Fiber, Loom and Technique
The Journal of the Tracing Patterns Foundation
OPEN ACCESS

An Indian Loom in Indonesia

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Abstract
A loom in use in Balai Cacang village in the Minangkabau region of Sumatra has an unusual warp suspension system, in which the warp is attached to a cord and tensioned around a pole. We show that this system is similar to that used on traditional Indian pit looms, and that it probably crossed the Indian Ocean to Indonesia. Indian influence on Indonesian textile forms is well-documented, but this is the first identification of an Indian loom technology in Indonesia. It implies the presence of Indian craftspeople in Indonesia in the past.

Citation: Buckley, Christopher and Sandra Sardjono (2021) An Indian Loom in Indonesia. *Fiber, Loom and Technique* 1: 40-46.

Editor: Paul Hepworth

Publication date: 31 August 2021

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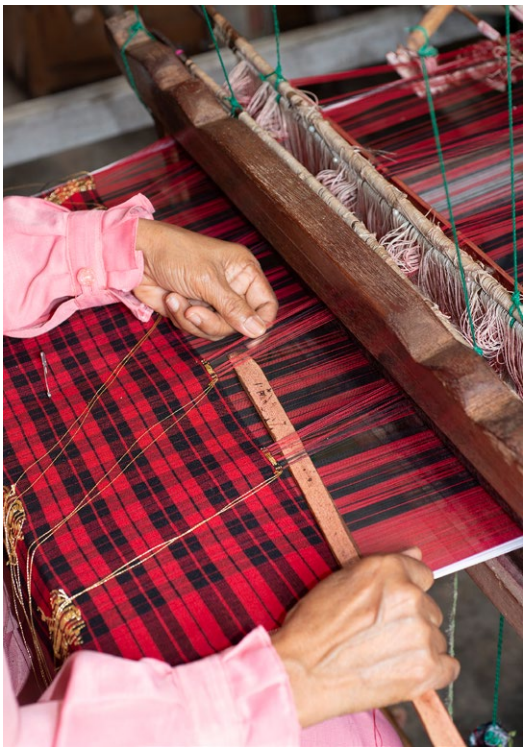
Introduction
The Minangkabau region of Sumatra is known for the weaving of *songket*, a term generally applied to luxurious silk cloth patterned with gold-and silver-supplementary wefts. The knowledge of *songket* weaving appears to have a long history in Indonesia, as the technique spread widely among various cultural groups across the archipelago. In Minangkabau, *songket* weaving continues to thrive, both in domestic settings as well as in professional or semi-professional workshops. The cloths are used for weddings, festivals, and other special occasions; worn as headdresses, shoulder cloths, and sarongs.

Minang weavers use a variety of looms and patterning systems for making *songket*. These looms are different from the body-tensioned looms that are traditional in most parts of the Indonesian archipelago. They are large frame looms with a fixed warp and a reed, and a fixed cloth beam. Some of these looms are similar to looms used in the Malaysian peninsula, to which they seem closely related. Most looms used in this region today employ a large, flat warp beam, around which the unwoven warp is wound. Some families in the region specialize in preparing these warps together with the reed and selling their services to weavers.[1]

The Balai Cacang loom
In the Balai Cacang area, we found a different and apparently older system of warping (fig. 1).[2] Instead of winding the warp onto a warp beam, it is stretched out horizontally to its full extent and the end is suspended using a cord-and-pole system. The length of the warp is limited by the size of the room.[3] Formerly, these looms were often located under houses built on stilts, providing a large space to suspend the warp. This system is unique in Indonesia, as far as we know, and is quite different in principle and practice from warping systems used elsewhere in the archipelago. This loom has been described by Maxwell, who provides a photograph of a loom in operation under a house in Silunkang in 1976,[4] and by Yoshimoto, who provides a photograph



Figs 1–3. (above) general view of the loom at Balai Cacang; (below left) adjusting the cloth beam; (below right) decorative weft insertion.

Fig 4. Adjusting the warp

of the loom in operation in Payakumbu, Limapuluh Kota district in 1988, together with a sectional drawing of the loom.[5] He calls it the 'Minangkabau Type I loom.' Most recently the loom has been discussed by Hanssen[6] who provides a photo of a loom in Balai Cacang. None of these authors, however, remarked upon the loom's most interesting feature (in our opinion), which is a warp suspension arrangement derived from traditional Indian looms.

The Balai Cacang loom looks similar at the cloth-beam end to other frame looms in Minangkabau and in Malaysia (figs. 2, 3). The cloth beam is square in section, and placed in a cut-out in two pillars, allowing it to be rotated by quarter-turns to take up the woven cloth. A pair of ground-weave heddles is operated by a pair of transverse treadles (oriented along the weft direction), which is suspended from a cantilever above the weaver's head. The fine silk warps are spaced with a reed embedded in a swinging frame, which also serves as a weft beater. Patterns for *songket* wefts are preserved on sets of heddles on narrow rods, furthest from the weaver in the photographs.

At the other end of the loom, the warp is wound around a pair of lightweight rods that enclose a warp crossing. This is suspended by cords from a heavier tensioning beam, which is linked to an upright pole. The pole is held upright by being lodged between large stones, and supported by a cord that attaches to an iron nail fixed into the wall of the weaver's house. The loom photographed by Yoshimoto lacked this extra cord, instead the pole was fixed into a wooden base that was weighted with stones. At intervals the weaver loosens off the cords that attach the tensioning beam to the pole, and lengthens the cords, adjusting for the cloth that is taken up on the cloth beam (fig. 4). When the full extent of the cords is reached the weaver moves the stones and the pole closer to the cloth beam.

As mentioned, there is nothing like this system amongst Indonesian looms in other regions as far as we know, but it is very similar to traditional warping arrangements on Indian looms. The basic rural loom in India is a pit loom, which operates on a different tensioning principle to the frame looms found in China and mainland Southeast Asia. In a traditional Indian loom the tension in the warp is provided by three points fixed to the ground, rather than by a frame. At one end the cloth beam is supported on pillars set into the ground. At the other end, tension is provided by a pole and/or peg set into the ground, attached to a cord that is, in turn, attached to the warp. There are a number of different variations on this system, which we illustrate with three examples below.

Indian analogues

In the Hyderabad area, the traditional loom used for weaving large, flatwoven cloths was a pit loom with a hand-operated heddle (fig. 5). The warp was wound around a single rod, with a lease rod just behind it. This was attached to a tensioning bar. A cord passed from the tensioning bar around a pole at the back of the loom and was tied off on a stake in the ground next to the weaver. To compensate for the warp taken up onto the cloth beam the weaver loosened the cord at the stake, before reattaching and tensioning the cord. With three cords passing from the pole to the tensioning bar this system provided a 3:1 mechanical advantage to the weaver, meaning that the tension maintained in the warp was 3x greater than the tension applied to the cord.

In Patan, Gujarat, traditional *mashru* (a warp-faced cloth consisting of a mix of silk warps and cotton wefts) is still woven by a few households using pit looms with treadle-operated heddles (shafts) set into the floors of their homes (figs. 6, 7). The warp is attached to a pair of lightweight rods, and excess length is gathered into a bundle that is suspended loosely above the warp.

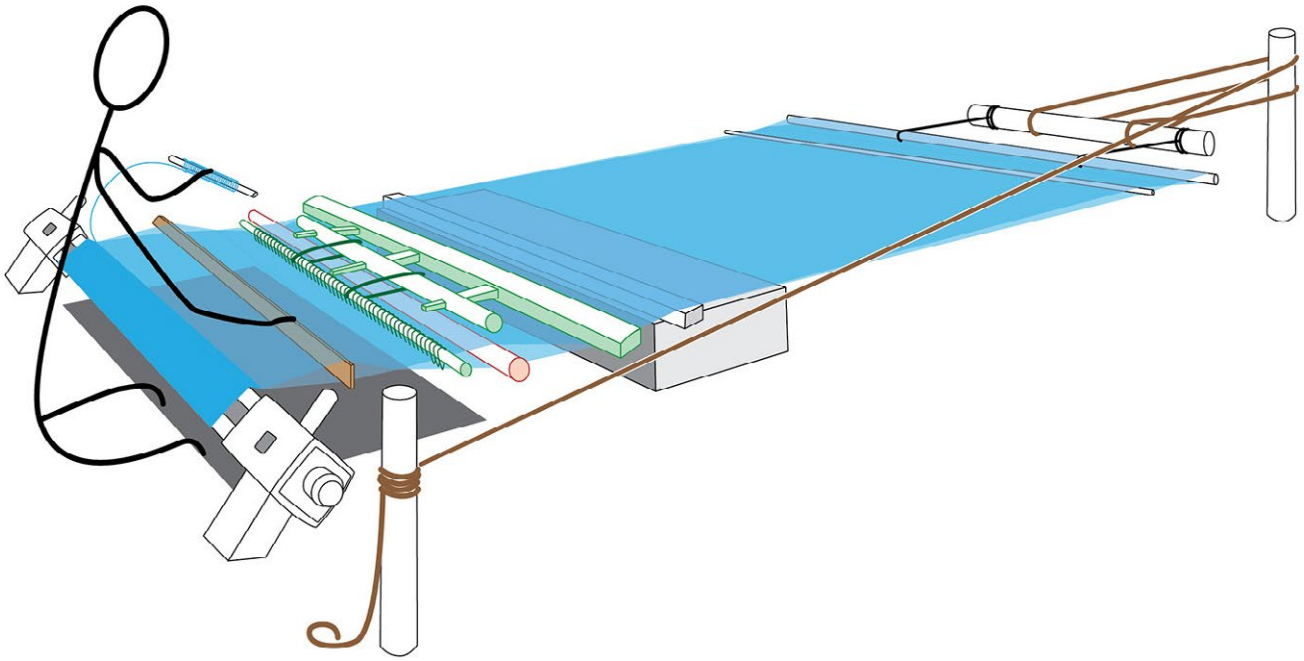


Fig 5. Drawing of the pit loom formerly in use in the Hyderabad region, India. The warp is attached to a tensioning bar at the right which is attached to a tensioning cord (brown), which passes around a pole at the back of the loom and is tied off on a post next to the weaver.

Figs 6, 7. (left, right) Two views of a loom used for weaving *mashru* cloth in Patan, India. The warp is attached to a tensioning bar (shown at left) which passes around a post at the far left. Surplus warp is tied in a bundle suspended above the tensioning bar.

Tensioning is provided by a tensioning bar attached to a cord that passes around a pole set firmly into the floor of the house and then back to a stake (also set into the floor) next to the weaver, as with the Hyderabad loom. Additional warp is released from the bundle and reattached to the pair of rods as needed.

At the workshops of the well-known double ikat *patola* weavers, also in Patan, the warp is suspended using another variant of this system (fig. 8). In this loom the warp is attached to a pair of lightweight rods and a tensioning bar, which is in turn attached to a large upright pole at the back of the workshop, using a cord and pulley system that can be loosened and extended as the finished cloth is wound onto the cloth beam.

Numerous other versions of this system exist, several of which have been recorded by Varadarajan and Amin-Patel.[7] Similar pit looms are employed across Central Asia and as far west as the eastern shores of the Mediterranean and North Africa, though geographical distance and lack of contact suggest that these are less likely to be antecedents of the Balai Cacang loom, the origins of which most likely lie in India. There are also no direct analogues of this loom on the Southeast Asian mainland. Akha people in northern Laos use a frame loom in which the warp is attached directly to a stake[8] but this warp suspension arrangement is quite different in its approach and unlikely to be related to our example.

Implications

The influence of Indian trade cloths on Indonesian tastes and styles is well-documented, but as far as we know this is the first evidence of the transfer of weaving technology across the Indian ocean.

Traditional weaving is transmitted from master to novice via an apprenticeship. This is a lengthy, one-on-one process in which learning occurs via observation and practice. Complex processes such as setting up a loom and mounting the warp can only be learned by direct, hands-on experience. This implies that Indonesian weavers must have learned this loom technique directly from Indian craftspeople, either in India, or (more likely) in Indonesia.

Fig 8. The loom used for weaving double ikat *patola* in Patan, Gujarat, India. The warp is attached to a tensioning bar, which is attached via a cord to a pole at the far left.

This is significant, since it is the first direct evidence of the involvement of Indian craftspeople in the development of weaving in Indonesia. There have been some suggestions of Indian involvement in the past, for example J. E. Jasper was told by a local informant that ikat was introduced to the Gresik region of East Java by a 'Keling', meaning an Indian craftsperson.[9] However, the looms formerly used in the Gresik region and the ikat woven there were similar to those from other parts of Java (and Bali, as Jasper noted). More recently, Buhler et al[10] compared the techniques for weaving double ikat *patola* cloths woven in Gujarat with double ikat *geringsing* woven in Bali, but found little in common besides the basic fact of ikat decoration being applied to both warp and weft.

The identification of Indian weaving technology in Indonesia raises questions of which other technologies may have been introduced from India. The large market in Indonesia for Indian cloth over the past millennium certainly provided the incentive, and Indonesian tastes for luxurious silk cloths with weft patterning (ikat and *songket*) seem to have stimulated the use of new technologies, including silk production, the use of the reed, and the spinning wheel for cotton. The cotton spinning wheel in particular is known by its Sanskrit name in Indonesia (*charkha*) and is presumed to have come from India. However, transferring more complex weaving technologies across long distances is difficult and is correspondingly infrequent. The examples that do exist of such transfer tend to be the result of deliberate intervention, either by merchants or by rulers. For example, the art of drawloom weaving in northern India is said to have been introduced and sponsored by Mughal rulers, who wanted a local source of fine silk cloth. Similarly, there are numerous records of rural weavers in China being seconded to the imperial courts. It seems likely that the Balai Cacang loom is also the result of deliberate intervention, either as a result of courtly summons and/ or opportunistic textile merchants. Van der Kroef, who was generally skeptical of the extent of 'Hindu' influence in Indonesia, nevertheless noted that: 'it is … certain that Indian craftsmen migrated to the courts, although not in large numbers.'[11]

The introduction of this warping system almost certainly pre-dates the arrival of Malaysian-style looms with full frames from the Asian mainland, since post-introduction of these looms there would be little reason to modify the warping method. It may be that the Balai Cacang loom is evidence of the earliest shift away from the short, circular warps that are indigenous in the archipelago, to a long warp and reed suitable for weaving fine silk textiles.

Why has this ancient system survived in Balai Cacang? We note that it has some advantages for individual weavers who don't wish to employ a specialist to wind a warp for them. The long, suspended warp is cumbersome and takes up space, but it avoids the delicate task of winding the warp onto a beam, which is normally done using dedicated winding equipment. The Balai Cacang-type loom, known by the locals as *alat tenun kampung* or 'village loom,' must have been more prevalent in the past. However, many weavers in Minangkabau today work in relatively cramped homes or workshops, so a compact warp wound onto a beam has become a necessity.

At the time of our research we could only find a single weaver using this ancient warping method, and it is unlikely that it will survive amongst the next generation of weavers.

Acknowledgements

We thank Bernhard Bart, who introduced us to Ibu Jumatul Khaira at Balai Cacang, as well as Ibu Jumatul for demonstrating her weaving for us, and Erika and Bernhard Bart for their hospitality and for sharing their knowledge of traditional weaving in the Minangkabau region. We would also like to thank our editor Paul Hepworth and reviewer Long Bo of the China National Silk Museum for their comments, which have helped us to improve this paper.

Photographs and drawings are by the authors.

Notes

1 In Silungkang, we met with nenek Hj Rahma, her daughter, ibu Zulhaida, and her granddaughter. These three generations of weavers run a business preparing warps for weavers in and around the area. Their clients are weavers who may specify the color and length of the warps they wanted; even at times send their own warp beams and reed to be mounted with the new warps.

2 The weaver, Jumatul Khaira, started weaving since elementary school to help out her mother. She said that her father also wove. She claimed that weaving has been practiced in her family since *nenek moyang*, meaning many generations. She regarded herself as *orang asli* or a native from the Balai Cacang. She remembered that her mother also used the same warp setup. The loom she used is described as *alat tenun kampung* or 'village loom'. In November 2019 during our visit, she was the only person who was still using this type of loom and there were no younger weavers continuing the practice. The pattern is stored using pattern heddles, as noted. Ibu Jumatul only knows this method of storing the pattern. She has never used temporary pattern sticks or *lidi*, which presumably would have been the original way of storing patterns in the Minangkabau region.

3 In her current warp setup, Ibu Jumatul was able to weave four lengths of cloths with one warp. One warp length took her about one week to finish and her work was mostly based on commissions.

4 Maxwell 1990, 164 and 166. See photograph of the loom on page 164, figure 232.

5 Yoshimoto 1990, 35.

6 Hanssen 2013, 62.

7 Varadarajan and Amin-Patel 2018.

8 McIntosh 2018, 72.

9 Jasper wrote (Jasper and Pirngadie 1912, 162): *Men deelde mij mede, dat het ikatten te Gresik ingevoerd is door een Keling uit Soeratte, die het werk aan vroegere, Gresiksche nijveren heeft geleerd. Niet onwaarschijnlijk is echter den invloed op deze kunst van Oostelijker gelegen gebied gekomen, daar oude, Gresiksche tjindèns een zeer groote overeenkomst hebben met Balische ikats*.
'I was informed that ikat was introduced to Gresik by a Keling from Soeratte, who taught the art to former Gresik workers. It is not unlikely, however, that the influence came from a more easterly region, since old Gresik cloths have a very close resemblance to Balinese ikats.' [our translation]

10 Buhler et al 1975

11 Van der Kroef 1951, 24.

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