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A traditional secret saving method of woven designs in *talapatra pothi* by *Rangani* at Dhalapathar

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A traditional secret saving method of woven designs in *talaptra pothi* (palm leaf manuscripts) by a Buddhist weaving community *Rangani* at Dhalapathar has been discussed. It describes the way of representing woven designs numerically in an unconventional way to make incomprehensible for others. The novelty of this method is to prevent other weaving communities of the state from purloining of their original designs which is rare and hardly seen anywhere in India.

Keywords: Buddhist, *Chiari*, *Dhalapathar parda*, *Kusumikasta*, *Rangani* community, Traditional secret saving

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The Buddhist weaving community *Rangani* at Dhalapathar about 60 km from the state capital Bhubaneswar is known for their craftsmanship in weaving of *Dhalapathar Parda*- a traditional door screen. The uniqueness of the *Parda* lies in its featured weft rib designs woven by special *Chiari* shedding technique[1]. Though the first ever *Dhalapathar Parda* had been woven by the community in the year 1936, but its origin was from the transformation of the locally woven traditional popular *Saree Kusumikasta*[2]. Besides the *Kusumikasta saree, Kankanapedi, Muktapunji, Nahati* and *Akata* were the other popular *Dhalapathar sarees* at that time with traditional motifs like fish, wheel of chariot, Swan, temple, *Danti,* etc. in their *Anchal* and borders.

The community is in the weaving profession since more than a century and almost every member of the family knows the art of dyeing and weaving. In almost every family of the village, some mythological books, some old palm leaf manuscripts (*pothi*) and *Srimad Bhagabat Gita* are seen on a *Byasasan* (a small foldable desk made up of wood and its name *Byasasan* is due to the keeping place of *Srimad Bhagabat Gita,* which was originated from the Hermit *Byasa*) in their worship room. Though the palm leaf manuscripts are there in their worship room since long ago, no one has ever thought to know actually what has been written in those manuscripts because all believe those are only the mythological scripts[3].

But during the shooting for a documentary film on the historical evidences with respect to the culture and tradition of *Rangani* community, it is found out on the palm leaf manuscripts, certain single and double digits are encrypted on both sides of each leaf by a number of rows without any punctuation mark in between. Besides, a cluster of the rows of digits on each side has been assigned with a colloquial name in Odia language. Even in some leaves, one side contains more than one cluster of rows and each cluster has been assigned with a colloquial name. More interestingly, no one from the present generation of the community knows the meaning of some of those colloquial names written on palm leaf manuscripts.

As the researcher Iswar Chandra Nayak had done an earlier research prior to 2011 on the novel weaving technique of this craft[1], suddenly a curiosity sprouted in mind, is there any relation with the weaves of the *Dhalapathar Parda* with these clusters of digits? And this curiosity led the study to go forward.

Surprisingly when the clusters of single and double digits on the old palm leaf manuscripts are interpreted in a thought of relevance with the traditional door screen *Dhalapathar Parda*, it is concluded that the woven designs used in their age old traditional *sarees* and door screens have been saved secretly making

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others incomprehensible. It can be stated with certainty; even any textile technocrat cannot presume the cluster of rows of digits on the old palm leaf manuscripts represent various woven designs without hint of the origin of the palm leaf from a weaver family as the representations of the designs are in a pure unconventional form. Furthermore on some of the palm leaf manuscripts, one fourth of the repeats of designs are found encrypted. It indicates the weavers were so competent in their design weaving skill, from which during the weaving process they were able to transform those one fourth repeat of the design into complete one. On the other hand, the designs on the palm leaf manuscripts were made more incomprehensible for others or were secret saving method for them. Perhaps in other traditional weavers' community in India this type of unique secret saving method of their designs is rarely seen.

History of palm leaf manuscripts (*Talapatra pothi*) writing in Odisha

Palm leaf inscription is an ancient method of documentation traditionally used in South and Southeast Asia, dating back over 2,000 years[4]. This practice was prevalent in countries like India, Nepal, Sri Lanka, Indonesia, and Thailand, where inscriptions recorded religious texts, literature, historical events, medical treatises, and horoscopes. In Odisha, the use of palm leaves as writing material became widespread due to the availability of high-quality leaves and their durability in the tropical climate. Odisha's palm leaf manuscripts predominantly cover subjects like the Vedas, Puranas, Tantra, Ayurveda, Jyotisha Shastra, and poetry (Kavyas). These manuscripts typically consist of four parts: (1) *Mangala Charana* or invocation, (2) the main text, (3) the conclusion, and (4) *Pushpika* or the colophon, which provides details about the author, date, and place of composition. The colophon often includes information about the scribe's background, such as family, teachers, personal beliefs, and the socio-economic and political contexts of the time. The exact origin of palm leaf manuscripts in Odisha is challenging to pinpoint, but the earliest known autographed Buddhist manuscript, the *Avatamsakasutra*, dates back to A.D. 795, sent by the *Bhaumakara* king Subhakaradeva of Wu-Cha (Odisha) to the Chinese emperor Te-Tsang. The tradition of palm leaf manuscripts continued in Odisha until the 19th century, gaining recognition after the British occupation in 1803. British scholar Andrew Sterling was the first to document his collection of *pothis* in 1804. During this period, many valuable manuscripts were transferred to the India Office Library in London and the Asiatic Library in Calcutta[4,5].

In 1877, Babu Baidyanatha Pandita Rayabahadur established the *Oriya Talapatra Sahitya Udharana* Company to publish and distribute these manuscripts. Systematic efforts to collect and edit palm leaf manuscripts began in the early 20th century under the leadership of Artaballava Mohanty with the founding of the *Prachi Samiti* in 1924. In the post-independence era, organizations like the Odisha Sahitya Academy, the Department of Culture, Government of Odisha, and various universities have continued this work. Additionally, several foreign scholars have published manuscripts through research projects[5].

Objective of the study

The main rationale behind this study was to find out (i) what is the meaning of those clusters of rows of digits? (ii) For what, those stand for. (iii) What is the meaning of those colloquial names (iv) The relation between those colloquial names with the cluster of rows of digits and (v) The relation between them and *Dhalapathar Parda*.

Methodology

Experimental methods were used to convert cluster of digits into conventional weave representation form, to develop them into graph design and to weave of the design on a traditional *Dhalapathar Parda* loom.

The study was carried out at the village Dhalapathar located at Lattitude $20^0 12' 23.1''$N Longitude $85^0 20' 38.4''$E, beside Khordha-Kantilo Road, Po-Kalapathar, Pin-754009, Block- Bolagarh, Dist-Khordha, State-Odisha of traditional weavers of *Dhalapathar parda.* The worship rooms of some of the families of the weavers were searched and some palm leaf manuscripts were collected for the study. As the manuscripts were very old and not under the proper care of family members, some of them were torn partially and the encrypted portions were lost. So from them, eight palm leaf manuscripts were selected for the study.

The specifications of all the eight palm leaf manuscripts selected named as *pothi* No. 1A to *pothi* No 8B are given in the Table 1. The mark A and B assigned with each *pothi* No. represents both sides of the palm leaf manuscript respectively. The images of

palm leaf manuscripts taken by camera from 1A to 4B are Figure 1 and the images of palm leaf manuscripts from 5A to 8B are Figure 2.

The photographs of all the sixteen sides of the palm leaf manuscripts were taken using Sony Alpha 7 IV full-frame hybrid camera. The inscriptions over the palm leaves were not decipherable, for which the photographs had gone through digital image processing method to bring back the attenuated image into perceptible form.

Table 1 — Specification of the palm leaf manuscripts taken for study

Sl. No.	*Pothi* No.	Length (cm)	Width (cm)	Remarks
1	1A	26.00	2.50-3.00	
2	1B	26.00	2.50-3.00	
3	2A	26.50	3.00-2.50	
4	2B	26.50	3.00-2.50	
5	3A	25.00	2.50-3.00	
6	3B	25.00	2.50-3.00	
7	4A	25.40	2.50-3.00	
8	4B	25.40	2.50-3.00	
9	5A	26.80	3.50	
10	5B	26.80	3.50	
11	6A	25.00	2.50	Found torn
12	6B	25.00	2.50	Found torn
13	7A	29.20	3.20-3.00	
14	7B	29.20	3.20-3.00	
15	8A	26.20	3.00-3.20	
16	8B	26.20	3.00-3.20	

Fig. 1 — Palm leaf manuscripts taken for study

Development of designs into graph paper

From the eight palm leafs, the designs numerically encrypted on two palm leaf manuscripts numbered as 1 and 8 have been developed both on graph paper and then in cloth. In the first step, the cluster of digits in Odia language on the palm leaf manuscripts were noted down on plain paper and then that cluster of digits were translated into English. After that, the digits were arranged in the conventional[6] way of representation of the repeat of design and from that the repeat of the design was represented on the 10×10 graph paper. By seeing the designs on graph paper, the skilled weaver wove that into the cloth.

In the images, the 1A stands for one side of the palm leaf manuscripts No. 1 and 1B represents the other side of the same palm leaf and likewise the others. The detailed study of the cluster of rows of digits assigned with the colloquial name *Satabadia hans* means "seven sticks swan" at the right side of the palm leaf manuscript No 1A is (Fig. 3). The digits in Odia language and the colloquial name have been mentioned in English just below the cluster of rows of digits which is in the form of unconventional way of representation of weave. The conventional way of representation of the said repeat of woven design from that cluster of rows has been shown just below the unconventional representation in the figure. Then below it, the hidden design is shown on graph paper and the woven design on cloth.

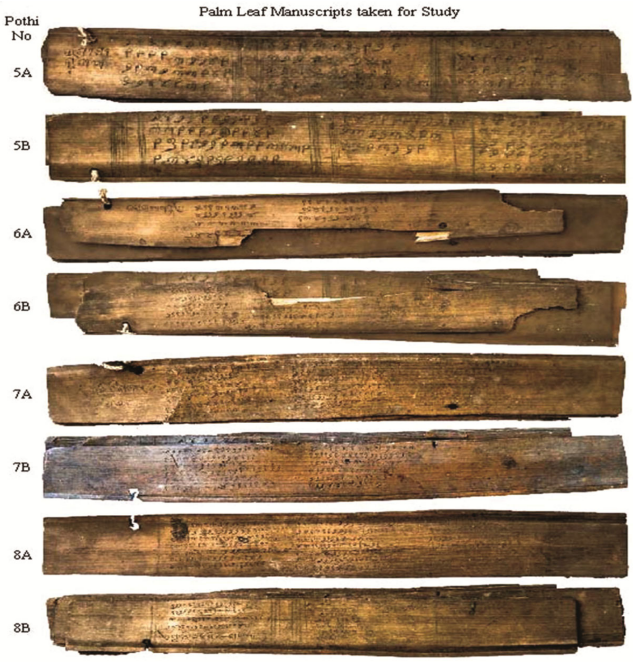

Fig. 2 — Palm leaf manuscripts taken for study

Likewise in the (Fig. 4) the numerical representation of design only from the side A of the palm leaf No. 8 (8A) have been represented respectively which produces a traditional floral design on the graph paper. The same floral design from graph paper has been woven into cloth which is shown sequentially below one by one.

Weaving

The weaving of cloth has been carried out on a frame loom with unique *Chiari* shedding technique by a skilled weaver in the weaving of *Dhalapathar Parda* with the raw materials and technical specifications[7] for the cloth as mentioned in Table 2.

Results

During the study it was found that those clusters of rows of digits on each side of the *Talapatra Pothi* are the representation of weaves of beautiful traditional designs like swan, floral designs, fish, Konark sun temple wheel, small flower etc. in an unconventional way and incomprehensible form. And there are either one, two or maximum three designs saved on each *Talapatra Pothi.*

The cluster of digits are seen little symmetrical as shown in each Palm leaf manuscripts in the Figure 3 and Figure 4. The digits are seen in a row as a very large value digit as they are written in a sequential order without any punctuation mark in between

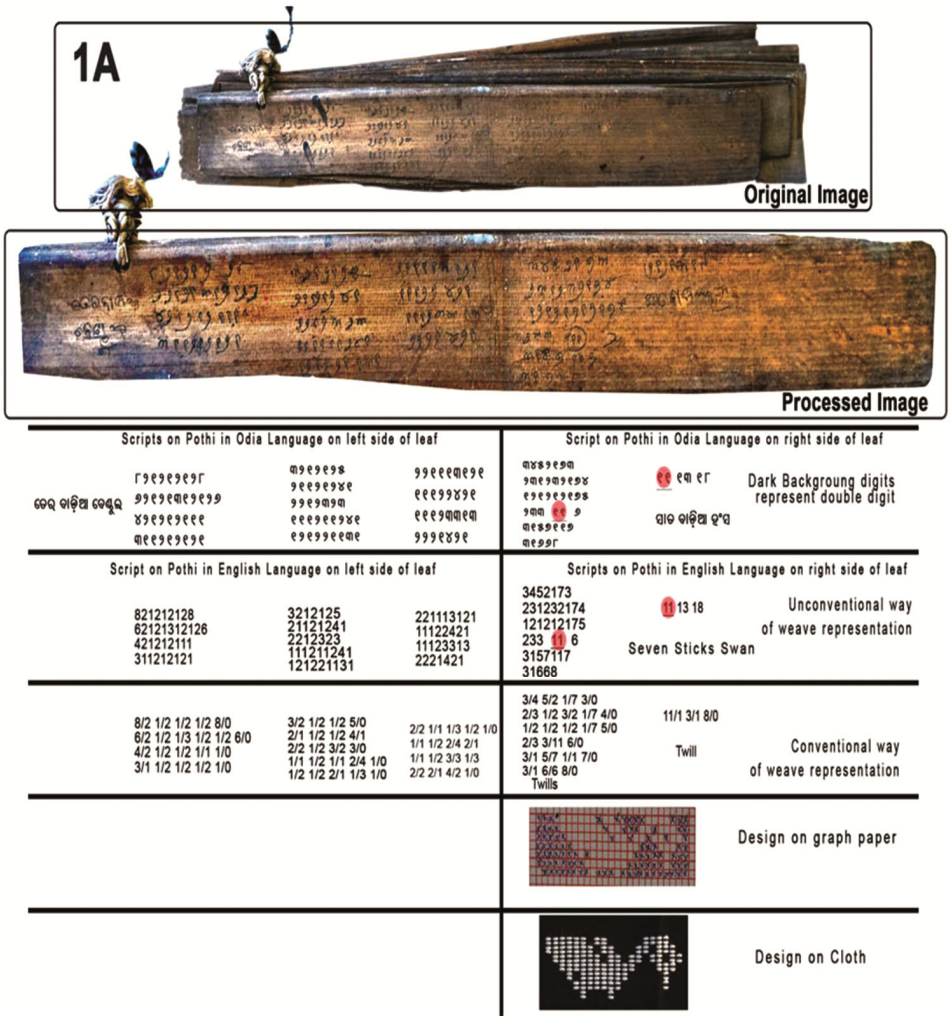

Fig. 3 — Woven design development sequence from cluster of digits

Table 2 — Raw materials and technical specifications used for cloth

Size (cm)	Warp	Weft	Extra weft	Ends/cm	Picks/cm	Extra picks/cm
100×100	2/80^s mercerized cotton	2/80^s mercerized cotton (2 ply)	2/80^s mercerized cotton (2 ply)	26	18 (2 ply)	8 (2 ply)

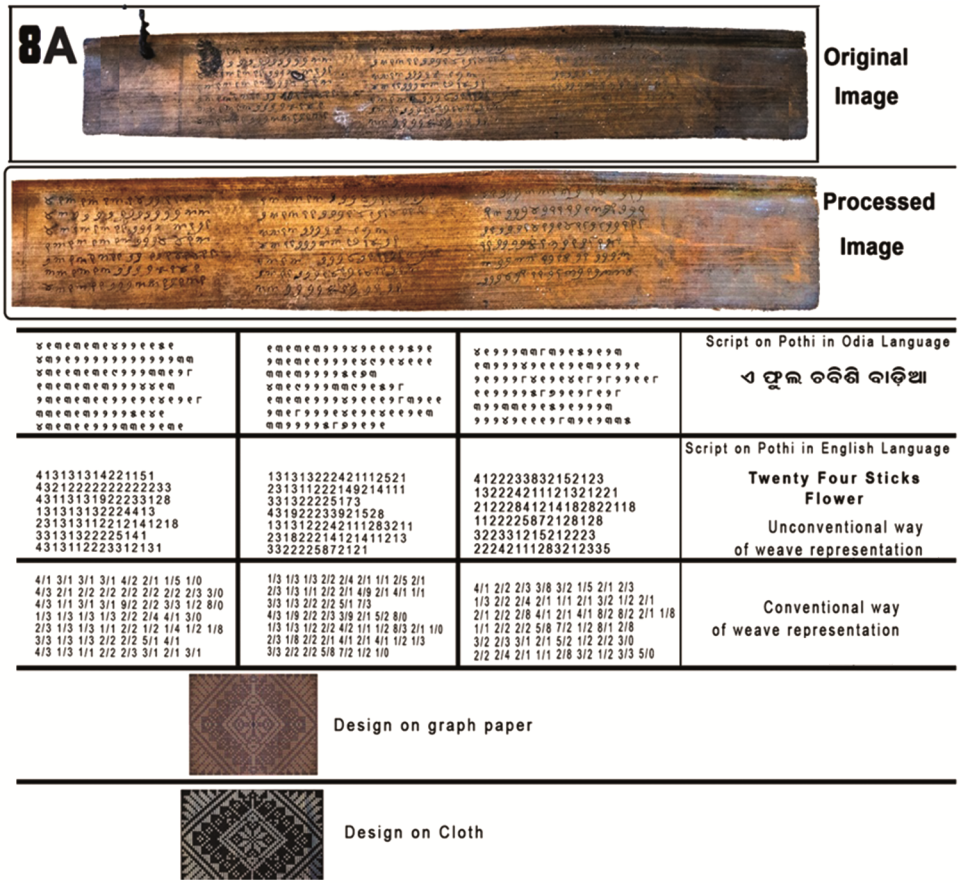

Fig. 4 — Woven design development sequence from cluster of digits

them. Some rows of digits are of longer width where as some are small but the minimum numbers of digits found in a row is 3 whereas maximum numbers of digits are seen in a row is 24. The maximum number of rows in a cluster of digits is 8. As the digits are hand written with the help of metal stylus they are also not so uniform. Even in some palm leaf manuscripts, cluster of rows are separated by a perpendicular line drawn between them.

Discussion

The representation of clusters of rows of digits on each side of the *Talapatra Pothi* are written in such a style that anyone can read it as a large valued digit. Even for a person from the textile background without relating to the presence of such *Pothi* in *Dhalapathar Parda* weaver family, it is almost impossible to guess that these might be representations of woven designs.

It is interesting to note that when a double digit number is required to represent in a cluster of digits for a design, that double digit has been encircled with a line which makes them comprehensible but making others more confusing as shown on the right side of the *Pothi* 1A for the swan design in Figure 4. The words which are found nearby the cluster of digits are the names of the design which that cluster represents and the meaning of words are the name of the animals, birds, flowers, certain cultural motifs seen in the *Dhalapathar Parda*.

Conclusion

The success of this study paved a way to explore the beautiful traditional designs which were hidden by their parents and grandparents in their home in the palm leaf manuscripts being worshipped in their worship room. As a result now many weavers are using successfully those designs in the diversified product of *Dhalapathar Parda* like *Saree.* If this study had been done earlier, large verities of traditional designs may have been retrieved from all the weavers' homes as most of them have been fully destroyed unknowingly.

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Conflict of Interest

We hereby declare that there is no competing or conflict of interest within any parties on this study.

Author Contributions

ICN contributed to the paper in conceptualization, formal analysis, supervision, self-funding, original draft writing and editing. SB contributed to the paper in conceptualization, resources, self-funding, supervision and review.

Prior Informed Consent

Prior informed consent was obtained from all owners.

Data Availability

The author confirms that all data generated or analyzed during this study are included in this published article.

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