

Adoption of Heritage-Based Inspiration(Kantojir Mondir) for Design Development Using 2D Design Software.

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Abstract— The art of Kantanagar Temple in Bangladesh ancient history is the most powerful combination of architecture & sculptures which were created from 1704 to 1752 A.D. [1]. The doors, windows, pillars, ceilings, and walls were adorned with the terracotta design. Kantanagar Temple is a unique example of the temple architecture in the sub-continent because of the finer details of reliefs. It was originally constructed under Maharaja Prannath & his adopted son Ramnath renowned Jamindars of Dinajpur, Bangladesh [2]. In this research, we try to find out our cultural significance through technology which will help us promote our cultural heritage & its history. I make an overview of the state-of-the-art by Illustrator Graphics Suite CS6 in the modification process of selected motifs and in the color experiences, clothing design, and simulation. Through a wide range of drawing tools & special effects that have been developed. This paper investigates a new direction in the design through using Terracotta plaques which represent Geometric motifs, mythological scenes from the Ramayana & the Mahabharata, social scenes & favorite's pastime & the author created a fashion collection inspired from the design which can be used to ready -to-wear market.

Keywords: Kantaji Temple, Heritage, Bangladesh, Fashion Design, Garment, Surface, CAD.

1 INTRODUCTION

The Civilization of Bangladesh is a hundred years old. Once upon a time in Bangla as the richest region of the Indian subcontinent. Her deep-rooted heritage is amply reflected in her architecture, literature, dance, drama, music and painting and also in people's lifestyle. Heritage is considered to be the best expression of the cultural identity and the cultural character of a nation. Heritage includes numerous cultural, artistic and intellectual forms inherited from the early and recent past of a nation. In the other hand clothes represents the culture of a country & it express our personal & social relationships linked how we live and see ourselves within society and also it is considered as one of the world's largest industry. It can be an opportunity to bring up our cultural heritage through clothing using technology. So, the challenge is to find out the way how we can do it. The main objective of this research study is to find out the way of promoting our heritage through clothing.

2 1.1 BACKGROUND OF THE RESEARCH

Kantoji Temple at Kantanagar is a late-medieval Hindu temple in Dinajpur District, Bangladesh [3]. (Ghosh, 2005) It was built by Maharaja Pran Nath; its construction started in 1702 and

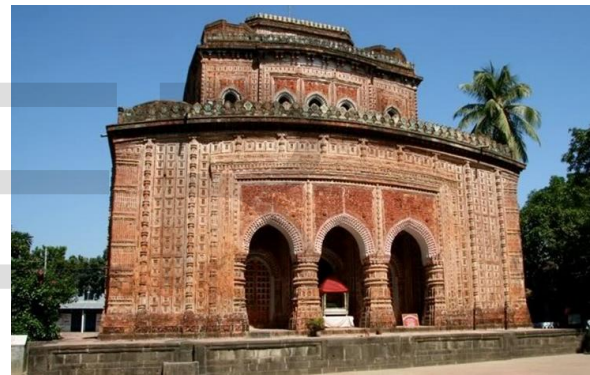


Fig. 1. Full view of kantoji temple

ended in 1752, during the reign of his son Maharaja Ramnath [1]. It is one of the best examples of terracotta architecture in Bangladesh. The Terracotta Temples of Bengal are famous for the terracotta motifs used for ornamentation on the temple walls 'as one of the most original and unique expressions of decorative temple art in the late medieval period of Bengal' [4]. Figurative sculptures of popular gods and goddesses, human in their dancing postures, conjugal postures, floral decorations, animal figures, etc. were generally used as themes for ornamentation. Along with these, activities of social lives, religious cult practices, scenes from the epics and wars were also depicted in the terracotta motifs. The Terracotta Temples of Bengal such as kantoji temple stands as the epitome of culmination of various influencing factors - be it the geographical, geological, structural, social or political factors.

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Fig. 2. Terracotta designs of human in their dancing postures, conjugal postures, floral decorations, animal figures

1.2 Nativity

1.2.1. Terracotta Plaques:

The meaning of Terracotta is "baked earth" it's a Latin word. Terracotta is a type of stoneware, which is ceramic based on unglazed or glazed clay where the fired body is absorbent. In earthenware, Terracotta is the term usually used for sculpture made, and also for various functional uses including flower pots, water, and wastewater pipes, tiles which used in roof, bricks, and surface embellishment in building construction. Most terracotta is brownish orange color & the term is also used to refer to the natural, which varies considerably.

1.2.2. Computer-aided design (CAD) and art

Computer aided drafting is known as Cad (computer aided design). Usually it uses of computer systems to promote in the modification, analysis, creation or optimization of a design. The process of creating a technical drawing with the use of computer software defines computer-aided design. Electronic files often in the form of CAD output for machining operations or print. Cad software uses either vector-based graphics or may also produce raster graphics Vector based graphics describes the objects of traditional drafting & raster graphics shows the overall appearance of designed objects. The output of CAD delivers information such as materials, dimensions, processes, and tolerances, according to application-specific resolutions which uses in the manual drafting of technical & engineering drawings. . To design curves and figures in two-dimensional (2D) space; or surfaces, curves, and solids in three-dimensional space CAD may be used. In many applications, including automotive, shipbuilding, and aerospace industries, industrial and architectural design, prosthetics, and many more design CAD is widely used as an industrial art. To create digital content, face & defining is also widely used.

2 Significance of Research

This paper intends to use CAD and the technique to recognize fashion trends of 2D garments by using terracotta motif of kantoji temple on the surface of the fabric. Next study the relationship between the parameters of the 2D garment prototype and different garment styles. Based on the relationship, the processes and com-

peers of rules for transferring style requirements to the parameter values of the garment prototype are developed. As such, the knowledge base can be constructed, and the quick design system of garment style is built. Various garment styles can be designed spontaneously to satisfy several style requirements using the system.

5 MATERIALS

3.1 Adobe Illustrator CS6

In clothing enterprises computer aided garment design system has been widely used & it has improved production efficiency significantly. The process of operating the system is interactive whereas most of the systems are developed for 2D garment design. Instead of ruler & scissors designers are used mouse & light pen which helps to increase work efficiently by using this system but the process of designing is the same conventional process. Such kind of garment CAD system cannot please the garment initiatives because of the development of clothing industry. "To solve this problem, many researchers have been focusing on & have developed different garment design visualization & 2D style intelligent design, respectively" [5]. As for 2D garment intelligent CAD system, genetic programming however adobe illustrator CS6 is a spontaneous and adaptable graphics application for creating high-quality vector illustrations, and designs, a wide range of drawing tools and special effects we can choose to create realistic, photo-quality illustrations, all by hand, it also provisions pen tablet technology, which makes the experience of drawing by hand smooth and instinctive. We can create splendid illustrations by using tools. Illustrator CS6 helps to create & modify shapes by providing a variety of drawing tools. The most time-consuming task in illustration is drawing lines. To trace the sketch several methods can be used. We can effectively trace it by using image trace if the original sketch is detailed enough. Alternatively, rectangle & ellipse tool is normally used to create simple shapes or by using pen tools can manually draw lines & curves. One can edit and fine-tune their shape by using the Shape tool after drawing the curves. By using rotating, scaling & reflecting one can modify whole objects.

3.1.1 New tools in Adobe Illustrator CS6:

Over the years the application has been given some quite remarkable features - from the Gradient Mesh in the 1998 release of version 8 to multiple art boards in CS4 and the Perspective Grid in CS5 (which Adobe ported across from FreeHand, the tool it bought from Macromedia and then phased out), it is a behemoth of an application, whether you want to create photorealistic illustrations or slick logos. Adobe Illustrator CS6, a facelift, some speed improvements, a few tweaks and one major addition that illustrators and designers in particular will love are all on the agenda.

3.1.1.1 Image Trace in Illustrator CS6

Illustrator is a little miscalculated sometimes. And it's probably because of its ability to trace raster images to create vector graphics. Adobe Illustrator CS6 sees the end of Live Trace, bringing in a new tracing tool and engine housed in the Image

Trace panel. When one place a raster image in Adobe Illustrator CS6 (JPEG, TIFF and so on) can access Image Trace one of two ways [6]. By the presets in the Control Panel (can create own presets - more on this in a bit) or by using the comprehensive Image Trace panel under Window>Image Trace. There are five options that run across the top of the panel, which are separate to the presets - think of them as starting points. These are: Auto-Color, High Color, Low Color, Grey scale, Black and White and Outline. Once you've applied a starting point, the main slider within the panel changes contextually, giving further control.

3.1.1.2 Add more colors

It gives you options for adding more colors in the 'Color' starting points, Greys in mode and Threshold in Black and White and Outline modes [6]. You can choose different views as you're tracing: Tracing Result, which shows the final trace; Tracing Result with Outlines, showing paths; Outlines; Outlines with Source Image; and Source Image. At any time press and hold the small eye next to this dropdown to view the source image.

3.1.1.3 Gaussian Blur Effect

Another feature of note is improved, the Gaussian Blur. In Adobe Illustrator CS6 you preview your blur on the art board - if the Preview box is checked as you ramp up the slider your selected object blurs in real time. And once again, it's fast.

3.1.1.4 Pattern Creation tools:

Usually, an upgrade has a killer feature. Something that users just cannot imagine not having. If there's one feature that fits this mold it's Adobe Illustrator CS6's new Pattern Creation tools. Patterns are something designers and illustrators create in Illustrator on an almost daily basis. And this changes things in a big way. Creating patterns pre-CS6 was a little clunky. Create your objects, go to Edit>Define Pattern and then apply that swatch to your object. If you want to edit the pattern it was difficult, and lining up a tiled repeat using a pattern swatch was often frustrating. CS6 changes this.

3.1.1.5 Pattern Options panel

Here's a typical workflow to show you how easy it is to create repeat patterns. First, open or draw your objects, select them and then go to Object>Pattern>Make. Your object is immediately repeated according to the settings in the new Pattern Options panel. Your pattern swatch is added to the Swatches panel but you can edit in Pattern Creation Mode until you're happy, finalizing the swatch by hitting done. We'll go back to the Swatches panel in a moment. The Pattern Options panel gives you a huge amount of control over your patterns. You can change the tile type (even interactively tweaking the tiling using the Pattern Tile tool - accessed from the panel), spacing, copies and more depending on the preset you've chosen. A very handy option is being able to dim copies of repeats within your pattern as you're working on it - so you know you're working on the original object. A slider and percentage field let you edit the amount your repeats dim.

3.2 Methods of Design Works

These works are to develop a new influential area of Kantoji Mondir which clothing design can express by introducing the formativeness of constructionist's sculpture, which was a foundation of arts, into fashion and to realize it to be visual modeling. The main method applied in this study was the research of relevant documents and design work in the field. A visual and connective image was conducted by publications, articles, and magazines. Clothing design work was formed out of redefining the elements of constructivism by investigating its visual images and established a concrete design plan for the study. Primarily, data of design Kantoji terracotta designs including constructivism were collected and categorized to be analyzed formatively after background and concept of constructions were arranged and then constructionist of Kantoji terracotta to design applied to clothes formative embodiment were analyzed. In order to decide the clothing image, the con-



Fig. 3. Terracotta designs outside the temple

cept and properties of clothing design are arranged. The patterns and decoration from ancient time to the present time were studied historically and cases of clothing design shown in modern fashion were analyzed, centered on collections. The design works drawn into the construct shapes, repetitive as in fractals. The silhouettes were precisely draped, and drafted, for the most natural function of a garment, much in the same way a snail builds a shell. The colors are subdued and tonal, but not flat -they are soft with energy. The line consists of pieces that allow for stacking and layering and also mixing of textures and silhouettes, it also can combine very well other lines. The pieces are all very intentionally finished, from inside and out. I tried to sift some samples from the patterns on the walls of the temple as the following: The intelligent system is easy to learn and operate so that even the general user without the professional knowledge and skills can make it work efficiently. The new system combines the fashion design system with a pattern design system; therefore, the conception of the designer can be retained during the design process. The new system can greatly shorten the time required for the design and improve design efficiency. Also, it makes the expenditure for employing a professional designer unnecessary. The divinity of the terracotta design is associated with the tales of

Mahabharata and Ramayana, the exploits of Krishna and his spirituality, and a series of extremely fascinating contemporary social scenes depicting the favorite leisure time of the aristocrat class. There are also depictions of animated hunting scenes of wild games, royal processions of elephants, horses, camels, and dainty ox-carts of the nobility with their retainers in Mughal dress and arms. The richly caparisoned majestic elephants and splendid stallions, their chariot and harness are vividly delineated. There are also curving of the zamindars who are seen squatting in their gilded palanquins puffing from luxurious hukkkas with long sinuous pipes. Mythological scenes are also depicted, such as the nativity of Krishna, the demon King Kansa, successive attempts to kill the infant Krishna; Krishna's killing of the Putana ogress and the Bakasura or crane-demon [3]. The detailing of the Hindu scripture in its clay and crafted forms are explicitly striking. The temple consists of deities which depict the astonishing sense of reali



Fig 4. Application of different types of tools to create motifs ty, the endless panels of terracotta art embellishing & ornamenting the wall surface of the Kantaji Mandir, giving it a life and vitality of their own and are deeply imbued with the spirit nourished for thousand years on the silt-laden soil of Bangladesh [1]. From below image some terracotta designs motif is selected which were redrawn by computer graphic program (Illustrator).

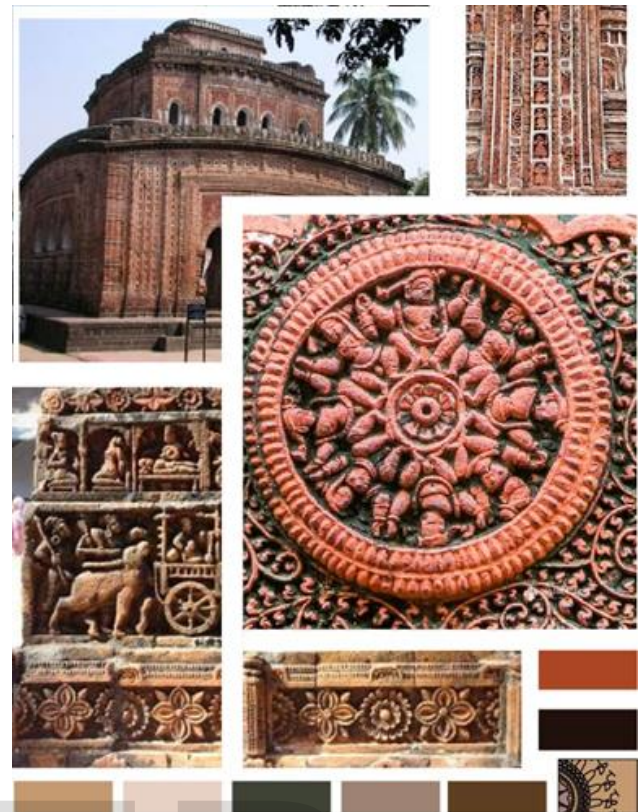


Fig. 5. Concept Board



Fig. 6. Mood Board

3.2.1 Development of others motif using Adobe Illustrator tools CS6



Fig. 7. Development of different motifs using Adobe Illustrator CS6 inspired from temple's terracotta design & implication- Figure axis labels are often a source of confusion.

3.3 Implementation



Fig. 8. Implementation of motifs into dress (Range Plan)

4 Result & Discussion

Terracotta design is very popular in art sculpture but a designer who designs clothes can be an observer and creative thinker as well as a good listener, a careful interpreter and a skilled craftsman who takes his/her inspiration from anything. He must understand style, composition, balance, aesthetics and human emotions and also understand the vision and the psychology of perception. Using elements of art, the designer must learn to think sense and generate with his heart.

The designer needs a new, fresh, innovative spark for creating any design. From inspiration, all these design ideas come. The inspiration for a design can be found everywhere. The aesthetic beauty of kantoji temple is asymmetrical order, geometrical structure, photo mixture techniques, and colorist implications. The asymmetrical order emphasizes rhythm and movement formed by imbalance and asymmetry, creating a dynamic rhythmical sense and expanding the spatial concept. Geometrical structures express features of non-objective forms and artificial, modern forms. A rhythmical sense is presented from geometrical structures of figure factors such as straight lines, oblique lines, circles, and squares. Kantoji temple's terracotta design has a new visual language that tells stories of Ramayana & the Mahabharata, the contemporary social scenes & favorite's pastime. Visual characteristics like clarity and visibility of colors were reasonably used to express intended themes or contents. Kantoji temple architecture can be an inspiration for a fashion designer. It may seem a little surprising to use an architectural temple as an inspiration for fashion design, but all examples of architecture, whether traditional or contemporary, can cause a creative spark to the designer. The fashion of constructivism which received influence from this constructivism include the trend of absolutism, productions designs, Kantoji temple expression of simplicity, applications of textile designs and motives, considering its characteristics such as geographical organization and abstract forms, expressions of dynamics and movement, use of clear colors, and simplified patterns. The trend of despotism stands for pure geometrical abstracts. It expressed cubism and nonobjective ground configuration by basic forms with squares as the factor and accompanied by circles of fashion designs of the production of Kantoji temple. As an art trend directly participating in productive activities, it rejected industrial materials based on realism and expressed abstract, dynamic beauty with a physical sense of proportion. It showed a new and equal value in clothes through the human body, as well as articulating clothes as a subject which powerfully presented a social sense of belonging by directly upsetting the wearer's insolence. Characteristics of simplicity trend designs have short, strict and simple formative lines as main factors and pursue simplification, miniaturization of detailed decorations. Especially a representative constructionist used a ruler and compass for comparison of geometrical patterns and colors, and to display structures of clothes and geometrical shapes. This formative feature designed productive working clothes called overalls. The top part could be separated as a uniform jacket while the pants were like a sailor's trousers with its needlework being completed by using textiles and leather used geometrical motives, collage, photograph montage, and motives with a theme. Designs were finished with various arrangements. As for determinative characteristics of clothes, forms highlighting practicality and convenience were designed and geometrical constitution rules were highlighted. The sketches that they have drawn guided them in deciding which details are to be used and which are to be eliminated of Kantoji temple. Finally, I have united the basic elements into their fashion designs. In these designs inspired by architecture, you can discover interesting textures, glamorous colors and strong design features

that reflect their source and are also concepts in their own style. In the following paper, the examples from these designs will be given and architectural interactions will be discussed. Geometrical organization and architectural images were stressed and simple, concise works based on geometrical motives with two-dimensional features that could go into mass production were designed. A new form of emphasizing function and purpose was proposed and a special production working clothes based on reductionism were made. Funiculars were used regularly and colors with strong contrast were applied as trimming. Gradual effects of colors were articulated to put stress on diversity. Rectangular or straight silhouettes were used for clothing design which can be easily manufactured and supplied for the public.

5 CONCLUSION

In this paper, we constructed the prototype of a garment with the designer working in art surface patches and expressed these relations into arithmetic and generated rules. By setting up the knowledge base with object-oriented technology and illation mechanism, we accomplished garment intelligent design; we have proposed a novel solution for the design of virtual garments of Kantoji temple terracotta design. An initial rough geometry is approximated by a piecewise developable surface. The folds that appear on a garment worn by a character are added procedurally, taking advantage of the well-studied buckling properties of the fabric. Since we compute the corresponding 2D sewing patterns, distortion-free texture mapping becomes straightforward, and realistic replicas of the designed garments can be sewn. My methods for developable approximation and for generating cloth folds can be used in several other contexts of Kantoji temple. In particular, the developable approximation method can be used for a variety of engineering applications requiring developable surfaces, such as forming or forging. our practical method for fold generation can be applied to generate folds on any input mesh representing a garment. This study is aimed at reviewing the unique formative aesthetics of constructivism for the creation of modern clothing design of Kantoji temple terracotta art. Constructivism can be regarded as bold plan delineation, a reciprocal symmetry, a geometrical whole line, the graphics formative material, and the functional and basic material contrast together with color contrast, which are the self-conscious expressions for a new sense of life. Geometric, spatial and constructional and kinetic form principles were applied as constructionist sculptures were introduced to shape visually image. The materials of works soft woven fabric. They were used to express such geometric and space constructional as a circle, square, triangle and cube. It was verified that they were themselves harmonized with clothing, they were shaped formatively and various materials were available in Kantoji Temple's terracotta. As a result, the expressive clothing design could be expanded as three-dimensional patterns composing space and a side was expressed by organizing the lines of the body. This works overcame such a problem by creating the conceptual view of the constructivism. It objectively created a design with nature as a subject, using these objectified elements in a design process. The method could be used in two different ways to-

ward this goal. The 2d patterns we generate can be used by a cloth animation system to compute the rest lengths of the springs that model the cloth material. Thus, the garments we design can be animated using standard techniques. Another option would be to take advantage of our procedural modeling of fabric folds during an animation. Then, only the control mesh would need to be animated using physically-based simulation, while fine details such as folds, costly to simulate since they are caused by stiff, buckling phenomena, would be added procedurally at no cost prior to rendering. We plan to explore this approach in the near future. Another possible application of our work is the prototyping of real garments. A fashion designer could use our sketching system to quickly sketch some clothing, automatically get different views of the garment, edit the model as necessary, and finally print the corresponding 2D patterns.

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