthesiser.

It is also possible to record and replay the sound played on the Sitar by external devices but it does not provide the simplicity and usage of it.

#### 4.2.1.7 Monitoring of Output Sound

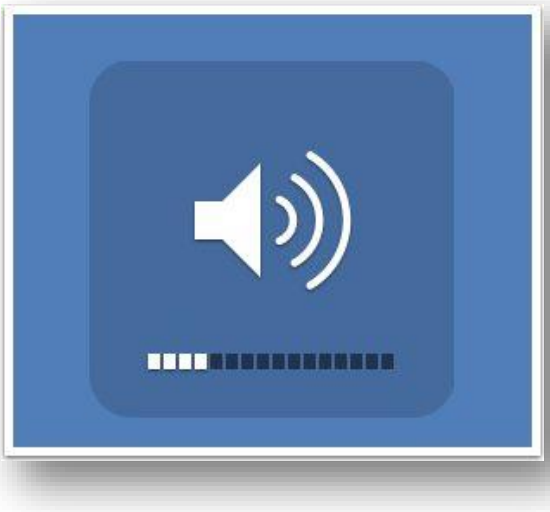
This feature is desire at the time of public performance. If a performance of Sitar is in duet with tabla or any other instrument or with combination of group of other instruments, the output sound of Sitar reaching the audience becomes very crucial. The timbre of the Sitar is very unique and may get supressed with other instrument, or may not produce the exact desired quality of the output and hence the impact. So some facility is required by which an artist can listen the output of its own instrument, and combined output of his own instrument with other instruments as well. So that he can

do the necessary corrections in the controller available with him to get the desired output quality.

This feature will be used for controlling volume, attenuation, changing tonal quality, etc. finally controlling texture of the sound output

Usually a monitor (speaker) is provided on the stage near the sitting position of the Sitarist but it is not that effective and it is not providing the facility to check an individual performance of the Sitar.

#### 4.2.1.8 Volume Control



This is the feature related to the power. The sweet and spiky tone of Sitar, sometimes gets suppressed in presence of some percussion instrument like tabla. It is observed that if a same amount of amplification is provided to the sound of Sitar and tabla, tabla sound is prominent in the output. So to avoid such kind of situation if a volume control is handy with the Sitar player will enable him to balance the output.

#### 4.2.1.9 Mute


This facility seems to be surprising, as on one side we are trying to make Sitar voice powerful and dominating and here we are talking to make it mute! But yes this is a necessary sophisticated feature.

This feature will help an artist to mute the outgoing sound of Sitar while tuning the instrument on the stage when live show is going on, as because of wooden pegs, frequent fine tuning is required. Even we have seen that in classical music performance, after completion of one raga, when player switches to other raga with different musical notes then strings are to be tuned at a different level. At this time sound going to the audience can be muted.

## 4.2.2 Physical Features

Now a list of desired physical features of Sitar will be made. They are as follows:

- **Portability**
- **Durability/ Unbreakable**
- **Light Weight & Compact**
- **Foldable**
- **Standardisation**
- **Pitch / Scale Changeability**
- **Fine Tuning of Pegs Using Digital Press Buttons**

### 4.2.2.1 Portability

In today's era every gadget has to be a portable one, may it be a laptop, hand phone or a Sitar. A Sitar artist is supposed to perform recital at various different location and he always prefers to play on his own Sitar and so he moves with his Sitar. So portability is the first physical desirable feature of Sitar.

### 4.2.2.2 Durability / Unbreakable

Sitar is considered as a costly instrument compare to other instruments. Every musician has a high regards to his instrument with whom he plays. Instrument should be made of the material which can offer it a long durable life. A material should be **termite resisting, water resistant and should be unbreakable**. Traditional Sitar is a very fragile because of its wooden structure, length, and bulky resonator.

For making Sitar, wood is used. We have to think of other eco-friendly material to save the tree and environment, which is a need of today.

We can think of some fibre type material which can be lasted for a long time and make the instrument unbreakable, and light weighted. Such type of the materials are termite proof too.

### 4.2.2.3 Light Weight and Compact

Physical strength of human being was naturally very high because of his life style in olden days. His life was full of physical exercises in a

routine. Today because of automation and luxury available in life, physical strength of average person has reduced.

Sitar is a bulky instrument and becomes very difficult for a medium sized human, female, children and aged ones to handle it, in such condition, if a light weighted and compact Sitar is designed will be well appropriated with time.

To overcome the drawback of bulkiness of the Sitar some of the Sitar players have made a Sitar with a flat tumba. But when it is done so, the timbre gets changed and the 'GUNJ' of the traditional Sitar which is an identification of its own among other string instruments gets lost.

So something is to be done so that Sitar becomes compact retaining its tonal quality.

#### 4.2.2.4 Foldable

If this feature is added in the Sitar it will take it one step ahead to rest of all Indian and western musical instruments as far as design is concerned. This feature will enable artist to travel with his Sitar easily without any more hassle. During air travel a Sitarist has to pay for additional luggage charges because of its excessive volume. If Sitar is made foldable then Sitarist will get rid of this problem.

In cities like Mumbai, average size of the house or music class is small compared to other cities. Same is the situation with other metro cities also. So if the Sitar is made foldable, will be really a boon.

### 4.2.2.5 Standardisation

Today, world has become a small village. English has become an international language. Along with that a lot of standardisation has taken place in food industry, water, medicine, clothes, computer, engineering so why not in arts?

We studied the basic constructional detail of the Sitar. The wood used to make it, size of various parts, thickness, metal type, and quality of the strings, size, shape and internal structure of tumba, and at last but not least – the Jawari also affects the quality of the sound of Sitar.

It requires a high skill of a Sitar maker to produce a good quality Sitar. But this method is person dependent. If we have to go for mass production then standardisation is to be adopted. For that we have to fix the norms for Sitar. We have to classify the Sitar with its particular type and tone. This will easily lead the Sitar maker to the mass production. Hence manufacturing cost will go down enabling makers to sell it at reasonable price, which is an important factor to enter into the competitive global market.

**Pros and Cons of Doing Standardisation of the Sitar**

As in other fields, the making of musical instruments too depends on inherent craftsmanship. It is not that specification of every instrument can be quantified, but much depends on the skill that some maker gives it to a particular type of instrument. Certain instrument can produce a special kind of sound. As Pt. Ravishankar has told in his message that, “It is a matter of luck whether one gets an instrument of good

quality sound or not."[6]So looking at this statement standardisation is a good thing to do in making process of Sitar.

In our country, in every art, every craft, and every branch of learning there is an element of skill which is spontaneous which can be termed as an adjustment. The profound extent of this spontaneous skill found in our art, is not found in any other part of the world. Indeed we have to nurture this aspect. Any attempt at standardisation could be harmful.

On the other hand a brighter aspect is in our way of life: Spontaneity has a special significance and everything is not evaluated in terms of mechanical way. If some improvement can be made with the available facilities, this is welcome, but it must emphasise that we have to honour country's traditional wealth of craftsmanship and we should try to understand its positive aspect.

Every human has a distinguish voice, so with the Sitar. Every Sitar is different than other. We can recognise the Sitar playing by its stroke and tonal quality. Every instrument made by hand has its own appeal. If we make a standardisation this feature will be compromised.

But if we summarise pros and cons of it I am in favour of doing standardisation of the Sitar.

[6] Sageet Research academy page 2

#### 4.2.2.6 Pitch / Scale Changeability

This feature is very useful when Sitar is used for the light music or in orchestra. When pitch or scale is required to be changed in such kind of application, it requires a lot of time to tune all the strings of the Sitar again as per the requirement. This process is tedious too.

To overcome this problem we can have two ways.

**4.2.2.6.1.1 Mechanical System**: We can use a mechanism on which all frets are fitted, and this mechanism is fixed on the fret board. The mechanism is such which can be moved up or down on the finger board. Hence effective length of the string will be varied and thus scale can be raised or lowered as per use and fulfill the need.

**4.2.2.6.1.2 Firm Ware**: A software can be implemented at the output going path of the sound which can change the scale of the sound as per need. This method may be a costly one.

#### 4.2.2.7 Fine Tuning of Pegs Using Digital Press Buttons

As all the pegs and receiving sockets are made of the wood a precise movement is difficult and hence the tuning. This process becomes more difficult in monsoon. To overcome this, pegs and sockets can be made with metallic threads on them. Further a circuit can be made which can operate them with a digital push buttons.

The same buttons can be implemented for volume control, and changing sustention time of the sound. This will create a great ease for coarse and fine tuning of the strings in a very sophisticated and efficient manner.

## 4.2.3Aesthetical Feature

Aesthetic has its own importance in the music. It may be the aesthetic related to the Hard Core Art, Artist or an Instrument.

As per **Heteronomy** it is not sufficient to know, only the core element of the art but one has to know the other factors also related to it, for more success.

"**What's good for the eye is good for the ear**" has guided luthiers and other instrument makers for centuries in their quest for perfection[7].

Production of musical instruments with good aesthetics, in addition to pleasing the ear, **would satisfy and delight the eye**, like painting and architecture.

When a musical instrument is made, the focus should be mainly on the instrument's tone, along with its harmonious shape, pleasing colour, fine craftsmanship and, musician playing it, balance and personal suitability.

In the last century we have seen the people wearing mostly the white and black clothes. The ink used to write on paper was blue or black. All cinema houses were showing black and white movies. All televisions were black and white. Teacher used to write on black board with a white chalk. All hoardings were with black letters. Newspaper was in black and white.

Now the time has changed. People are wearing beautiful colourful and florescent clothes. Colourful pens, sketch pens and high lighters are used to write on the papers. All cinema houses show HD coloured movies. All channels shown on television are coloured one. Teacher uses colour markers to write on the boards. All hoardings and posters are coloured one.

[7] www.tandfonline.com/doi/full/10.3402/jac.v8.32222

God has created a world in combination of beautiful attractive colours. And also given us an eyesight to visualise all of them and enjoy.

In olden days there were limitations of the polish, colours and other things in making process of the Sitar. So we were finding Sitar mostly in the natural tone of wood only with limited shades of brown.

But now a days with the latest technology we can have a very attractive colours and polishes that can be done on Sitar. We can have a transparent Sitar or our own choice of red, blue, yellow, white, black, golden, or silver colour, offering Sitar a very attractive rich look .Even we can think of a Sitar with changeable colour. We should adopt this change and make the Sitar aesthetically beautiful. Which will attract a man kind towards it and make him force to play!

As discussed in previous part its compactness in size, portability, lightness in weight will also enhance its aesthetical aspect.

Some ornamental effect can also be done like putting ivory design, carving, silver golden masking, along with other electronic and physical value added features, which will give a royal, rich, trendy and touchy look to the Sitar, offering it a new international recognition.