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Craft Study and Product Design Interventions: Soapstone Craft Cluster of Dhakotha Area in Kendujhar District of Odisha, India

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Abstract
This paper covers the dynamics of Soapstone Craft of Dhakotha. Broadly this paper can be divided into two parts, i.e., crafts study part and product design intervention part. The crafts study part includes- research methods, craft introduction, crafts location, craft history, available raw materials, craftsmen and existing skill sets, tools under use, involved craftsmanship processes, existing product ranges etc. On the basis of understandings developed during crafts study, this researcher had explored different market specific and end-user focused product design possibilities. The product design intervention part includes different product design interventions and collections developed by researcher with a holistic approach. There are two different soapstone clusters, with different skill sets, i.e., Soapstone carving cluster and Soapstone ପତ୍ଥର କୁଣ୍ଡ or *Patthar Kundo* cluster; are practicing in same geographical area, so studying and exploring interventions in joint mode was an interesting experience for this researcher. This craft study cum design intervention initiative was conducted during 2010-2011 by this author.

Keywords: *Stone Craft of India, Craftsmanship, Crafts & Design, Craft Excellence, Carving Crafts*

1. Introduction

There are two different soapstone craft forms exist in Dhakotha, i.e., ପତ୍ଥର କୁଣ୍ଡ or *Pather Kundo* Craft and Soapstone Craving Craft; and there is a number of approximately 450 soapstone craftsmen are active. Out of approximately 500 soapstone craftsmen, around 400 craftsmen are involved in stone carving or statue making craft; while another pool of approximately 50 craftsmen are involved in traditional *Pather Kundo* or stone turning craft. In *Patthar Kundo* craft, different forms of utensils are being crafted, while in soapstone carving craft, highly detailed soapstone statue crafting takes place. Skill handed craftsmen are spread in different nearby villages, named as- Dhakotha, Bhalukuma, Badaekatali, Masapar, Nahaguna, Amaranga, Jalananda, Kundakote, Tobhakud, Santoshpur and Arjunbanya. Dhakotha is a Gram Panchayat, which is geographically located under the administrative territories of Anandapur subdivision of Kendujhar district[i], with an administrative strength of 10 villages and 1508 households[ii]. Here, this is significant to write, that Kendujhar is also known as Keonjhar in different documents- but, both indicate the same geographical district area, within Odisha state of India.

2. Research Methodology

This craft study is based over different field visits of Dhakotha Soapstone Craft Cluster, made by this researcher during the calendar year of 2010-2011. All basic information, compiled in this paper, is based over primary data collection, which was received by this him through field observations, meetings with different individual craftsmen, questionnaire and discussion sessions etc. Further, these primary data findings were supplemented by secondary and tertiary data sources- on an, when and where required basis, to clarify and supplement primary data, during paper compilation phase.

3. Craft Locations, Climatic Conditions

3.1. Distribution of Craft Clusters and Geographical Location

The Soapstone craft cluster is spread in different locations, within Dhakotha area, like- Bhalukuma, Badaekatali, Masapar, Nahaguna, Amaranga, Jalananda, Kundakote, Tobhakud, Santoshpur and Arjunbanya. Dhakotha soapstone craft cluster is surrounded by beautiful nature and situated on the bank of Baitarini River. This river flows in the southern direction of this village. Dhakotha is a village as well as a gram panchayat[iii], under the political subdivision of Anandapur in Kendujhar district of Odisha. Please refer figure-1 for Dhakotha's location identification over the world map- not to be scaled. According to an online elevation tool, veloroutes[iv], Dhakotha is located at 21.3237400° North and 86.0840499° East, with an average elevation of 62 meters, over the globe. Different landmarks within Dhakotha village area, are displayed in figure-2.

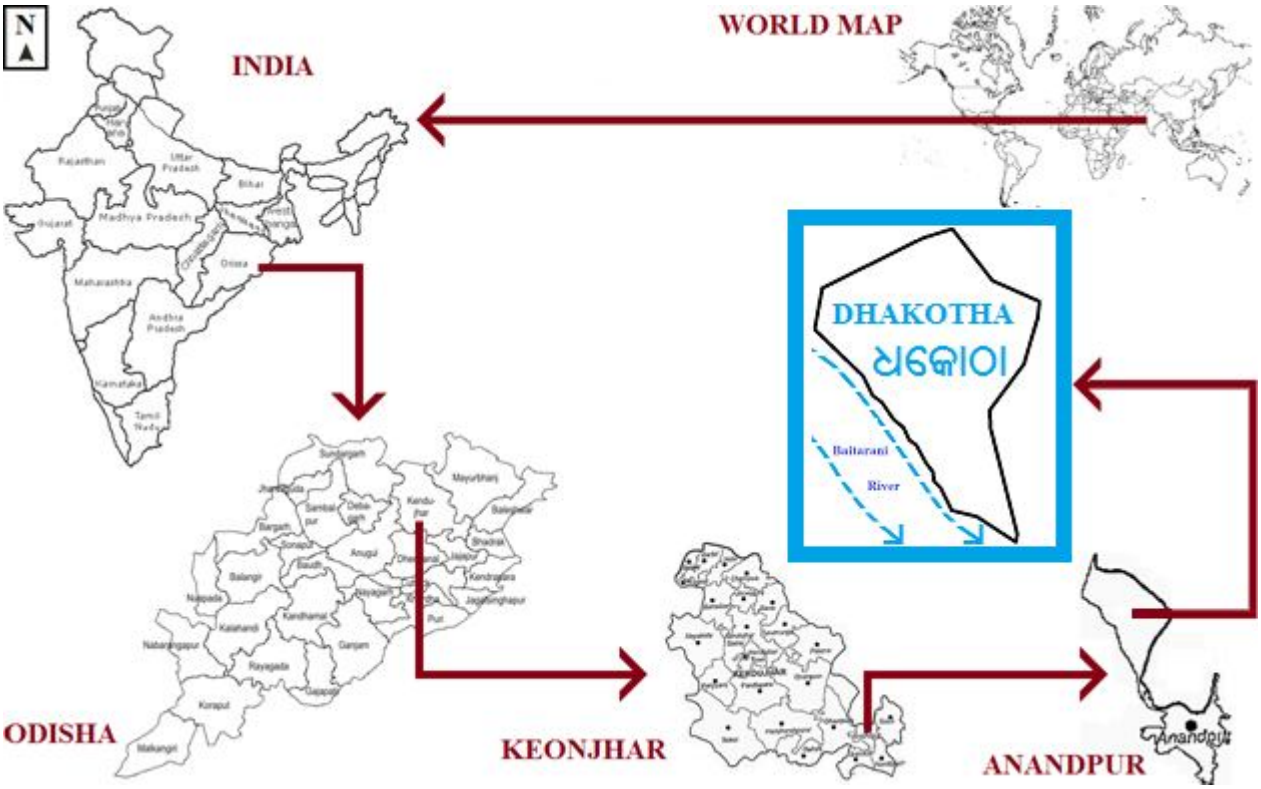


Figure-1: Location of Dhakotha over world map (Illustration by author)

3.1.1. How To Reach Dhakotha

Dhakotha is well connected with the state capital, Bhubaneswar, by roadways and is around 147 km away, in North direction; while the district headquarters is 75 km away from Dhakotha. Anandapur is the nearest city, which is approximately 15 km away from this stone-craft location. The state capital Bhubaneswar is well connected through Indian Railways, along with different domestic and international Airlines. Nearest railway station is Kendujhar Railways Station[v], which is approachable through local roadways. Among other nearby cities of Odisha Dhakotha is approximately 65 km away from Karanjia, while Jajpur is approximately 45 km away and Basudebpur is 65 km away and these locations are connected through road. Dhakotha is not directly connected with any railway station.

3.2. Climatic Conditions

According to online weather search tool- AccuWeather[vi], the temperature of Dhakotha was - highest 91° Fahrenheit and lowest 51° Fahrenheit on 31st December' 2015; highest 97° Fahrenheit and lowest 75° Fahrenheit on 31st March' 2016; highest 91° Fahrenheit and lowest 80° Fahrenheit on 30th June' 2016; highest 90° Fahrenheit and lowest 77° Fahrenheit on 30th September' 2016.

3.3. Area Identification

3.3.1. Some Local Landmarks in Dhakotha

Some of locally available landmarks, found within the Dhakotha village area, are displayed in figure-2. These local signage may be treated as local landmarks- as on January' 2011. In this figure, 'A' is the image of Dhakotha bus stop; 'B' is the image of Dhakotha Jubak Sangha's sign board; 'C' is the image of the road construction department's site specification details; and 'D' is the image of a school sign board.

Figure-2: (A.) Dhakotha bus stop; (B, C & D) Different landmarks within Dhakotha village area

3.3.2. Postal Index Number of Dhakotha

There is a postal index number or PIN code- "758015", allotted to Dhakotha, by India Post[vii] of Ministry of Communication, Government of India. There is a branch post office established here, which comes under the postal-taluka of Ananadapur, post-division of Keonjhar and postal-region of Sambalpur, in Orissa postal circle of India Post.

3.3.3. Vehicle Registration Number of Dhakotha

Personal and commercial vehicles belonging to this location can be identified through "OR-09-xxxx" or "OD-09-xxxx" series of vehicle registration numbers.

3.3.4. Subscriber Trunk Dialing Code of Dhakotha

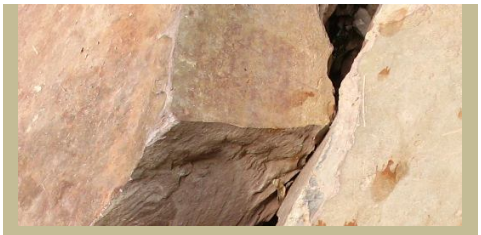
The Subscriber Trunk Dialing Code or STD code for Anandapur area is "06731", allotted by the Bharat Sanchar Nigam Limited[viii] of Government of India.

4. Craft History

The soapstone carving-craft, which produces, statues and murals, is under practice since last 55-60 years in Dhakotha area; while the *Patthar Kundo* craft is under practice since unknown history with more than thousands of years- as claimed by the craft community members[ix]. Around 50 craftsmen are practicing *Patthar Kundo* craft today, as their family based hereditary craft and professional tradition[x] at different locations in Dhakotha area, since unknown era. Here, the term- 'Dhakotha', includes- Bhalukuma, Badaekatali, Masapar, Nahaguna, Amaranga, Jalananda, Kundakote, Tobhakud, Santoshpur and Arjunbanya villeges of Kendujhar district of Odisha.

5. Raw Materials

Dhakotha of Kedujhar district is surrounded by different natural soapstone mines[xi]. Soapstone is a metamorphic rock[xii]. Chemical composition of soapstone includes talk, mica, chlorite, carbonate, amphibole and other natural minerals. Among physical qualities, soapstone is a- nonporous, non-absorbent, low conductor of electricity, heat resistant, higher specific heat capacity, resistant to acid and alkaline substances. Due to higher amount of talk, as its basic composition, soapstone displays, soft and craft-friendly behavior[xiii].

SN	Raw Soapstone	Qualities	Images
01.	**Blackish Grey Soapstone**	Black and grey shades. Available in different shades between light grey to black gradations. Suitable raw material for carving and *Patthar Kundo*.	
02.	**Pink Soapstone**	Whitish-pink in color. Available in different shades in combination of white and pink with visible grain marks. Suitable raw material for carving and *Patthar Kundo*.	
03.	**Orange Soapstone**	Orange in color. Available in different shades in combination of white and orange with visible grain marks. Suitable raw material for carving and *Patthar Kundo*.	
04.	**Light Green Soapstone**	Visually light green in color composition. Visible grain marks available on surface. Suitable raw material for carving and *Patthar Kundo*.	

05.	**Dark Green Soapstone**	Visually dark green with blackish tone in color composition. Grain marks are difficult to identify. Suitable raw material for carving and *Patthar Kundo*.	
06.	**Soft Granite**	Visually dark grey with blackish tone in color composition. Grain marks are difficult to identify. Harder than soapstone. Not suitable for carving, but Ideal for *Patthar Kundo*.	

Table-1: Raw soapstone used by craftsmen in Dhakotha (Photography and Illustration by Author)

These qualities are defining soapstone, as a craft friendly material. In Dhakotha craft clusters[xiv], blackish grey, pink, orange, light green and dark green colored soapstone are used for craftsmanship purposes. As, there are several soapstone mines available around Dhakotha area, which is situated in Kendujhar district[xv], so, this feature makes Dhakotha craft cluster, self-dependent regarding continuous raw material availability. However to fulfill specific requirements placed by clients, some other quality of stones are also being procured from other parts of country. For example, the raw Soft Granite is being procured from Chennai[xvi] of Tamil Nadu state.

6. Available Craft Skill Sets in Dhakotha

There is a total number of approximately 450 natural soapstone craftsmen are active in crafts practices in and around Dhakotha village. Other surrounding villages, where soapstone craft exercise as professional handcraft[xvii]- which in indulged in the mass production at professional level, through the skillful craft inputs from local pool of craftsmen, are- Bhalukuma, Badaekatali, Masapar, Nahaguna, Amaranga, Jalananda, Kundakote, Tobhakud, Santoshpur and Arjunbanya. According to the nature of available soap-craft forms, craftsmanship and skill set of craftsmen, craftsmen of Dhakotha area could be classified into two sub-classes, i.e., Soapstone Turning and Soapstone carving.

Figure-3: Classification of different soapstone craft skill-sets available in Dhakotha (Classification by author)

6.1. Soapstone Craft-I: Patthar Kundo Craft

There are approximately 50 craftsmen of Dhakotha area, involved in the ପତ୍ଥର କୁଣ୍ଡ or *Patthar Kundo* or Soapstone Turning Craft. Majority of these craftsmen are belonging to different ancient tribes. Most of them are carrying soapstone turning craft, as their ancestral craft profession, since decades, with unknown era of actual origin of this craft in Dhakotha area. The wooden, handmade wooden lathe system is developed by the craft community members themselves and being used for craftsmanship purposes.

Figure-4: Traditional soapstone turning process of Dhakotha cluster (Photography by author)

This turning process requires a set of two craftsmen to perform craftsmanship. The first craftsman holds the pulling rope in his both hands and perform axis rolling in clockwise and in anticlockwise direction; while the another craftsman preforms stone carving process, with the help of different carving tools.

6.1.1. Components of Patthar Kundo Mechanism

The wooden lathe mechanism is traditional and primitive in its form of installation, functional mechanism and origin, as claimed by the craft community members[xviii]. In local language, this integrated mechanism is called as- '*Patthar Kundo*'. Please refer figure-4 for understanding the *Patthar Kundo* mechanism, which is an excellent example of Indian, Integrated Sustainable System Design Approach[xix,xx]. The mechanism of this traditional mechanical system, with Indian origin could be subdivided into 05 different major components, as displayed in table-2.

SN	Components	Component Details with Uses	Images
01.	**Lathe Bases**	A pair of two differently notched and grooved hard wood blocks. These blocks are getting fixed into sand base of clay floor. 'Head-1' carries iron nail, while 'Head-2' fits with neck groove of Axis.	

02.	**Turning Axis Bar**	A hard wood, cylindrical bar with a head and round iron tail. This tool is used to fix raw stone block over its head component, using melted *Kulsum* glue. Axis end with neck groove get glued with raw stone.	
03.	**Turning Base**	A "Y" shaped wooden structure. Helps turner to make 'balance of tool', during turning process under progression.	
04.	**Turning Tool**	A turning tool, made up of sharp-tip iron, with rounded wooden handle. Carve the soapstone block, during turning process.	
05.	**A. Pulling Rope & B. Leg Stopper**	Pulling rope helps to turn the 'turning axis bar' in clockwise and anticlockwise directions, and allows soapstone turning process. The 'Leg Stopper', supports rope-pulling craftsperson to maintain equal axis rolling speed.	

Table-2: Common components of a *Pattah Kundo* Mechanism (Illustrated by Author)

6.1.2. Patthar Kundo Craftsmanship Process

6.1.2.1. Unique Features of Patthar Kundo System

Here, this is significant to understand the traditional soapstone turning form or *Patthar Kundo*- as this primitive form of turning system is rare; which is quite different then the contemporary mini turning machines[xxi], which is under practice with wider acceptance in manufacturing sectors all across the world today and used for stone, wood and metal turning requirements. The most appealing and unique feature, noticed by this researcher in *Patthar Kundo* system is, 'zero raw material requirement for head griping purposes'. Usually today's contemporary turning process machines require a countable amount of pre-sized head-jaw grips to perform its turning process. However, these systems are faster, accurate, and precise with advanced technology, but still the traditional mechanism of *Patthar Kundo* proves its precedence over them, in terms of less raw material wastages. This indigenous technical process can be visually understood through figure-6 (F) to 6(M).

Among other unique features of *Patthar Kundo* system- comparatively lower installation cost, portability, simplicity in operational mechanism, re-installable and component wise repairable wooden structure. These features are defining, *Patthar Kundo* as a unique system. The stage wise process of *Patthar Kundo* craft could be understood through the visual illustration, displayed in figure-6.

6.1.2.2. An Essential Pre-Process

As the soapstone turning craft's mechanism is a primitive form of turning craft; so, edge trimming, before turning process was observed by this researcher, as a common and essential pre-required process. This process minimizes the requirement of human generated mechanical force for turning; and also reduces the rate of product damages during *Patthat Kundo* craftsmanship, when under progression. In this process, craftsmen, pre-assess the dimensional requirements of raw material, for the subjected object- under production. Now, they cut and shape the required cubical block of soapstone, by keeping some extra margin of around ½ inch at its every side, to reduce the rate of any unexpected edge chippings and subjected object's damages during craftsmanship. The trimming process of extra edges, takes place now, through careful chiseling. Some of the chiseled, pre-turned forms are displayed in figure-5.

Figure-5: Some chiseled but pre-turned soapstone forms of Dhakotha cluster (Photography by author)

6.1.2.3. Different Craftsmanship Stages of Traditional Patthar Kundo Craft

The *Patthar Kundo* craft is a phase wise craft technique. On the basis of field studies and discussions with the crafts community members, this researcher divided the entire process into 18 visual phases, as displayed in figure-6. These 18 stages cover a sequence, which starts from the initial phase of raw soapstone procurement from nearby mines, to the final product; and displays different phases of craftsmanship, which involves different set of tools, skill-sets and processes.

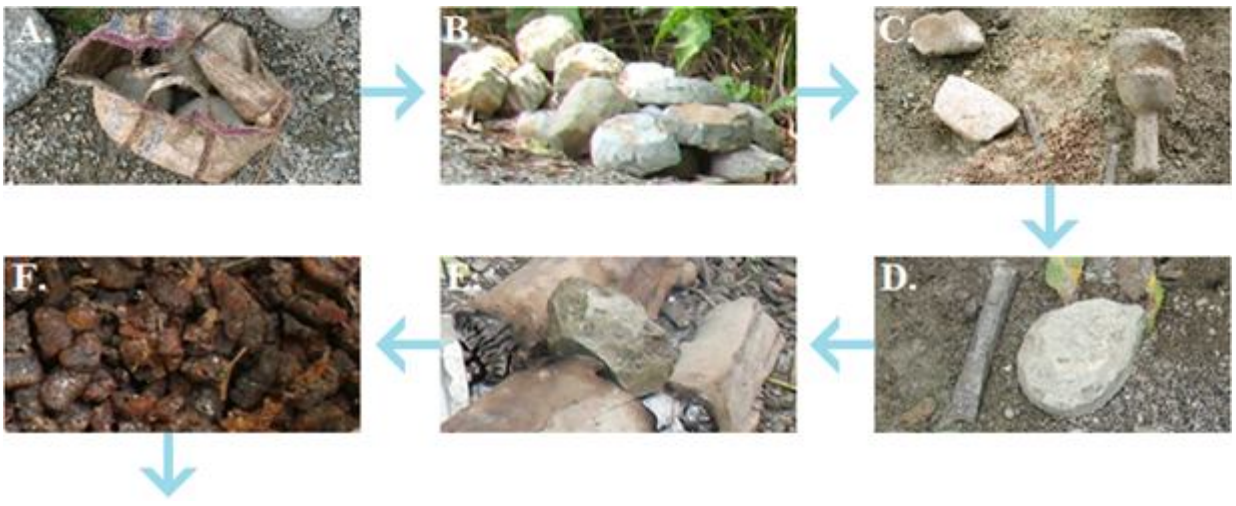


Figure-6: Different stages of traditional soapstone turning or *Patthar Kundo* craft (Photography and illustration by author)

6.1.2.3.1. Different stages, displayed in figure-6, could be understood as follows:
6.1.2.3.1.1. Stage-A: Procure soapstone blocks, from nearby mines.
6.1.2.3.1.2. Stage-B: Soapstone storage near craftsmen house.
6.1.2.3.1.3. Stage-C: Stone Sizing through chisel.
6.1.2.3.1.4. Stage-D: Outer stone-shape formation through chiseling.
6.1.2.3.1.5. Stage-E: Heating water cleaned, shaped-stone, before *Kulsum* glue application.
6.1.2.3.1.6. Stage-F: Display of raw and dry *Kulsum* glue. This glue is collected from locally available *Kulsum* or *Kusum* Trees[xxii]. Botanical name of this tree is- *Schleichera Oleosa*, and belongs to the family of *Sapindaceae*. These trees are available in Dhkotha's surrounding nature in abundance.
6.1.2.3.1.7. Stage-G: The *Kulsum* glue application over turning-bar head.
6.1.2.3.1.8. Stage-H: Pre-turning heating, to achieve stronger glue bounding, between soapstone and turning-bar's head end.
6.1.2.3.1.9. Stage-I: Central-alignment process of subjected stone over turning-bar head.
6.1.2.3.1.10. Stage-J: Turning of outer side of *Kulsum* glued soapstone.
6.1.2.3.1.11. Stage-K: Turning of inner side of *Kulsum* glued soapstone.
6.1.2.3.1.12. Stage-L: Post-turning heating process, to un-glue the turned form.
6.1.2.3.1.13. Stage-M: An unglued soapstone form.

6.1.2.3.1.14. Stage-N: A post-turned soapstone form, forwarded for hand-cutting and finishing stage.
6.1.2.3.1.15. Stage-O: Hand-cutting and finishing process under progression.
6.1.2.3.1.16. Stage-P: End of hand-cutting and finishing process.
6.1.2.3.1.17. Stage-Q: A stack of finished products.
6.1.2.3.1.18. Stage-R: Final product. [Process concluded]

6.2. Soapstone Craft-II: Carving Craft

Soapstone carving is respectively a newer soapstone craft in Dhakotha area with around 55-60 year's existence in this area. Please refer figure-7. Approximately 400 skilled and semi-skilled craftspeople of Dhakotha area are involved in this craft.

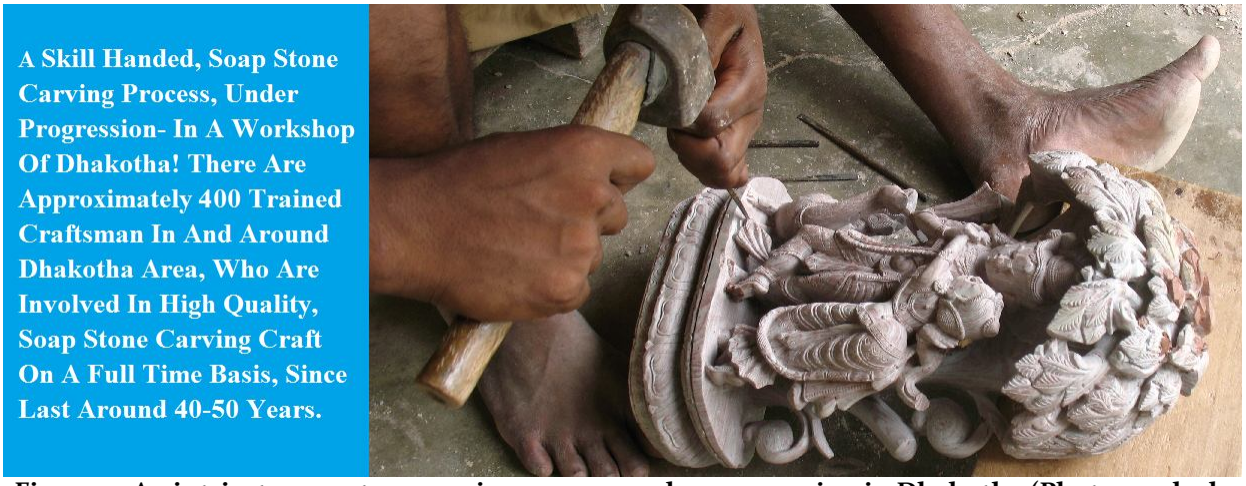
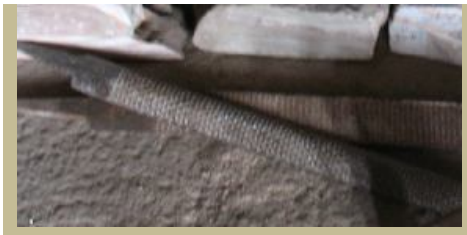


Figure-7: An intricate soapstone carving process under progression in Dhakotha (Photography by author)

6.2.1. Tools of Soapstone Carving Craft

There are different tools are being used for soapstone carving craft. Among tools- chisel, hammer, mallet, *Lakdi Pidha*, *Jute Chatti* etc. are commonly used by craftsmen for carving soapstone statues and other carved products. Some of these tools are displayed in table-3.

SN	Tools	Uses	Images
01.	**Chisels**	Carves soapstone. Available with different cutting-tip variations, like: 's', 'ʔ', 'ɿ', '>', '␣', 'Π', 'L', 'U', 'ᴗ', 'o', '–', 'ʃ' and '◊' etc.	
02.	**Hammer**	Helps to provide additional cutting-force to chisels, during thick stone block, during initial phase of stone carving.	

03.	**Electricity Operated Stone Cutter**	Cutting extra outer edges of soapstone blocks.	
04.	***Jute Chatti***	Provide cushioning to half-made stone products, during further craftsmanship processes and prevent sharp edged, stone chippings- as soapstone is a soft natured stone.	
05.	***Lakdi Pidha***	Provides angular support and cushioning to the under process stone products and prevent their sharp edges from unexpected chippings, during craftsmanship process.	
06.	**Filers**	Provides cleaning of un-useful, thick, outer surface of soapstone blocks during carving process of craftsmanship. Filers are available with different forms, i.e. flat, round, semi-circular, triangular etc.	
07.	**Chisel Sharpener**	Provides sharpening to the blunt chisel tips, used for carving different soapstone products.	
08.	**Tool Box**	Wooden tool box keeps small and fine soapstone carving chisels. Also protects craftsmen from unexpected skin-cuts and other accidents, due to ignorance towards used tools.	
09.	**Steel Scale & Pencil**	In combination, both of these tools provide dimensioning and marking facilities, which help craftspeople to achieve standardized production of end-products.	

10.	**Cutting Blade & Compass**	Cutting blade helps to cut respectively thin soapstone slabs, while, compass helps to mark circular forms over the even and semi-even soapstone surfaces.	
11.	**L-Scale**	An iron tool. To mark right angle and straight lines over the even and uneven soapstone surfaces with at least one even edge.	

Table-3: Common tools used by carving craftsmen in Dhakotha (Photography and Illustration by Author)

6.2.2. Soapstone Carving Craftsmanship Process

6.2.2.1. Unique Features of Soapstone Carving Craft

Soapstone carving craft of Dhakotha is unique in its highly detailed and precise sculptural qualities. Mostly, statues of different Hindu gods, goddesses for religious purposes; architectural decorative and household daily-utility based soapstone products are being crafted by the carving craft community members. The aesthetical richness is a common element in entire range of the carved products, was noticed by this researcher, during his craft studies.

6.2.2.2. Different Craftsmanship Stages of Soapstone Carving Craft

In Dhakotha area, this craft is under existence since last around 55-60 years. So, this craft form may be treated as a respectively newer craft form, with respect of traditional *Patthar Kundo* craft form. The soapstone carving craft is a phase wise craftsmanship process. Different involved phases are illustrated in figure-8. As illustrated in figure-8, different phase wise craftsmanship process is displayed in a number of 12 different stages; these stages are marked in this figure, as- 8(A) to 8(L).

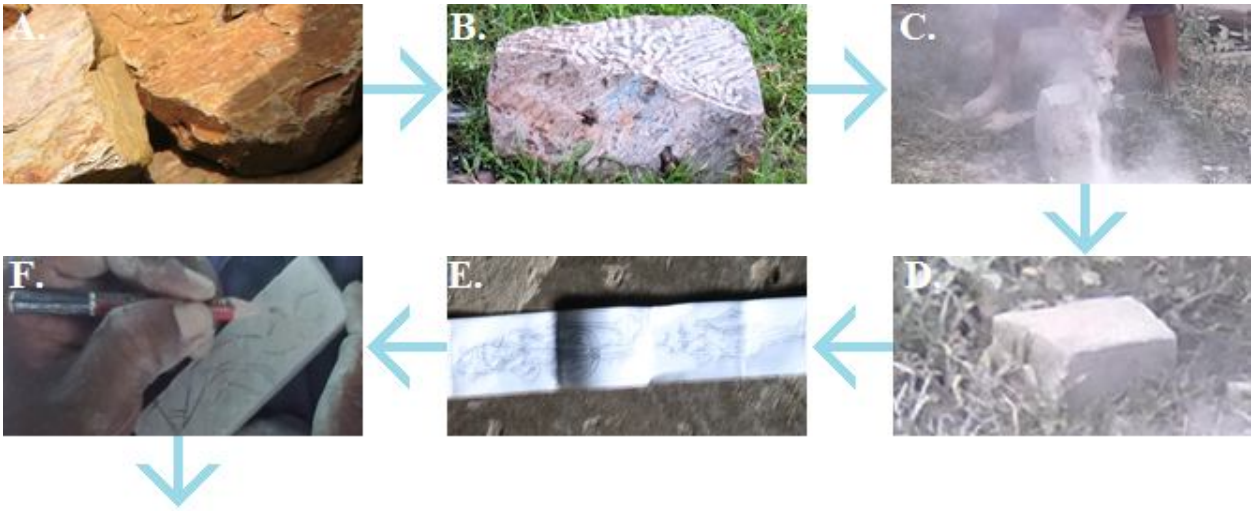


Figure-8: Different stages involved in soapstone carving craft (Photography and illustration by author)

6.2.2.2.1. The phase wise process details can be understood through descriptions given below:
6.2.2.2.1.1. Stage-A: Raw soapstone
6.2.2.2.1.2. Stage-B: Primary stone cutting with the help of chisel and hammer. This phase provides a semi-finished stone block, which is ready for further craftsmanship processes.
6.2.2.2.1.3. Stage-C: Edge cutting with the help of hand operated electricity stone cutter to receive a uniformly surfaced stone block.
6.2.2.2.1.4. Stage-D: A product dimension specific stone block.
6.2.2.2.1.5. Stage-E: Conceptual line-drawing on plain paper.
6.2.2.2.1.6. Stage-F: Finalized drawing gets drawn over the stone block received from '*Stage-D'*, with the help of erasable pencils, i.e., HB pencil.
6.2.2.2.1.7. Stage-G: As the HB pencil marks might erase during the soapstone chiseling process, so, craftsmen convert, final pencil drawn line marks, into the surface-etched line marks, with the help of a fine tipped chisel. These line marks sustains over the surface for longer duration and provide significant referential supports during further chiseling processes.
6.2.2.2.1.8. Stage-H: Chiseling process under progression.
6.2.2.2.1.9. Stage-I: A post chiseled soapstone form.
6.2.2.2.1.10. Stage-J: Fine carving under progression, with the help of fine chisels.
6.2.2.2.1.11. Stage-K: Application of sand paper over a chiseled surface, to achieve final finishing.
6.2.2.2.1.12. Stage-L: Final products. [Process concluded]

7. Existing Product Ranges

Based on the uses of above discussed tools, raw materials and skill sets of craftspeople, there are different set of product ranges are being developed in Dhokotha soapstone craft cluster. The entire range of soapstone products can be classified into two sub-sections, i.e. Soapstone Carved Products, and Household Utility Products. These sub-sections are also further sub-divided into two groups of product ranges. Please refer figure-9, for detailed classification.

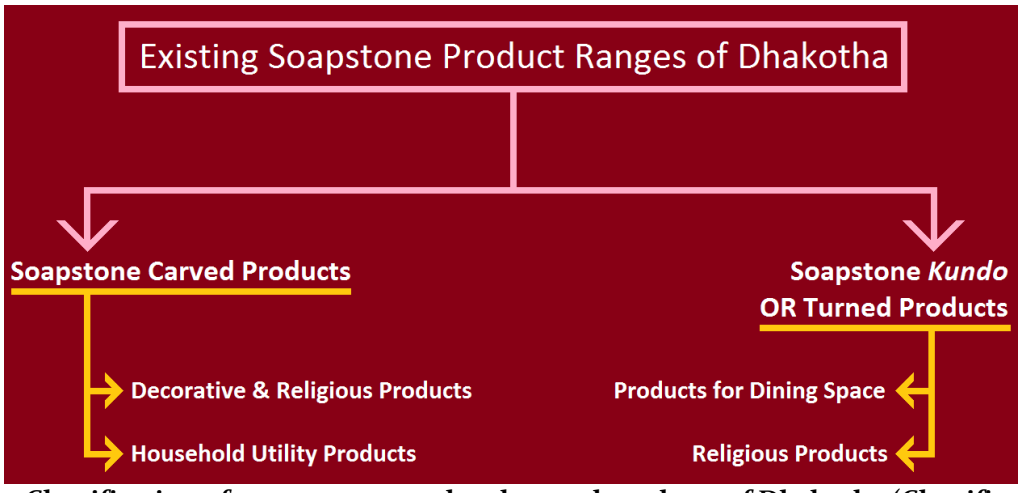


Figure-9: Classification of soapstone carved and turned products of Dhakotha (Classification by author)

7.1. Soapstone Carved Products

As observed by this researcher, the skill sets of soapstone craftsmanship involved in production of soapstone products may be considered as excellent in its professional level; due to the carving intricacy, precision and fine detailing with accuracy in three-dimensional representation of the subject etc.

7.1.1. Decorative and Religious Products for Living Spaces

During field visits, this researcher came across with some finished decorative and religious products with mythological[xxiii] importance. Some of them are displayed in figure-10. This figure carries a number of 05 different products which are marked as- (A) *Yakshini*[xxiv]- this is a decorative product with 12 inch height; (B.) *Lord Ganesh on Rat Pulling Rath*[xxv]- this is a religious product with 16 inch height and 08 inch length; (C.) *Sheshnaag*[xxvi]- this is a religious product, with 14 inch height; (D.) *Airavat*[xxvii]- this is a decorative cum religious product of 06 inch height and 08 inch length; and (E.) *Lord Ganesh*[xxviii]- this is a religious product with 08 inch height and length each; etc. It had been observed that these products were majorly developed for indoor living spaces, according to the contemporary end-user's lifestyles.

Figure-10: Few decorative and religious products of Dhakotha (Photography & illustration by author)

7.1.2. Utility Products for Living Spaces

During field visits, this researcher came across with some finished and half-finished utility products. Some of them are displayed in figure-11. This figure carries a number of 04 different products which are marked as- (A) *Wall Tiles*- to cover interior and exterior walls, different in dimensions ranging from 03 inch to 06 inch, in square and rectangular forms; (B.) *Lamp Shade For Wall Fixing*- to provide shade for interior and exterior lighting arrangements, observed dimension was 16 inch in height; (C.) *Candle Holder*- to place one candle in interior, table top space, dimension was 04 inch; and (D) *Ground Base*- to provide height to the 'place able object' from the ground level in an interior or exterior living space. Here, "A" was finished, but, "B, C & D" were found half-finished, at the point of time, when this researcher visited Dhakotha soapstone crafts cluster.

Figure-11: Few utility products of Dhakotha (Photography & illustration by author)

7.2. Soapstone Patthar Kundo Products

Different turned products are being produced in Dhakotha soapstone cluster. The phase wise craftsmanship process is displayed in figure-6. The range of *Patthar Kundo* end products is available in two broader classes of variations, as per the classification of product categories- Products for dining space and Religious products, as per the utility.

7.2.1. Products for Dining Space

Utensils of different dimensions and different utility specifications are being crafted by the *Patthar Kundo* craftspeople in Dhakotha soapstone cluster. These product ranges are primarily targeted to the dining space of an end-user's household.

Figure-12: Few *Patthar Kundo* utility products of Dhakotha (Photography & illustration by author)

7.2.2. Religious Products

The range of Oil lamps are being produced through *Patthar Kundo* craft. This is a product with religious importance and is targeted to be used by the end-users of different religions, belonging to Hinduism, Jainism, Buddhism and Sikhism. These lamps are used in the divine space, to offer light to God, during prayer time; within the boundaries of living space or in temples. The oil-lamps, produced by this craft community, are available in different dimensions and forms; among which, two different soapstone oil lamps are displayed in figure-13.

Figure-13: Two different variations of oil-lamps, produced through *Pattah Kundo* craft (Photography and illustration by author)

8. Author's Contributions in Soapstone Craft

On the basis of above studies in different phases, this researcher understood the need of design interventions in this craft community to broaden the product-line, so that this craft community may receive more professional attention with their enhanced professional abilities. A number of total 76 new product-design concepts had been explored through a 15 day's design development project.

However a number of 76 individual soapstone products, in total developed under active guidance and supervision of this researcher and author, but due to the space constraints in this research

paper, only 3 different collections, which contains a total number of 18 individual finished products are displayed. The basis of collection nomenclature was end-use specific.

Figure-14: Author with some of his product design contributions to Dhakotha soapstone crafts cluster, displayed in an in-house exhibition

8.1. Collection-I: Table Top Products

This collection displays a number of 3 different soapstone products. These craft products are targeted to be used as table top accessories by the end-user. Please refer figure-15. This figure displays:

Figure-15: (A.) Side-table's lamp cum sculpture, (B.) Photo frame, (C.) Fresh-flower's vase for single stick flower(s) (Design conceptualization and photography by author; Product development by craftsmen of Dhakotha)

8.1.1. Sculptural Side-Table Lamp: "*Flying Sun, On The Wings of Garuda*"

This product is primarily a side-table's electric lamp and secondarily a sculpture, which may provide light, during night; as well, during the day this product works as a decorative piece of sculpture. Product is made with the combination of green and orange soapstone. The product dimension is- length 26 cm, width 12 cm and height 29 cm. The intricate surface ornamentation, through soapstone carving is one of the key features of Dhakota crafts cluster. So, this skill was used in development of this product. Conceptual inspiration was based over an ancient Hindu mythology[xxix], and titled as-*"Flying Sun, on the wings of Garuda"*. Please refer figure-15(A).

8.1.2. Carved Photo Frame: "*The Photo Shoot*"

Used raw materials were- pink soap stone, teak wood stick, standard photo frame fittings- back stand, turn buttons & screw, mount, glass, middle density fiber board etc. The product dimension is- length 26.5 cm, thickness 01 cm and height 17.5 cm etc. Intricate soapstone surface carving skill

was used in development of this product. However, due to space constraints, only one image of the photo frame is displayed in figure-15(B.), but a range of 05 different photo frames were developed with different design intervention approaches, by this author- in same product line. Conceptual inspiration was- *"The Photo Shoot"*.

8.1.3. Fresh-Flower's Vase for Single Steamed Flowers: *"The Green & Healthy Life"*

End-user specific purpose of this product is to hold single fresh flower at office table, reception counters, study table and for meetings and conference tables. Raw materials used were- pink and green soapstone, teak wood and base bumpers. The product dimension is- outer diameter 7 cm, height 9.5 cm etc. The skills set combinations of *Patthar Kundo* and stone carving were used in development of this product. Conceptual inspiration for this product was- *"The Green & Healthy Life"*. Please refer figure-15(C).

8.2 Collection-II: Office Stationary Products

Targeted audiences for these products are commonly officials who work in different corporate organizations. The skills set combinations, used for development of these products were, *Patthar Kundo* and stone carving; except in 16(F)- where only carving skill was required. All products of this collection are of table-top, in nature. These products are displayed in figure-16. The common conceptual inspiration for this product was- *"The Office"*

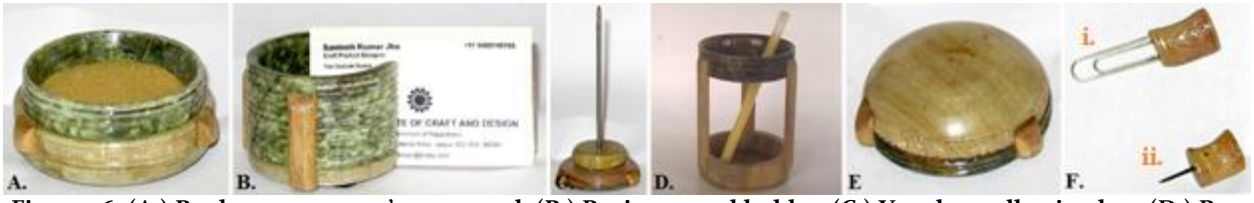


Figure-16: (A.) Bank-note counter's water pad, (B.) Business card holder, (C.) Voucher collecting bar, (D.) Pen holder, (E.) paper weight, (F.) Paper clip and board pin (Design conceptualization and photography by author; Product development by craftsmen of Dhakotha)

8.2.1. Bank-Note Counting Clark's Water Pad

Purpose of this product is to wet the fingers during bank-note or currency counting as well for counting papers, to provide figure grip, while counting. Target end users are accountants, clerks and officials. Materials used are pink and green soap stone, teak wood, sponge and base bumpers. The product dimension is- outer diameter 07 cm and height 2.5 cm. Please refer figure-16(A).

8.2.2. Business Card Holder

Purpose of this product is to hold and keep visiting cards. Targeted end users are officials and consultants. Raw materials are- pink and green soapstone, teak wood, base bumpers etc. The product dimension is- outer diameter 7.5 cm and height 4.5 cm. Please refer figure-16(B).

8.2.3. Voucher Collecting Bar

Purpose of this product is to hold letters and memos in an office environment. Targeted end users are accountants, counter clerks, reception personals etc. Raw materials are- pink and green soap stone, tipped galvanized iron wire, teak wood and base bumpers etc. The product dimension is- outer diameter 07 cm and height 13 cm. Please refer figure-16(C).

8.2.4. Pen Holder

Purpose of this product is to hold pen, pencil, painting brush etc. Targeted end users are students and officials. Raw materials used in this product are- pink and green soapstone, teak wood and base bumpers. The product dimension is- outer diameter 6.5 cm and height 10 cm. Please refer figure-16(D).

8.2.5. Paper Weight

Purpose of this product is to hold loose papers against air, within office and living spaces. Targeted end users are teachers, students and officials. Raw materials used in this product are- pink and green soapstone, teak wood, base bumpers. The product dimension is- outer diameter 07 cm and height 02 cm. Please refer figure-16(E).

8.2.6. Paper Clip & Board Pin Set

This is a small set of two products- (i.) Paper clip, and (ii.) Board pin. The paper clip is used to temporarily hold a set of unbounded papers on table, while board pin is used to hold papers over the notice and display boards in office spaces. Targeted end users are officials and other users of papers, i.e. students, teachers etc. Raw materials used in this set of products are- pink soapstone, stainless steel pin, stainless steel clip. The product dimensions are- (i.) Paper clip: length 03.7 cm, width 01.4 cm, height 0.9 cm, and (ii.) Board pin: length 01.8 cm, width 01.1 cm, height 0.6 cm. The intricate soapstone surface carving skill of craftsmen was used in development of this product. However, due to space constraints, only one image of this set is displayed in figure-16(F), but a range of 05 different sets of paper clips and board pins were developed with different design intervention approaches, by this author- in the same product line.

8.3. Collection-III: Wall Clocks

The collection of soapstone wall clock includes, a total number of 04 different functional products in combination of green soapstone as the primary material, as the secondary material, orange soapstone and teak wood were used. The primary product form was achieved through *Patthar Kundo* craft; while surface carving, fitting of secondary material(s), standard timer fittings, D-rings, angle stopper, wall separator-cum-wall grip and final finishing was done by soapstone carving craftsmen. Please refer figure-17(L).

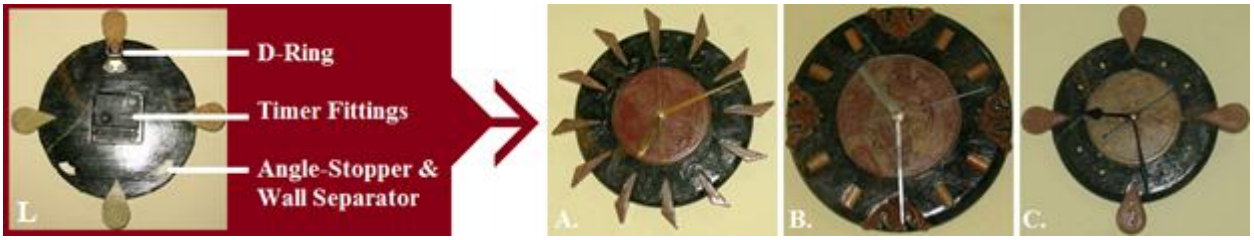


Figure-17: (L) Common back fittings; (A.) Carved wall clock-I, (B.) Carved wall clock-II, (C.) Carved wall clock-III (Design conceptualization and photography by author; Product development by craftsmen of Dhakotha)

During this collection development phase, the primary aim of this researcher was to create an inter-craft community entrepreneurial and professional harmony, between both of the soapstone craft community members, i.e., carving craft and *Patthar Kundo* craft. However, these communities are residing in close geographical areas, but usually less interactive at professional level, with each other. Products displayed in figure-17 are interior products and developed for wall hanging spaces; intended for time display purposes on a 12 hour time-scale.

8.3.1. Carved Wall Clock-I: "*The Rays of the Sun*"
The conceptual inspiration was "*The Rays of the Sun*". Product dimension is, outer diameter 25 cm and thickness 1.5 cm.

8.3.2. Carved Wall Clock-II: "*The Sun Flies in the Sky*"
The conceptual inspiration was taken from the Hindu mythology and titled as: "The *Sun Flies in the Sky*". The product dimension is- outer diameter 20 cm and thickness 1.5 cm.

8.3.3. Carved Wall Clock-III: "*Time Is Wealth*"
The conceptual inspiration was "*Time Is Wealth*". The product dimension is- outer diameter 26.5 cm and thickness 1.5 cm.

8.4. Collection-IV: Religious Products
By targeting, Odisha's large religious tourism market places in Puri, Bhubaneswar and in Konark, this researcher focused over his design collection-IV. In figure-18, few pilgrim based souvenir product collection is displayed, which were conceptualized by this researcher and further developed by the craftsmen of Dhakotha.

8.4.1. Sculptural Souvenir: *"The Lingraj Temple"*
This product is a pilgrim souvenir and is conceptually inspired from the *Lingraj Temple*[xxx] of Bhubaneswar (Lord Shiva's temple). The form of the temple top, the *Devine Shiv Linga* and *Belpatra* are highlighted with the natural stone-grain textures of soapstone. Raw materials used in this product are, green and pink soapstone, stainless steel wire etc. Involved craft skills were, *Patthar Kundo* and soapstone carving. Product dimension is- height 21 cm, length 12 cm and width 10 cm. Product inspiration was overall form and religious importance of the Ling Raj Temple of Bhubaneswar in Hinduism and other allied religions. Please refer-17(A).

Figure-18: (A.) "Lingraj Temple-"- sculptural representative souvenir, (B.) "Shivlingam"- Sindur Box for puja offerings, (C.) "*Suraj Ka Satwan Ghoda*"- sculptural representative souvenir, (D.) "*Sun: The God of Light, Energy and Power*"- Candle holder (Design conceptualization and photography by author; Product development by craftsmen of Dhakotha)

8.4.2. Sindur Box: "*Shiv Lingam*"
This is a pilgrim souvenir, targeted for Puri, Bhubaneswar and Konark's tourism markets. According to product utility, this is a *Sindur Box*. This is a common utility product for Hinduism, Jainism, Buddhism and Sikhism followers with religious values, as well; this is a common product for Indian married women; where women stores *Sindur* for their daily uses. *Sindur* is a red colored powder. In these religions, a dot or line of *Sindur* is being applied by every married women- as a

common and gender specific, socio-cultural element. The external form of this product is of *Devine Shiv Lingam*- who is considered as the God of family life, fertility and prosperity. Raw materials used were, green and pink soapstone. Involved craft skills were, *Patthar Kundo* and soapstone carving. Product dimension is- height 08 cm, length 07 cm and width 04.5 cm. Conceptual inspiration- *Shiv Lingam*[xxxi]. Please refer-17(B).

8.4.3. Sculptural Souvenir: "*Suraj Ka Satwan Ghoda*"

This is a tourism market focused souvenir for the Sun Temple of Konark. This sculptural expression includes 03 dimensional representations of the Sun, Horse and Cloud. This product is designed for decorative purpose in interior living space. Raw materials used were, green and pink soapstone, stainless steel wire and wood balls etc. Involved craft skills were, *Patthar Kundo* and soapstone carving. Product dimension is- height 14 cm, length 14 cm and width 09 cm. Conceptual inspiration- *Suraj Ka Satwan Ghoda*[xxxii]. Please refer-17(C).

8.4.4. Candle Holder: "*Surya: The God of Light and Power*"

This is also a Konark's tourism market, targeted souvenir. This is a table-top utility product, which is intended to hold a pair of candles. This product's visual, 03 dimensional represents the enormous power of sun. This product is designed for utility-cum-decorative purposes in interior living spaces of the end-user. Raw materials used to develop this product were, green and pink soapstone, stainless steel wire etc. Involved craft skills were, *Patthar Kundo* and soapstone carving. Product dimension is- height 12 cm, length 22 cm and width 06 cm. Conceptual inspiration- "*Surya: The God of Light and Power*"[xxxiii]. Please refer-17(D).

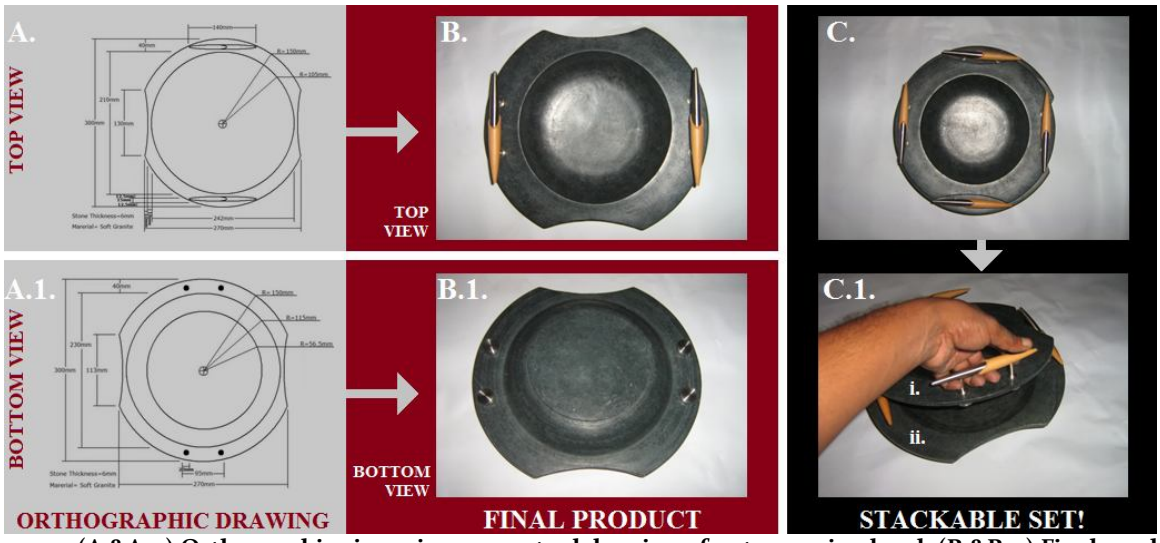


Figure-19: (A.&A.1.) Orthographic view wise conceptual drawing of outer serving bowl; (B.&B.1.) Final product views of outer serving bowl, after *Patthar Kundo* craft phase, followed by accessories fittings and; (C.&C.1.) Stack ability test demonstration (Design conceptualization and photography by author; Product development by craftsmen of Dhakotha)

8.5. Collection-V: Stackable Set Of Serving Bowl For Dining Space

As discussed above, the *Pattha Kundo* craft is an ancient form of stone turning, which is still under practice within Dhakotha area. As craftsmen are using all traditional forms for their craftsmanship, so this researcher conceptualized and explored the possibilities, whether this form of craft is able to produce products for dining space- along with the international standards of measurements and specifications, which is considered as the most critical segment for hand skills

based craft techniques. To explore stack ability was the focused challenge for this exploration. This researcher was surprised to witness the pre-defined dimensional and functional accuracy, in finished products; achieved through *Pattha Kundo* craft, according to his design specifications, given to the *Pattha Kundo* craftsmen.

As displayed in figure-19, this collection contains 02 different serving bowls for dining space, with 30 cm outer diameter for larger bowl and 26cm outer diameter for smaller bowl. The form theme was- "*Energy By Food*". Materials used for development of this product were black granite, wood and stainless steel. Involved average turning time was 40 minutes for both of the products, individually. The individual product dimensions of larger serving bowl is, height 06 cm, thickness 0.5 cm, inner diameter 24 cm, and outer diameter 30cm; while the product dimension of smaller serving bowl is, height 04.5 cm, thickness 0.5 cm, inner diameter 20 cm, and outer diameter 26 cm.

9. Craftsmen Involved in Product Design Development Process

The roles of a pool of skilled craftsmen are important to execute any conceptual interventions. During this product design and development intervention process, following skill handed craftsmen were involved on a regular basis and helped this researcher to convert his design oriented interventional concepts into physical products. Please refer table-04 for further details about individual craftsmen.

SN	Name of Craftsmen	Details of Involved Craftsmen	Photographs of Craftsmen
01.	**Mr. Badal Dehuri**	Soapstone carver. Running own production unit, named: "*Jay Jagannath Stone Carving*" in Dhakotha. Professional experience of 15 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 10th standard.	
02.	**Mr. Jadab Kumar Dehuri**	Soapstone carver. Running own production unit, named: "*Sai Gananath Stone Carving*" in Dhakotha. Professional experience of 22 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 12th standard.	
03.	**Mr. Nanda Kishoor Palei**	Soapstone and soft granite carver. Working for others in Dhakotha. Professional experience of 23 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 07th standard.	
04.	**Mr. Raisen Murmu**	Soapstone carver. Master craftsman. Running own production unit, named: "*Maranga Buru Stone Carving*" in Dhakotha. Professional experience of 22 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 09th standard.	

05.	**Mr. Pradeep Kumar Sahoo**	Soapstone carver. Running own production unit, named: "*Jay Jagannath Stone Carving*" in Dhakotha. Professional experience of 15 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 10th standard.	
06.	**Mr. Sudam Charan Nahak**	Soapstone carver. Working for others in Dhakotha. Professional experience of 14 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 10th standard.	
07.	**Mr. Dillip Kumar Mohanta**	Soapstone carver. Working for others in Dhakotha. Professional experience of 10 years. Monthly production capacity: 20 pieces statues of 06 inch-01 feet with excellent fine carving skills. Academic qualification: 09th standard. Physically challenged.	
08.	**Mr. Bhagaban Padhial**	Soapstone carver. Working for others in Dhakotha. Professional experience of 22 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet. Academic qualification: 10th standard.	
09.	**Mr. Bhatulo Mohrana**	Soapstone carver and *Patthar Kundo* expert. Working for others in Dhakotha. Professional experience of 14 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet OR 1000 pieces of *Kundo* utensils. Able to work in both stone-craft forms. Academic qualification: 07th standard.	
10.	**Mr. Badal Palei**	Soapstone carver and *Patthar Kundo* expert. Working for others in Dhakotha. Professional experience of 10 years. Monthly production capacity: 20 pieces statues of 06 inch-01 feet and 50 pieces of *Kundo* utensils. Able to work in both stone-craft forms. Academic qualification: 08th standard passed.	
11.	**Mr. Biswanath Patra**	Soapstone carver. Running own production unit, named: "*Jaleeka Stone Carving*" in Dhakotha. Professional experience of 20 years. Monthly production capacity: 30 pieces statues of 06 inch to 01 feet. Academic qualification: 12th standard.	

12.	**Mr. Himanshu Ranjan Sahoo**	Soapstone carver. Running own production unit, "*Mani Maa Stone Carving*" in Dhakotha. Professional experience of 10 years. Monthly production capacity: 30 pieces statues of 06 inch-01 feet; expert in stone cutting, local raw material procurement. Academic qualification: 12th standard.	

Table-4: Craftsmen involved in product design development process, under guidance of author

10. Author's Note

As far as concerned with Dhakotha soapstone cluster, the carving craft is a time consuming and rigorous process, which may be overcome through introducing small, lightweight, accurate, and precise, energy operated tools for soapstone carving community. While for *Patthar Kundo* community, this author do not suggest any tool related intervention- as this is one of the rarest available form of primitive stone turning technology. So this craft form has to be preserved in whatever form it is under existence. As there are only about 50 artisans are practicing this craft form- so, this craft is under languishing category. This craft requires conservation supports. This may be achieved through establishing a marketing network of *Patthar Kundo* products and popularization of this craft among its potential end-consumers etc.

On the basis of experiences gained by this researcher during his craft study-cum-exploration at Dhakotha, it is significant to state, that the term 'intervention' does not merely intended to introduce foreign elements, as- tools, uncomfortable work environment to craftsmen, less of temporarily feasible design concepts; but it is intended to introduce fresh ideas, which may happily accepted by the craft community, with minimal changes, in existing craftsmanship processes- this way, a justifiably sustainable model of craft sustenance could be achieved, with a holistic approach. Above phenomenon may be achieved, if, before introducing any intervention to the targeted craft community, the researcher should have an in depth, pre-study about the existing craft-scenario, existing tools, existing skill sets, crafts community's interest lead professional psychology, and most important is to understand and analyze the pre and post intervention effects on craft-cycle; before implementation by the researcher. Technical interventions across crafts and indigenous sectors might work well, if planned and implemented in a phase wise manner, by keeping sufficient time gap between two sequential implementation phases. This approach might support craft communities, to develop a strong cognitive thinking among community members, towards the intervention process. This way, intervention lead, positive changes may sustain for longer period of time along with pre-existing craft legacy.

11. Conclusion

During this craft study cum exploration this researcher came to know, that merely studying the dynamics of a traditional and/or induced craft cannot help such craft to upgrade its present craft-scenario, until and unless its existing potentials and skill sets get fresh interventions with professional approach. Soapstone cluster of Dhakotha is not only a highly skillful craft cluster, but there are many more clusters, which are still unprivileged and unexplored in our beautiful world.

As, there were two different soapstone clusters, with different skill sets, i.e., Soapstone carving cluster and Soapstone *Patthar Kundo* cluster; are practicing in same geographical area, so

studying and exploring interventions in joint mode was an interesting experience for this researcher.

12. Acknowledgement

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Notes

[i] (Kendujhar District Administration , 2015)
[ii] (http://kendujhar.nic.in, 2016)
[iii] (Panchayati Raj Department, Government of Odisha, 2016)
[iv] (veloroutes.org, 2006-2013)
[v] (Wikimedia Foundation, Inc., 2016)
[vi] (AccuWeather, Inc., 2016)
[vii] (Department of Posts, Ministry of Communications, Government of India, 2016)
[viii] (Bharat Sanchar Nigam Limited, Government of India, 2016)
[ix] (Sahoo P. K., 2010)
[x] (Murmu, 2010)
[xi] (Max Wyss, 2015, p. 397)
[xii] (Wikimedia Foundation, Inc., 2016)
[xiii] (Geology.com, 2005-2016)
[xiv] (Ministry of MSME, Government of India, p. 13)
[xv] (District Portal Kendujhar, Government of Odisha, 2016)
[xvi] (Sahoo, 2010)
[xvii] (Crafts Council, Creative Scotland, Arts Council of Wales & Craft Northern Ireland, 2012)
[xviii] (Palei, 2010)
[xix] (Peter Stansinoupolos, 2008)
[xx] (Jacqualyn L. Blizzard, 2012, pp. 456-479)
[xxi] (Frank J. Hoose, 2000)
[xxii] (Kawale, 2016)
[xxiii] (Joshua J. Mark, 2009)
[xxiv] (Jan Bailey, 1996-2016)
[xxv] (Lochtefeld, 2002, p. 567)
[xxvi] (Vedasbuff, 2010)
[xxvii] (Dharma Universe, 2009-2015)
[xxviii] (About, Inc., 2016)
[xxix] (National Earth Science Teachers Association, 2012)
[xxx] (Culture Department, Government of Odisha, 2015)
[xxxi] (Omkara Ashrama Mahasamsthana, 2016)
[xxxii] (Gupta, 2013)
[xxxiii] (Wilkins, 2013, pp. 30-35)

References

About, Inc. (2016). Ganesha: Lord of Success. Retrieved November 18, 2016, from about religion: http://hinduism.about.com/od/lordganesha/a/ganesha.htm

AccuWeather, Inc. (2016). India Weather:Dhakotha, India/Local Weather/Personalized Forecasts. Retrieved November 17, 2016, from AccuWeather Incorporation: http://www.accuweather.com/en/in/dhakotha/2903599/september-weather/2903599?monyr=9/1/2016

Bharat Sanchar Nigam Limited, Government of India. (2016). Online Telephone Directory/Search results/1 Matching Record(s) found/Anandapur/Orissa/06731. Retrieved November 17, 2016, from Bharat Sanchar Nigam Limited: http://218.248.243.16/bsnl-web/stdResult.seam?cid=1171725

Crafts Council, Creative Scotland, Arts Council of Wales & Craft Northern Ireland. (2012). Craft in an Age of Change. London: BOP Consulting.

Culture Department, Government of Odisha. (2015, January 09). Temple Architecture. Retrieved November 30, 2016, from http://orissaculture.gov.in/Architecture.asp

Department of Posts, Ministry of Communications, Government of India. (2016, November 15). Find Pincode. Retrieved November 17, 2016, from India Post: https://www.indiapost.gov.in/VAS/pages/FindPincode.aspx

Dharma Universe. (2009-2015). Airavat. Retrieved November 21, 2016, from The Hindu Universe: http://hindunet.org/god/animal_deities/airavat

District Portal Kendujhar, Government of Odisha. (2016). Steel and Mines. Retrieved November 21, 2016, from http://kendujhar.nic.in/steel_mines/steel_mine.htm

Frank J. Hoose, J. H. (2000). Mini Lathe Operation: Turning/Turning Operations. Retrieved October 16, 2016, from http://www.mini-lathe.com/Mini_lathe/Operation/Turning/turning.htm

Geology.com. (2005-2016). Soapstone: What is Soapstone? Retrieved November 18, 2016, from http://geology.com/rocks/soapstone.shtml

Gupta, S. (2013, September 18). Why 7- Horses for the chariot of sun? Retrieved November 08, 2016, from Speakingtree.in: http://www.speakingtree.in/allslides/why-7-horses-for-the-chariot-of-sun

http://kendujhar.nic.in. (2016). Anandapur Block/Household and B.P.L List (As per DRDA survey,1999)/Sl.No.-5/Dhakotha. Retrieved November 11, 2016, from http://kendujhar.nic.in/panchayatraj/anandapur.htm

Jacqualyn L. Blizzard, L. E. (2012). A framework for sustainable whole systems design. Design Studies, Vol. (33), 456-479.

Jan Bailey, M. M. (1996-2016). The 36 Yakshinis. Retrieved November 30, 2016, from Yakshinis and Chetakas: http://www.shivashakti.com/yaksh.htm

Joshua J. Mark. (2009, September 02). Mythology: Definition. Retrieved November 11, 2016, from Ancient History Encyclopedia: http://www.ancient.eu/mythology

Kawale, P. (2016). Kusum Tree. Retrieved December 01, 2016, from Flowers of India: http://www.flowersofindia.net/catalog/slides/Kusum%20Tree.html

Kendujhar District Administration . (2015, May 11). About Kendujhar District. Retrieved November 17, 2016, from District Portal, Government of Odisha: http://ordistricts.nic.in/district_home.php?did=kjr

Lochtefeld, J. G. (2002). The Illustrated Encyclopedia of Hinduism: N-Z (Vol. 02). New York, U.S.A.: The Rosen Publishing Group, Inc.

Max Wyss, S. P. (2015). Geoethics: Ethical Challenges and Case Studies in Earth Sciences. Amsterdam, The Netherlands: Elsevier Inc.

Ministry of MSME, Government of India. (n.d.). Brief Industrial Profile of Keonjhar District. Cuttack: MSME-Development Institute.

MKM Building Supplies Limited. (2015, August 06). What is the difference between wall and floor tiles? Retrieved November 16, 2016, from https://www.mkmbs.co.uk/inspiration/what-is-the-difference-between-wall-and-floor-tiles

Murmu, R. (2010, September 12). History of Soapstone Kundo Craft in Dhakotha Area. (S. K. Jha, Interviewer)

National Earth Science Teachers Association. (2012). Garuda. Retrieved December 01, 2016, from Windows to the Universe: http://www.windows2universe.org/mythology/garuda.html

Omkara Ashrama Mahasamsthana. (2016). Sri Dwadasha Jyotirlinga Devasthana. Retrieved November 29, 2016, from http://omkarhills.org/document/dwadashajyotirlinga.pdf

Palei, B. (2010, September 21). An Overview of Patthar Kundo. (S. K. Jha, Interviewer)

Panchayati Raj Department, Government of Odisha. (2016). About the Department: Panchayati Raj Institutions (PRIs). Retrieved November 21, 2016, from http://www.odishapanchayat.gov.in/English/department.asp

Peter Stansinoupolos, M. H. (2008). Whole System Design: An Integrated Approach to Sustainable Engineering (1 ed.). London: Routledge/Taylor & Francis Group.

Sahoo, H. R. (2010, September 13). About Soapstone Raw Meterials . (S. K. Jha, Interviewer)

Sahoo, P. K. (2010, September 19). History of Soapstone Craft in Dhakotha. (S. K. Jha, Interviewer)

Vedasbuff. (2010, October 16). Story 13 - Sheshnaag. Retrieved November 21, 2016, from Mythological Stories of India: http://vedicstoriesofindia.blogspot.in/2010/10/story-13-sheshnaag.html

veloroutes.org. (2006-2013). Use this page to find the elevation of any location in the world/Address: dhakotha, odisha, india. Retrieved November 17, 2016, from http://veloroutes.org/elevation/?location=dhakotha%2C+odisha%2C+india&units=m

Vishwamitra Systems Pvt. Ltd. (2013). Meditation. Retrieved November 25, 2016, from Yoga Point: http://www.yogapoint.com/info/meditation.htm

Wikimedia Foundation, Inc. (2016, July 26). Kendujhar railway station. Retrieved November 17, 2016, from https://en.wikipedia.org/wiki/Kendujhar_railway_station

Wikimedia Foundation, Inc. (2016, November 15). Soapstone. Retrieved November 18, 2016, from https://en.wikipedia.org/wiki/Soapstone

Wilkins, W. (2013). Hindu Mythology, Vedic and Puranic. New Delhi: Rupa Publications India Pvt Ltd.

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