**Petni, kondi and reku: Traditional techniques of weaving handloom silk sarees**

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**Petni, Kondi and Reku** are the names of three different traditional techniques being practiced by the handloom weavers in preparing the warp to produce *pallau*, body and border of silk *sarees* in solid colours. The basic colour concepts of warp and weft used in getting solid colour *pallau*, body and border have been analyzed. The steps followed for the preparation of warp in different colours have been observed separately in all these three techniques. In each step, the intersections of different colour ends in different parts of the *saree* have been noted and shown as threads interlacing diagram and/or line diagrams to understand the technicality involved in these traditional processes. The salient features of these three techniques have been studied. While comparing, it is found that the *reku* technique is very simple to carry and hence it has now slowly replaced the *petni* and *kondi* technique in different handloom clusters.

**Keywords:** Body, Border, *Kondi*, *Pallau*, Petni, Reku, Solid colour  
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The traditional handloom weavers of India are ‘Artisans’ who by themselves could able to translate the required designs and colour concepts in the cloth with their artistic skills. They are also equally ‘Technicians’ having complete knowledge to evolve different techniques time to time and adopt the same to achieve the desired effect. These traditional techniques and the technical skills are very simple, scientific and result oriented with available resources. Many traditional techniques practiced in different handloom cluster of India, have been getting transferred from generation to generation by having hands on practice without making any record about the technology. *Kancheepuram pattu* (silk) *sarees* are the traditional handloom silk *sarees* of Tamil Nadu in India that were being woven right from the time of Pallava kings. In Kancheepuram *sarees* the border and *pallau* are the same colour. They are in bright contrast to the ‘body’ which is in a single or a family (shades) of colours with tonal contrasts. Weavers use the ancient craft of 3-shuttle weaving and interlocking weft to get this effect (*korvai*). The *saree* is ornamented with pure gold *zari*. The motifs are from temple sculptures — religion, architecture or nature-based. The *petni* technique changes colours, extracted from leaves, barks and seeds. *Ilkal* is a small town down the hill (it takes its name from ‘Illekallu’ or the ‘slope down the hill’ because of its location) in North Karnataka in Bagalkot, is famous for the red granite it provides and the 8th century weaving tradition still kept alive by one third of the population till date. The *pallau* and body of Ilkal *saree* are joined by a technique called *kondi* or locking, deftly executed with the hand. Nearly 50000 knots, 2500 every hour are executed to create this. Dharmavaram is located at a distance of 47 km from Anantapur district in the state of Andhra Pradesh India. Dharmavaram *Sarees* are traditionally woven in the interlocked-weft technique. Handloom weaving is the largest source of employment in Dharmavaram. Dharmavaram silk *sarees* are famous for its broad solid colored borders with contrast *pallau* woven with brocaded gold patterns. The contrast *pallau* is brought simply by tie and dyeing the warp in different colours combined with special *reku* weaving technique.

This article is to technically explain about the three traditional techniques, viz. *petni, kondi, reku*, which are even now practiced by the weavers in many handloom clusters for the purpose of producing solid colour *pallau* in Silk *Sarees*.

**Traditional significance of study**

Solid colour border, body and *pallau* have become one of the identifying features of most of the traditional silk *sarees* of South India. The silk *sarees* produced with *petni, kondi, reku* technique have a
thick cross over stripe of 2" at the pallau and body junction place. The silk saree produced with these techniques is considered as high quality saree. The silk sarees produced without these techniques having the colour spread irregularly for 2 - 4" because of tie-dye warp are considered as low quality sarees. Hence, it is highly essential to train the young weavers to practice and make them confident to produce the silk sarees with these techniques. Very rich looking solid colour pallau, body and border sarees, ornamented with gold zari for ceremonial wear are always in good demand in the local market. The weavers, who are well practicing these techniques, are considerably earning better. Hence, this study aims to record the methodology of these techniques systematically in order to make the present generation of textile technologists to understand the strength of the traditional technology and transfer the same to the weavers in the scientific way.

**Solid colour pallau, border, body**

Solid colour in any part of the saree is obtained by using similar colour in warp and weft. Weaving pallau, border and body in solid colour is one of the features of traditional sarees of India which is shown schematically in the Fig. 1. Out of 5.5 m length of saree, the first ½ to ¾ m of the saree is called ‘pallau’. It is in solid colour for its full width – say blue. The purpose of having solid colour for the pallau is to have it as background over which the ornamentations of designs could be shown prominently in extra warp and extra weft principles. After pallau, in the remaining length of saree, 3 - 9" width from both the selvedges are called as borders. The solid colour of the borders is same as the colour of pallau that is blue. The centre part, leaving the border, is called as body. It is in another solid colour, different to that of body – say red. The solid blue colour is seen as black and the solid red colour is seen as grey in all the figures.

The solid colour of body different to that of solid colour of pallau and border can be brought by way of dyeing or printing or weaving or combination of these techniques. To produce solid colour by weaving technique, the warp and weft colour in different portions of the saree have to be arranged in the following way.

The warp is divided into two parts. One is border warp and other is body warp. As per the width of border, the border warp in required number of ends must be in single colour through its length in usual way, which is blue. The single colour of border warp is shown at the left side of Fig. 1.

As per the width of body, the body warp in required number of ends must be in two colours in its length way. In the beginning, as per the required length of pallau, say ½ to ¾ m, the body warp colour must be similar to the border warp colour that is blue. Then the remaining length of body warp, say 4¾ to 5 m must be in another colour different from that of body that is red. The two different colours of body warp are shown in the right side of Fig. 1.

After arranging the warp as described above, the weft is also made into three parts. One is pallau weft, the second is border weft and the third is body weft. In the beginning, the pallau weft is blue in colour. The blue pallau weft is interlaced with blue pallau warp using single shuttle to get solid blue pallau cloth. The single colour of pallau weft is shown at the bottom of Fig. 1.

After completing the weaving of pallau length, the remaining length of body warp starts with blue colour in both side borders and red colour in the body. If it is woven with single colour weft, say blue for full width, then the border becomes solid blue colour (blue warp + blue weft) but the body will be only in mixed colour (red warp + blue weft). When it is woven with single colour weft, say red for full width, then the body becomes solid red colour (red warp + red weft) but the border will be only in mixed colour (blue warp + blue weft).
red weft). Hence, to obtain solid blue colour in the border and also solid red colour in the body, it is necessary to use two different colour wefts to weave the body part of saree. Blue weft is used for the left side border and right side border. Red weft is used for the body. Three sections of body weft in two colours are shown at the top of Fig. 1.

From the above explanation it is to understand that special techniques must be used to have body warp in two sections of colours and body weft in three sections colours. Traditional weavers had evolved three unique techniques to have two different colours in the length way of body warp. The technique evolved and being used by the weavers of Kancheepuram areas in Tamil Nadu is named as Petni. The technique practiced by the weavers of Ilkal areas in Karnataka is known by Kondi. The technique derived with Tie and Dye warp by the weavers of Dharmavaram areas in Andhra Pradesh is called as Reku. To have each pick of the body weft in three sections of two colours, the traditional weavers have been adopting two unique techniques. One is three cut shuttle weft weaving with interlocking principle called korvai technique and other is tie and dye weft technique. Petni, kondi, reku techniques used by the traditional weavers to have two different colours in the length of body warp is explained below with schematic diagrams and figures with a view to make the today’s handloom technologists to understand the technicality and in turn give practice to the young weavers.

**Petni technique**

*Petni* technique is the name of traditional technique practiced in weaving Kancheepuram silk sarees to get two sections of colours in the length way of body warp, viz. pallau part in one colour and the remaining body part in another colour. As stated earlier, let us consider that the pallau and borders of saree are to be in solid blue colour woven with blue warp and blue weft. The body is to be in solid red colour woven with red warp and red weft.

In the loom, new warp is set in such a way to start the weaving of body length first and then the pallau of the first saree. Two separate ball warps of blue colour in required number of ends as per the required width of border are prepared. One is for the left side border and another is for the right side border. The third ball warp of red colour in required number of ends as per the required width of body is taken in the middle. Now, the complete warp sheet is in 3 separate ball warps, two blue warps for the borders and red warp for the body as shown in Fig. 2(a).

The warp is gaited and set properly. Weaving of body length of the saree is started with three shuttles. One shuttle is used with red weft to weave with red body warp. Other two shuttles with blue weft are used, one to weave with left side blue border warp and other to weave with right side blue border warp. The border wefts are interlocked with body weft. This interlocking portion of weaving is called ‘Body Weaving’ as shown in Fig. 2(b).

The body weaving is continued by introducing extra warp designs in the blue border and extra weft designs in the red body by operating the extra warp and ground ends by Jala or Jacquard shedding along with healds shedding. After completing the required length of body weaving, the loom is stopped for changing the red colour body warp into blue colour by using the technique called ‘Petni’ work.

A separate blue ball warp is taken containing ends equal to that of the red ball warp already used for the body. Each blue end in the ball warp is loop twisted and joined along with each red end in the body serially at the back side of the healds, by keeping the healds and reed very near to the fell of the cloth. This work is same as that of twisting the new warp with old warp, except that the old warp (red warp) on the loom is kept straight. After completing the loop twist joining, the healds and the reed which are near to the fell of cloth are slowly moved backward. By this, the loops of blue ends automatically come in front of the healds, get passed first through the clasping of the healds and then through dents of the reed along with the red end.

In between cloth roller and fell of cloth a rod is kept above the cloth and tied to the cloth roller on both side by the ropes. The loop twist of the blue ends which are before the fell of cloth is untwisted and removed from the red ends and then gaited properly in the rod by grouping into small bunches. The complete processes of twisting the blue ends, moving the healds and reed, untwisting and gaiting the blue ends are called as ‘Petni work’.

As the petni work has to be done with at most perfection, it takes one or two days to complete this work. After this petni work, each heald wire in the body portion carry 2 colour ends (1 blue + 1 red) and each dent carry 4 ends (2 blue + 2 red). The border warp continues to be in blue colour and the body warp is in mixed 2 colours (blue + red). In the beginning, if the ends per inch in the body are 100, after the
petni work, the ends per inch in the body will be 200 (red -100 + blue – 100). The border blue ends continue to be 100 per inch. With this setting, weaving is done for 2" length by using single shuttle with blue colour weft. At this place, blue warp get interlaced with the picks along with red warp. This portion of weaving is called as ‘Petni Weaving’ which is shown in Fig. 2(c).

Then, the red body warp ends alone is completely lifted at the back side of healds by a rod and separated from the blue ends. Proper separation of red ends from the blue ends is facilitated by lifting the bottom shaft and opening the clasping of healds. After complete separation of two colours, the red ends are cut at the fell of cloth and removed from reed and healds leaving only blue ends in the body. Now, the body warp has also become blue along with blue border warp and the complete sheet of the warp become one colour - blue as shown in Fig. 2(d).

Now, weaving is started using single shuttle with blue weft which is called ‘Pallau weaving’. The extra warp design in the border is continued during this pallau weaving. Along with extra warp design, extra weft designs are also introduced in the pallau portion of the saree by operating ground ends extra ends by Jala or Jacquard shedding along with Healds shedding. Pallau weaving is continued till the completion of required length of Pallau. With this, the weaving of one full saree with body and pallau get completed as shown in Fig. 2(e).

After completing the body weaving, petni weaving and pallau weaving of first saree, the pallau weaving of second saree is started by keeping the blue colour body warp setup as it is. After completing the pallau weaving of the second saree, petni work is again carried to change the blue body warp into red body warp. Then the petni weaving and body weaving of second saree is continued. Thus, by doing petni works for two times, two sarees are completed as shown in Fig. 2(f).

Kondi technique

Kondi technique is the traditional technique used in weaving Ilkal silk sarees to get 2 colours in the length of body warp, viz. pallau length in one colour and remaining length in another colour. As stated earlier, let us consider that the pallau and borders of saree are

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**Fig. 2** - (a) Warp sheet is set with 3 separate ball warps in 2 colours. Interlocked body weaving is completed with 3 shuttles, (b) Petni work is completed by taking- in the blue warp along with red warp; body ends doubled, (c) Petni weaving is completed with single shuttle; blue warp got interlaced with picks, (d) Red body warp is removed retaining the blue warp; warp sheet is in single blue colour, (e) First saree weaving is completed with interlocking body weaving, petni weaving and pallau weaving and (f) Interlocking body weaving of second saree is in progress after completing pallau weaving and petni weaving.
to be in solid blue colour woven with blue warp and blue weft. The body is to be in solid red colour woven with red warp and red weft.

Initially, the red colour body warp is prepared by peg warping method. All the ends of red warp must be in 2 ply and the length is 2.5 m, which is equal to half of the required length of body portion of one saree leaving the pallau (5 m/2 = 2.5 m). The total number of ends in the warp is equal to double the number of ends required as per the width of body. The warp has proper leasing/crossing of ends and open loop on both the sides as shown in Fig. 3(a).

A bobbin containing blue colour yarn in single ply is mounted on a swift kept at the left side. A stand containing two wooden pegs is kept at the right side. The distance between the two pegs is 40” which includes the length of pallau and gaitting length (34” + 6”). Blue yarn from the bobbin is passed through the top open loop of red ball warp and tied to the right side wooden peg as shown in Fig. 3(b).

The first red end loop from the ball warp is moved to the middle of pegs. Then, blue yarn lying between the ball warp and first red end loop (which is just moved to the right), is dragged between the pegs. The blue yarn is dragged from left side to right side by making it to loop in the left peg as shown in Fig. 3(c), and then making it to loop in the right peg by crisscrossing between the pegs as shown in Fig. 3(d). By doing so, the first loop of blue end has been formed between the pegs, and also the first loop of red end get inter locked with the first loop of the blue end as seen in Fig. 3(d).

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Fig. 3 - (a) 2.5 m of 2 ply red colour body warp is prepared by peg warping, (b) Blue yarn is passed through loops of red ball warp and tied to the pegs, (c) First looping of blue yarn is started between the pegs by moving the first loop of red warp, (d) First loop of red end got interlocked with the first loop of blue end, (e) Second looping of blue yarn is started between the pegs by moving the second loop of red warp and (f) Kondi warp is ready with 2.5 m length of red warp fully interlocked with 1 m length of blue warp.
The above step is again repeated for the second red end by which the second loop of blue end is formed between the pegs and also the second loop of red end automatically get inter locked into the second loop of blue end as shown in Fig. 3(e). Similarly blue loops are made for all the red ends. This process of inter locking the loops of red ends by making the loops of blue ends in between the pegs is called as ‘Kondi’ peg warping technique. The bunch of blue end loops which are locking the red end loops are removed from the pegs after putting proper leasing thread in between blue ends. Thus, when the kondi peg warping process is completed, out of the total length of warp prepared, 2½ m. length is red in colour and 1 meter is in blue colour as shown in Fig. 3(f). Each loop of 2 ply red end which is locked with the one loop of single ply blue end together is considered as one end as shown by numbering at the bottom of Fig. 3(f).

The kondi warp is taken to the loom for twisting. The blue colour side of Kondi warp is twisted to the completed body portion of old warp. While twisting, two blue ends are taken together as one set which form loop at other end, locking the loop of 2 ply red end. The border portion of old blue warp is twisted with 2 ply new blue warp. After gaiting, the loom is ready with single colour blue border warp and kondi body warp as shown in Fig. 4(a). Pallau portion is woven by using blue weft with the warp (both body and border) which is now completely blue in colour as shown in Fig. 4(b). Pallau weaving is continued by incorporating required ornamentation till reaching to the loops interlocking place. Weaving is also continued very slowly for 1½" in the looping place, as there are 4 ply red ends for every 2 ply blue ends in the body as shown in Fig. 4(c).

**Fig. 4 -** (a) Warp sheet is ready with blue colour border warp and kondi body warp, (b) Pallau weaving is started with single blue colour weft, (c) Weaving continued for 1.5" in the looping place, (d) Out of each 4 ply red ends, 2 ply is separated and cut at the fell of cloth, (e) 50% of cut red layer is removed from the healds and reed; ‘U’ hooks (Kondi) of the red ends locked with the blue ends and picks and (f) Body weaving is continued with single blue colour weft.
Now in the body warp, out of each 4 ply red ends, 2 ends are separated, cut at the fell of cloth as shown in Fig. 4(d). This 50% of cut layer is removed from the healds and reed. By doing so, the length of red warp becomes doubled as all the red threads are looped at the other end. The length of red warp which was 2½ m during the Kondi warping process has now become 5 m length and each 4 ply red end has become 2 ply red end as shown in Fig. 4(d). The 1½" length woven after crossing the loops, contain ‘U’ hooks of the red ends interlocked with blue ends and interlaced with the picks as shown in Fig. 4(e). These U hooks are called ‘Kondi’ in Kannada which means ‘Bent edge’. The complete body warp is now of 2 ply red ends along with 2 ply blue border warp. The body weaving is started either with 3 shuttle work or with single blue colour weft as shown in Fig. 4(f).

Reku technique

Reku technique is the technique used in weaving Dharmavaram silk sarees to get two colours in the length of body warp, viz. pallau part in one colour and remaining length in another colour. As stated earlier, let us consider that the pallau and borders of saree are to be in solid blue colour woven with blue warp and red weft. The body warp is to be in solid red colour woven with red warp and red weft.

Two warps are prepared as per the required number of ends, one for the body and another for border. The total length of warp is to weave 4 sarees or more. The border warp is completely dyed with blue colour in usual way. The total length of body warp is folded number of times equal to the number of sarees to weave, so that the folded length is equal to the length of one saree. The folded warp is measured and marked for pallau length and body length. By tying and covering the pallau part with polythene sheet, the open body length is dyed with red colour. Then the tied pallau part is removed and the dyed body part is tied. The open pallau length is dyed with blue colour. After completing two times tying and dyeing, the pallau length is in blue colour and the body length is in red colour as shown in Fig. 5(a).

The single blue colour border warp is twisted to the border ends of old warp and the blue part of tie & dye body warp is twisted to the body ends of old warp. After gaiting, the warp is completely blue in colour upto the pallau length. After the pallau length, the border colour is blue and body colour is red in the remaining length of one saree as shown in Fig. 5(b).

In the beginning, the blue pallau warp is woven with blue weft by incorporating required extra warp and extra weft ornamentations. Pallau weaving is continued till reaching to the colour changing place (Junction place), where the body warp colour changes from blue to red. In this changeover – junction – place, the colour changing does not occur exactly in straight line across the width. Even if the tie & dyeing, twisting and beaming are done perfectly, the changeover will spread atleast for about 1 to 1½" length; otherwise it is normally for about 2 - 4" as shown in Fig. 3b. If the colour change over is spread for only 1½" length, it is made hidden by weaving with zari weft either in weft face twill or sateen weave, for this 1½" length. When the colour - change over is spread for 2 - 4", reku pulling technique is followed to bring down /reduce the irregular colour spread length form 4" to 1½".

The Reku pulling work starts immediately after completing the pallau weaving when the colour change over starts from blue to red across the width of body warp and spread over for 2 - 4" length. The total body warp ends are separated into two parts by selecting the ends in 2:2 order by passing a lease rod in between healds and warp beam. The ends 1, 2, 5, 6, 9, 10,........ form first part and the ends 3, 4, 7, 8, 11, 12,.........form second part as shown in Fig. 5(c). These two parts of the warp are called ‘Rekus’ in Telugu which means ‘Layers’.

The warp is made loose by doing excessive let-off of the body warp beam. At the centre of healds and warp beam, the second layer (3, 4, 7, 8, 11, 12 ........ends) is taken in between two lease rods. These rods are rolled in such a way that 2 - 4" length of second layer gets wrapped between the rods. The warp is made tight by taking back the loose warp to the warp beam. By doing so, the second layer which is wrapped round the rods becomes tight and straight. But the first layer becomes loose equal to the length that got wrapped in the rods (2 - 4") as shown in Fig. 5(d). The loose first warp layer is now separated from the tight second layer and lifted upto the fell of cloth. A rod is passed across the width before the reed, in between the lifted first layer and the bottom second layer. Then the loose first layer is pulled back towards cloth roller by taking back the rod till all the loose ends of first layer become tight (equal to the tight second warp layer) as shown in Fig. 5(e). The rod is tied tightly to the cloth roller on both the sides by the ropes.

By pulling back the first layer for 2 - 4", the change over colour spreading of this layer, is pulled back. Hence, all the red colour part of this layer has
come in line with the fell of cloth. Of course the changeover colour spreading of second layer remains as it is, as seen in the Fig. 5(e). 2" length is woven with single shuttle. At this place, the pulled first warp layer is in single colour that is red and the second warp layer has the colour spread over as shown in Fig. 5(f).

After weaving 2", again the warp is made loose little by doing let-off of the body warp beam. The lease rods in which the second layer is wrapped, is unrolled and the warp is made tight by taking up the loose warp, back to the warp beam. By doing so, the second layer becomes loose for 2 - 4" and the first layer becomes tight and straight, as shown in Fig. 5(g). The loose second warp layer is separated from the tight first layer and lifted up to the fell of cloth. The rod which was used for pulling the first layer is removed and then passed across the width before the reed in between the lifted second layer and the bottom first layer. The loose second layer is pulled back towards cloth roller by taking back the rod till all the loose ends of second layer become tight (equal to the tight first warp layer) as shown in Fig. 5(h). The rod is tied tightly to the cloth roller on both the side by the ropes.

By pulling back the second warp layer for 2 - 4", the changeover colour spreading of this layer is pulled back. Hence, all the red colour part of this layer has also come in line with the fell of cloth. Now all the ends from the fell of cloth are completely red in colour without any colour spread over as seen in Fig. 5(h). The body weaving is started as per the colour combination required in the Body and Border. After weaving 5 - 6" of the cloth, the rod is removed and two series of loops are cut by leaving 1" height from the cloth. By doing the Reku pulling technique as stated above, the irregular colour spread over for 2 - 4" has been brought to 2".

Fig. 6(a & b) show the two stages in carrying petni work in Kancheepuram loom. Fig. 6(c & d) show the two stages in carrying kondi work in Ilkal loom. Fig. 6(e & f) show the two stages in carrying reku work in Dharmavaram loom. The complete layout of a traditional Kancheepuram silk saree is shown in Fig. 7(a). The junction place of pallau, body and border of an Ilkal saree is shown in Fig 7(b). The photo of a saree woven without carrying the reku technique containing the irregular colour spread over for 4" at the junction place of pallau and body is given in Fig. 7 (c). The photo of a saree woven
with the reku technique containing the cross over stripe for 2" without having any colour spread - over at the junction place of pallau and body is seen in Fig. 7 (d).

**Recommendations**

Weavers’ Service Centres and Indian Institutes of Handloom Technology in South India, functioning under the office of Development Commissioner for Handlooms, New Delhi, is imparting in-house and field training in the traditional skills under Integrated Skill Development Scheme. The weavers and master weavers can form group and approach these offices for getting training in the traditional skills practiced in the region and then implement the same in their handloom clusters.

Of course understanding petni, kondi and reku techniques will be fetching only half of the knowledge because these techniques are related to only warp direction of solid colour pallau, border and body weaving. In order to have complete knowledge, it is also equally important to have the understanding of ‘KORVAI Technique’ and ‘Weft Tie-Dye Technique’ which are related to weft direction in solid colour pallau, border and body making process of silk saree weaving. Hence, recording the methodology of traditional Korvai and Weft tie-dye techniques has been taken up as the second part of the study.
Conclusion

The Petni and Kondi technique are the century old techniques being practiced in Kancheepuram and Ilkal silk sarees. The Reku technique developed by the Dharmavaram silk saree weavers in Andhra Pradesh has been in practice for the last 25 yrs. The Petni and Kondi techniques are very laborious and time taking processes. It takes one day to complete these processes. Whereas, the Reku technique combined with tie & dye warp is a simple process which can be completed in one hour. Hence, the silk weavers of all the clusters are now doing mostly with Reku technique for producing medium cost range silk sarees. The Petni and Kondi techniques are used for weaving high end exclusive Designers’ Sarees when specifically required for niche market.

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