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ANUVAD: CREATING SUSTAINABLE SMART TEXTILES THROUGH THE MEDIUM OF TRADITIONAL CRAFTS

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ABSTRACT

This paper works on formulating and discussing a symbiotic integration of technology with traditional craft as a way of creating sustainable design practices. Craft as a medium allows for products created with emotion and love and hence are retained with care as opposed to other mechanically created products. Through combining e-textile technology with craft, this paper hypothesizes creating a two-fold impact on sustainability: by creating hand-crafted, slow produced products with longevity and by providing economic sustainability to traditional crafts by enabling them to create a wider product range that allows them to be relevant in the changing times. Eventually, the project 'Anuvad', which is the Hindi word for translate, is an enquiry into the combination of technology with crafts and specifically, textile based traditional Indian crafts. The pilot project under this took place in the village of Bhujodi in Kutch in the northern part of Gujarat. This concept hypothesizes, a higher functionality of the products created using e-textile technology. Through slow-production techniques the products created can not only be customised to meet specific needs but also create products that have a deeper meaning and value.

Keywords: E-textile, Indian Traditional Crafts, Technology

1. INTRODUCTION

'Craft' is being redefined and revalued in the digital age. Traditional crafts are experiencing a resurgence, with hand-crafted artefacts highly valued in a world of cheap mass production (Levine and Heimerl 2008). Smart textiles are still very new in their development despite having been around for a while. According to the report "The Global Market for Wearables and Smart Textiles to 2027", there is an emerging market for smart textile and related products. Crafts and especially crafts in the western part of India, on the other hand as stated in the web article by Paliwal, A. (2018) are facing troubles to keep on going with reducing demand and limited product range. The combination of the age-old skills of craft with the needs of experimental technology can enable a wide range of ideas and product possibilities. Often, crafts are demoted down to being mere production techniques. Finding the right tools and connections we can actually use crafts as a medium for prototyping and producing innovative and sustainable e-textile products.

What sounds like an extremely simple and uncomplicated question, is indeed rather complex question to answer. Craft, even in English language dictionaries, is not defined singularly. The term 'craft' can be associated with anything that involves skill such as 'handicraft' to 'crafted beer or crafted cheese'. The evolution of the term has led to its various meanings. Pye (1968, p.20), mentions in his book 'Nature and Art of Workmanship'; "Workmanship of the better sort is called, in an honorific way, craftsmanship. Nobody, however, is prepared to say where craftsmanship ends and ordinary manufacturing begins. It is impossible to find a generally satisfactory definition for it in the face of all the strange shibboleths and prejudices about it which are acrimoniously maintained. It is a word to start an argument with".

The table below explains the different views and definitions of the term 'craft':

Meaning / Description of 'Craft'	Source
"Craftsmanship is simply workmanship using any kind of technique or apparatus in which the quality of the result is not predetermined, but depends on the judgement, dexterity, care all of which the worker exercises as he works"	Pye, D (1968)(p.20)
"Craft only exists in motion. It exists in a way of doing things, not classification of objects, institutions or people"	Adamson, G (2007)(p.4)
"Handicraft or Hand-made are historical or social terms not technical ones. Their ordinary usage nowadays seems to refer to workmanship of any kind which could've been found before the Industrial revolution"	Pye, D (1968)(p.26)
"Textile crafts, on the other hand, are among the oldest crafts practiced by humans, having shaped the course of early civilization"	Beaudry M.C. (2006)

[Table 1] The different views and definitions of the term 'craft'

Our impressions and understanding of the word craft are highly based on our backgrounds and exposures. The focus of this paper is the relevance of the term 'traditional craft' which pertains to a skill, that is primarily hand-based but can be supported by some tools, has a deep cultural significance and is a skill that has developed over generations of practice, socio-cultural influences and has evolved to create its own identity. The contextual definition of Craft here is a hand based skill, set in a traditional and cultural environment, mostly undertaken by a certain community. For e.g. The craft of Kutchi weaving, is a counted thread extra weft technique undertaken in Kutch, by the Vankar (weaver) community. This craft has been performed since generations by the weaver community for the nomadic community. In the broader sense of the term Buechley & Perner-Wilson (2012) talk about traditional craft communities and demographics by mentioning "While academics explored the decorative and psychological aspects of craft, in popular usage, the term was increasingly identified with the vernacular. [...] The term retained its association with pleasurable labor but was stripped of its seriousness, its association with excellence, and its political implications."

The term e-textile should also be defined here. The book 'Designing with smart textiles' Kettley (2016) very aptly defines the various definitions related to the term innovative textiles, such as smart textiles, SFIT (smart fabrics and interactive textiles), wearable technology, interactive textiles, and e-textiles. One piece of innovative textile can fall under one or more than one of these categories. Some technical textiles are also sometimes confused with smart textiles. Technical textiles may or may not be 'smart'. Jute used as a geotextile to mitigate erosion is not a smart textile, even though it has a very technical purpose.

This paper hypothesizes craft techniques as being the perfect medium to explore and prototype innovative product ideas. Crafts are hand-done, supported by physical tools that aid in the process. Smart or e-textile technology often needs hand- prototyping before converting it into products. The need for hand-work in smart textiles and the hand skills of crafts combine well with each other. This makes it the perfect medium to work with. The use of the medium of traditional craft for prototyping makes it a part of the design process and not a substitute of the same. As idealistic as this idea may sound, working with craft communities require more than just ideas. This paper aims to find the right tools to communicate with craftspeople for effective collaboration.

2.METHODOLOGY

This concept brings together different disciplines that have distinct languages. Languages in this context represents an organized syntactical structure that is adhered to by a particular profession community. The craft community and the tech community both have their distinct, individual languages. The methodology adopted in this study was to understand the concept of hand-done traditional craft of Bhujodi/Kutchi weaving, conducting qualitative interviews with the craftsman and experts in the field and analysing their responses into arguing the hypothesis.

3.FOCUS AND LIMITATION OF THE STUDY

The scope of this study meets a variety of other topics which in themselves have a potential to be investigated in detail. Hence, it is important to define the focus. It defines the terminologies of craft and e-textile briefly to set the tone for the rest of the text. This paper examines the craft of hand-weaving in Bhujodi as a potential entry point to explore and create sustainable hand-woven e-textile products. Through examining contemporary craft practices, we reflect on and explore the generative design potential imbedded in the making process, and ask whether the making process can be a way of generating new design knowledge. Loh, Burry & Wagenfeld (2016). The focus of this thesis is not only to define and discuss the value of using traditional craft as a medium to translate technology into products and prototypes; but to look at this concept as a practice in sustainability not only for the environment but also for preserve and prolong the craft practices.

What if now that new techniques emerge, in order to craft a more sustainable future, we would get inspired from ancient techniques and meanings as well? Many rules for life, ways of living and making things got changed during industrialization. Certain decisions and directions towards efficiency and standardizations killed older and long-lived principals of quality, individualized approach and value of handwork. Crafts were considered too time demanding for mainstream in that period, but now re-considering some decisions that led us to mass production, they sound inspiring and worth looking into. Kuusk & Wensveen (2012). Most traditional crafts have evolved their production and aesthetic expertise over years of practice, compiling generations worth of wisdom which is a gold mine to be carried into the future.

This paper limits its focus to studying the craft of Bhujodi, through the eyes of innovative e-textiles and examines its potential as a craft that can enable one to create sustainable e-textile products.

4.BHUJODI: THE LAND OF WOVEN MUSIC

The study in India was conducted in a small village called Bhujodi. Bhujodi is in the Bhuj District, in Gujarat, India. According to the Census 2011 (2011), Bhujodi has a population of 3,484 persons out of which 1,876 are males and 1,608 females. In comparison to the population of India this is a rather small village. The village of Bhujodi is most known for its art of weaving. The art of weaving particular to this region derived its popular name from this village called "Bhujodi weaving".

Chhatopadhyay (2010, p.192) in the book *The Craft Reader* talks about the repertoire of Indian crafts "Handicraft is rightly described as the craft of the people. In India it is not an industry as the word commonly understood; for the produce is also a creation symbolising the inner desire and fulfilment of the community. The various pieces of handicrafts whether metal ware, pottery, mats or woodwork, clearly indicate that while these are made to serve a positive need in the daily life of the people, they also act as a vehicle of self-expression for they reveal a conscious aesthetic approach.



[Figure 1] photo showing the look of a modern day bhujodi shawl

The craft that is popular to this region is an extra-weft patterned weaving. Simply explained, this is a patterned weaving technique. A supplementary extra-weft is used to create patterns while weaving the fabric. This is done through manual lifting. This means that the weaver could lift the threads they knew would create a pattern by inserting an extra coloured weft into the cloth while weaving. By planning the pattern beforehand the weaver lifts the threads that would create a pattern, after which he inserts a supplementary weft that creates an embossed pattern

on the fabric while weaving. Shamjibhai Vankar (2018), states in his interview, that Bhujodi is the skill of creating embossed patterns by hand-lifting warp and weft threads. Vishrambhai Vankar (father of Shamjibhai) emphasises on the word Kutchi instead of Bhujodi, mentioning that the craft is practiced overall in the region and not just in the village of Bhujodi, and hence shouldn't be called Bhujodi weaving but instead should be called Kutchi weaving.

5. SUSTAINABILITY THROUGH CRAFT AND TECHNOLOGY

The further we move into the future our needs for consumption increase exponentially. Our increased need for technology also reveals that smart and e-textile will eventually become an integral part of our lives. Increased needs result in increased production and eventually increased consumption and eventually disposal.

The cycle goes on. What if we are able to create products that not only provide for our evolved needs but are also products with increased longevity and aesthetics? We as human beings tend to care for and cherish products that have been created by hand or have a story or memory attached to them. For e.g. a piece of heirloom clothing though old and tattered holds more value and significance in our lives than a new garment purchased from a store. We are less likely to let go of the heirloom piece because of its attached emotional significance. Traditional craft techniques have the potential to create products that are handcrafted with love and affection. Shamjibhai Vankar, a weaver from a village called Bhujodi near Bhuj in the north of Gujarat, explained in one of his interviews that emotion and love is at the center of all crafts. This study explores the possibility of creating sustainable smart textiles by combining traditional hand-done craft techniques with technology.

Handicrafts or hand-done traditional crafts are usually crafts that have evolved through a certain culture and tradition, often by addressing a local need. With evolving times, these needs dissolved making way for the crafts to be interpreted into new products and ideas to address new needs and markets. Smart textiles and e-textiles is a market that is suspected to grow exponentially by 2020. It is only natural in that case that we allow traditional crafts to evolve with the so called 'digital era'. The concept of combining e-textile technology with crafts techniques is an idea befitting not only to create sustainable products but also as new methods of prototyping, providing exposure to crafts communities and as a method of expression for makers and crafters. E-textile technologies available today are still experimental in nature and require a lot of hand-work. The existence of hand-skill in craft processes fits well to this need. The structure of traditional craft processes allows for intervention and is thus also a very good medium for prototyping. New technology, as mentioned by Mili Tharakan in the interview, is also like a new material that is being explored in different ways from different perspectives. Crafts on the other hand have very fluid and organic processes. The qualities in this sense, of both crafts and technology, is a good combination for exploration and innovation. For e.g. In handloom weaving the process is slow and time-taking, thus, one can use a variety of different threads as wefts to explore new ideas. The same is not possible in quicker weaving processes such as automatic looms or power looms.

Bhujodi is a craft where the weaver uses his dexterity to create inlaid patterns while weaving using a supplementary weft. At every step the process involves the weaver thinking, planning and imagining his final design. This process through structured allows for intervention at every step. The process of such hand-done weaving is very open.

Bhujodi weaving has a very quintessential aesthetic that among the textile craft enthusiasts is not only recognisable but is popular. It is a technique that through counted hand-lifting can enable the weaver to create inlaid woven motifs. In principle this inlay can mask the circuitry to create products with a higher aesthetic qualities. As developed and evolved the aesthetic strengths of this craft may be it is facing trouble in today's times to have its deserved recognition. Slow-production of this process may enable a designer or a crafter to take and alter decisions while working with the weavers implementing a sense of learning by doing. This craft enables new knowledge to be created through the process of production and making. Just like the weaver visualises the product as he weaves, a designer can make design decisions while the production is happening making the process all the more interactive. The hand-skill the craftsmen have, has developed over years of practice. This not only makes them very precise and neat with their work but also increases the speed of work. One may think that working with hand-loom and crafts is a slower process and would result in more time taken while prototyping. But, working on field with the craftsmen in India proved this notion to not be true. The speed of the craftsmen in this case was fast enough to see quick results but also slow enough to give time for thinking and discussing the next steps. Posch (2017, p.81) puts it very aptly, "For engineers this is an invitation to include those new materials and processes into their practice. For crafters it is a potential entry point to electronic making, recognizing their knowledge as valuable to the field". Zoran & Buechley (2013) talk about retaining the authenticity of craft "We attempted to preserve the essence of craft while experimenting with techniques that are at odds with this very premise."

The keyword here is 'organic'. The organic nature of crafts allows one to have a sense of play and exploration which they wouldn't find in static and fixed production processes. This is of special significance when it comes to textile crafts. Discussing weaving, the freedom one has when they work with the handloom is higher as compared to the fixed production processes. Not only that, in an unorganised sector such as craft, there is freedom to organise man-power and skill as required for the project. For example, during the case study in India, we had two weavers and two looms. On specific days, when the two weavers didn't have enough work, within short notice they could change the warp on their loom to work on a different project. This would not be possible in an industrial set-up with fixed processes and systems.

Combining the classic Bhujodi aesthetics with e-textile components may also 'de-alienise' the aesthetics and the visual impact of e-textile products. Hereby, meaning that a lot of e-textile products because of the components embedded in them look extremely different to the textile products we are used to seeing around us. Combining them with craft may bring back the human-factor in the aesthetics of e-textile products.

6.CONCLUSION

Smart textiles as a field has been widely discussed by the textile community. There are opposing views to this topic. Some feel that adding electronics to textiles is not desirable because it doesn't add any value. Smart and e-textiles are also expensive currently because the technology isn't as extensively developed. This is why also smart textiles are not as easily available in the market as one would expect. Developing these products requires a lot of in-depth research & development. However, other opinions feel that textile is a field that is wide and ever evolving and it is only natural that textiles too as a discipline evolves with time. Smart textiles can raise the functionality of regular textiles exponentially. Textiles are a very core part of our day to day life. When a baby is born, he is first wrapped in a cloth also when someone dies they are wrapped in a piece of textile. Every stage of our lives has textiles at the very core. It is therefore obvious that in the 'digital age' our textiles too will have technology embedded in them.

Working with crafts and especially on field with the community requires a lot of different skills. It is very different from working in a studio on an artwork on your own. Designers need to be sensitive to varied factors when engaging with craftsmen. As opposed to the standard or classical design processes, being on field and working with different communities requires very quick and spontaneous thinking. Compared to the conventional design processes like the 'design thinking process', the process of working with crafts is very spontaneous. It requires quick decision-making, reacting to current situations and people skills. It is a process that is very organic in nature and this is exactly what allows intervention and innovation. Right from the schedule, to the output, to the deadlines cannot be planned to the hour. The standard design thinking processes followed by most industrial set-ups don't allow for intervention and experimentation. While on one hand it is difficult to assess the outcome when working with crafts but it also allows for more flexibility in prototyping. It demands 'thinking on the feet'. Depending on the situation and the circumstances, spontaneous and clever thinking is often needed. This is also highlighted in the insights and learnings from the field. Being flexible and accommodative is one of the key tools when working with such industries or set-ups. Craft is all about emotion and emotion cannot be forced or planned. Because of this trait, craftsmen working with their craft are often very closely attached to their work and treat it with respect. Thus, it is very important to deal with them with respect not only for their work but also for them individually.

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