

**DESIGN
CULTURE**
PINK CITY DESIGN CONFLUENCE 2022

FORM. REFORM. TRANSFORM
CONFLUENCE PROCEEDINGS 2022

ARCH College of Design & Business
Jaipur, India





PINK CITY DESIGN CONFLUENCE 2022

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Greetings and Welcome to the Pink City Design Confluence

The following papers have been collected and presented here for your convenience. Please note that the papers are presented here in the guise presented to us and therefore we have not edited or revised any content. In these circumstances, please note that the Arch College of Design & Business bears no responsibility for their content, or for the expressed views of the authors presented in the papers. These remain the responsibility of the authors themselves. The views and content of the papers are owned by the authors and any further reproduction of their content is expressly forbidden unless you contact the authors direct for their permission.

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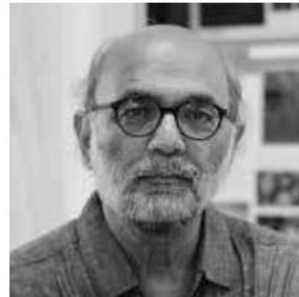
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THE RIPPLE EFFECT

By Students of Foundation Department

"Art is not just about painting or performing or sculpting, it is about speaking a certain deep truth. This faceless installation is like a torch that emits a ray of hope while the colours create a ripple effect. The installation proposes how the human race is richer and stronger for the diversities that exist within us. It allows people to experience gender fluidity as a positive movement towards a more inclusive world. The colours over the white surface of inclusiveness depict the beauty of diversity while the wings give the onlookers a message of peace and positivity towards this idea of collectivism and gender fluidity."



SPECIAL THANKS

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Managing Director, Teamworks &
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& college of Art, Design & Media.



FOREWORD

The contents of this book are a compilation of around twenty six research papers received as part of the 'Design Culture - Pink City Design Confluence 2022', an international event scheduled between 9th and 16th March 2022.

With its theme Form Reform Transform and sub themes Creativity 5.0, Society 5.0. Harmonious Livability and Design Leadership, the Design Culture drive of the Arch College of Design and Business has been conceived to spread out far and wide in the creative domain for not only students, but mentors, researchers, professionals and the industry. The intent is to create an interface between education and industry sectors to debate on how Design-Technology led education can be leveraged to support the emerging economies of the new world.

This compendium of these papers share research experiences of prominent design practitioners and researchers, addressing to the theme and sub-themes which are central to the transformation of the meaning of design from it's form and function based understanding to a much larger and meaningful context, which is the need of the times during this complex and unpredictable world of today. This book is an attempt to make these exemplary works of research available to interested readers.

Most of these papers have been delivered during the online research panel of the PCDC 2022 and for those interested, it will be prudent to add that the actual content delivery by the authors may be accessed by searching for the titles and keywords curated in the institute's online archives.

Happy reading!

BHARGAV MISTRY

Dean – Design Culture
Arch College of Design and Business
Jaipur
India



BIRD-BOX

By Students of Foundation Department

"Bird-Box is a term for not looking at something or avoiding it.

This installation is created by using the ignored scrap found in our surroundings using the Japanese technique of folding paper to form birds, we have taken the term 'bird- box' literally and created a ball of birds using discarded papers. With the help of the light effect, the birds appear to get dropped by the rain and create an 'Organised chaos'."

PREFACE

ARCH College of Design & Business has been disseminating quality Design Education with an Individual Centric Focus for 22 years now, and it continues to do so! ARCH's mandate is to nurture a culture of design and social entrepreneurship, with a holistic, multi-disciplinary approach; and to create design professionals who can keep reinventing themselves and position design more strategically as an integrator of aesthetics, business, technologies and sociological concerns.

Through design education ARCH endeavours to empower students with the knowledge, skills, values and attitudes to address the many interconnected global challenges faced today like Climate change, environmental degradation, loss of biodiversity, poverty and inequality.

ARCH's DESIGN CULTURE initiative was inspired by the need to harness the power of Design to enable the aspirants of the creative and innovative domain to become Explorers, Creators, Changemakers and Leaders; Learners who are on a journey to understand themselves and the world at a deeper level, experiencing learning as a voyage of adventure and discovery; Self-directed practitioners who yearn to grow their creative capacity and love the discipline of expanding their abilities to solve complex global issues; Changemakers who extend the creative realm and focus on business and applied technology, keeping Circular Design at the epicentre; and quality human beings who are team nurturers; passionate, receptive, confident, and socially inclusive.

Following the successful conclusion of the International Fashion Colloquium 2020, which culminated in the Jaipur Responsible Fashion Manifesto 2020 declaration, ARCH has conceptualised and organised this Pink City Design Confluence 2022. With the theme 'FORM.REFORM.TRANSFORM', the Confluence is trying to facilitate forums to analyse and contribute to the content and nature of training that could be considered appropriate for developing the next generation of designers and Design Leaders capable of transforming existing scenarios!

As a prelude and a lead up to the Confluence, we have had eminent practitioners and academicians worldwide address these concerns in over 20 online panel discussions conducted over three months. Recordings are available for viewing on YouTube. Collaborating and supporting the event as advisors, Scientific Committee members, and jury, are the World Design Organization (WDO), International Foundation of Fashion Technology Institutes (IFFTI) and CUMULUS; forums in which ARCH holds full membership. The exciting content plan for this international event can be explored on the ARCH website, along with the subthemes and participation guidelines.

The Confluence is acting as a hybrid platform where over 25 researchers from 10+ countries are presenting papers and presentations on the themes and sub-themes of the confluence. There are Design Awards; a Designathon; Design Story - a photo/ video competition; installations; the Design Dhara Exhibition; Design Culture School Awards, and much more, where design researchers, educationists, professionals, scientists, and corporates share their insights and culminated design learnings and experiences to examine the culture and effect of Design.

Mrs. ARCHANA SURANA

Founder & Director, ARCH College of Design & Business

13TH MARCH 2022
sunday

03:00 pm

ARCH is hosting a Session on-
Form, Design and Function: Leadership & Society

Satish Gokhale, Founder Director,
Design Directions Pvt. Ltd.
Founding Member, (ADI)
In Conversation with
Archana Surana, Founder & Director,
ARCH College of Design & Business
Chairperson, Pink City Design Confluence

07:00 pm

GABA - ARCH Fashion Show 2022 at Amer Fort

15TH MARCH 2022
tuesday

09:00 am

Registration & Campus Round

11:00 am

Industry Panel
"Experiencing the Metaverse within the Universe"
Shrutidhar Paliwal, CEO, Framtix Holdings AB
Puneet Mittal, Co- Founder & Managing Director,
Pratham Software (PSI)
Sanjay Yadav, Program Architect, 100 Cofounders Lab
Yashika Khater, Crypto Educator, WazirX Warrior & Y
MODERATOR: Manan Surana, Excellence Officer, ARCH College

12:00 pm

Industry Panel with **Garment exporters association for Rajasthan (GAEAR)**
"Materialize vs Dematerialize - Emerging Trends for Society 5.0"
Rakesh Poddar, Director, Cheer Sagar Exports
Anupam Arya, Co- Founder, Fabriclore
MODERATOR: Archana Surana, Founder & Director, ARCH College

03:30 pm

Industry Panel with **Indian Institute of Interior Designers (IIID)**
"Biophilic Interiors for the Modern World"
Sheetal Kumar Agarwal, Chairman IID - JRC
Nikhil Agrawal, Chief Architect at Design Atelier
Megha Bhatnagar, Architect, Archeus Design Studio
MODERATOR: Bhargav Mistry, Dean Design Culture, ARCH College

16TH MARCH 2022
wednesday

FORM
FORM
FORM
TRANS
FORM



Kris
Pres

04:00 pm **11** FRIDAY (online)
Inauguration
Keynote Address: Design Culture (s) for Peace
Prof. Lorenzo Imbesi, Full Professor,
Sapienza University of Rome
Design PhD Chair, Cumulus Executive Board

10:00 am **12** SATURDAY (online)
11:30 am Research Paper Panels
02:30 pm Society 5.0, Chair: Dr. Lakshmi Murthy, Founder-Vikalp Design
04:00 pm Creativity 5.0, Chair: Archana Surana, Founder & Director, ARCH College
05:30 pm Design Leadership, Chair: Patsy Perry, Reader in Fashion Marketing, MMU, UK
Harmonious Livability, Chair: Prof. Lorenzo Imbesi, Professor, Sapienza University of Rome
Creativity 5.0, Chair: Prof. Lorenzo Imbesi, Professor, Sapienza University of Rome

October
(GEAR)

2022
wednesday

09:30 am Session on
11:00 am **Creating of Aha! moments by Krishan Jagota**
President, Association Of Designers Of India (Mumbai Chapter)
Industry Panel
Transformation - Form & Function within the Jewellery Industry*
Shimul Vyas, Principal Designer, Founding Faculty,
Lifestyle Accessory Design, NID
Gaurav Mehta, Founder, Jaipur Watch Company
Prema Makharla, Digital Creator, India's 1st Jewellery Influencer
MODERATOR: Archana Surana

12:00 pm Panel on
"Women in Design Leadership - Changing Heartsets"
Hema Yadav, Director Varnicom
Shipra Mathur, Founder, PEN, Consulting Editor, Global Stratview
Pooja Mukul, Director, Jaipur Foot Rehabilitation Centre & BMVSS
Jaipur Foot Organisation
Archana Surana, Founder & Director ARCH College

06:30 pm Closing Session
Keynote Address
Surya Vanka, Founder & Chief Designer, Authentic Design
Former Director of User Experience, Microsoft

Award Ceremony
Gayatri A. Rathore, IAS, Principal Secretary, Tourism, Art & Culture
Government of Rajasthan
Pradyumna Vyas, Advisor- Confederation of Indian Industry (CII),
Board Member- World Design Organisation (WDO),
Immediate Past Director- National Institute of Design,
Shimul Vyas, Principal Designer,
Founding Faculty- Lifestyle Accessory Design, NID

Krishan Jagota, Product Design Head, Sideways
President, Association Of Designers Of India (Mumbai Chapter)

14TH MARCH 2022
monday

10:00 am Workshop for New Researchers,
Chair Bhargav Mistry, Dean Design Culture,
ARCH College
11:30 am Digital Poster Presentation,
Chair Mohd. Bilal Abid, Dean Academics,
ARCH College

02:30 pm Research Paper
04:00 pm Society 5.0, Chair: Dr. Biljana Jovic,
Dept. of Landscape, University of Belgrade, Serbia
05:30 pm Harmonious Livability,
Chair: Prof. Ian W. King, Former Professor, LCF, UK
P-RE Practise - Research - Education Workshop
by Cumulus & IxDA
Eija Salmi, Secretary General,
Cumulus International
Alok Nandi, Managing Director Partner,
Spread Design Architempo

PARCHAYEE

By Students of Product Design Department

"Nothing is as nostalgic as remembering your childhood memories". Parchaayee, an ambience light designed for the side table, brings you back your childhood memories of flipping a sketchbook and playing with light and shadow. It is made from 20 gauge brass sheet, with traditional jaali cuttings, inspired from Maharaja Palace, Rajasthan. It creates patterns of jaali on the wall, which can be changed by flipping the sheets.



SPEAKERS



SATISH GOKHALE
Founder Director, Design
Directions Pvt. Ltd.
Founding Member, Association of
Designers of India (ADI)



PRINCESS GAURAVI KUMARI
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Princess Diya Kumari Foundation



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Pratham Software (PSI)



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Product Design Head, Sideways
President, Association Of
Designers Of India (Mumbai
Chapter)



SHIMUL VYAS
Principal Designer,
Founding Faculty- Lifestyle
Accessory Design, NID



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Chairman IIID- JRC



RAKSHIT PODDAR
Director, Cheer Sagar Exports



SHRUTIDHAR PALIWAL
CEO, Framtix Holdings AB



PRERNA MAKHARIA
Digital Creator, India's 1st
Jewellery Influencer



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SANJAY YADAV
Program Architect, 100
Cofounders Lab



HEMA YADAV
Director Vamnicom



MEGHA BHATNAGAR
Architect, Archeus Design Studio



NIKHIL AGRAWAL
Chief Architect at Design Atelier



ABHISHEK RANIWALA
Founder & Creative Director at
Raniwala 1881



SHIPRA MATHUR
Founder, PEN, Consulting Editor,
Global Stratview



POOJA MUKUL
Director, Jaipur Foot Rehabilitation
Centre & BMVSS
Jaipur Foot Organisation



RAMESHWARI KAUL
Co- Founder Cotton Rack



YASHIKA KHATER
Crypto Educator, WazirX Warrior
& Youtuber



GAURAV MEHTA
Founder, Jaipur Watch Company

THEME 1

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AIKYAM

By Students of Interior Design Department

"Everyone in today's world tends to stay in their own cocoon. But when two people come together, they tend to create a space and environment of their own which is lled with their energies. We created a space where people can interact together and in India, one of the ways is a marriage where the personality, behavior, and traits are analyzed on the basis of The Guna Matching system where the minimum number is 18 which goes up to 32. As platonic solids show stability we incorporated the shape with crystal as the process of crystallization solidifies the shape more, making it stronger. The uid art on the product signies the thought of molding oneself for each other wherein a person tends to adapt and embrace the qualities of their counterpart."



CREATIVITY 5.0



IDLEATION

By Students of Foundation Department

*"Transforming one's scrap into another person's treasure,
This installation is a man sitting idle and admiring nature
around. Form reform transform"*



THE MIRACULOUS POWER OF TRANSFORMATION INSPIRED BY THE FLOWER OF DANDELION (LEONTODON TARAXACUM L.)

DR. BILJANA S. JOVIĆ

Department of Landscape Architecture and Horticulture,
Faculty of Forestry, University of Belgrade, Belgrade, Serbia

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ABSTRACT

This paper is focused on researching the scientific field of bionics/ biodesign and its connection with landscape architecture through the design process of parametric modeling. Biomimetics, bionics, or biomimicry is a relatively young but very modern scientific discipline that studies models from nature, translating them into solutions to current problems while ensuring their sustainability. The term bionics is a combination of two areas: biology and technology. Biology is the science of life, while technology encompasses the widely applicable development field of constructive machines, devices, tools and processes. These two areas, fundamentally different, in this case ideally complement each other. Nature is the best teacher. The application of biomimicry leads to faster solutions and answers to the great challenges of the modern age. With the progress of civilization and the development of modern technologies, the importance of bionics is growing rapidly and becomes necessary in the humanization of today's way of life. This work is inspired by the flower of the dandelion (*Leontodon taraxacum* L.) (Figure 1), a fascinating plant of exceptional vitality and cosmopolitan distribution. The paper focuses on the analysis of the natural shape of dandelions, using a bionic pattern and parametric modeling. It has been shown that Blender software is suitable for parametric modeling, generating of bionic parameter and sustainable solutions. Beside this SketchUp and Lumion software were used. Since morphology of dandelion flower is heading shape and seeds are with pappus, construction of geodesic dome is suggested. The focus is in fibres of pappus designed as illuminated elements which collect energy during sunny days and release the light during night period. The enclosed form of the geodesic dome enables the achievement of the greenhouse (botanical) garden effect, which would represent a mini green oasis in an urban environment.

KEYWORDS:

Biodesign, Parametric modeling, *Leontodon taraxacum* L.,
Art installation, Landscape architectural design



Figure 1: Dandelions (*Leontodon taraxacum* L.)

1. FLOWER FORM OF PLANT SPECIES LEONTODON TARAXACUM L.

Flowers have always been a universal symbol of beauty, love, peace, and bliss that we primarily associate with good and positive human emotions. The shape, smell, color, and texture of flowers positively affect human perception and create a sense of harmony.

Dandelion (*Leontodon taraxacum* L.) (Figure 2) is a very resistant plant species, cosmopolitan in distribution and of exceptional vitality, considered a symbol of hope, unity, peace, happiness, and childhood. An interesting metaphysical association is that the dandelion is the only flower that, in its stages of development, represents three celestial bodies - the Sun, the Moon, and the stars. When it blooms, the yellow flower looks like the Sun; when it matures, its white head (rosary) is associated with the Moon, and the seed scattered in the wind translates to countless stars in the sky. Only seemingly tender and vulnerable, it is a symbol of perseverance and strength: dandelion is a "pioneer species," one of those plants that will be the first to grow roots after major natural disasters, especially fires. Due to its regenerating ability, it is believed that it collects and emits solar (cosmic) energy throughout the year.

Dandelion is a perennial herbaceous plant with milky sap, 2-100 cm high and belongs to the Asteraceae family. The rhizome is multi-headed. From the vertical, well-developed and deep root, a leaf rosette emerged and lay on the ground. The leaves are obovate to narrowly lanceolate, usually deeply serrated and deeply pinnately divided, serrated. The flowers are lingual yellow to light yellow, rarely orange-red or whitish-yellow, arranged in a glabrous inflorescence. The fruit is a single-seeded syncarp nut (achenia) with white pappus. Achenia is light (gray to dark brown) or black, never brown to bright red, with many prickly nodules.

The universal custom associated with dandelion is to pick the plant in a blooming phase (white puffy ball), "make a wish," and then blow the seeds, which get scattered in the wind, allowing new plants to emerge. The inspiration for creating this spatial installation (pavilion) is precisely the adaptability, resilience, and great vitality of this plant species. The wide distribution of dandelions directly depends on their reproductive mechanism and plant material. In its overblown phase, the yellow dandelion flower is replaced by a white ball-shaped head composed of a large number of seeds (achenia) topped by a white pappus composed of a series of fluffy filaments.

According to the researches, the key to success is the shape and structure of the papule, which resembles a small parachute - an umbrella, thanks to which air currents transmit the seed. The structure of dandelion seeds and the way it is dispersed is a real example of how evolution can influence the creation of mechanisms of adaptation and successful survival and spread of a species. This plant is able to produce up to 5,000 seeds a year.

The aim of this paper is a symbolic presentation of an installation that stylizes one such perfect form of existence. The whole life cycle of this plant is made possible thanks to the tiny but very powerful seed, which represents the spark and impulse of life. The essence of survival is found in the seed carried by air and comes into contact with the element of the earth, activating a new life and continuing the life cycle.



Figure 2: Dandelion (*Leontodon taraxacum* L.)

2. REFORM - SPATIAL INSTALLATION

Of particular interest is the harmonious shape of the flower, which is often used as inspiration in architectural design. Examples of modern architectural structures, whose basic shape is inspired by the morphology of the flower, are based on minimal geometric shapes that build complex structures. Possibilities for applying biomimetic principles in architectural design are based on geometric principles, providing an opportunity to develop various generic models based on parameters originating from nature and whose configuration is adapted to the requirements of spatial structures.

In this paper, the form of a geodesic dome was used as a basis for the symbolic representation of the construction of the dandelion flower plant form (*Leontodon taraxacum* L.).

The characteristics of the geodesic dome, its high resistance, durability, and a high degree of functionality, as well as the spherical shape itself, can be related to the properties and appearance of dandelion (*Leontodon taraxacum* L.) in its flowering phase - white ball-shaped head composed of a large number of seeds with pappus. The shape of the geodesic dome is related both to the geometry of the universe and the molecular structure itself. The shape of the geodesic dome provides excellent aerodynamic properties and enables great resistance and durability of this construction even in very inaccessible environments and climatic conditions. Precisely out of these reasons, Buckminster Fuller pointed out that a geodesic dome is the best way to secure human habitats on the Moon, Mars, or other celestial bodies.

2.1. PROCEDURE FOR MAKING THE CONSTRUCTION OF A GEODESIC DOME AND PART OF THE ACHENIA WITH PAPPUS

The first step in creating the structure of the geodesic dome, in the Blender program, is to select the geometric solid of the icosahedron and transform it into the shape of a geodesic sphere by a digital process of geodesic triangulation. By switching to Edit mode, the lower half of the sphere is highlighted and deleted.

After the first step, in Edit mode, the edges command is turned on, the object is selected, and the Bevel option that defines the edges of the triangles, i.e., future constructions themselves. Next step is to the faces command and select all the surfaces of the triangles, then Extrude Faces along Normals, which achieves differentiation and movement of all internal surface (triangular).

At the end, the choice of texture remains. Using the same procedure as in the previous step all surfaces of the triangles are selected, and in the Material tab, the color is selected, Metallic is adjusted, and the entire geodesic dome takes over the selected characteristics.

To single out only the mesh construction of the geodesic dome, all surfaces of the triangles are selected and deleted.

To create the shape of a dandelion achenia with pappus, the option Mesh> Curve> Bezier is used, and to correct the selected curve. In the Properties category - Object Properties, x, y, z coordinates are assigned, and in Object Data Properties> Depth. On the Object mode, selected

command: Object> Convert to> Mesh from Curve / Mesh / Surf / Text, allows continue working in Edit mode. In this way, the initial curve with the help of Vertex is formed.

To form papule filaments in the Object Data Properties category, a new Vertex Group is created. In the Particle Properties category, the Hair command is selected; Number, Advanced is set, and Vertex Group> Density> Group is activated. After this procedure, the pappus got its basic shape.

The selection of texture and material is made in the same way as described in the previous process of making a geodesic dome. To fully create a 3D model, the installation (pavilion) inspired by the dandelion flower in the overblown phase, it is necessary to add elements to the shape of the geodesic dome that represent achenes with pappus, which are characteristic for this plant species. A 3D model of the construction of the geodesic dome and a 3D model of the element of achenia with the papules previously created in Blender was added to the SketchUp program in which they were connected and a glass surface was added. After that, to add realistic effects, the 3D model was converted to the Lumion program.

3. THE MIRACULOUS POWER OF TRANSFORMATION AS A MANIFESTATION OF THE POWER OF NATURE

The process of transforming the shape of the dandelion flower is fascinating, from the phase of the yellow flower to the whitish achenes with the pappus that the wind blows. The whole secret of nature and the absolute secret of life is hidden in one dandelion flower. Just as life represents a great cycle, when something "dies" something new begins to be born.

The whole harmony of nature is based on constant change.

The mythological bird Phoenix, which is reborn from its ashes after death, symbolizes the power of resistance and transformation. This fantastic creature dies because it knows that after that it rises and becomes stronger. His resurrection from the ashes is actually a restart. Due to its fiery nature, the Phoenix is associated with the Sun, where there is also a resemblance to a dandelion - a sun-shaped flower.

Everything material is doomed to the time and space limitations as well as to the constant process of change. Evolution is a typical example of change, transformation for the purpose of optimal adaptation for the sake of survival (on this planet).

From the phase of the yellow sunflower dandelion, after closing and reopening, it becomes completely different - the yellow dandelion flower turns into a white ball. Each change leads to something new, in the case of dandelions, it establishes a life thread. Life continues to flow. Many of these scattered parachutes will turn into new dandelions and the life cycle continues.

In addition to selecting the metallic white geodesic dome construction that is glazed, the focus is on the papulae filaments designed as luminous elements that collect solar energy during the day and are activated during the night to emit light. The enclosed form of the geodesic dome enables the achievement of the greenhouse (botanical) garden effect, which would represent a mini green oasis in an urban environment. (Figures 3, 4 & 5)

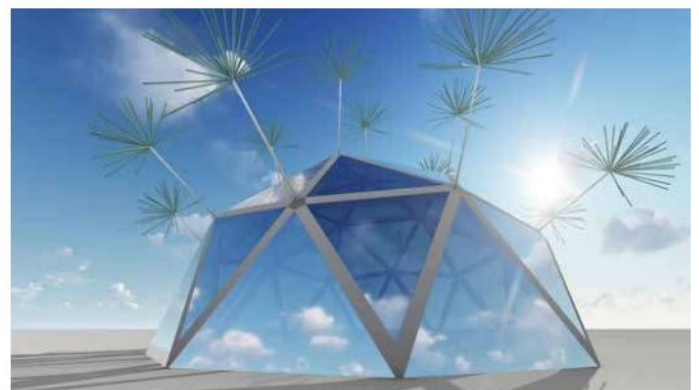


Figure 3: Final appearance of a 3D model (installation/pavilion) inspired by a flower of the species *Leontodon taraxacum* L.



Figure 4: The interior of the installation/pavilion inspired by a flower of the species *Leontodon taraxacum L.*



Figure 5: The interior of the installation/pavilion inspired by a flower of the species *Leontodon taraxacum L.*

4. CONCLUSIONS

This is why it is not surprising that today, in a time of accelerated technological development and growing alienation from nature, people have an increasing need to integrate with nature in urban areas. Bionics, an area of connection of nature and technology, with its principles, can contribute to that. The very essence of the growing presence of bionic forms is that through nature, as a model, it has a positive effect on modern human, primarily visually and psychologically.

There are many positive effects when the biomimetic approach is included as a new methodology in the field of landscape-architectural design. These original open-plan design models can be a new direction in nature-inspired urban design.

The result of this research is a generated bionic art form that is materialized in the form of conceptual solutions for the design of spatial installations inspired by the flower of the miraculous power of transformation - dandelion (*Leontodon taraxacum L.*)

“There is nothing that would be as worth studying as nature.”

Nikola Tesla

Nikola Tesla was the greatest inventor of the last millennium, and his inventions are the property of the entire human civilization. After his discoveries, the world is no longer the same! Nikola Tesla is the son of all humanity, not only Serbian and Slavic. In addition to Tesla's mechanical inventions, in the future there will be results for the humanities such as sociology, ethics, philosophy, logic, ecology, psychology, physiology, all the way to medicine itself.

ACKNOWLEDGMENTS

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REFERENCES

- Biljana S. Jović, Dragica D. Obratov Petković, Aleksandar A. Čučaković and Olga D. Gajanić (2021) BIODESIGN INSPIRED BY THE LEAF AND FLOWER OF DANDELION (*Leontodon taraxacum L.*) Proceedings of 13th Asian Forum on Graphic Science (AFGS 2021), 6-7, DEC, 2021, HONG KONG, Virtual Conference. <https://afgs2021.com/wp-content/uploads/2021/12/AFGS-proceeding-v5-20211204.pdf>, ID 25, pp. 1-14, Edited by Heng LI, Hsi-Hsien WEI, Hung-Lin CHI, The Hong Kong Polytechnic University, Hong Kong SAR, Published by the AFGS2021 Organizing Committee.
- Biljana S. Jović, Dragica D. Obratov Petković and Olga D. Gajanić (2021) BIODESIGN IN ARCHITECTURE, LANDSCAPE ARCHITECTURE AND FASHION, Revista Brasileira de Expressão Gráfica, Vol. 9, No. 2, ISSN 2318-7492
- B. Jovic (2018) Biomimetic Principles in Landscape Architectural Design, 15th Symposium “Landscape Horticulture 2018” University of Belgrade, Faculty of Forestry, Department of Landscape Architecture and Horticulture, pages 104-114, Belgrade
- P. Gruber (2011) Biomimetics in architecture: Architecture of life and buildings, Springer
- B. Jovic, A. Cucakovic, M. Markovic, and K. Cvijic (2021) Biomimetic Approach to Parametric Flower Modeling, Conference proceedings ICGG 2021; Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 1296) Springer Nature Switzerland AG 2021 L.-Y. Cheng (Ed.): ICGG 2020, AISC 1296, pp. 244–251
- Kojić M., Mihajlov M., Kišgeci J. & Cvetković M. (1999) Medicinal plants of Vojvodina, Institute for Agricultural Research “Serbia”, Federal Ministry of Agriculture, Federal Institute for Plant and Animal Genetic Resources, Belgrade
- Flora SR Srbije VII (1975) Serbian Academy of Sciences and Arts - Department of Natural and Mathematical Sciences, Belgrade
- Obratov, D. and Đukić, M., Mala flora Avale
- Petković, B. and Obratov-Petković, D. (2014) Botany with practicum, University of Belgrade - Faculty of Forestry, Belgrade
- Aleksandar Cucakovic, Biljana Jovic and Mirjana Komnenov (2016) Biomimetic Geometry Approach to Generative Design, Periodica Polytechnica Architecture, 47(2), pp. 70-74
- Biljana Jovic and Andjela Mitic (2020) Exploration of nature-based biomimetic approach in landscape architectural design: parametric study of candelabra model design, Visual Computing for industry, Biomedicine, and Art 3:25, VICO-D-20-00017R1, Springer
- I.Sjekloća Miller (2019) Nikola Tesla - The Inner World of Health - Medicine, Akia M. Princ, Belgrade



THE DESIGN PROCESS ROLE ON ONLINE COURSES: ALUMIA CASE STUDY

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INNOVATION IN PRODUCTS FOR THE VUCA WORLD

As the Covid 19 pandemic happened, the processes for creating online courses were intensified. Because people were forced to stay at home, the entire educational system had to adapt. Classes started to be online, and the idea of just teaching through a computer was proved not to be the best way of teaching. Several educational institutions were preparing their own online courses: it is scalable, as it can be accessed all over the world and cheap: once the course is finished, the educational institution can sell it endless. Although many of these educational institutions had their processes of creating online courses still in their infancy, they were forced to adapt to the new modality. But to what extent do these courses promote student learning? What is the role of the design process and its management for a better online course? On this article, we examine Alumia's design management for creating online courses and how its design process management contributes to a differentiated course. Located in Brazil, the company has its own methodology for creating its courses. Firstly, the authors examine theoretical basis: what is design process and design management; What does this mean when its related to creating online courses; What education authors are used on Alumia's methodology. After that, the authors examine Alumia's methodology itself: How is the course actually made? How does the design management is used and what are the key results of it.

KEYWORDS:

Design process. Design management. Online courses. Alumia Methodology.

Distance learning happens when students and teachers are physically and/or temporally remote using a media so that the learning process occurs. In Brasil, it started in 1904 through letters. Since then it evolved using different medias such as Radio, television and internet (Leite, 2021).

By the end of 2019 the world suffered a huge impact. The First case of Covid-19 was detected in Wuhan, China. It affected different practices such as shopping, working and studying worldwide. Nowadays we are still learning how to do some activities and adapting to old ones. We are living the "New Normal" as the Covid 19 pandemic changed habits and behaviors.

The pandemic also changed how we study. As mentioned before, distance learning already existed, but as the entire world had to practice social distancing many classes were canceled: distance learning must happen not only for adults, but for all ages and educational stages. "Adaption" became the core word for different workers and Educational Institutions. the core word for different workers and Educational Institutions.

When we think about education and knowledge we think about development and innovation. And consequently we think about technology. Technological advances happen exponentially. Educational processes have also improved. We have rich contributions from

renowned pedagogues, dating back to Ancient Greece until Paulo Freire (1921-1997). Freire thought about a school that changes the lives of its students. Every day, virtual learning environments become more interactive due to web 2.0, allowing countless possibilities and using different media so that students can learn and interact.

Decherney and Levander (2020) point out that perhaps most importantly, where campus faculty are often left alone in a classroom, online learning is always a team effort. Teachers and professors may be experts in their fields, but not everyone can't be expected to be experts in research to support online teaching and learning. They [...] do not follow studies of learning outcomes or assessment design strategies or adaptive learning technologies. And so instructional designers have become the Sherpas of online learning teams, experts in teaching and planning a course.

This analogy of Instructional Designers being considered Sherpas is perfect as we understand that Instructional Designers are the ones who help in a decisive way to achieve the main goal, which is learning. Long before COVID-19 provoked the global wave of online educational disruption, since 2004 the online educational field has been growing but lacking in professionals capable of not only adapting to the online model but also knowing how to interpret and develop new methodologies. Hybrid teaching, mediated by technology, had been adopted by most Brazilian universities.

In the same way that the virus boosted online education, it exposed other weaknesses such as the natural requirement of adapting the curriculum to the applicable active methodologies. It is still common using corporate teaching practices. Using very little of the concepts of andragogy and at that time, more than ever, it was necessary to apply concepts of heutagogy.

"In this scenario, it is clear that the lack of skills and competences of its main actors has turned into the assumption that online or remote teaching is the villain of the state of confusion and stress generated by the pandemic in the Brazilian educational ecosystem, however, given Historical evidence demonstrates that this impact stems from the lack of adequate teacher training and the lack of equipping of Educational Institutions (EIs) to deal with technologically mediated remote education or teaching. There are also reports of resistance to distance education, located especially in public education, aggravating the unpreparedness of teachers at these EIs for this new imposed reality."

(ROCHA, 2020)

Translated by the authors.

Filatro and Cavalcanti (2018) say that the use of immersive virtual environments, using AR and VR, promote interactive learning experiences. And as we will see later on, interactivity is extremely important so that those involved are not spectators, but part of the processes.

“Education can be at a distance, but the relationship must be close.”

It is already said that, in a very near future, education will be mediated not only by Virtual Environments but by Artificial Intelligence - AI. However, we know that, for this to happen, the creative and innovative supply of technological artifacts is necessary. And for that, the alignment of skills and abilities of design professionals will be essential.

ALUMIA

Alumia is a Brazilian educational startup located in São Paulo, Brazil. It is an OPM (Online Program Management), creating and managing courses for different Educational Institutions. It manages the entire process: not only it creates the courses but also creates the marketing campaigns related to the courses, registering the students and tutoring them. For running this operation Alumia has different teams, working for different areas: sales team, marketing, education and innovation and tutoring. In this paper we will be discussing the role of the education and innovation team.

ALUMIA'S METHODOLOGY

According to Leite (2021), Alumia's methodology offers 5 operational proposals :

Multiple Operational Proposal: The educational content is presented in different media such as videos, ebooks and podcasts. This proposal relates to how the student learns and is designed to fit all learning styles.

Current Operational Proposal: It relates to the educational content that is presented to the student and its relevance for its life.

Gradual Operational Proposal: This Proposal is related to the complexity of the content that is being taught. The content is always related to previous knowledge known by the learner and it gets more difficult as the student makes progress along the course.

Iterative Operational Proposal: The educational content is offered more than once using different media and activities so that the learning process actually occurs.

Collaborative Operational Proposal: It relates to how the student learn, becoming the star of its own learning process.

As mentioned before, the faculties themselves may not know the process of creating educational content for online courses, as used to perform in classrooms. For this reason, Alumia has its own course so that the professor can write its own online course.

This course is based on the hero's journey and this idea of the journey is used to create a more immersive course. It is divided in 3 acts:

Act 1- Welcome - How the course is divided: how the content presented will help the student solving its problem and who is the course instructor.

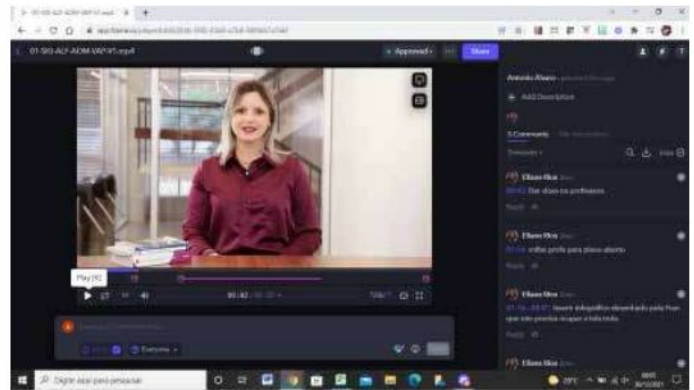
Act 2- Learning Trail - The Educational Content itself.

Act 3- Hands On - Activities that will help the student on practicing what he/she learned such as forums and quizz.

This course is offered for all the content creators for free. For designing the courses, Alumia works with squads, a model used by big tech companies such as Spotify. Each Educational Institution has its own squad: an Educational Designer, a Graphic Designer and a Video Editor - number may vary according to the number of programs and courses offered by each Institution. Working with Squads allows a better understanding of each Institution particularities: identity system, LMS, media used.

The educational designer is responsible for designing the course itself: it thinks about how the content will be presented on the ebook, video and has control of the entire process and deadlines. As the Educational designer works with at least 3 courses at the same time, being organised, time oriented and having good communication skills are mandatory for the success of each project.

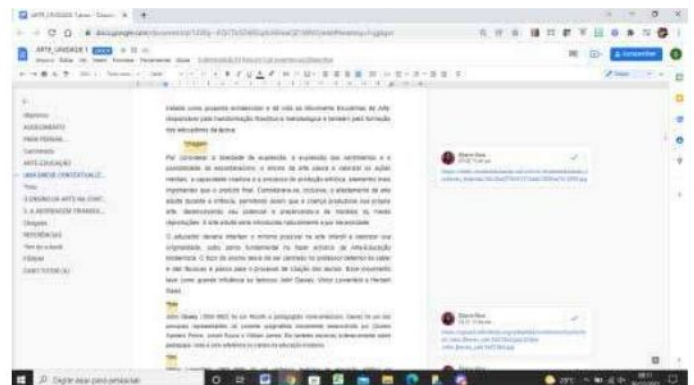
We show below some steps of the process of creating an on-line course:



Picture 1: Once the video is made, the Educational Designer and Video editor use Frame.io software: the Designer writes guidelines for the editor such as framework to be used and words to be inserted.



Picture 2: a shot of the video.



Picture 3: For written content, the Educational Designer writes notes for the Graphic Designer: images to be used; infographics to be made.



Picture 4: A glimpse of the written content - as the students see it.

The Educational Designer also communicates with other professionals in Alumia, such as the sales and marketing team, providing tips about the program or tutors. Being close to the tutors is also important for the student's success as mentioned before.

As the Educational Designer is not only thinking about the aesthetics aspects of the course and how they help the student during the learning process, being close to the tutors makes the student's experience richer. As creating a program is a process, the success of this process must be measured. A research is made when the student finishes the course/module. With the data collected, the Educational Designer understands what resources were important for the student and which resources were not. There were cases when the entire course was re-made based on the data gathered.

INFERENCE

Through this paper we have known Alumia's methodology for creating online courses. We've also shown the Squads working model and how it makes the team more focused on each Educational Institution.

We have made visible that the Educational Designer should be aware of the entire process for creating an online course highlighting the soft skills for doing so: Good Communication, being Time Oriented and Organised. Although each Educational Institution/ Program is unique, following a methodology and knowing its core principles is essential for learning objectives being achieved by the student.

REFERENCES

- Decherney, P. and Levander, C. (2020) "The Hottest Job in Higher Education: Instructional Designer", [online], Washington Inside Higher ED, www.insidehighered.com/digital-learning/blogs/education-time-corona/hottest-job-higher-education-instructional-designer/complex.htm
- Filatro, A. (2018) Como preparar conteúdos para EAD: Guia rápido para professores e especialistas em educação a distância, presencial e corporativa. Saraiva, São Paulo.
- Leite, P.M. (2021) Curso de Capacitação para Docentes Utilizando a Metodologia Alumia. Centro Universitário Senac, São Paulo.
- Rocha, E.F. (2020) "Trilha formativa e currículo: antagonismo na conquista de um propósito", [online], ABED, São Paulo, www.abed.org.br/arquivos/Trilha_formativa_e_a_conquista_de_um_proposito_Enilton_Rocha.pdf/complex.htm



COLOURS, VISUAL DISPLAY DESIGN AND ERGONOMICS

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ABSTRACT

Colour envisages an optical quality as well as a unique semiotic meaning in the context of visual display design in India. This is typically essential to an object's appearance that any account of visual perception must contain some account of colours (Maund, 2012). In addition, one of the major trends in applications of visual elements that present screen as an expressive, ubiquitous interface of continued communication(s); has been the ever increasing role of colours in visual display units. For instance, a standard IBM personal computer displays 256,000 colours and a Sun workstation displays around 16.8 million. Hence, hardware is just a carrier of colours; but the visual ergonomics on the interfaces / visual displays are regulated by the use of hues, their combinations, degree, hierarchy, effects, etc. as part of colour interactions.

Brands and Services tap the conscious as well as the unconscious (rather more intuitive) side of colours. Generally observed in tested scenarios, that especially involve direct RGB light primaries as part of certain computer-based displays – accurate colour specifications are not there. These are not intuitive, as people do not decode a communication or a message in terms of just the relative proportions of the red, green and blue. Context plays a part in color symbolism, meaning that one color can have positive or negative connotations depending on the larger framework. For example, although blue communicates strength and optimism in the West, but blue in the context of Eastern countries could communicate distance, despair.

Overall, the short-term workshop course aimed to explore the inherent semantics, syntactics and pragmatics in colours in different kinds of displays such as posters, signage, billboards, placards, electronic information panels, to name a few. Moreover, colours are important in both identifying objects i.e. in locating them in space and in re-identifying them with respect to each other as part of an entire display. The half day session included few activities in the end that helped faculty participants from varied schools understand application and interaction possibilities to apply for in visual display design ideas – these in-session became the contribution to decode color meanings in visual displays with respect to the visual ergonomics / scientific basis embedded in colors.

KEYWORDS:

Color, Color Theories, Visual Design, Display Design, Display Interfaces, Color Interactions

INTRODUCTION

Much of our perception of physical things involves our identifying objects by their appearance and colours. Colour is non-verbal communication and may be perceived as an aspect of form or surroundings. The subliminal messages we get from colour shapes our thoughts. As humans, our very survival is hung on the identification of colour. We stop our cars for red lights and go on green. We look at the colour of plants and animals to determine whether or not they are safe for us to eat

or touch. The bottom line is that colour is a very important part of our daily lives. It's important for us as designers to use colour appropriately and understand the meaning behind the colours we choose. It has been the phenomenal work of the French chemist Michael Chevreul who has experimented with the effects of placing different colours alongside one another (Figure 1).

lacking in professionals capable of not only adapting to the online model but also knowing how to interpret and develop new methodologies. Hybrid teaching, mediated by technology, had been adopted by most Brazilian universities.

In the same way that the virus boosted online education, it exposed other weaknesses such as the natural requirement of adapting the curriculum to the applicable active methodologies. It is still common using corporate teaching practices. Using very little of the concepts of andragogy and at that time, more than ever, it was necessary to apply concepts of heutagogy.



Fig 1. Johannes Itten's colour wheel (left) and colour Ball detail from a book by Philipp Otto Runge (1777-1810) (right)

KNOW-HOWS OF A COLOUR: ROLE OF A HUE

To understand this through a single color case – let us take a color of joy, say Yellow. Yellow is the colour of the sun and gold, and was one of the first colours to be recognized by man as important, signifying a heavenly body and a divine metal with all the meanings that still stem from that. Yellow is the colour of Apollo, the sun god, and the solar plexus chakra that is linked to fire. It has meanings associated with joy, vivacity, intellect, force, ambition and knowledge as well as the more negative connotations from gold of power, envy, jealousy, anxiety, falsehood and fear. Yellow has been shown to stimulate mental processes and the nervous system, activate memory and encourage communication. In language a 'yellowbelly' is a coward, 'yellow fever' is a common tropical disease, 'yellow jack' is the flag for a quarantined ship, and 'yellow journalism' is the sensationalization of a story to sell more papers (Figure 2 and 3).



Fig 2. The yellow gold of the sunflower (left) and the hue of yellow gold has a strong recall value of 'sunflowers' by Sir Vincent Van Gogh



Fig 3. Yellow hue representing known brands and symbols

COLOR PSYCHOLOGY APPLIED IN DISPLAY DESIGNS

Colour is a subtle but pervasively influential element in graphic design. It permeates graphic representations in packaging, advertising and branding. Slight variations in colour can advance or devastate design effectiveness and have massive economic implications for companies and products.

Pantone Colour Institute has expressed that, "Colour is the single most powerful communication tool influencing 50 to 85 percent of ideas and product purchase decisions. With consumers looking at colour more holistically, it has become the catalyst of cross-design thinking and the connector across all areas of design" (Fig. 4).



Fig 4. Pantone have announced Serenity and Rose Quartz as their colours for 2016. The theme is harmony, calm and balance



COLOR PSYCHOLOGY AND IMPACT IN BRANDS

Whether the target audience is conscious or unconscious of a colour's impact, its involving potential makes it a worthy asset for any visual communicator (Rider, 2009). In the context of business that involves representation through visual display designs, colour is an essential tool that makes the brands, products or services break ice in distinction with customers or repels them away from a potential purchase decision. The acceptance or rejection of a product might be related to colours used (Walker, 1993).

It has also been found by researchers that coloured visuals increase the willingness to read eighty percent and can positively affect motivation and participation to the same degree (Green, 1989). Therefore, colours can be considered as meaningful facilitators that create an effective visual design of promotional medium(s) such as commercial outdoor signboards as part of streetscapes in a city (Fig. 5).



Fig 5. Famous insignia in commercial outdoor signboards

SHORT-TERM COURSE OBJECTIVES

"Colour Principles in Visual Display Designs" workshop examines the concepts and language of colour, colour systems and the relationships of colours to each other and to other visual elements. It also explores the many meanings of colours, how they are influenced by culture and circumstances, and the implications and influence that colour meaning can have on the effective functioning of a visual display. Participants opportunities included following:

- To learn how colour is affected by context, colour schemes and contrasts in visual displays
- Study examples of colour in different cultural settings where different kinds of visual displays are installed
- Analyze the use of colour and apply colour principles in few given sample of learning material

Participants would learn following from this session:

- Knowledge of the basics of colour wheel, terminologies, concepts, relationships and systems of colour.
- An understanding of the possible influences that culture can have on colour interpretation
- Participants will also learn and apply different ways to wield color more intelligently as a professional practice of designing visual displays

CONCLUDING ACTIVITY: SESSION CONTENT

- Brief introduction of the Colour Wheel by Johannes Itten, its history and functions
- Colour Theories (Light & Pigment Theories) and applications in visual displays
- Science of Colour mixing (Subtractive & Additive colour mixing principles)
- Colour Applications discussed in Case studies - Colours in signage, billboards, kiosks and electronic boards as part of 'Outdoor Graphics' and colours in packaging as part of 'Product Graphics'

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These are Extracts in the form of Notes of the presentation cum demonstration lecture and distributed are for classroom study purposes only for following:

KIC-TEQIP Work Shop: Visual Display Design: a Scientific way of representation
March 14th to 16th , 20016. DoD-IITG

Notes & Extracts: Invited Lecture on Colour Principles
Date: 14th March 2016
Venue: Conference Room, Department of Design, IIT Guwahati

Short-term course for KIC-TEQIP 2016:
Colour Principles in Visual Display Designs

Past Session instructor:
Prof. Nanki Nath, Department of Design, Indian institute of Technology Guwahati (March 2016)

REFERENCES

- Green, R.E. (1989). The Persuasive Properties of Color. Marketing Communications.
- Maud, J. B. (1991). The Nature of Color. History of Philosophy Quarterly, 8: 253–63.
- Rider, R. (2009). Color Psychology and Graphic Design Applications, Honors Program Liberty University.
<<http://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1118&context=honors>>
- Walker, C.B.F. (1987). Reading the Past: Cuneiform. British Museum.

READING MATERIALS

- Gage, J. (1999). Colour and Meaning : Art, science and symbolism, Thames and Hudson, Singapore
- Feisner E.A.,(2006). Colour Studies. Second ed. Fairchild Publications, New York.
- Feisner, A. (2006). Colour: How to use colour in Art and Design, Laurence King Publishing, London.
- Holtzschue, L. (2002). Understanding Color: An Introduction for Designers, John Wiley & Sons, London.
- Itten J. (1974). The art of colour: the subjective experience and objective rationale of colour, John Wiley and Sons
- Martinson, B. and DeLong, M.R. (2012). Colour and Design. Bloomsbury Academic, London.
- Sherin, A. (2011). Design Elements, Color Fundamentals : A Graphic Style Manual for Understanding How Color Impacts Design, Beverly, Mass Rockport Publishers, London.
- Sahlins, M. (1977). Colors and cultures. In: J.L. Dolgin, D.S. Kemnitzer, D.M. Schneider (eds.), Symbolic anthropology. Columbia University Press, New York, pp. 165–180. Cf. in Semiotica 16 (1976): 1–22.



BEYOND THE OBVIOUS: A PRACTICE ORIENTED INVESTIGATION INTO BLENDED LEARNING CULTURES OF CREATIVE SUBJECTS IN THE UNIVERSITY OF HIGHLANDS AND ISLANDS.

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ABSTRACT

Little is known about how creative design learners experience competence development in alternative, blended or hybrid design studios setting. This research is an evaluation of the phenomenon of Blended and Hybrid Learning and Teaching using technology enhanced learning (TEL) in the context of Scotland's newest university, University of the Highlands and Islands (UHI).

The research evaluates existing provision of a blended approach and explores the hybrid approach to learning and teaching as a future proposition within the context of Creative Industries curriculum of the University of the Highlands and Islands (UHI). The research is undertaken with a view to inform UHI's future holistic and strategic approach to Creative Industries curriculum development; initial lecturer training; and to connect communities enabling wider access and collaboration internationally and within the Highlands and Islands of Scotland.

Blended and hybrid terms - Blended is the more commonly used term of the two and is applied in several different ways to describe different models of delivery and/or student engagement. Hybrid is not as prevalent in the UK higher education sector. "Hybrid teaching does not assume either an on-campus or an online model but is designed for easy student transition between the two. Hybrid teaching consists of a mixture of digital and on-campus activities, where students may be able to attend on-campus sessions, digital sessions in the same time zone, or digital sessions in a different time zone."

The research reported here explored the development of learners' competences in online and blended design education in a longitudinal qualitative study. Learner biographies were recorded through repeated interviews and analysed using a narrative, grounded theory approach. The research discusses emergent themes such as phases in development, roles of learner autonomy and learning groups, crisis situations, and expert dialogue. It presents the proposed hybrid studio as an intersection of internal and external factors in online design learning. The research goes on to suggest a taxonomy of virtual design learning, teaching, and educational theory that may aid educators in the design of blended and hybrid design learning spaces. It suggests a design didactic concept that combines the theories of creative processes with the media didactic contexts of a development-centred design pedagogy. The work concludes with the proposition that study programmes should be developed based on competence and personality. Ultimately the most effective blend is personalised and co-designed with the learner. The results indicate that the pedagogical transition to online education reduced the possibility for students' social interactions in their learning process. This negatively affected several aspects of their experience of online learning using digital tools, such as reduced motivation. However, the diverseness in the responses suggest that a blended learning approach may offer pedagogical benefits while maintaining an advantageous level of social interaction. Research findings also indicate that lecturers' conceptions of and approaches to teaching are crucial for the successful engagement and implementation of TEL in Tertiary Education. This research advances this proposition enabling wider access and innovative solutions to what we learn, how we learn, when

we learn and where.

Key Words: Technology Enhance Learning; Design pedagogy; Widening access; Indigenous communities; Blended and Hybrid learning.

KEYWORDS:

Persistent intent; Technology Enhance Learning; Design pedagogy; Widening access; Indigenous communities; Blended and Hybrid learning.

INTRODUCTION

"Across the world, universities continue to transform their teaching and learning practices to meet the challenges facing Higher Education in the 21st Century. Higher education providers are adapting to rapid and recent worldwide changes in markets and new technologies whilst seeking to maintain and improve quality and develop partnerships with their learners. The proliferation of new technologies and internet tools is fundamentally changing the way we all live and work. The HE sector is no exception with technology having a major impact on learning and teaching. This in turn affects the skills needs of the learning delivery workforce." OECD (2016), *Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264265097-en>

Art and design tutors recognise that academic ability alone is insufficient to denote creativity in arts practice. Without complementary development of the sensory awareness gained from experiential learning, and exposure to the inherent physical, mental, and emotional engagement with tactile and material aspects of non-verbal modes of communication, many students struggle to locate and tap into their own wellspring of creativity. Students struggle to find motivation and express meaning from a personal perspective. This is the challenge faced by arts tutors engaged in online or blended approaches to art and design education.

The primary aim of the research was to establish whether blended and hybrid learning, and teaching exhibits the benefits that some literature claims and if there is an optimum blend formula that could be rolled out across the UHI academic partners, faculties, and cross creative curriculum.

The original path of the research focussed on the learning environments and the technology used within the field of Blended Learning. Spending time in the 'field' revealing the fundamental challenges continued to include the technology and its advances however the challenges surrounding staff and students participating came to the fore. The research became person-centred. Within the literature reviewed, little study of the human element of the engagement with blended learning was apparent including feedback. Re-aligning the proposition of the study allowed the research to encompass student contributions as a "community" and retaining the aspiration of empowering the voice of the student body.

The focus of the research was to inform design pedagogy and policy surrounding learners within UHI's Creative Industries faculty. The need for a deeper and more comprehensive understanding of the complexities of each learners' individual circumstances, the requirements of SCQF levels and delivery of design education is vital. The notion of co-design is important to establish. Learners do not always believe that they can bring about change in their experience of education and its delivery. Relationships are key to success.

UNIVERSITY OF THE HIGHLAND & ISLANDS (UHI)

Brief History

The seeds of a University of Highlands and Islands were sown some 100 odd years ago. From the beginning of the 20th Century, it was established that higher education would be of great benefit to the communities of the Highlands and Islands otherwise doomed to increasing marginalisation and ultimately the disappearance of the old Gaelic and Nordic cultures, their languages, their industries, and their people's. The lack of post 18 education had forced many individuals to seek their education elsewhere, in Glasgow, Edinburgh, Oxford, Cambridge and beyond. A small team was assembled to conceive and plan a new kind of university, a university of the 21st century, which would utilise the latest developments in educational technology and embrace the whole of the Highlands and Islands. The use of flexible learning resources for geographically distributed rural students. Dr Frank Rennie. (2003: 11).



University of Highlands & Islands campus locations.

“The purpose of a University of the Highlands and Islands would bring benefits of higher and further education directly to this part of Scotland rather than offer it at arms – length. An additional value of such a university would be that of strengthening the economic basis of the Highlands and Islands, and in doing so reinforce the culture, confidence, and competence of the region. This is not simply an optimistic assertion. It is happening worldwide and not least in the emerging countries as all subscribe to the values of an educated liberal democracy.” Professor Sir Graham Hill; Extract from a report on; The Vision of a University of the Highlands and Islands. (1997) Target population – Highlands & Islands Scotland-UHI vision.

UHI is part of an important step in the regeneration of Highland culture and society as evidenced in the recent Highlands & Islands Enterprise (HIE) survey.

Youth migration from these areas has been a concern of HIE for several years. The results of the study show increased levels of young Highlanders and islanders wanting to remain in their local areas after they leave school. Many of the 4,409 respondents were also proud of where they lived, with the highest levels of pride found among young people living on Orkney, Shetland and the Western Isles. Those surveyed also said Highlands and Islands Enterprise's (HIE) new Inverness Campus, which among other purposes provides a new base for University of the Highlands and Islands, has made staying in the Highlands more appealing. More than half of those who took part in the survey said they believed the region was a better place to live now than it was five years ago. Young people reversing 'brain drain' of the Highlands. A new study has shown that more young people are choosing to stay in the north of Scotland leading to a reversal of the so-called "brain drain". The area has suffered in the past as better education and work opportunities took many elsewhere.

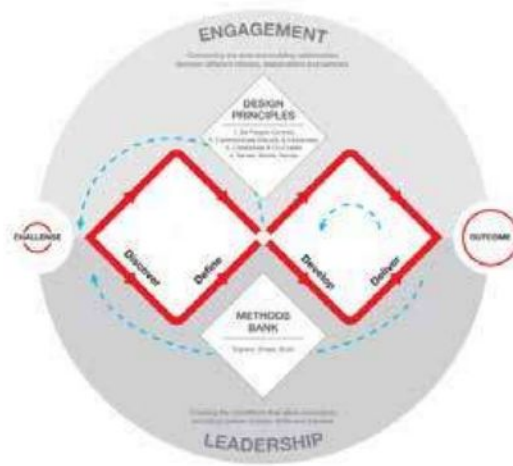
This research has been undertaken in design pedagogy and innovation to transform the creative capacities of our student communities and the region. Realisation of the potential of creative industries in remote and rural regions had been overlooked till now.

“We want to ensure our funding benefits the widest possible range of people in Scotland and beyond. That will mean encouraging the people and organisations that we fund to think carefully about how they connect with hard to-reach people in remote rural locations or communities who do not have easy access to the arts, screen or creative industries because of economic disadvantage, disability or social circumstance.” Creative Scotland 10 Year Plan 2014-2024.

RESEARCHER'S POSITION

Almost all design researchers are members of academic communities. This agency comes from a background, which typically includes not only some kind of design activity, engaging in the process of designing, but also a track record in scholarly endeavour. A pre-occupation is with three areas: the process of designing, teaching design and researching design. This research indicates that lecturers' conceptions of and approaches to teaching are crucial for the successful engagement and implementation of TEL in Tertiary Education and this research advances this proposition. Consideration of the philosophical assumptions and researcher positionality is crucial to methodological decision-making within research. In establishing the methodological connection, the researcher is positioned as a UHI design curriculum tutor and Module leader. The relevance of the methodological approach to the overall research design is clarified and the research questions emerged iteratively throughout this study and the resultant findings of the research project will inform UHI university strategies i.e., the Learning and Teaching Strategy in relation to the use of TEL and Induction and initial training programmes for new staff and students. The need for further research in this area was formalised during Masters' degree study which was completed at Dundee University. An investigation through practice-based research of learners' experiences of physical and virtual learning environments (within UHI) was and remains the researchers focus.

The researcher, positioned as an experienced lecturer engaged in delivery at multiple levels and involved in curriculum design at SCQF levels 7 to 10 began to formulate a research design that would allow divergent voices to emerge from the study and demonstrate that students could share the same outward experience, but the meaning attributed to that experience and the effect it had on the individual could be very different. This research approach was arrived at before reading much literature explaining the constructionist perspective that indicates that it was a personal worldview that was dictating the orientation that the study should follow. Once the research and reading were undertaken the discovery of the literature enabled access to a language that allowed the research design to emerge into a legitimate framework and identified the specific research methods employed. The variety of methods of data collection used in the qualitative research, included observations, interviews and focus groups.



Design Council.(2019)

BLENDING LEARNING AND HYBRID APPROACH. INTRODUCTION TO TECHNOLOGY ENHANCED FOCUS ON LEARNING AND TEACHING

Institutions have a variety of reasons for choosing to introduce technology-enhanced learning and teaching within their programme of study. University of Highlands and Islands (UHI) and HE institutions reasons for introducing technology – enhanced learning include.

“Improving the quality of the teaching and learning experience and process (Yetton, 1997) the shift from short-term, subject-focused learning to ‘lifelong’ learning (Rigmore and Luke, 1995; Bates, 2005) the need to tap into a global market (Nicol et al, 2004) widening access and embracing diversity (Yetton, 1997) the social inclusion and employability agendas (Rigmore and Luke, 1995) the ‘new’ knowledge society (Laurillard, 2002; Collis and Moonen, 2005) competition from other universities (Yetton, 1997) and the private sector” (Nunan, 1996; Twigg, 2002).

Excellence in education and in educational technology is critical for the UK to compete globally, and for the success of individual education providers. However, there is “little continuing improvement in the quality of instruction – because there is no consistent basis for building the evidence of what works and what does not. “What can we do about this and how can and when should research evidence impact on educational technology design and use?”

METHODOLOGY APPROACH - Inductive. Open-ended and exploratory.

This approach aligned with the design-based research method used in this research project. The design-based research began as “Problem Defining” through an iterative, evidence-based procedure of observation, ideation, prototyping, and testing, with each cycle of the iteration looked deeper into the solution space. The result is a form of incremental change, optimising the solution through a step by step (non-linear) process.

Not all students learn the same way. This is not a particularly novel concept, but it is an important one. Students never outgrow their learning preferences, so why do traditional university and college classrooms fail to engage all of them? This question provided a key driver in the quest to establish an ‘optimum blend’ and eventually an understanding of the complex challenges facing the researcher, lecturing staff and curriculum designers in relation to the creation of bespoke learning blends. The result of the study is intended to enhance the quality of delivery of design curriculum by staff to students who will

engage with the ‘blended learning approach’ in the future. The research strategy followed within this study reflected the design-based and ethnographic process allowing the researcher to find that the volume and complexity of geographically disparate learner requirements and time constraints continue to conspire to cause issues. To gain insight into the efficacy of BL and hybrid approach focus group semi structured interviews and surveys were carried out within the UHI campus of Perth and the northern Inverness campus. Gate keeper permissions were granted, and academic staff and creative design students participated, and results interpreted.

The philosophical stance of the researcher in this study is “interpretive, humanistic, and naturalistic” (Creswell, 2007). According to Creswell (2007), qualitative researchers believe that “truth is both complex and dynamic and can be found only by studying persons as they interact with and within their sociohistorical settings”

REFLECTIVE PRACTITIONER

This research study explores the potential of a design-oriented approach to research. The framework for this reflection-based approach can be characterised as multi-modal, iterative, and engaging with multiple methods. The following paper was designed to structurally embody the nature of the research approach. This translates to research with an interwoven narrative and reflections layered on reflections. The key element of the study that shape this research are case study projects carried out over a substantial length of time.

FRAMEWORKS FOR EVALUATION

To make wise choices about blended learning programs and courses, teachers, administrators, and policy makers need evaluative information about the efficacy of blended learning. Evaluation identifies, clarifies, and applies “defensible criteria to determine an evaluation object’s value (worth or merit) in relation to those criteria” (Fitzpatrick, Sanders, & Worthen, 2011, p. 7). As Picciano (2016) has stated, “A fundamental aspect of instructional design ... [which] many consider the crucial culminating step, is evaluation. ... Unfortunately, this last crucial step is not always conducted, or conducted in ways that are much too brief and informal” (p. 4). Researchers need to understand existing frameworks for evaluating HE and BL programs along with methods used in the evaluation process.

The “defensible criteria” chosen for evaluation are sometimes drawn from a supporting theoretical framework. For example, Garrison and Vaughan (2008) offered guidelines for evaluating HE blended learning

courses using a COI perspective (see also Voegelé, 2014). Wegmann and Thompson (2014) utilised the SCOPE (Self, Content, Others, and Platform) framework to evaluate levels of interaction in blended courses. In contrast, others may eschew paradigm for pragmatism. Whether a paradigmatic or a pragmatic approach is taken, evaluators can remember that “the goal of any evaluation is to provide a valid mechanism for collecting meaningful data, providing results to constituents to help them better determine impact for continual improvement” (Moskal & Cavanagh, 2014, p. 39, italics added).

This research draws on the concept of evaluation in the form of surveys and focus groups and semi structure interviews. This recognised position was the point of departure and through reviewing results from the UHI investigation it was possible to build upon and extend this knowledge. The tools and techniques used enabled stakeholders (Staff and students) to articulate experiential concepts and created a sense of agency. The researcher was able to gather empathetic and authentic insights and accounts. Knowledge is often contained within action and the appropriation of ethnographic methods such as observation and contextual immersion were methods adopted. (Blomberg and Karasti 2013, Kensing and Blomberg 1998, Le Dantec and Fox 2015.)

CONCLUSION AND FINDINGS.

Blends at differing levels do not allow easy empirical comparison, so distinction is important in research. This is taken into consideration in the construction of this UHI research. As important as the level of blend, the nature of the blend should be classified. Graham (2006) noted three categories of blended learning systems: enabling, enhancing, and transforming. Graham and Robison (2007) classified examples of blended learning by asking the question:

“What learner activity does the technology allow that would be difficult or impossible without the use of the technology?”

The chance to answer this question came in March of 2020 when a full Covid 19 restricted lockdown gripped our institution, region, and country. Initially as an institution we were well placed to function (unlike some other HE's in Scotland) on a Blended delivery model. The UHI have been delivering fully online and blended courses since 1993.

“Getting lots of students to turn up in the same place, at the same time, to listen to one-off lectures that they will not be able to hear again, says nothing about ‘best educational practice’ and everything about mass production.”

“Most of my students do not miss student social life, they already have a community. Why should they need to leave their family, their job, or their social circle when they can have the best of both worlds – a rooted home community, and global access to learners with similar interests?”

Retrieved from: <https://www.heraldsotland.com/news/19075693.agenda-internet-many-advantages-traditional-teaching/?ref=twtrcc> Frank Rennie, Professor of sustainable rural development, Lews Castle College, University of the Highlands and Islands.

UHI Creative Industries faculty by its very nature is a practice led and studio-based curriculum. It has no legacy of decades of online delivery or vast experience of a blended approach however the staff teams and students were forced by the Covid 19 lockdown restrictions to undertake a massive change in direction in relation to teaching approaches and delivery and student engagement. Although not every blend is transformative this research has shown that the findings were valuable in framing the project delivery created by the staff team. An understanding of the online support necessary, not only related to curriculum but pastoral, mental health, well-being and learning support required. The ongoing use of existing learning environments but the careful creation of discreet platforms enabling students to function as individuals in the privacy of their own homes and as members of groups and classes. The understanding that in this time of a global pandemic learners do not want to sit with their camera on for hours in a synchronous lecture. A simple ritual of opening the lesson WebEx 15 minutes early for those learners who want to chat to enable a semblance of community improved engagement and reduced anxiety.

It is evident that creative design students need support for the agile navigation through the design process. Learning experiences should develop students' natural motivations and professionalise motivation to create a resilient, informed, and sustainable capacity. This is the essence of 'transformative learning'. Design education is a passport to practice and showcases how some of the key developments in education use techniques related to collaboration, case studies and experience to motivate students, enable them to express their identity, reflect and learn.

The educators most excited about online (including blended) learning were those already teaching online and blended courses, those at teaching institutions, those just beginning their teaching careers or teaching part time, and those teaching in the professions or applied sciences. A new experience for UHI creative arts tutors. Initial teacher training institutions now offer modules directly relating to progressively more diverse student populations and endeavour to change new teachers' perceptions. This enhancement to training show this to be effective and resulting in teachers who employ differentiated instructional strategies.

Although HE constituents often celebrate the flexibility and convenience of BL, much of the drive for adopting BL is its potential for personalised learning adapted to the abilities and preferences of the learner versus a one-size-fits-all approach. The Clayton Christensen Institute has argued, at its best, online content delivery can allow students to learn at their own pace, and in some cases, can tailor a unique pathway that adapts to their needs. The hope, then, is that online content delivery will not only personalise instruction to students' needs and pace, but also allow for face-to-face interventions that provide individual guidance and support. (Fisher, 2014, n.p.) This is the approach that this research is centred around.

This recognises that both humans and computers can personalise learning, potentially at the same time if, for example, students in a computer lab use an online maths program that personalises practice problems to their current skills, while the tutor moves around providing one-to-one tutoring for students who are struggling or receiving insufficient help from the online programme. Personalisation is more easily scaled using computers, but quality personalised learning is more likely from a human than from a machine. The discussion moves beyond how much online or face-to-face learning to use and becomes how to best provide personalised learning. This shift is necessary to broaden blended learning research and explore the notion of an “optimum blend”.

This new focus leads to perhaps the most important area for future research: the roles of online learning and face-to-face learning in a blend. Some blend because they value the flexibility and affordances of online learning but cannot fully separate themselves from meeting face to face (Horn and Staker, 2014). Others blend because face-to-face human interactions seem to impact student satisfaction, persistence, and engagement in ways not replicated online. Research has focused too much on the amount of online learning or seat time rather than on what should be done online and what should be done face to face.

In the past blended learning was predicted “to emerge as the predominant model of the future – and to become far more common than either [online or face-to-face instruction] alone” (Watson, 2008, p. 3). As blended learning becomes increasingly widespread in higher education (HE), research in this area becomes even more imperative as well as more feasible.

TUTOR TRAINING

Research is emerging on effective practices for tutor and faculty training for blended learning instruction. Wolf (2006) found training programmes successful when faculty (a) had the requisite computing skills before training began, (b) were trained using the delivery system they would be using, (c) had continuous institutional support, and (d) were motivated to work in an online or blended environment. After reviewing existing

teacher education programmes, Kennedy and Archambault (2012) recommended including (a) relevant coursework in online pedagogy, (b) experience with instructional design for online learning environments, (c) curriculum centred on technology tools, and (d) field experiences with online or blended teaching.

This paper builds on and contributes to work in the field of blended learning as an approach within design education and explores whether an 'optimum' blend exists. Although several studies in blended learning have examined efficacy, there has not been a strong focus on design related and creative courses and in relation to the unique situation around the University of the Highlands and Islands, Scotland. As such, this longitudinal study provides additional insights into this non-traditional, tertiary university offering wide access and an alternative route to a range of SCQF levels of design education. This widened access is offered to our indigenous population, national and international learners. This research differs from previous studies in blended learning by identifying/documenting/ three case studies relating to UHI blended design delivery over a substantial period, using a design process methodology, iterating, and improving each 'blend' as the researcher and research project moves forward. Each of three case studies takes a design process research approach and documents the first ethnographic study of blended learning within the design curriculum of UHI. In doing this it draws strongly on the work of Diana Laurillard and Frank Rennie (UHI) who have researched and are experts in this area and provide inspiration and knowledge in this field.

Due to these unique pandemic circumstances a request for a simple, templated technical solution was made recently by a UHI colleague. This was to enable new and experienced teaching staff, currently facing a heavy workload and under extra ordinary circumstances (related to lockdown) to help ease the load and to standardise content delivery and ensure quality. An understanding of why this is required is acknowledged. Based on this research and its associated literature review, this reliance on a 'template' does not tend to result in an optimal blend, or good educational outcomes when related to the delivery of creative courses. A nuanced and pedagogy-driven approach to blended and online course design is required as is evident from the results of the case studies. Learner-centred pedagogy-constructivist, inquiry based, reflective, collaborative, and integrative – a hybrid and personalised model is optimal.

The final iteration acknowledged in the research findings of this paper points to an evolving arena (albeit accelerated by the unique effects of the Covid pandemic and lockdown) in which this research is positioned. It is the onset of the use of digital technologies across the creative industries education sector and the ongoing quest for an 'optimum' blend across all curriculum areas.

The research findings demonstrate that the benefits of a blended approach relate to accessibility, physical accessibility, and financial accessibility. The research also shows that some students, in particular introverts claim benefit from blended and online learning and learners surveyed prefer the self-paced learning environment. The blended approach is particularly useful to students with behavioural issues or social anxiety and is the opportunity to study within a level playing field without the distractions that may occur in face-to-face learning environments. (*The Future of Learning Report 2021*)

"Here's where I want to be..."

"I think there will certainly be more formal blended learning and I'm hoping that we might move into hybrid degrees, where you don't necessarily have students coming to UCL for a three-year degree programme – they might come for one year and do the other two years online at home."

Professor Diana Laurillard.
UCL Knowledge Lab(2021)

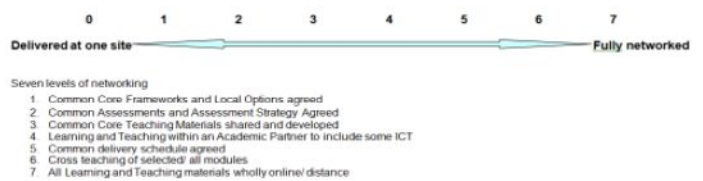
Quote from Future of Learning Report (2021)

UNIVERSITY OF THE HIGHLANDS & ISLANDS MODEL.

Below is the 'formula' suggested by the UHI in 2010. The seven stages of networked learning (Wilson, n.d). Figure 1 The seven stages of networked learning (Wilson, n.d). This model was an early attempt at UHI to characterise delivery across the network, superseded by the Four Models (Campbell & Wright, n.d)

The 'seven stages' were superseded by the Four models describing UHI's delivery (Campbell & Wright, n.d) (Box 1), part of the Curriculum for the 21st Century (C21C) - an initiative redefining delivery of the curriculum at the University (UHI, 2010). C21C strategies outline the view that a more networked and blended approach enhances the student experience and is more sustainable.

Aiming to "capture the relationship between the student, their programme and location of study" (UHI, 2013a) the Four models' concept is a student-facing definition of the learning experience a student can expect depending on which mode their chosen course takes (Innes, 2013).



Seven Levels of Networking. (Wilson.(2010)

UPDATED - UHI Four Models Taxonomy – 1) Local 2) Site-specific 3) Network 4) Off-campus.

These models streamline how delivery methods are communicated to students in UHI's marketing (Innes, 2013), helping address student satisfaction based on inaccurate expectations (Kemmer, 2010b, p. 4; de Lima et al., 2011, p. 66). Student satisfaction is currently monitored by internal evaluation at both module and programme level, and increasing importance is placed on the results of the National Student Survey outcomes. Actions from all the above are channeled into an annual cycle of reflection and enhancement, in Self Evaluation Documentation and Quality Monitoring Dialogues at module, programme and Subject Network level.

Four models describing UHI's delivery – In order to successfully communicate how a course will be delivered to new students and to guarantee that they are aware of what to expect from their time studying at the University of the Highlands and Islands, the Four models describing UHI's delivery (Campbell & Wright, n.d) were endorsed and used by the University as part of the Curriculum for the 21st Century (C21C).

In this model, local and site-specific programmes are usually "delivered face-to-face, but will increasingly make use of blended learning" as appropriate. The exact nature of the blend used in these programmes is not specified, although it is recognised elsewhere in the report that provision should be decided depending on the optimum needs of a particular programme.

Local and site-specific programmes usually require students to attend a specific academic partner, often because that campus has specialised provision. The main difference between these two modes is that local programmes are aimed at local students, while site-specific programmes are considered to have more national and international appeal (Campbell & Wright, n.d.).

Programmes that are ordinarily delivered face to face within this UHI model, either local or site-specific, will further engage with the advantages of offering a blended approach to learning. Within this new model the nature or 'formula' of the blend is not specified. The optimum blend relies on the requirements of each individual programme. This research shows that it is only an optimum blend if the requirements of individual students are taken into consideration. Two modes of delivery within UHI is noted as Local and site-specific programmes. Local programmes are

aimed at “local’ students and site-specific programmes are considered to have more national and international appeal (Campbell & Wright, n.d.). Students attend a particular academic partner (within UHI) usually because a campus has specialised provision.eg SAMs Oban.

Within UHI provision delivery of networked programmes (available at most academic partners) involves a higher proportion of ICT based delivery in an “appropriate mix of face-to-face, video conference and online delivery and support” (Campbell & Wright, n.d, p. 3).

Off-campus programmes (no blend evident) are entirely online and do not require students to attend any academic partners, although induction and support may be provided by an allocated campus. Evidence of no blend taking place and results of student surveys show ... completely online can be isolating.

During the first lockdown UHI moved from the Quality Assurance Agency for Higher Education (QAA’s taxonomy) - of Passive digital engagement to Immersive digital engagement/experience. (Appendix 1)

As a result of the global pandemic there is agreement that hybrid learning & teaching models—accommodating different locations and schedules—have proven to be better and more productive than most expected. This research’s data shows that students want to maintain a blended or hybrid model, even once the pandemic has ended. UHI and other universities are experimenting with asynchronous models, helping to write the guidelines for the optimum blend in the 21st century world of education. (QAA)

Findings show that the students wishing to maintain the blended or hybrid model are students who are not resident in Perth city or in proximity and are generally within the age range 18-25yrs. Perth based students are keen to return to campus-based studio work in particular older age range 25-60yrs. The findings of this research indicate that some of the student characteristics/backgrounds are significant predictors for student learning outcomes in blended learning.

Finally, the move to ‘digital first’ delivery during the first UK-wide lockdown resulted in an emphasis on supporting an accessible, holistic, digital student learning experience. This resulted in a renewed focus on the impact of digital exclusion on disadvantaged student communities. This was a greater issue than expected and the UHI addressed this by ensuring all students requiring access to hardware and software were supported.

Further research in the field of the circular design model and the impact on sustainability of student designers learning in a blended or hybrid way is required. Less carbon footprint, travel miles and the positive retention of indigenous populations in the Highlands and Islands of Scotland is a driver for this further study.

Helen Roger M.Des PhD Research:Design PGDipTQFE



BAMBOO CHARKHA & LAPTOP CHARKHA: PORTABLE SPINNING WHEEL AS OPEN-SOURCE PROJECT

HIDEO OGURI

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ABSTRACT:

The “basic needs” for a human being are food, shelter, and clothing. But, how many of us know how to make our clothes?

For example, who and where sewed the 100% cotton shirt we are wearing now? How was the cloth woven? And how was the yarn made? But first, what is cotton? What kind of seed is it, where does it come from, and how much effort and resources does it take to grow it?

Many people positioned as consumers in today’s world have forgotten that they do not even know about these things. And, without knowing these things, anyone can buy and wear clothes as long as they pay for them. When people forget how things are made, they lose respect for those who made them.

However, if you try to make even a tiny thing with your own hands, you will feel closer to that field and become interested in it, just like I used to do.

Spinning yarn can give people great insight. It makes people realize how much time and effort it takes to make clothes and how powerful the mechanization of the Industrial Revolution has been.

A typical tool for spinning yarn is a spinning wheel. There are many variations of this in various regions of the world. But, the best-known spinning wheel that can be folded and carried around is the so-called Box Charkha. Mahatma Gandhi himself used this Box Charkha as part of his charkha movement during India’s independence movement. Still, some people use similarly designed charkha today.

Then, I asked myself if I could make a tool like this, using locally available materials as much as possible.

Based on these considerations, I made Bamboo Charkha, compact and portable spinning wheels, using bamboo, a useful but not fully utilized material in Japan.

The project’s goals were safety, portability, ease of use, and learning opportunity for beginners.

By conducting cotton-spinning workshops at various events, I realized that Bamboo Charkha achieved these goals.

However, there are some areas where bamboo suitable for Bamboo Charkha does not grow, but wooden plates or MDF (Medium-Density Fiberboard) are more readily available.

So, I made Laptop Charkha, which is a laser-cut MDF version of Bamboo Charkha.

As an open-source, it has the advantage of sharing the process with the world.

Nowadays, people can share digital information on the Internet and use digital tools such as laser cutters in fablab or maker space. In this situation, open-source co-creation may create a new convivial society.

This paper introduces why and how I developed them and the features and further plans of these open-source projects.

KEYWORDS:

self-sufficient, spinning wheel, cotton, bamboo, digital fabrication, open-source

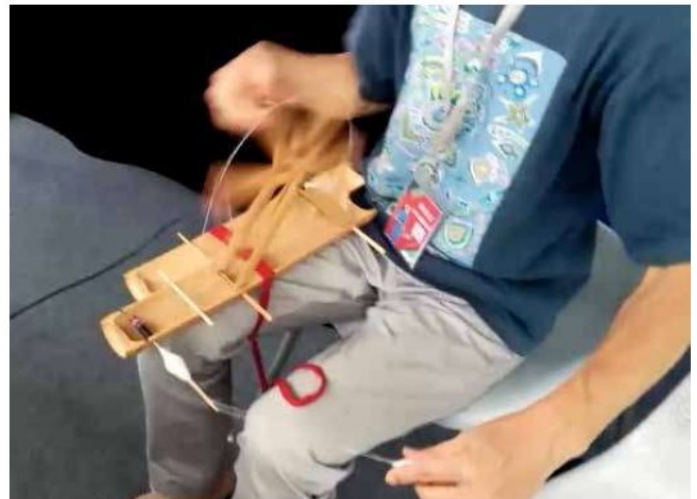


Figure 1 Cotton Spinning using Bamboo Charkha

INTRODUCTION

In 2009, I participated in a cotton spinning workshop as part of a permaculture study group in Japan.

The first part of the workshop was to look back at the charkha movement in Mahatma Gandhi’s independence movement from self-sufficiency, non-violence, and sustainability. And the second part was to try cotton spinning using Box Charkha.

It was a very fresh experience for me. I was surprised that I didn’t know much about how to make the clothes I usually wore. Although I couldn’t spin yarn from cotton during 30 minutes of practice, the feeling of the cotton remained in my hands for a while.

But, from an engineer’s point of view, although the design of Box Charkha was excellent, it had some aspects that concerned me in some situations. At the spinning workshop, there were about five Box Charkha lined up on the floor. Most of the participants were beginners, and they, including myself, had problems with the Box Charkha. For example, their feet had gone numb, they wanted to practice by turning the spindles slowly, but they could not, etc. And, with children running around, I was a little concerned about the safety of the sharp metal spindles.

Also, if the purpose of the spinning was to try making things by ourselves, I thought that we should make our charkha rather than importing it from India.

On the other hand, when I learned about the activities to revive Japanese indigenous cotton in 2015, I thought about contributing to them.

So, I started to make an original piece that would be easier to use than Box Charkha.

The goals of the project were as follows.

1. Safety-
 - No metal protrusions
2. Portability-
 - a person can carry it around in a bag
3. Ease of use-
 - It can be handled in a comfortable posture while sitting on a chair.
 - Person spinning should look nice.
 - Even beginners can easily control the spindle speed and yarn thickness (counts).
4. Learning opportunity -
 - To learn and enjoy the basics of spinning.

Then I created Bamboo Charkha in 2017 (Figure1) and Laptop Charkha in 2019.

The following are the description of their features.

BAMBOO CHARKHA

FEATURES

(a) Utilization of local resources, creation with simple tools

Bamboo is a valuable plant. In Japan, there were various tools for daily life made from bamboo. However, through the rapid economic growth that began in the 1950s, most of them have been replaced by plastics. And in many parts of Japan, bamboo is invading farmland and forests, causing damage in some cases.



Figure 2 Bamboo Charkha, folded

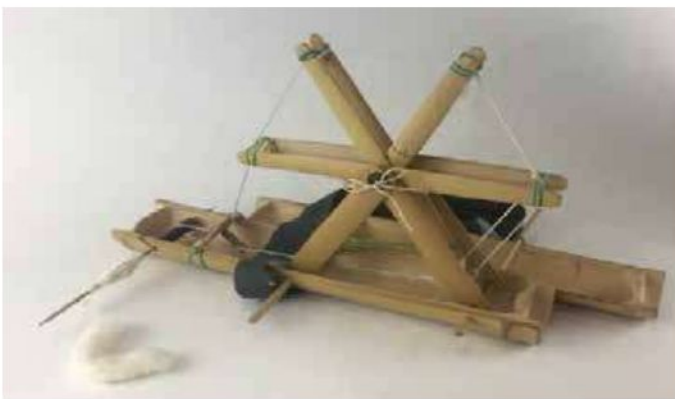


Figure 3 Bamboo Charkha, ready to spin

One of the most common types of bamboo in Japan is "ma-da-ke" *Phyllostachys bambusoides* (Wikipedia, 2021). It is thin-walled, hard, and grows straight. For example, it has a diameter of about 50mm to 70mm, a wall thickness of 5mm to 6mm, and a node-to-node spacing of about 300mm. So it can be used as a case or a cylindrical structure. (In India, the Assam region produces similar bamboos.)

Using this bamboo, I designed it to make it with simple tools such as a hand saw, a machete, and a drill.

In addition to bamboo, some other materials used are as follows ;

Brass pipes, rubber bands, disposable chopsticks (bamboo), knitting stick (bamboo), rubber sheet (bicycle tube)

(b) Compact

With the Bamboo Charkha design, a single bamboo case can contain all the components and raw cotton (punis). And when assembled as a charkha, this bamboo tube functions as the base of the charkha itself (Figure 2, 3. YouTube video (Oguri, 2018)).

It is lightweight and compact, so you can keep it in your bag and spin yarn whenever and wherever you like (Table 1).

(c) Laptop

You can comfortably continue spinning in a seated position without a table by fixing Bamboo Charkha on your lap with a cotton band.

It is suitable for today's chair-using lifestyles, on park benches, cafes, living rooms, etc., just like spinning for entertainment (Figure 1).

(d) Ease of use

The Box Charkha uses two levels of pulleys (The combined pulley ratio is 125:1 (Shepard, 2013)). If you turn the grip on the large pulley slowly, the spindle spins fast. This is good for a posture sitting on the floor and keeping your right arm down.

But if you are a beginner at spinning, sometimes it is difficult to handle it, and the spindle turns too fast. (This is not a problem for people accustomed to using Box Charkha, or if the Box Charkha is well maintained.)

The pulley ratio of Bamboo Charkha is about 13:1, and it is customizable. Therefore, if you turn the handle slowly, the spindle turns gradually. If you want to turn the spindle faster, you have to turn the handle faster, but this is easy since you can turn the handle with your wrist. In other words, it is easy to control the rotational speed of the spindle. This function is beneficial for beginners to practice spinning yarn.

In addition, I feel that the posture in which both hands are in view and the palms face each other is a natural way for humans to create things (Figure 11).

(e) Safety

To eliminate metal protrusions, I adopted bamboo knitting sticks as the spindle.

(However, those who want to improve the quality of their yarn can use the same metal spindle used in the Box Charkha. It is compatible.)

Since the spindle positions above both knees, you can guard the spindles with both hands when people around you, especially children, approach. Also, you can quickly remove the spindle.

(f) Hank-winding function

As shown in Figure 4, yarn spun on the spindle can be wound onto the wheel (spider), and folding the wheel allows to remove the wound yarn (hank or skein). Although the amount of wound yarn is smaller than that of Box Charkha, one Bamboo Charkha can perform the whole process from yarn spinning to hank winding.



Figure 4 Hank winding

CHALLENGES

Each bamboo as a natural material has a different wall thickness, diameter, and node-to-node spacing. Therefore, it is necessary to change each component's dimensions of the Bamboo Charkha accordingly. Action for this will be the next step in organizing the fabrication manual, which shows the appropriate dimensions of the components depending on the material dimensions.

(If I may add, in the development process of the Bamboo Charkha, I did not make any drawings or even measure the length of the bamboo pieces. Everything was done simply by hand-feeling and trial & error. This effort was an unlearning process for me as an engineer, who made drawings whenever I created something.)

LAPTOP CHARKHA

Bamboo is available in many world regions, but thin-walled bamboo suitable for Bamboo Charkha is limited to the mid-latitude areas. On the other hand, thin wooden plates, such as MDF (Medium-Density Fiberboard), are available in many regions, assuming the modern logistic system.

Also, with the expansion of fablab (Fabfoundation, 2021), maker space, and digital fabrication services, there are more and more opportunities to use digital machine tools such as laser cutters.

With this in mind, I designed a laptop charkha that can be made anywhere in the world with a laser cutter and thin wooden plates (Figure 5 & 6, YouTube video (Oguri, 2021a)).



Figure 5 Laptop Charkha, folded

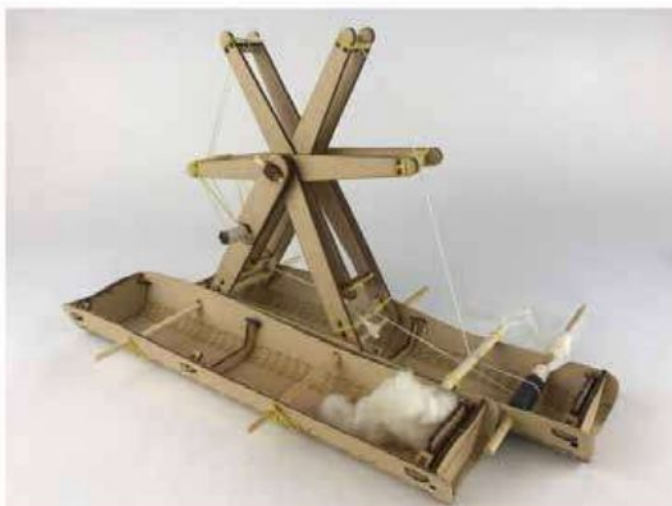


Figure 6 Laptop Charkha, ready to spin

FEATURES

In addition to all the advantages of Bamboo Charkha, Laptop Charkha is more compact and lighter and has the following characteristics (Table 1 shows weight and dimension comparison.).

(a) Digital fabrication & Open source

The 3D CAD model (fusion360), laser processing data (.dxf file), assembly instructions, etc., have been uploaded in 2021 to Wikifactory (Oguri, 2021b), a social platform for collaborative product development (Wikifactory, 2021). The license is cc-by-sa (Creative Commons Attribution Share-Alike 4.0 International), allowing people worldwide to make and improve Laptop Charkha, sell the finished product, perform assembly workshops and cotton spinning workshops, etc. (Figure 7).

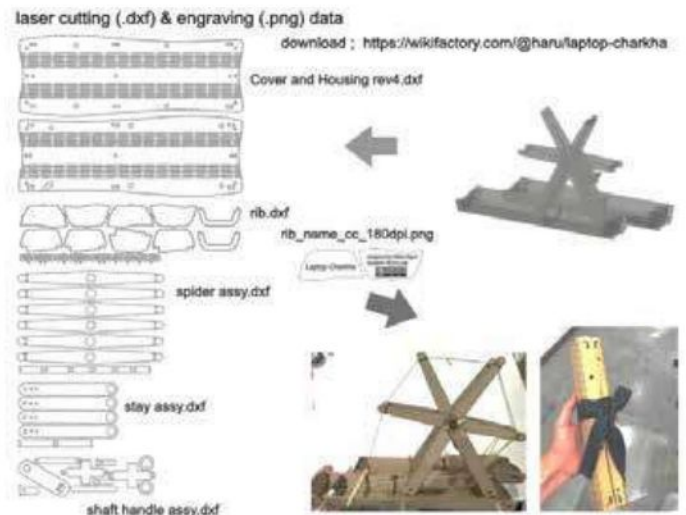


Figure 7 3D-CAD model, Laser-cut data, Assembly

(b) No metal

A layer of laser-cut plates functions as the shaft to eliminate the brass pipe used in Bamboo Charkha (Figure 8)



Figure 8 "shaft" of Laptop Charkha

(c) No glue

The bamboo case was replaced by a combination of thin wooden plates bent together without glue (Figure 9).



Figure 9 cover & housing

(d) No protrusion

The spindle mounting part protruded a little when the housing plates were bent to be combined (Figure 10). This protrusion would get caught when the charkha was put in or out from the bag. To avoid this, the curved edge of the cover protects the protrusion. The corresponding portions of the housing are also curved to create a harmonized appearance as a whole.

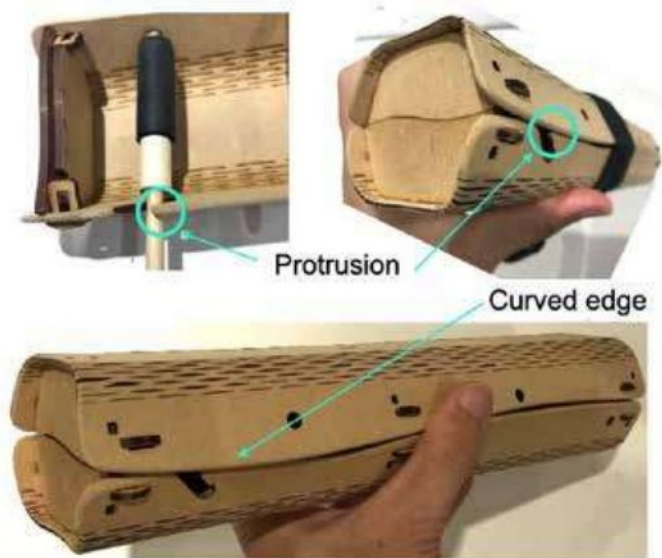


Figure 10 Protrusion and Curved edge

CHALLENGES

“Dealing with variations in plate thickness”

The thickness of a thin wooden plate varies from country to country and region to region, depending on standards and availability. The current Laptop Charkha design is for a thickness of 2.5mm. With the current laser cutting data, it is possible to assemble plates in the thickness range of 2.3 mm to 2.6 mm. In case that the thickness is beyond this range, one idea is to resize the entire Laptop Charkha according to the thickness. For example, in the case of using a 3.0mm plate, the size of the charkha should be $3.0/2.5 = 1.2$ times larger.

The 3D CAD model in the next step will be parametric so that the thickness can be adjustable. And, this means that the entire size of the Laptop Charkha will become manageable.

OBSERVATIONS

There were opportunities for cotton spinning workshops using Bamboo Charkha in various places (India, China, Korea, Japan) and using Laptop Charkha in China and Japan. Through these activities, I decided that the design of Bamboo/Laptop Charkha achieved the goals set for development.

Goal 1: “Safety”

At the events such as Maker Faire (Maker Faire, 2021), there were many children in attendance. They would touch and try various things with their curiosity. In this situation, I realized again that it was an excellent decision to use a bamboo spindle.

Goal 2: “Portability”

Table 1 shows the dimensional comparison of Box Charkha ((Mkgandhi.org, 2021), (Sahasrabudhe, 2013)) and Bamboo/Laptop Charkha.

Table 1 Dimensional Comparison of Charkha

		Box Charkha	Bamboo Charkha	Laptop Charkha
Weight (g)		1500 - 2700	410	230
Folded dimension	length (mm)	394	340	295
	width (mm)	230	63	70
	hight (mm)	51	63	70

For example, I once carried six Bamboo Charkha in a bag and conducted a cotton spinning workshop by myself. Also, sometimes a Laptop Charkha stays in my bag and is so light that I forget I am carrying it around.

Goal 3 “Ease of use.”

And you can quickly start spinning wherever you visit (assemble time is about 3 minutes). Sometimes as a demonstration for people who don’t know how to spin. In today’s lifestyle, people mostly sit in chairs rather than on the floor. One of the advantages of Bamboo/Laptop Charkha is that people can easily use it in a chair-seated position without any preparation on the floor (Figure 11).



Figure 11 Spinning on laps

Also, people who spin yarn for the first time often overdo the twisting. So, the first thing I did was to have them try turning slowly with the handle and using the least amount of twist, and then they often improved quickly. In the case of Bamboo/Laptop Charkha, the distance between the spindle tip and the face is closer than the traditional charkha or Box Charkha. So they can easily observe how the spindle twists and winds the yarn.

Goal 4 “Learning opportunity.”

Most of the cotton spinning workshop participants focused on feeling the cotton and watching it turn into yarn (Figure 12). This experience would be a good opportunity for them to learn how to make clothes. Even if they could spin only a little, they would take it home with a sense of accomplishment.



Figure 12 Cotton spinning workshops at various places

COMPARISON WITH OTHER TYPES OF CHARKHA

Table 2 shows a comparison with traditional charkha and Box Charkha (Photos are exhibits at Sabarmati Ashram, Ahmedabad). This summary is my observation based on the responses from the participants in the cotton spinning workshops I have conducted in various places.

In short, Bamboo Charkha and Laptop Charkha are suitable for starting cotton spinning.

Also, there is a possibility to meet professional use by enlarging the size and using a metal spindle.

And, digital fabrication/sharing is an advantage of Laptop Charkha, which has a possibility of dissemination via the Internet.

Table 2 Charkha comparison

	Traditional Charkha	Box Charkha	Bamboo Charkha	Laptop Charkha
durability	★★★★★	★★★★☆	★★★★☆	★★★★☆
performance	★★★★★	★★★★☆	★★★★☆	★★★★☆
mobility	☆☆☆☆☆	★★★★☆	★★★★★	★★★★★
hank winding	☆☆☆☆☆	★★★★☆	★★★★☆	★★★★☆
digital fabrication / sharing	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	★★★★★

FURTHER PLANS

Based on the above items, the next steps of this project are as follows.

- To organize a manual on how to make Bamboo Charkha.
- To try a larger version with functions comparable to Box Charkha.
- To improve the 3D CAD model of Laptop Charkha, which can handle various wooden plate thicknesses.

CONCLUSIONS

Bamboo/Laptop Charkha are easy-to-use/make spinning wheels for everyone.

The situation is different today than it was during the time of Mahatma Gandhi's Charkha movement. However, I believe that the concept of making things from the ground up and the insights gained from this

process are still significant today.

Also, sharing how to make tools and improve them together is a modern interpretation of the constructive program he promoted. And in this pandemic situation, digital fabrication/sharing is an effective solution to enable communication at a distance.

The evolution of machines and tools has been positioned to make things easier for humans and avoid using human abilities since the Industrial Revolution has powered many of them.

However, one of the significant roles of tools is using our hands and bringing out our abilities.

I would be delighted if this open-source project could help people rethink making things and interacting with tools.

This is the change I wish to see in the world.

ACKNOWLEDGEMENT

I created this Bamboo/Laptop Charkha by receiving energy from many people, including my friends who introduced me to the world of spinning, who organized the spinning workshops, and the participants. Thank you all for this exciting journey.

REFERENCES

Fabfoundation.org 2021. The Fab Foundation. [online] Available at: <<https://fabfoundation.org/getting-started>> [Accessed 29 December 2021].

Maker Faire. 2021. Maker Faire. [online] Available at: <<https://makerfaire.com>> [Accessed 29 December 2021].

Mkgandhi.org. 2021. Buy Box-Charkha (Spinning Wheel) [online] Available at: <https://www.mkgandhi.org/swadeshi_khadi/charkha.htm> [Accessed 29 December 2021].

Oguri, H., 2018. Bamboo Charkha. [online] Youtu.be. Available at: <<https://youtu.be/U0QLB8G4DUl>> [Accessed 29 December 2021].

Oguri, H., 2021a. How to spin cotton with Laptop Charkha ; Assembling, Spinning, Hank making. [online] Youtu.be. Available at: <<https://youtu.be/S0BGNX55L14>> [Accessed 29 December 2021].

Oguri, H., 2021b. Laptop Charkha. [online] Wikifactory.com. Available at: <<https://wikifactory.com/@haru/laptop-charkha>> [Accessed 29 December 2021].

Sahasrabudhe, M., 2013. Art of Spinning. [online] Mkgandhi.org. Available at: <https://www.mkgandhi.org/swadeshi_khadi/Charkha_Manual.pdf> [Accessed 29 December 2021].

Shepard, M., 2013. Charkha Tips. Charkha Tips (Spinning Cotton, Handspinning, Mahatma Gandhi, Khadi). [online] Available at: <<http://www.markshep.com/peace/Charkha.html>> [Accessed December 29, 2021].

Wikifactory.com. 2021. [online] Available at: <<https://wikifactory.com/home>> [Accessed 29 December 2021].

Wikipedia.org. 2021. Phyllostachys bambusoides. [online] Available at: <https://en.wikipedia.org/wiki/Phyllostachys_bambusoides> [Accessed 29 December 2021].



ITALY IN THE AGE OF MIXED REALITY. AN EXPANDED EXPERIENCE OF FASHION

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ABSTRACT:

The contribution aims to investigate the interactions between technology and fashion design of the 21st century in the mixed reality. Within the Italian context, identified as a place of experimentation and interaction between digital innovation and manufacturing tradition, four case studies are examined. During the months of social distancing imposed by Covid-19, they have developed projects based on mixed reality with consequences on creative processes, production, distribution, communications, and consumption of fashion. In this scenario of hybridization between physical and digital dimensions, the contribution questions the expansion of fashion experience, the ongoing transformation of the digital object, the conception and perception of time, and the idea of intimacy.

This contribution intends to consider the screen of technological devices as an element of intersection between physical and digital dimensions, overcoming the opposition between reality and the dream world of fashion, and transforming the subject from spectator to protagonist - private or public - of the experience. Computer and smartphone screens have gone beyond the two-dimensionality of images produced by mirrors and magazines, on which the history of fashion has built the idea of modern subjectivity. The research activity was developed through desk analysis and qualitative interviews, which allowed us to identify and analyse four case studies, chosen as recent examples of mixed reality experimentation belonging to the creative, production, communication, and retail system of fashion in Italy. The aim of this contribution is to demonstrate how fashion in the 21st century needs interpretative models that go beyond an opposing vision between material and immaterial, between physical and virtual. In mixed reality, the subject is no longer just a spectator in front of the mirror, beyond which he can observe the magic of fashion, but is transformed into an actor, the protagonist of this expanded experience made possible by the screen.

KEYWORDS (max 6)

mixed reality; mise en abyme; fashion design; expanded experience; intimacy

1. Through the Looking Glass vs Mise en Abyme

In November 2019, Italian online retail company Yoox Net-A-Porter Group unveiled YooxMirror Reloaded, an application supported by artificial intelligence and designed as a virtual fitting room that offers users an interactive experience in which they can virtually match and wear clothes and accessories, share them on social networks and eventually buy them.

The YooxMirror Reloaded project was presented on 25 June 2020 by Giorgia Roversi, director of sustainability and inclusion at Yoox Net-A-Porter Group, during the second meeting of the workshop WHAT IF? Collaborative Conversations and Speculative Fashion, organised by Università Iuav di Venezia. www.iuav.it/DIPARTIMEN/CHISIAMO/eventi/2020/06--giugno/What-if/index.htm [last accessed 24 September 2020].

Using virtual reality technologies, selected products are digitally translated and adapted onto a 3D model, which comes to life on animated backgrounds. Users can upload a photograph of their face which is digitised to generate a personalised 3D avatar. Unlike a mirror, YooxMirror's fitting rooms allow users to see themselves virtually wearing a potentially infinite range of garments and accessories [fig. 1].



Figure 1: YooxMirror

Through the screen of a computer or smartphone, a *mise en abyme* effect is thus produced, erasing the boundaries between the physical and digital dimensions, between subjects and objects. This effect originally refers to the dimension generated by two opposing mirrors that, instead of returning a single image, produce infinite depth. Starting from this example, the contribution asks whether the model of the *mise en abyme* can help us to understand 21st century fashion in the same way that through the looking glass, with its sharp contrast between reality and dream, was a powerful metaphor for 20th century fashion. Through the Looking Glass was the title of a television series on the history of contemporary fashion, produced by Suzanne Davies and Robert Albury and broadcast on the BBC from 20 November 1989. Inspired by Lewis Carroll's book, the series promised viewers to cross the screen to relive the fashions of the past, even in their most everyday forms. These were years when fashion and its theoretical approaches were being reconfigured in the light of cultural studies, which put media and mass culture at the centre of attention. As Lou Taylor, co-author of the book that accompanied the series, recalled, the conceptual framework that was emerging questioned how to reconcile the reality of everyday clothes made from poor fabrics with the idealised image of fashion "created by the new styles" (Wilson & Taylor 1989: 89). This debate highlighted a dualistic vision of fashion as material culture on the one hand and as a dream world on the other, with the result of emphasising the opposition between fashion history based on the analysis of artefacts and fashion theory, focused on the interpretation of meanings. Since the second half of the 1990s a plurality of approaches and theories have challenged this opposition, which today seems radically outdated for

² www.youtube.com/watch?v=D3_cNqH8Abo [last accessed 24 September 2020].

³ See also Lou Taylor, *The Study of Dress History, Establishing Dress History* (Manchester: Manchester University Press, 2004).

at least two reasons, as this contribution attempts to demonstrate (Beward 1998; Riello 2010). The first is in relation to the concept of “material”, which in the Internet era and with the perspectives opened up by media theorists and scholars, has been extended to virtuality and the digital. The second relates to the overcoming of the idea of fashion as a great collectively shared dream – theorised, for example, by Elizabeth Wilson (1985) in *Adorned in Dreams* – which has been parcelled out in the 21st century into a multitude of imaginaries, conveyed on a different scale by fashion communities through platforms, networks and, above all, social media.

This contribution intends to consider the screen of technological devices as an element of intersection between the physical and digital dimensions, overcoming the opposition between reality and the dream world of fashion and transforming the subject from spectator to protagonist – private or public – of the experience. Computer and smartphone screens have gone beyond the two-dimensionality of images produced by mirrors and magazines, images on which the history of fashion has built the idea of modern subjectivity. The metaphor of the *mise en abyme*, on the other hand, as used by the architectural historian Anthony Vidler, shows how digital technologies create “environments constructed in the world of four-dimensional sensory perception out of virtual materials”, thus going beyond the three dimensions of space and projecting “multivalent and other environments en abyme” (Vidler 2007: x). At the centre of these environments is the multifaceted experience of the self, as fashion designer Elsa Schiaparelli had already pointed out in the 1950s when describing her image reflected and multiplied by a mirror as a “fifth dimension”, in addition to the four space-time coordinates (Evans 1999; Evans & Vaccari 2020; Ruggerone & Stauss 2020).

Two fundamental aspects of portable screens, ubiquitous containers of new fashion imagery in the 21st century, are investigated here. The first one consists in the fact that the new technologies of fashion are also technologies of the self, as Agnès Rocamora has argued by borrowing and adapting Michel Foucault and Anthony Giddens’ concept of technology to the discourse of fashion. This allows us to consider how the staging of the self – explains Rocamora – no longer takes place only in the three-dimensional space in which our bodies move, but also in the reality of screens (Rocamora 2011). The second one is in relation to *Made in Italy*, the representation of which has often been monopolised by the narrative of Italian fashion, which has privileged the discourse of the most famous brands to the detriment of both innovative fashion phenomena with less commercial impact and processes of self-reflection (Colaïacomio 2006).

Applied to the discourse of 21st century fashion, the model of the visual and media *mise en abyme* proves to be a theoretical framework that is also useful for highlighting the interactive role that the screen is called upon to play in the reality-virtuality continuum that mixed reality articulates. The concept of mixed reality was theorised in 1994 by Paul Milgram and Fumio Kishino (1994) to define any form of interaction between physical (or “real”, as they define it) and virtual elements. In the theoretical model they developed, called the “reality-virtuality continuum”, which places totally real and virtual spaces in opposition, mixed reality encompasses all intermediate modes of union between the physical and digital dimensions (Milgram, Takemura, Utsumi & Kishino 1994).

The visual, cultural and historical implications of mixed reality on the new fashion experiences in Italy make it possible to overcome the old limits of figures, digital doubles and potential avatars that only moved in a mirror universe (Baudrillard 1994: 105). The complex relationships and interactions created in this environment are what this contribution defines as an expanded experience of fashion.

On these issues, the exhibition “Les Immatériaux” by Jean-François Lyotard and Thierry Chaput played a historic role (Parigi: Centre Georges Pompidou, 28th March - 15th July, 1985).

As developed in the following parts, the theoretical framework thus outlined allows for the analysis of phenomena such as haptic perception of clothing and textiles in virtual reality, real bodies and digital styling, and material objects in virtual showrooms. The technologies promise an experiential aspect that prevails over the aesthetic one; places, or rather situations, that are immersive and highly interactive; and an idea

of fashion projected towards extended performative forms.

Within this theoretical framework, the paper considers how the experience of fashion’s reality-virtuality continuum, through mixed reality, has intensified with the Covid-19 pandemic that has heavily conditioned the ways in which fashion is designed, experienced, and interacted with.

2. Fashion in Italy at the time of Covid-19

The current relevance of mixed reality is investigated with particular attention to the design, production, distribution, and consumption of fashion in Italy at the time of Covid-19. This choice is motivated both by the cultural and industrial value that fashion has for Italy, and by the impulse to digital innovation that the strict and prolonged implementation of the anti-Covid measures in spring 2020 had in the country. Italy was in fact the first European country to launch a lockdown policy, drastically interrupting production activities, trade and the movement of people and objects. Moreover, the regions where fashion production and experience has historically been concentrated have one of the highest population densities in Europe, which made the social distancing imposed during the pandemic crisis particularly difficult. The consequence of all this was the need to quickly identify alternative ways of relating, including in the fashion system, encouraging the launch of mixed reality experiments and accelerating projects that had already begun. Italy has thus become an extraordinary testing ground for the degree of interaction between digital innovation and deep-rooted manufacturing traditions. Placing *Made in Italy* en abyme, observing it from different perspectives and identifying new peculiarities, allows projects with a high digital factor to emerge, which go in the direction of that integration between cyber and physical that a few years ago was still only hoped for (Bertola & Teunissen 2018; Vacca 2015). With the spread of the pandemic, this integration has had the consequence of rethinking the foundations of *Made in Italy* and of highlighting how the concept of *Designed in Italy* has gradually been added to it. In particular, the debate has intensified on the possibilities offered by digital manufacturing to reverse the process of delocalisation, bringing the production of “physical goods” back to national territories, with benefits in terms of employment, dignity of manual labour, and sustainability (Temporelli 2020: 120; Conti & Franzo 2020).

The reflection proposed here is part of an ongoing research at the Università Iuav di Venezia, aimed at mapping emerging fashion practices in Italy. The project was conceived in 2019 with the aim of organising the experiences analysed through an interpretative model that takes into account handmade and digital technologies, intersected with the comparison between short and long supply chains. One of the objectives of the research is also to contribute to deepening the territory oriented towards the use of digital technology, which is still largely unexplored and quantitatively marginal compared to the traditional sphere of handmade products.

The research activity was developed through desk analysis and qualitative interviews, which made it possible to identify and analyse four case studies, chosen as recent examples of mixed reality experimentation in the creative, production, communication and retail system of fashion in Italy. This choice is also coherent with the approach adopted here of giving voice to a *Made in Italy* that is not just an expression of the big brands. The selection fell on InVRsion and Sense-Immaterial Reality, projects that had already been set up a few years before the pandemic crisis, and on IL3X and Barbara Bologna, who instead began to delve more deeply into the opportunities of mixed reality during the lockdown. All these experiences were born in Milan and concern different aspects of fashion: materials, design, communication, retail. The Covid-19 also influenced the modalities of this research, which used as sources video conversations with representatives of the cases under investigation, carried out between June and September 2020, as well as the analysis of their websites, the materials they contain and the Instagram profiles. IL3X is a start-up founded in January 2020, with the aim of designing and selling digital garments that can be worn in social networks and live experiences, thanks to the use of facial recognition and body tracking, anchoring a digitally designed object to physical points on the body. The brand operates on two different fronts, both by creating wearable 3D

digital objects and by providing real objects with augmented reality, with digital animations that are activated when a pre-designed object is recognised. The digital garments are presented on the website as “Designed in Italy”, rather than Made in Italy, underlining the deliberate disconnection from the manufacturing identity of Italian fashion, while maintaining a reference to the equally classic concept of Italian design. In August 2020, the collaboration with Missoni was presented, thanks to which three virtual face masks were developed with the Sumirago-based brand’s archive fabrics. It is interesting to note how a historic brand, which has built its heritage on the materiality of typical knitwear, opens up to digital experimentation and possible trajectories to be undertaken on the enhancement of the archive.

InVRsion is a start-up founded in 2015 that creates showrooms and retail spaces in immersive virtual reality, including 3D products and contents. Digital objects react to movement and interaction with the user in a similar way as they would in the physical dimension. The aim of the project is to imagine a new shopping experience, combining traditional shopping and e-commerce. The project mainly makes use of augmented reality, which a few years ago began to show its potential, allowing digital elements to be superimposed on the physical world through the use of the screen of a smartphone or a dedicated visor, a camera and sensors. The prediction stated on the start-up’s website is that soon this shopping revolution will enter shop fitting rooms “where magic mirrors will process huge amounts of data in a matter of seconds to give us personalised information and advice on how to match the outfit we are trying on”. The case of InVRsion is examined here as an example of the exit from the first spectacular application of mixed reality, still limited to the magic mirrors and interactive screens of a few international flagship stores such as Italian brands like Prada In Store Technology in New York in 2002 and Pinko’s Hybrid Shop in Milan in 2013. Moreover, the actual diffusion of these technologies is interesting for its implications in terms of big data and surveillance of people’s tastes and interests.

The third case examined is Sense – Immaterial Reality, a company founded in 2018 that develops multi-sensory shared experiences of immaterial reality, intended as an evolution of augmented reality through the fusion of physical reality and photorealistic virtual reality. The Sense Fabric mobile app allows users to simulate the physical behaviour of fabrics, observe their movement by touching

5 The interview with designer Barbara Bologna took place on 6th June 2020; with Matteo Esposito, CEO of InVRsion, on 1st September 2020; with Erika Lamperti, co-founder and CEO of IL3X and with Silvia Valeria Rinaldi, Chief Magic Officer of Sense – Immaterial Reality on 2nd September 2020.

6 www.il3x.com [last accessed 18th September, 2020].

7 www.invrision.com [last accessed 18th September, 2020].

8 www.sense-immaterialreality.com [last accessed 18th September, 2020].

the device, blowing on the screen or moving it. These fabrics can be visualised on a digital outfit which, thanks to augmented reality, can appear in the viewer’s location. Sense introduced the figure of the Chief Magic Officer, currently held by Silvia Valeria Rinaldi, to highlight the “magic” component that unites material and immaterial reality. As stated by Rinaldi during the round table Phygital Textiles. The Virtual Side of Fashion, organised by C.L.A.S.S. on 7th July 2020, “today the magic wand is our mobile phone, transformed into a real futuristic tool [...]. The illusion is to bring the real sensations of the products wherever you are”. In this sense, technology makes it possible to create immaterial objects to be experienced in physical life. The adjective Phygital, a neologism combining the concepts of physical and digital, helps to understand how the two dimensions are increasingly integrated and are part of the same reality.

The last case study is represented by the designer Barbara Bologna, perhaps the least directly involved in the integration of digital technologies in the creative process, but who has been selected here for having experimented with actions in mixed reality in response to the need for social distance due to the Covid emergency [fig. 2]. The only example of a designer discussed here, Barbara Bologna is a body artist, who has made the body an object of worship and blasphemy at the same time, bringing it from the theatre to the catwalks. This contribution analyses in particular both Bologna’s collaboration with the duo Trashy Muse during the Tribù collection show in February 2020, and the experiment of building an online fashion tribe through

the W40tribu web channel, which she created and launched at the beginning of the lockdown. Bologna has used this tool to translate her hybrid universe of fashion and art into a digital dimension accessible to everyone and everywhere, thus declining the concept of remote into a participatory experience and a call for a new collective synergy. This case exemplifies the relationship, already illustrated, that fashion has with the technologies of the self and contributes to the construction of the discourse of a new Made in Italy.



Figure 2: Barbara Bologna

Covid-19 has led to a rapid development of digital experimentation in fashion in Italy, as confirmed by the interviews conducted during the research. Erika Lamperti, for example, confirmed that the closure due to the pandemic emergency was the accelerator for the implementation of the IL3X project, imagined at the end of 2019 and rapidly developed in the following months. People’s habits have changed and new dynamics have been created: it no longer seems necessary to move from home to work or act socially, and collaborations with physically distant professionals no longer seem impossible. In this context, therefore, the possibility of socialising in digital or virtual spaces offers much more ground for companies such as IL3X, which design garments to be used in the context of mixed reality.

11 www.w40tribu.com/ [last accessed 25th September, 2020].

10 www.barbara-bologna.com/ [last accessed 25th September, 2020].

9 www.youtube.com/watch?v=WIDip4my3Hk [last accessed 18th September, 2020].

The whole fashion system, including companies, brands, designers, magazines, and photographers, has started to imagine how to exploit the opportunities of digital technologies to find new forms of relationships, both on a personal and professional level. The lockdown experience has made it clear that the physical domestic space, intimate and private, has entered the screen, taking on a new public identity, but it has also made the opposite seem true. Silvia Rinaldi’s statement shows, for example, that mobile applications such as the one developed by Sense and called Fabric have made it possible “to bring the show-room to the customer’s home. If in the show-room I have shelves, mannequins and a collection at my disposal that I can see, what we can offer right now is the possibility of having a hundred mannequins at home”. The creation of immaterial catalogues allows textile companies to present their collections at a distance to designers and manufacturers, thus reducing waste, time, rehearsals, and travel.

The early months of 2020 were also a phase of great development for InVRsion, as Esposito also stated during the interview. Prior to that, the company had focused on designing virtual retail spaces only for large-scale food retailers. During the weeks of lockdown, Esposito explains, “we realised that entire industries, including fashion, were on their knees because of the inability to meet supply and demand, buyers and brands [...] and so we adapted our software for the needs of fashion”. Unlike other fields, fashion objects require more attention and care, and can be set up and displayed in different ways: folded on a shelf, hung on a hanger, worn on a mannequin. This prompted InVRsion to develop research on this front, having considered how, precisely as a result of Covid-19, the proximity shop is back in vogue. A possible scenario is then envisaged in which even the shops of the main brands can become very small and intimate physical places, inside which virtual reality screens can be found. This opens up a prospect of combining the characteristics of “brick and mortar” shopping - i.e. in a physical shop - with those of ecommerce.

3. The extended dimension of design

The case studies analysed show that digitally-oriented fashion projects do not aim to “cannibalise physical fashion”, but to offer “one more channel”, as Lamperti points out. The work of the fashion designer must therefore be placed in this extended dimension in order to identify how the creative process is changing. For the founder of IL3X, already a shoe designer for her own brand Lamperti Milano, the integration of physical and digital reality increases the degree of creative freedom of fashion designers, freeing them from the constraints of material production: fabric yield, tailoring techniques, fit, and cost. In fashion companies, digital prototyping is already widely used and allows them to assess on screen whether or not a product should be included in the collection and which variants to develop without having to make all the prototypes. This approach not only leads to a reduction in time and costs, but also allows more creative ideas to be tested. The scenario that many young designers envisage, including Lamperti, includes the development of entirely digital collections that allow for a more intense fashion experience than the physical one. One example is the possibility of having garments that come alive, that transform, that include sound experiences and that narrate themselves. The trend that seems to emerge from the testimonies collected during the research is that we are moving towards a diffusion of design experiences that, until recently, were the prerogative of a few designers considered visionary and active in the border areas between art, fashion and technology, as in the cases of Hussein Chalayan and his multiform clothes and the designer and researcher Ying Gao and her interactive fabrics.

In the perception of the interviewees, the creative freedom of the designer is to be read in direct relation to the need to recover the technological gap that characterises fashion, especially in Italy, where traditionally there is an approach more linked to the physical, manual and artisan dimension. While in architecture, for example, the design phases have been completely digital for over twenty years, in fashion there is still a widespread manual approach to drawing, at least in the design phase. The spread of digital software such as that made available by Sense, on the other hand, makes it possible to design fabrics as if they were virtual looms or to design clothes and accessories in 3D. However, what for the interviewees is a greater creative freedom, does not seem to be so much about creativity as it is about speeding up the processes of testing designers’ ideas, developing market analysis before prototyping, and making digital content available for the subsequent stages of communication and sales. This opens up questions about the possible marginalisation of the fashion designer’s creative contribution in the face of the data flows that he or she will increasingly be called upon to interpret. A totalitarian transposition of the creative process to the digital world is averted by the fact that, at the moment, the digital model is never totally faithful to the physical prototype: for this, “the last stroke of the craftsman’s magic wand will always be needed”, to quote Rinaldi. It is interesting to note how the stereotype of the artisan-wizard that has been at the centre of the Made in Italy narrative continues to re-emerge.



Figure 3: Sunnei Canvas

The extended reality between physical and digital also involves the ways in which designers and retailers interact. One example is the Sunnei Canvas project, presented in July 2020 by Sunnei brand, founded in Milan in 2014 by Loris Messina and Simone Rizzo (Blanks 2020). The project consists of a platform in which digital avatars wear and present some of the brand’s most iconic unisex garments, including accessories, shoes and bags [fig. 3].

Selected retailers have the possibility to be guided in this experience by the avatars themselves, customising the outfit and having it produced in the chosen colour, fabric, stitching, and length. The example of Sunnei Canvas supports the thesis of the diffusion of expanded design, in which the retailer becomes co-designer of the collection, participating in the creative choices that will be translated from the digital dimension into the physical one. It is conceivable, then, that in the future it will be possible to buy and try on a digital garment, the cost of which can be reduced by the absence of materials and logistics, and, if satisfied, to convert it into a physical product. Mixed reality wardrobes of clothes could thus be created. An experience on which Lamperti and the many “techno designers” (Wipprecht 2012) who are working in this direction trust.

Finally, mixed reality also becomes a space for creative experimentation for consumers, who can wear many more garments to satisfy their desire to look and change. In fact, digital technology allows you to “be more people in a day” (Lamperti) and through the screen you can instantly change your look according to the situation, cancelling the established ritual of opening your wardrobe in the morning and choosing your outfit for the whole day. By moving digitally through different situations and places, but remaining physically in the same location, it is possible to characterise our presence in different contexts through digital clothes. Consumers can thus acquire a primary role, and not only because the garments of the collections are addressed to them, but because they become the pivot around which the universe of a brand is created. In the total interaction they are called upon to perform when they approach a certain fashion product, the subject becomes both user and creator, subverting the normal production hierarchies and determining the greater or lesser success of a proposal.

Applications in this extension of reality make it possible to modify, replace and define the aesthetics of products, and to try them out virtually on oneself or on a similar avatar; through the screen, one becomes a factotum of a new declination of the concept of fashion, experienced in extended reality. Another question, then, is to understand to what extent this condition of demiurges is not a pre-packaged game of mirrors with circumscribed rules, where those who participate are attracted only by the technological divertissement.

In the idea of avatar, digital dress and virtual representation, one perceives the depth of the experience of fashion *mise en abyme*. For Barbara Bologna, the mobile phone screen is interesting because it is a subtle, undeclared support for the (de)structuring of her own image, for the creation of a series of multiple identities that populate her collections. The designer’s experiments with technology are quite recent, preceding by only one season the crucial moment marked by the pandemic. Until a few years ago, Bologna was a shy creator, not very inclined to media exposure, but with the advent of social media and the spread of digital filters, her image has undergone a radical change to the point of becoming the face and body of her clothes. With her Instagram profile, and particularly through constant use of stories, the designer seems to celebrate the possibility of continuous transformation on a daily basis, offering herself as a distorted figure, visible but at the same time concealed, in an overexposure that becomes manifest. The hybrid reality analysed here accentuates the changing and ephemeral nature of fashion, generating constantly changing, transgressive, extreme and fleeting identities.

12 During the interview Lamperti says she registered the domain *Ardrobe*, which alludes to the idea of a wardrobe in AR (Augmented Reality), with the aim of selling digital garments by other designers.

13 www.instagram.com/barbara_bologna [last accessed 28th September, 2020].

4. Fashion objects and digital times

Digital fashion is developing in response to certain habits expressed, especially by younger consumers, on social networks. Instagram, Tik Tok, Facebook, just to name a few, have become channels where the winner is the constant, massive media overexposure of those who act on them and acquire value precisely on the basis of the frequency of content publication. "Everyone wants to publish all the time. They want to share a story, a video of where they are and what they are doing". (Lamperti). One consequence is the increasingly popular phenomenon of wardrobing, or returning an item – often very expensive – worn just once to show itself through a photo or video on Instagram. "Social media makes the moment immortal. A garment, once worn, becomes obsolete", says the founder of IL3X. The physical instant, brought to the digital, is transformed into infinite time. This implies the need for many consumers to have at their disposal a large number of clothes and accessories that can always define new identities on social networks, thus becoming a fundamental alternative to the physical meeting occasions drastically limited by Covid-19. For these reasons, the use of digital clothing, which exists and can be worn in mixed reality, is becoming more and more widespread. We arrive at an idea of fashion intended for instant social use, a digital experience of self-fashioning that allows the individual to construct his or her identity through digital clothes and change it an instant later. It is important to highlight the contrast that characterises digital fashion: although it is not subject to the durability limits of physical fashion, which is connected to materials, their consumption and degradation, and therefore potentially usable forever, it is enjoyed for a very limited time. Lamperti also points out, however, that the time span of use can also be established by the brand, programming the moment of activation and cancellation of the digital garment. It can be linked to the duration of a specific event, it can be geo-localised, it can be set as to the total number of pieces that can be purchased, it can be available only to certain categories of people: digital objects, that could potentially be without limits of time, space and number, are programmed to be the object of desire of a limited nucleus of consumers. A limited availability creates the feeling of necessity that makes a product desirable.

Digital fashion makes it possible to coincide almost at the same time when a garment is presented by a brand, put on sale, purchased and worn by the consumer, thus eliminating the waiting time that traditionally characterises fashion. In recent years, physical fashion has also started some experiments that revise the times and practices of presentation and sale of collections, trying to respond to consumer needs arising from social media. An example of this is the practice called "see now, buy now", implemented for the first time in 2016 by Burberry with its spring-summer 2017 collection (Boardman, Haschka, Chrimes & Alexander 2020): at the end of the fashion show, garments were immediately available for purchase in the British brand's physical and online shops. This model has since been adopted by a number of brands, but it has not been widely applied because it involves a large-scale production of garments whose public response cannot be known in advance. It is therefore economically unsustainable, but also unsustainable from an environmental point of view because it produces a lot of inventory. Digital, then, can be the means to provide a sustainable response to new consumer needs.

In the extended landscape analysed in this contribution, the concept, rooted in the fashion system, of seasonality also changes. Digital fashion lives in a space not conditioned by weather seasons, which makes it much freer in the use of materials, in the layering of the outfit, in the typology of garments. This will affect the creative work of designers, as Lamperti herself acknowledges: on the one hand, it will lead to a slower physical fashion, based on the quality of materials, disconnected from trends and the need to continually propose novelties; on the other hand, it will allow digital fashion to be more experimental and varied. These two approaches, she predicts, will live in symbiosis.

The development of fashion in mixed reality changes the timing of creation, production and consumption. Like in physical fashion, the design and development phases of the creative idea take a long time and require a sequence of actions to arrive at the definition of a prototype. In the digital dimension, however, this allows for the development of variations and modifications in a very short time, does not need to wait

for subsequent production and can be replicated indefinitely. The result is a considerable reduction in costs, pushing digital to be usable by all. However, we should not forget the choices of some digital brands, such as The Fabricant, to present some garments as unique, "made-to-measure" pieces, whose selling price is comparable to that of physical couture. This can be interpreted as digital couture, i.e. craftsmanship applied to digital fashion.

The analysis of fashion in mixed reality, therefore, questions the various connections with the temporal dimension: the times of production, duration, expectation, and fruition change. The distinctions between present, past and future rapidly blur into one another. The novelty becomes in a few moments the consumer's digital present and then his or her archive.

5. Between intimacy and expanded experience

The social distance measures and the restrictions on freedom of movement, introduced in 2020 as anti-pandemic measures against Covid-19, have reinforced the use of digital forms of participation and proximity, encouraging a different use of the senses for an extension of experience. In particular, intimacy has been disrupted, if we consider by this term that which relates directly to the most personal and somehow secret dimension of the person. Already before Covid-19, digital technologies had begun to unveil this protected, reserved, hidden dimension, in an inexorable dissolution of liminal surfaces, until arriving at an increasingly totalising mixed reality.

Many works carried out for several years in the experimentation of "wearable" technologies have shown how they can be expanded and find new forms related to the most intimate we possess, namely our own presence (Birringer & Danjoux 2006). A presence that we could therefore define as augmented, disintegrated, multiplied, linked to the body that generates it, but from which it immediately distances itself, becoming something else.

Another significant example of an expanded experience of fashion in mixed reality is that proposed by Barbara Bologna with the "w40tribu" platform. This online channel, opened during the lockdown, was the answer to the need for imposed social distancing, creating through the network a new tribe, a disembodied society of altered figures. Real characters, but extrapolated from fantastic visions, who thus regain their immaterial dimension on the web. The designer declares: "I think the pandemic led us to be more inclined, closer to something that we hadn't really experienced yet. Because yes, we were all interconnected, we had WhatsApp, Instagram, and the virtual, that we used on a daily basis anyway. But perhaps without ever really understanding that this virtuality was something paradoxically more "carnal". A carnality excavated through the webcam, revealed in the domestic intimacy of homes during the lockdown. Bologna's intention was to create a collective cyborg interconnection, linking designers, photographers, stylists, editors, and models, allowing the work of one to be in sync with that of all the others (Pini 2020). An expanded, shared and connected

14 www.w40tribu.com [last accessed 25th September, 2020].

experience, through cameras and monitors, in which reception and participation are confused, real and augmented become within reach of the screen and distances dissolve to leave room for the tribal identities of multiform clothes and changing bodies. As the designer says: "W40tribu is an amplified extension of the apparent randomness of the flows that reveal articulations, where before it seemed we could only see lines, because during the work we grew up together with this creature, shaping it and letting ourselves be shaped. That's why we also wanted to tell all the back, the inside, what we usually don't say because it seems unseemly, and not only creatively, but also technically. And so we vetoed secrecy". The idea that in mixed reality the subject is no longer just a spectator in front of the mirror, beyond which he or she can observe the magic of fashion, but is transformed into an actor, a protagonist in this expanded experience made possible by the screen, is reiterated. The secret of the magic lapses because one is part of the magic itself, placed en abyme.

CONCLUSIONS

This contribution has tried to demonstrate how fashion in the 21st century needs interpretative models that go beyond an opposing vision

between material and immaterial, between physical and virtual. We have proposed as a model the *mise en abyme*, understood as the virtual space created by the screens of portable technological devices and in which the experience of fashion and the self is expressed. Through this approach, the mixed reality that characterises the contemporary, intensified in Italy during the Covid-19 pandemic, was investigated. The case studies analysed allowed us to investigate the expanded experience of fashion in its performative forms and the role it plays in redefining design and its authors; the representations and discourse of Made in Italy; the intimacy between people, objects and spaces. In this sense, the lockdown experience has made it clear how domestic and private physical space has entered the screen, taking on a new public identity.

BIBLIOGRAPHY

Barker, J. (2017) 'Considering Snapchat Filters as Digital Adornment', *The Fashion Studies Journal*, 2 July, viewed 16th December 2021, <http://www.fashionstudiesjournal.org/notes/2017/7/2/considering-snapchat-filters-as-digital-adornment>.

Baudrillard, J. (1994) *Simulacra and Simulation*. Ann Arbor: University of Michigan Press.

Bertola, P. and Teunissen, J. (2018) 'Fashion 4.0. Innovating Fashion Industry Through Digital Transformation', *Research Journal of Textile and Apparel*, 22(4), pp. 352–369.

Blanks, T. (2020) 'How Sunnei Bucked the Fashion System', *Business of Fashion*, 16 July, viewed 16th December 2021, www.businessoffashion.com/articles/tims-take/is-sunnei-the-future-of-milan-fashion.

Birringer, J. and Danjoux, M. (2006) 'The emergent dress: transformation and intimacy in streaming media and fashion performance', *Performance Research*, 11(4), pp. 41–52.

Boardman, R., Haschka, Y., Chrimes, C. and Bethan, A. (2020) 'Fashion "see-now-buy-now": implications and process adaptations', *Journal of Fashion Marketing and Management*, 24(3), pp. 495–515.

Bolton, A. et al. (2015) *China through the looking glass*. New Haven: Yale University Press.

Breward, C. (1998) 'Culture, Identities, Histories: Fashioning a Cultural Approach to Dress', *Fashion Theory*, 2(4), pp. 301–313.

Colaiacono, P. (ed.) (2006) *Fatto in Italia: la cultura del made in Italy (1960-2000)*. Rome: Meltemi.

Conti, G. M. and Franzo, P. (2020) 'Distretti produttivi virtuali. La transizione del Made in Italy nella moda', in Barucco, M.A., Bulegato, F. and Vaccari, A. (eds.) *Remanufacturing Italy. Il Made in Italy nell'epoca della postproduzione*. Milan-Venice: Mimesis-DCP luav, pp. 124–143.

deLahunta, S. (2002) 'Virtual reality and performance', *PAJ: A Journal of Performance and Art*, 24(1), pp. 105–114.

Dixon, S. (2007) *Digital performance. A history of new media in theatre, dance, performance art, and installation*. Cambridge MA e London: MIT Press.

Evans, C. (1999) 'Masks, Mirrors and Mannequins: Elsa Schiaparelli and the Decentered Subject', *Fashion Theory*, 3(1), pp. 3–31.

Evans, C. and Vaccari, A. (2020) (eds.) *Time in Fashion. Industrial, Antilinear and Uchronic Temporalities*. London and New York: Bloomsbury.

Giannachi, G. and Kaye, N. (2006) 'Presence', *Performance Research*, 11(3), pp. 101–103.

Hunt, E. (2019) 'Faking it: how selfie dysmorphia is driving people to seek surgery', *The Guardian*, 23 January, viewed 16th December 2021, <https://www.theguardian.com/lifeandstyle/2019/jan/23/faking-it-how-selfie-dysmorphia-is-driving-people-to-see-surgery>.

Lipovetsky, G. and Manlow, V. (2009) 'The "artialization" of luxury stores', in Brand, J. and Teunissen, J. (eds.) *Fashion and Imagination. About Clothes and Art*. Arnheim: ArtEZ Press, pp. 154–167.

Marchetti, L. (2009) 'From the object to the invisible: Retail experience within space, fashion and body', in Brand, J. and Teunissen, J. (eds.) *Fashion and Imagination. About Clothes and Art*. Arnheim: ArtEZ Press, pp. 168–183.

Milgram, P. and Kishino, F. (1994) 'A Taxonomy of Mixed Reality Visual Displays', *IEICE Transactions on Information and Systems*, E77-D(12), pp. 1321–1329.

Milgram, P., Takemura, H., Utsumi, A. and Kishino, F. (1994) 'Augmented reality: A class of displays on the reality-virtuality continuum', *Proceedings of SPIE – The International Society for Optical Engineering*, 2351, pp. 282–292.

Pini, B. (2020) 'Barbara Bologna, mutazioni genetiche, cyborg e eterodirezione', *i-D*, 12 May, viewed 16th December 2021, <https://i-d.vice.com/it/article/5dzmvq/barbara-bologna-mutazioni-genetiche-cyborg-e-eterodirezione>.

Pitozzi, E. (2011) (ed.) *Culture Teatrali*, 21 'On Presence'.

Riello, G. (2010) 'L'oggetto di moda: tre approcci per la storia della moda', in Muzzarelli, M. G., Riello, G. and Tosi Brandi, E. (eds.) *Moda. Storia e storie*. Milan-Turin: Bruno Mondadori-Pearson, pp. 131–144.

Rocamora, A. (2011) 'Personal Fashion Blogs: Screens and Mirrors in Digital Self-Portraits', *Fashion Theory*, 15(4), pp. 407–424.

Ruggerone, L. and Stauss, R. (2020). 'The Deceptive Mirror: The Dressed Body Beyond Reflection', *Fashion Theory*, <https://www.tandfonline.com/doi/abs/10.1080/1362704X.2020.1766228>.

Salter, C. (2010). *Entangled: Technology and the Transformation of Performance*. Cambridge MA and London: MIT Press.

Taylor, L. (2004) *The Study of Dress History, Establishing Dress History*. Manchester: Manchester University Press.

Temporelli, M. (2020) 'Artigiano portami via', *Wired*, 93, June, pp. 116–121.

Vacca, F. (2015) 'Artisanal advanced design. Advanced manufacturing processes as a tool to revitalize peculiar Italian (craft)productions', in Collina, L., Galluzzo, L. and Meroni, A. (eds.) *The Virtuous Circle: Design Culture and Experimentation*, *Proceedings of the Cumulus Conference*. Milan: McGrawHill, pp. 703–715.

Vidler, A. (2007) 'Foreword', in Bruno, G., *Public Intimacy Architecture and the Visual Arts*. Cambridge MA and London: MIT Press, pp. ix–xiii.

Wilson, E. (1985) *Adorned in Dreams. Fashion and Modernity*. London: I.B. Tauris.

Wilson, E. and Taylor, L. (1989) *Through the Looking Glass. A History of Dress from 1860 to the Present Day*. London: BBC Books.

Wipprecht, A. (2012) *Technosensual. Where fashion meets technology*. Wien: Mono/Monochrom.

BREAKING THE INNER BOUNDARIES

By Students of Foundation Department

"We are afraid that if we show these ugly, unpalatable parts of ourselves, it will be too much for others. Without acceptance, we are still in denial and fighting within. The object of life is not to be on the side of the majority, but to escape finding oneself in the ranks of the insane. So, this is an attempt to break away from Self consciousness web and accept one's flaws and be a part of the imperfect yet beautiful."



SANITARY WASTE – PROPER DISPOSAL MANAGEMENT AND ALTERNATIVES

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ABSTRACT:

Menstruation - the onset of physiological changes among females during adolescence still faces many social and religious restrictions nationwide which stops them from maintaining proper menstrual hygiene. Due to the lack of resources and information, many females across the country still use disposable sanitary napkins, most of which are composed of more than ninety percent plastic, causing a huge threat to the environment. The main challenge faced in this area is the improper disposal of sanitary napkins, wherein most of them make their way to landfills, choking up the pipelines giving birth to various health issues. Segregation work can be dangerous and the incinerators used for burial emit many harmful gases, contributing to an increase in the carbon footprint. The goal of this study is to develop new techniques to channelize waste and use it in a more effective way. Thus, the primary research would be conducted through surveys and questionnaires - answering the questions on different disposal methods used by them and understanding the composition and hygienic treatment of the material. The data collection would help in analyzing how health and environmental risks can be reduced. Herein, the paper focuses on the effective use of sanitary waste by its proper disposal, reducing risk to the environment.

KEYWORDS:

Sanitary waste, incinerators, proper disposal

1. INTRODUCTION

India is a country of over 655 million women, out of which 336 million women menstruate and 36% of this population use disposable sanitary napkins (Muralidharan, 2018). A single woman in her lifetime generates up to 125 kg of non-biodegradable waste, contributing to an increase in sanitary waste (Bhatia, 2018).

Disposal of sanitary waste has become a major challenge across India. According to the Solid Waste Management rules, 2016, sanitary waste comprises used diapers, sanitary towels or napkins, tampons, and any other similar waste, and is categorized under dry waste. This waste needs to be properly wrapped and segregated under non-biodegradable waste. But according to Bio-medical Waste Management rules 2016, anything that is contaminated with blood or bloody fluids should be incinerated or autoclaved and categorized under Bio-medical waste. Due to the lack of concern of the authorities on sanitary waste, its disposal is becoming a huge problem, as the disposable sanitary napkins are composed of more than 90% plastic, which is non-biodegradable and causes many health and environmental hazards. "The impact becomes more profound with the unorganized ways of Municipal Solid Waste Management and poor community collection, disposal, and transportation networks in the cities and the villages." (Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Govt. of India 2018, p.1)

One more challenge that contributes to improper sanitary waste

management is the superstition and taboos prevailing around menstruation. Indian women during menses are considered as 'untouchable' and banned from cooking and performing various religious activities, resulting in maintaining poor menstrual hygiene. (Kaur et al., 2018)

In the early 90s, the silence around menstruation was intense, but things started changing with the passing years. Women started using reusable cloth pads, instead of ash and sand (especially in rural areas). Many NGOs and government schemes also came in support to educate women on menstrual hygiene and provide them with a variety of options on menstrual products. Since 2010, there have been many programs, campaigns, social media movements in the menstruation arena and gradually women have started adopting sustainable options like menstrual cups and reusable cloth pads, but the choice of the products completely depends on personal comfort (Ministry of Health and Family Welfare Government of India, n.d.).

Despite many efforts being made to educate women about menstrual hygiene, most women are still uneducated on properly disposing of sanitary napkins. Hence, due to the unawareness, they throw them into the garbage bin mixed up with other dry and wet waste, leading to improper segregation posing grave health risks for the waste segregators. Addressing this growing concern, the study focuses on creating a system to channelize the waste, and using the available technologies to create a wood surface finish, taking care of both health and environment, by doing a qualitative analysis through tools like questionnaires and surveys.

2. MENSTRUATION IN INDIA - PRESENT CONDITIONS

2.1. TYPES OF PRODUCTS USED

During a survey conducted by distributing google forms across the country, it was observed after analyzing a sample of 108 menstruating women that, 75% of the total responses use disposable sanitary napkins, and the rest 11% and 14% use biodegradable sanitary napkins and menstrual cups respectively. Concludingly, disposable sanitary napkins are India's most commonly used menstrual products. People are gradually becoming aware of the alternatives of disposable sanitary napkins, but there is still a long way to go, as women are hesitant to try the alternatives. The women must be made aware of the importance of using these products hygienically, to avoid susceptibility to infections. Awareness should also be made on the various sanitary products for a hygienic environment.

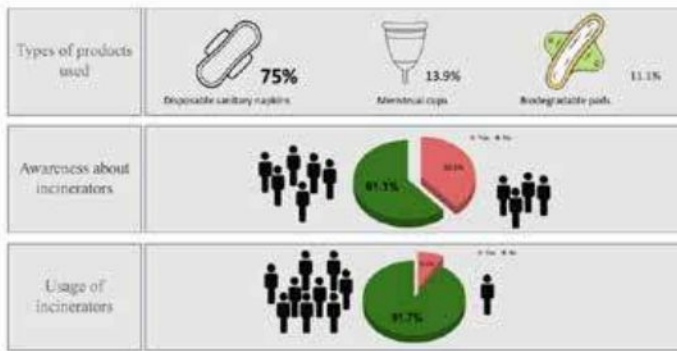


Figure 2.1: Data Analysis of the conducted survey

2.2. BELIEFS AND TABOOS

Menstruation in India still faces the barrier of many social, cultural, and religious restrictions across the country, which acts as a hindrance in the path of maintaining proper menstrual hygiene. In many parts of the country, menstruation is still considered secretive, where women cannot go out of their homes, attend religious functions, be a part of auspicious events during these days, as it is considered unclean. One of the reasons for the taboos prevailing around menstruation is the improper knowledge of menstrual hygiene and the infections it can have, if not taken proper care of.

Considering menstruation embarrassing, many girls skip school during their menses. It is also believed that washing the used sanitary products before discarding prevents black magic. Many women across the country, especially in rural areas, use cloth as an absorbent material that can be washed and used again, but this needs to be done secretly when no one sees it (Bhor & Ponkhse, 2018). These taboos and beliefs, prevailing around menstrual flow, can lead to many health and medical issues.

"In some parts of India, perceptions center on notions of purity and pollution. Bodily excretions are believed to be polluting, as are the bodies producing them. All women regardless of their social caste, incur pollution through the bodily processes of menstruation and childbirth. Such taboos about menstruation present in many societies have an impact on girls' and women's emotional state, mentality and lifestyle, and most importantly health. Hence both men and women should be educated on menstrual hygiene and its proper disposal" (Garg & Anand, 2015).

3. DISPOSAL OF MENSTRUAL WASTE

3.1. WASTE GENERATED

India generates up to 12.3 billion non-biodegradable sanitary waste every year, amounting to 113,000 tons of the waste reaching landfills. According to a study, across the country, over 336 million females experience menstruation of which 121 million of them use the disposable menstrual product. These products are non-biodegradable and a single sanitary napkin takes 500-800 years to decompose. Disposable sanitary napkins comprise more than 90% plastic, contributing to the 3.3 billion tons of plastic generated every year. (NewIndianXpress, 2021) Despite an increase in awareness about the alternatives of disposable sanitary napkins, they are still flooding the market, and it will take years before the usage of sanitary napkins scales down.

3.2. DISPOSING TECHNIQUES

There are a varied kind of products used during menstruation and their disposal also varies from rural to urban areas. Most of the women dispose of their sanitary waste with other household waste, which is then collected by the segregators, that ultimately ends up in landfills contributing to environmental pollution.

Menstrual Health Management facilities in India, lack bins for disposing of menstrual waste, which henceforth leaves them with no option other than leaving the soiled napkins around the corners of the toilet, or flushing them, making them more susceptible to various health problems. Conditions are even worse for public toilets in both rural and

urban areas. Depending on various cultural beliefs around periods, it is still considered secretive in many areas. All these practices contribute to a lot of health and environmental problems for anyone who is exposed to it. (Bhor & Ponkhse, 2018)

Disposing sanitary products also depend on the location of the person. Rural women are open to many other options, other than throwing in dustbins, such as deep burial, composting (which can only be practiced with biodegradable products), and burning them in deep pits. (Garg & Anand, 2015)

In the survey it was observed that 67.7% of the total sample dispose of them by properly wrapping in newspapers or polybags in dustbins, 25.8% of them disposed of in the waste collection truck, 1% burn them, 1% flush them in the washrooms and the rest 1% in open and empty spaces. Concludingly, the majority of the sample dispose of them by properly wrapping, but still, due to the improper segregation of the waste, they



Figure 3.1: Data Analysis of disposal methods on the conducted survey

4. TREATING THE MENSTRUAL WASTE

Disposable sanitary napkins, being non-biodegradable, are posing a grave problem to the environment. To solve this issue many experiments were conducted to use the available incinerating technology to use the waste effectively.

Many experiments were conducted to burn the sanitary waste at home because the incinerators were not available in the near proximity to incinerate the waste. Initially, the attempts were conducted with unused sanitary pads.

4.1. ATTEMPTS AND FAILURES

Attempts to burn unused sanitary napkin:

1. Dissected the unused pad and burned it with coconut oil in a terracotta bowl, but it didn't burn completely. The possible reasons for it are that it didn't receive the proper amount of heat, as the temperatures in incinerators reach as high as 800°C.
2. Shredded it and then wrapped it with its plastic cover. The pad burnt leaving the least amount of unburned part, i.e., plastic with cotton. The plastic that is present in the wrapper shrinks on burning and sticks to the pad. But the unburnt part is negligible.
3. Burnt the shredded sanitary napkin and plastic wrap separately, which didn't make much of a difference in the residue.

The ash obtained was then sieved using a sieve and it was grayish-black in color.



Fig 4.1: Burning the ash sanitary napkin



Fig 4.2: Sieving



Figure 4.3: Ash Obtained

Observations: Different brands of sanitary napkins produce different amounts of ash, depending on their composition and expiry dates. The amount of residue left depended on the heat which was provided to it, and the plastic only melted, never burnt completely.



quantities of ash produced on burning different brands

Figure 4.4: Different

Also, the gases produced were very toxic, hence the mask was put on, and the residue was sieved with a sieve to make the grains finer.

With the obtained ash, many experiments were conducted.

Tie & Dye experiments:

S.No.	Experiments	Observations
A.	Boiled the ash in water, and added cloth to it for 2-3 minutes.	Cloth slightly changes its color to gray.
B.	Boiled the cloth in another water, after tying it in a specific pattern. Then, add the cloth in the same water(as used in expt. A) for 5-6 minutes.	Gradually the mixture gets thicker. A slight pattern is visible on the
		cloth.
C.	Boiled the same mixture again, and added half a pinch of turmeric powder to it and boiled cloth to it.	Cloth color changes to ochre-yellow.
D.	Boiled the same mixture again (as in expt. C), and added pattern-tied cloth in a specific pattern.	Now, almost all water evaporated from the ash mixture. A thick slurry is left at the bottom. Cloth color changes to ochre-orange.

Table 1: Experiments with tie and dye



Figure 4.5: Expt. A



Figure 4.6: Expt. B



Figure 4.7: Expt. C



Figure 4.8: Expt. D

In the end, ash is left at the bottom of the container. And is then drained into the sink.

Observations: The ash didn't dissolve in water, but gave a slightly greyish color to the same and settled at the bottom of the container. The color is seen in the cloth while wet is darker than the color when it is dry.

Hence, the dye didn't work well.

Experiments with wood finish:

S.no.	Experiments	Observations
1.a.	Mixed the 1st part with water and MR adhesive to form a paste, and applied on teak wood.	Ash did not dissolve well in water. The finish came off the wood.
1.b.	Mixed the 2nd part with MR adhesive and applied it on teak wood.	The finish dried out with a black matte look.
1.c.	Mixed the 3rd part with Fevite.	It hardened after drying. Can be better used to make molds.
1.d.	Mixed the 4th part with Varnish and applied it on wood with a toothpick.	The finish dried out with a glossy black look.

Divided the ash of an unused sanitary pad (900mg) into 4 different parts:
Table 2: Experiments with wood finish



Fig 4.9: Expt. 1.a.

Fig 4.10: Expt. 1.b.

Fig 4.11: Expt. 1.c.

Fig 4.12: Expt. 1.d.

As the wood finishes with adhesive and varnish produced satisfactory results, the experimentations are now tried with used sanitary napkin ash.

Experimentation with used sanitary napkin ash:

Unused sanitary napkins produce toxic gases. Since the used sanitary napkins are heavier, they would require a greater amount of heat. Hence, there was a need to find incinerators to experiment, but couldn't find any incinerators in Jaipur. Even if there were incinerators, they were not in working condition, so, to test the finish with a used sanitary napkin, the used pad was burnt at home in a terracotta bowl covered with a terracotta pot with a hole at the top for proper combustion. But due to improper heating and the moisture present in the pad, it didn't burn completely, but the amount of ash obtained was enough for testing the wood finish.



Figure 4.13: Burning used sanitary napkin



Figure 4.14: Picture through the hole

The wood finish test results with both used and unused sanitary came out the same. There was a slight difference in the finish because of the improper burning of the used sanitary pad ash.



Figure 4.15: Used sanitary pad ash



Figure 4.16: Left - Ash + Varnish, Right - Ash + Adhesive MR

4.2. SAFETY

Menstrual blood is safe and doesn't contain any harmful chemicals or bacteria unless the person is diagnosed with some menstrual disease. The reusable pads are sterilized with sunlight, and here the used pads are sterilized at a very high temperature, making the ash safe to be used. Hence, the wood finish obtained is safe to use, as the used sanitary napkin goes through the process of sterilization by incinerating it at a temperature ranging from 800°C to 1000°C. To make it safer, a lacquer finish is applied to its surface.

5. RESULT

Different wood finishes:



Figure 5.1: Ash + Varnish Figure 5.2: Ash + Adhesive Figure 5.3: Ash + Varnish (sanded with sandpaper)

Wood finishes testing:

Different types of tests are applied to the wood finish to check it against different resistances (Flexner, 2018).

Scratch resistance: Tested using 2B to 5H pencils, where the pencil is pushed forward maintaining equal pressure, increasing the hardness of the pencils. The hardest lead that doesn't cut is the rating of the resistance.

Water resistance: Tested by placing a small puddle of water on the surface, and checking it in every 10 minutes for cracks or discoloration, and is rated to the most recent time before the damage occurs.

Heat resistance: Tested by placing a hot pan of boiling water on the surface, and checking the discoloration under the surface to rate the resistance.

Chemical resistance: Tested by placing drops of lemon juice on the surface, and sponging it off at regular intervals (5 minutes), checking the discoloration and cracks.

Adhesion: Tested by cutting horizontal and vertical lines in a crosshatch pattern using a paper cutter, and placing a strip of masking tape over the scorings, and pulling it off. The more jagged the edges of the cuts, the poorer the finish is bonded.

Observations:

Ash + Varnish (1): The finish is scratch-resistant till 8B; water and chemical resistant for more than an hour; heat for more than half an hour and the edges didn't get worn off while testing for adhesion.

Ash + Adhesive (2): The finish is resistant to scratch till 8B, but is not resistant to water and chemical, and gets discolored within seconds. The finish didn't stick to the masking tape while testing for adhesion.

Ash + Adhesive + Varnish (3): Results are the same as (1).

	Ash + Varnish	Ash + Adhesive	Ash + Adhesive + Varnish
Scratch resistance	✓	✓	✓
Water resistance	✓	✗	✓
Heat resistance	✓	✗	✓
Chemical resistance	✓	✗	✓
Adhesion	✓	✗	✓

Figure 5.4: Wood finish testing analysis

6. CONCLUSION

The wood finish developed can be used by the wood décor industry. It is recommended not to be used in the areas where it comes in contact with food (dining ware), to make the contact minimal.

7. PROPOSED SYSTEM – SOLUTION

The paper proposes a system to properly manage the sanitary waste by wrapping it properly and disposing of it separately in a dustbin which is collected by the waste collection truck, which has a separate compartment for sanitary waste disposal and the segregated within the waste collection truck itself, making it safe for the ragpickers. The segregated waste then goes to the large-scale incinerators, where the used sanitary waste is incinerated at a temperature ranging from 800-1000 C, and the resultant ash is sterilized, hence safe to be used. The ash then goes to the wood industry where the finish is made and applied on wood décor products, and the safety is further ensured by applying lacquer finish over it.

It is further recommended to test the finish in the laboratories, to check the toxicity level of the ash, as the sources were not available, to get the ash tested.

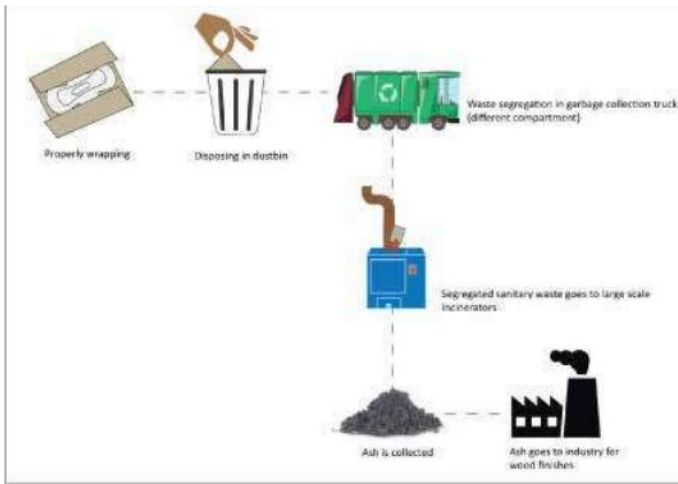


Figure 7.1: Proposed system

8. REFERENCES

- Bhatia, A., 2018, An urgent challenge: Why India needs to tackle its menstrual waste, NDTV, viewed 19 December 2021, <<https://swachhindia.ndtv.com/urgent-challenge-india-needs-tackle-menstrual-waste-6665/>>.
- Bhor, G. & Ponkhe, S., 2018, A Decentralized and Sustainable Solution to the Problems of Dumping Menstrual Waste into Landfills and Related Health Hazards in India, European Journal of Sustainable Development, viewed 23 December 2021, <<https://ecsdev.org/ojs/index.php/ejsd/article/view/730/725>>.
- Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Govt. of India 2018, Guidelines for management of sanitary waste, viewed 23 December 2021, <https://www.cpcb.nic.in/uploads/MSW/Final_Sanitary_Waste_Guidelines_15.05.2018.pdf>.
- Flexner, B., 2018, Testing wood finishes, Woodshop News, viewed 26 December 2021, <<https://www.woodshopnews.com/columns-blogs/testing-wood-finishes>>.
- Garg, S. & Anand, T., 2015, Menstruation related myths in India: Strategies for combating it, Journal of family medicine and primary care, viewed 23 December 2021, <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4408698/>>.
- Kaur, R., Kaur, K. & Kaur, R., 2018. Menstrual hygiene, management, and waste disposal: Practices and challenges faced by girls/women of developing countries, Journal of Environmental and Public Health, viewed 23 December 2021, <<https://www.hindawi.com/journals/jeph/2018/1730964/>>.
- Ministry of Health and Family Welfare Government of India, n.d., Menstrual Health in India: An update, Ministry of Health and Family Welfare Government of India, viewed 26 December 2021, <https://pdf.usaid.gov/pdf_docs/PA00W863.pdf>.
- Muralidharan, A., 2018, Management of Menstrual Waste, Insights from India and Pakistan, WaterAid India, Menstrual Health Alliance India, viewed 26 December 2021, <https://menstrualhygieneday.org/wp-content/uploads/2018/06/WaterAid_Arundati-Muralidharan.pdf>.
- NewIndianXpress, 2021, Menstrual waste disposal adding to India's environmental crisis: Study, The New Indian Express, viewed 23 December 2021, <<https://www.newindianexpress.com/nation/2021/jun/03/menstrual-waste-disposal-adding-to-indias-environmental-crisis-study-2311185.html>>.



GOING TOWARDS A RESPONSIVE BRAND MODEL

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ABSTRACT:

The traditional commercial enterprise is forced to reinvent itself. The corporate image and the strategies we use to set up brand values must have (also) that adaptation virtue. Today's consumers are no longer the same: they have various channels and platforms that force us to reconfigure our traditional paradigm and develop a responsive model.

KEYWORDS:

branding, responsive design, corporate image, social networks, UX, consumers behavior

BODY:

We live in times signed by speed and constant innovation. On a general level, we can see a blind optimism in technological development as the basis of general well-being. The impact of the changes in recent years has generated a significant transformation in the relationships between companies and people, forcing the reconfiguration of institutional communication models. Today's companies seek (and need) constant innovation and reinvention.

In times of digital transformation, high competitiveness, and demands from users or clients, the traditional commercial company fades and forces us to design a model that combines revenue growth with respect for our users and support from the environment. We are talking about a program that includes environmental, social, cultural, and technological aspects that are constantly evolving, where the relationship with internal and external audiences is increasingly relevant and the positive impact generated in society. Companies are becoming essential in critical issues like inequity, health, and diversity, among many others.

Consequently, the graphic brand of an organization and the strategies we use to capture it must have that adaptation virtue. This is the central aspect of a responsive brand (a definition with informatic origin): a set of visual identifiers and strategies that can respond to the complex web of internal and external transformations faced by institutions. We are not talking about distorting the brand to harm it (since its preservation over time can be an invaluable identifying capital). Still, we need to exploit all its qualities optimally.

This adaptation responds to many reasons, some of which we will try to detail. Although in this presentation we will focus on the visual aspect of communication, it's essential to have in mind that most of the concepts that apply to the visual field can be extrapolated to other areas, like user experience, design services, countless options that audio offers, etc. The idea of generating flexible strategies and models is transversal to different disciplines. In these times, it's essential to incorporate it in (practically) any project that we want to work on.

At present, we can no longer hide any aspect from our clients: they know everything that happened with a company or how it responded to a particular problem. Today we must be prepared to satisfy a demand for transparency and truth that our audiences constantly demand. They

want to see a real commitment that goes beyond a simple message or product.

For this reason, the control of the brand environment becomes essential and its comprehensive long-term planning.

We look at the case of BMW. Without going into technical aspects, the idea of transforming the classic logo (for the first time in 20 years) was carried out with the purpose of "more openness and clarity" since BMW "becomes a brand of relationship" according to the own words of Jans Thiemer (Senior VP of Customers and Brand, BMW). He also said: "Our new brand design is geared towards digitization challenges and opportunities for brands. With visual and graphic restraint, we are flexibly equipping ourselves for the wide variety of communication touchpoints where BMW will show its presence online and offline in the future" (The BMW logo - meaning and history, 2020). We can also find out about the case of a corporate giant like Disney: they adapted the brand identity to different formats and technical requirements without altering its essence and considering the need to always be present in other spaces through a responsive and effective brand concept. This is to mention some relevant examples since the expansion of this model can be reflected in countless situations today. Just to provide some references, many examples that illustrate these cases can be found by entering the website <http://responsivelogos.co.uk> and adapting the screen size of the navigator window.

In a context where we find increasingly heterogeneous audiences, it becomes essential to think "out the box" and design personalized messages and more flexible visual identifiers. Any space, no matter how small, becomes vital. The reason is simple: we consume information differently depending on devices, moments, or even personal experiences. It's not the same as what we look for on our phone while we rest, what we see on our notebook while listening to music, or what we watch on television during dinner. The communication team and Brand specialists have to think about how to communicate for each platform or medium, taking into account its structure, intrinsic characteristics, and how the consumer uses it in specific moments.

These new technologies and spaces pose a tremendous challenge for brands, jeopardizing the classic communication model and forcing recent habits to be acquired. For instance, social networks, the immediacy of comments or likes that can be granted with a simple click, gave consumers a preponderant role. The known-well paradigm, where brands offered their product and customers chose to purchase it (or not), can no longer be strictly applied. Today, people can instantly generate brand value through their digital interactions and valuations.

From these typologies emerges the concept of prosumers: an audience consumer and producer simultaneously. At present, whoever consumes a product also can produce, for example, new content (comments on a specific brand or product, references, reviews, and digital evaluations immediately).

We are then faced with multi-tasking targets, hyper-connected, and often over-exposed to many messages. It's a process where branding becomes an increasingly complex task and in which all possibilities must be foreseen.

This difficulty in gaining consumer's attention also invites us to rethink

the way we design brand storytelling. The classic narrative model (which raises the sequence introduction, middle, and end) is no longer enough in contexts of such vertigo. While we can reach our audiences like never before in history, achieving authentic engagement becomes increasingly tricky. Our audience can often be in front of the same message and still not assimilate it, which shows the difficulties brands and their teams face.

We must add other aspects to these transformations in people's habits and preferences. Contrary to the classical theorists, who affirm that the decisions made by clients are based on rational processes, some new models ensure that all these choices are linked to an emotional component. This is one of the main statements of neuromarketing, for example. We can also find this premise in the definition of "lovemarks" established by Kevin Roberts "for a brand to survive, it needs to create loyalty beyond reason" (Roberts, 2005).

In this way, new possibilities are opened up for those brands and companies looking for new ways to reach their potential customers. It seems that we live in a new "golden age" of audio, with the appearance of voice assistants, podcasts, or streaming. We are rediscovering the communication possibilities that sound offers us and contacting our users while they carry out other activities.

Even more. Just as symbols, institutional colors, fonts, music, or sound effects are part of the range of possibilities available to brand architecture, smell is also gaining more and more importance in brand design. All these variables must be present when viewing our responsive model.

However, we cannot fail to consider one last question. Companies understand the importance of communicating in different ways with their audiences, which is why they are launching more and more contact channels. But the model cannot be synthesized to a simple question of quantity. If an organization offers different service channels but still cannot generate a satisfactory user experience, it can affect our brand environment. That is why it's necessary to emphasize that it's not only about offering multiple alternatives but rather about finding which ones are the most appropriate for our clients or users. As the corporate image specialist Norberto Chaves explains, "what the public thinks about an organization is the result of the contacts that institution establishes with it" (Chaves & Belluccia, 2003).

Is it possible to generate a comprehensive experience that solves problems and generates effective communication in all these spaces?

Brands must be prepared to manage efficiently and communicate adequately (ideally in any circumstance), focusing on their audiences. To achieve this, a brand identity system will be necessary that allows flexibility, considering different formats and experiences, and fueled by knowledge from other disciplines. Companies and their strategies must concentrate all their efforts on knowing and adapting to their followers to ensure that they feel heard and become more human, authentic, and transparent in the face of a general society that demands it.

CONCLUSIONS:

In a context characterized by hyper-connectivity and hyper-segmentation, branding becomes an increasingly complex task. It's not just about offering a multiplicity of products and options or delegating these tasks to automated systems, but rather about adequately managing the most appropriate channels for our messages, according to the characteristics and preferences of our audiences. These aspects must be transversal when planning an optimal corporate image and capacity to respond to current (and future) transformations.

BIBLIOGRAPHY:

Official BMW website (2020, March 5), The BMW logo – meaning and history (online), <https://www.bmw.com/en/automotive-life/bmw-logo-meaning-history1.html>

Roberts, K. (2005). "Lovemarks: el futuro más allá de las marcas", Empresa Activa, Barcelona.

Chaves, N. & Belluccia, R. (2003). "Marca: los significados de un signo identificador", Paidós, Buenos Aires, Argentina.



FASHION IN THE TIMES OF COVID-19: IN A NUTSHELL

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ABSTRACT

History reveals a series of nasty occurrences which affected mankind severely resulting in a reformed shape of the complete eco-system where humans have to start again from scratch to showcase their resilience towards the disorder, the same is true in the case of recent pandemic Covid-19 also. This Chaos affected all the facets of human life whether it is society, industry, ecology, belief system, or the way we live on the planet earth. So, seeing the Fashion industry struggling hard during the recent pandemic should not be a matter of surprise as it is also part of the same ecosystem, after all. To delve deeper into this tale, a series of research papers, journal articles, research projects, media reports, and forecasts by a reputed agency is reviewed and presented in this paper which will be beneficial in unlocking the true potential and adaptive measures for the future. A qualitative approach to review the past reputed articles in context to Covid-19 impact on fashion industry is followed here. The major findings are grouped under sub-themes conversing & diverging at different nodes showcasing the hostile nature of impact made. Digital –shift, sustainability, design, communication & advertising, supply chain management, adaptiveness and capability, consumer behavior, circular fashion, manufacturing and supply-demand, workforce, purchase, AI/BOTS/automation/games/wearable and solidarity & community development are the major area of concern during the pandemic and post pandemic also. These are domains where resiliency measure is to be taken massively so as to resume the balance in Fashion. Having a quick review of the above-mentioned key findings, one thing is clear that Covid-19 led to substantial change in the whole course of the Fashion diaspora has made the industry people ponder upon the present and future of the Fashion Industry. Key-words- Covid-19, Sustainability, Internet, Design, and Fashion

INTRODUCTION

History reveals a series of nasty occurrences which affected mankind severely resulting in a reformed shape of the complete eco-system where humans have to start again from scratch to showcase their resilience towards the disorder, the same is true in the case of recent pandemic Covid-19 also. This Chaos affected all the facets of human life whether it is society, industry, ecology, belief system, or the way we live on the planet earth. So, seeing the Fashion industry struggling hard during the recent pandemic should not be a matter of surprise as it is also part of the same ecosystem, after all. It got affected in multiple nuggets and showcased a strong resiliency to face this hostile market scenario. To delve deeper into this tale, a series of research papers, journal articles, research projects, media reports, and forecasts by a reputed agency is reviewed and presented in this paper which will be beneficial in unlocking the true potential and adaptive measures for the future. The following presentation is weaved in a chronological manner stating Key –focus areas happenings related to the fashion diaspora as a whole.

METHODOLOGY

A qualitative approach to review the past reputed articles in context to Covid-19 impact on fashion industry is followed here. The major findings are grouped under sub-themes conversing & diverging at different nodes showcasing the hostile nature of impact made.

DISCUSSION

DIGITAL –SHIFT AND RELATED OUTCOMES.

Although Haute fashion has been seen embracing technology and innovation for a long the recent pandemic outbreak has forced the whole fashion diaspora to be online (Casini and Rocchetti, 2020a). Digital participants like Google, Amazon, Skype, Walmart & Target have been able to boost their revenue manifold due to this recent surge in online traffic. (Gruenwald, 2020) Convenience and safety measures have been the main reason. (Hude, 2020b) Further, the triumph of technology-based physicals to resist the risk factor involved in visiting physical fashion stores and ramp shows has also been an addressable factor for the demand in the online fashion market. (Seibel, Santos and Silveira, 2021) It has satisfied the consumers up to an extent for whom this lockdown was full of boredom. (Silvestri, 2020a) The late-adopters and skeptical buyers for digital platforms are also seen active on the e-commerce portal to let their fashion purchase happen during the Covid-19. (Kim, 2020) This recognition of online platforms is possible only by embracing AR (Augmented reality) and VR (virtual reality) which ultimately gives surge to the online traffic. (Silvestri, 2020a) Apart from gratification made to the consumers it has also helped in relationship building easier and long-lasting (Mangussi, Dutra and Karam, 2021b). The pandemic-led digital revolution has given a boost to the Bandwagon effect in the Fashion & Luxury of China where buyers want to be seen devoted to a particular social-media group showcasing their mindset and values. (Liang et al., n.d.) Integration of technology like data analytics, digital mirror, smart dressing, clerk-free stores, 3-D representation, RFID tags, interactive touchscreens, beacon technology, and mobile apps are the sign of business transformation employing Fascinating experiences and sensory appeals in fashion retail. (Deshmukh, n.d.) Buyers are willing to feel an augmented version of shopping portals rather than the basic ones. They want to get engrossed with illusions of physical appeal, spatial placements, background sounds, and avatars like sales assistants. (Silvestri, 2020a) The craving for sensory stimuli is also found in the digital ramp-show audience where they are missing the texture, fabric, and embellishments of the ensemble. (Silvestri, 2020a) Increasing demand for “virtual reality-based fashion shows” especially in the pandemic by companies like ORDRE is also justifying the same. (Silvestri, 2020a) To let this materialize the Govt. or related body must emphasize access to the internet for rural chunks and policy ease for the online brands. (Hude, 2020b) Apart from these Personal computers were the main gadgets in searching online and making the purchase. (Jílková and Králová, 2021)

MOMENTS OF SUSTAINABILITY MEASURES

Fast fashion buyers throughout the world are feeling hopeless in wardrobe makeovers due to the chaotic supply chain network and unsafe consequences of visiting stores. (M and Kannappan, 2020b) Mushrooming of these brands in the past has given rise to multiple internal threats related to sustainability like water consumption, chemical pollution, and the plight of labor rights. (Tran, 2021) Strategic planning for the sustainability of the fashion business is a must to have a sense of relief. (M and Kannappan, 2020b) Following this sustainability in SCM (Supply chain management) can only be possible by introducing dimensions like diversion of wastage from landfills, controlling CO-2 emissions and environmental pollution is to be taken into account. (Rotimi and Hopkins, 2021) Similarly, the existence of limited purchasing power has made consumers more conscious about their money spent for these fashion brands causing a shift in demand and supply overall. It is subsequently initiating the fashion brands to reshape the fashion calendar, slow-fashion, and design collections beyond the realm of seasons. (Santos, Seibel and Silveira, 2021) Now the push from eco-anxious consumers is causing Companies to build a biosafe fashion portfolio by all the facets like organic packaging, adherence to environmental norms, recycle and reuse (upcycling, renting & repairing) of materials. (Seibel, Santos and Silveira, 2021) Circular strategy incorporating factors like Green-reputation, Eco-design, efficient usage of utility, accountable HRM, Traceable, Sustainably certificated incentives, and circular premium like factors post-Covid-19 for letting transition into sustainability happen. (D'Adamo and Lupi, 2021) Seeing the poor performance of creative industries like fashion design and other related areas proves that they are not effective enough in preventing external threats like Covid-19 by maintaining a healthy work environment resulting in a sense of security among the professionals working here. (Comunian and England, 2020) Now and then these professionals are seen abandoning the industries because of a lacking sustainable growth shortly. (Comunian and England, 2020) It also entails a weak HRM practice related to most of the brands in the fashion world. It will not be wrong to say that this is two-way damage for both the Fashion brands and workers in the market. (Comunian and England, 2020) During the study of Consumer perception towards sustainable fashion consumption, a profound direct or indirect input of functional, social, emotional, conditional, and epistemic values were found during Covid-19. So to let the sustainable purchase happen with zero reluctance the fashion brands should come forward in increasing the weightage of these inputs. (Nadia et al., 2020) In one study experts were seen propounding the up-cycling of no-use objects like old clothes, candy bags, Daily objects to overcome the shortage of PPE- Personal protective equipment such as masks, face-shields and protective suits during Covid-19 apart from innovative practices like modification of PPE- Personal protective equipment for introducing sustainable designs. (Li and Liu, 2020) The benefits of Personal Protective Equipment (PPE) to mankind during pandemic has raised the issue of "considering Personal Protective Equipment (PPE) as a clothing category" and justifying "right to clothing" consequently. This right entails democratization of fashion & clothing for the general mass in economical figures. (Graham, 2021b) Although the recent vulgarity of the market due to outside threats like Covid-19 has taught the Fashion leaders and consumers a lesson of adopting sustainable practices so that voluntary stay over internal threats may get materialized soon. (Tran, 2021)

MOMENTS OF DESIGNING

Covering the face with a Mask has started assimilating into the mainstream fashion trend during Covid-19. (Tedjomurti and Suyanto, 2021b) In the same vein, Women of Surabaya (Indonesia) are preferring cloth mask because of the patterns, designs, polka-dots, motifs it carries within apart from the repeated usability. The option to choose the mask as per the clothes they are wearing is letting them be more fashionable and increasing the demand for cloth masks. (Tedjomurti and Suyanto, 2021b) Booming sales of colorful masks and anti-bacterial fabric made intimate wear line, cozy street styles, durable and minimalistic one's kind of classic designs are suggesting the fashion brands to redo their assortment planning for the upcoming seasons. (Zhao and Kim, 2021b)

Wearing a well-designed cloth mask on the bearded face is more preferred than any clinical mask because it is more comfortable to the face-shape and less susceptible to virus entry. (Prince et al., 2021) The acceptance of cloth masks and homemade masks by these folks is also lessening the scarcity of medical masks in the market and consequently leading to an ample supply for frontline-corona warriors. (Tedjomurti and Suyanto, 2021b) In one word we can say the "synecdochical" role is being played by Face-mask full filling all the parameters. (Silchenko and Visconti, 2021) It is quite fascinating, noticing Athleisure and activewear brands being able to maintain their sales when all the fashion brands were found lagging in the pandemic. (AMED, BERG and Et al., 2021) Legal professionals have shown a strong reluctance to work from home (WFH) in comfy clothes as it may breach the work-atmosphere protocol, advocate that dressed in formals not only showcase their professionalism but also fosters a focused mindset much needed for the ongoing legal proceedings (Moran, 2020) T-shirt with pictures of local revered objects, showcasing a belief that it is going to protect the wearer from the Covid-19 like a bad omen is a great example stating design is beyond aesthetics. (SOOKAROMDEE and WIWANITKIT, 2020) Consumer's increasing discourse for sustainability has given rise to slow fashion mediated by Made order garments. Although made to order process takes time to produce and is pricy but they are also going to trigger local employment in the market. (Kreetta and Valonen, 2021) On the other side, designers should hear the minimalistic echo of beige and camouflage colors are ruling the season. While talking about fabrics-leather, denim, and rainproof have become second skin to humans. Romantic and feminine appearance with long sleeves in parallel to polka dots and disty prints have been the taste of ladies. People feeling cozy and getting prepared for a picnic have brought Gingham pants and white jeans in limelight. To have an easy walk around they have preferred hi-sneakers and hi-top converse over any other styles. Above all these elements crescent-shaped bag with vintage leather and bamboo/plastic/ knotted handles are adding an extra touch to the overall look of these gracious ladies. ((Pinville, n.d.))

MOMENT OF COMMUNICATION & ADVERTISING

Like consumer groups and fashion brands, the digital ambassadors, influencers, bloggers also behaved differently during the Covid-19 outburst. Previously they were portraying a fake, virtual identity while being on a digital platform but now they are forced to post their everyday life by being at home wearing comfortable clothes and pajamas. Zero access to film in beautiful locations unique spots and a utopian world has compelled these digital narrators to change the way of depiction. Dressing with an eye-catching mask covering and working at a distance for online shootings was like pretending to be normal while not being normal for the fashion folks. Two trends of digital influencers emerged Post-Covid-19 out of which one was unusual averting from the fashion brands advocacy and another was to be in the limelight at all costs. Even the followers are following the same trap of gaining popularity syndrome and showing FOMO (Fear of missing out) syndrome post-Covid-19. In addition to this, fashion brands should be cautious in weaving their story via online platforms as the manipulation of messages is easier due to the growing rate of prosumers nowadays. (Rossi, 2020) Post covid-19 brands should adapt to the shuffle in the market by altering the promotion, focusing on utility-based products, and creating captivating content like Nike stating "play inside, play for the world". (Pinville, n.d.) A humanitarian & innovative form of promotion has been used by Luxury brands during the pandemic. Although the four brands Louis Vuitton, Chanel, Gucci & Burberry behaved differently while promoting themselves but their motto was the same i.e. promotion with compassion. For instance, Burberry promotion with #stayhome campaign or Gucci donating mask & medical care is one among these. (Grilec, Vukusic and Dujic, 2020) Confidence of the customer is the key to success in the market. And to achieve it they have been using real-time communication and content sharing on social media as a tool for a long. (Mangussi, Dutra and Karam, 2021b) Socially responsible campaigns have established a system-based approach to advertising research. This holistic approach has been a triangular association between the Individuals, eco-factors, and advertising research overall. (Gangadharbatla, 2021) A study

done propounds that hedonic shopping and utilitarian shopping and online advertising is done during Covid-19 help measure the cognitive dissonance among buyers. In addition to this impulse buying and cognitive dissonance are positively correlated. (Chauhan, Banerjee and Mittal, 2020) Social media marketing activities (SMMA) of fast fashion brand Uniqlo in Indonesia during the pandemic revealed the trend fashion brands are leaning towards. The Social media marketing activities (SMMA) of the brand community on Instagram during this outbreak were more vivid and intense as well. Product publicity, product image posting, product launch previews, and sharing posts of influencers and product endorsements with influencers through social media were key themes of these key themes. (Nahya Nurnafia et al., 2021) Practicing Greenwashing in promotion has slowed down because consumers becoming more cautious. (He and Harris, 2020b) Coming to conversion rate, UX-Design should be in such a manner that targeted landing take place apart from the omnipresence of brands on all the digital platforms. On the other side, physical stores should try to be a room for experience, gathering, and joy to have maximum footfall. (AMED, BERG and Et al., 2021) Unanimous advocacy was seen towards CSR activities by most of the Luxury fashion brands across the world converging on the appeal for the resiliency towards Covid-19. (Pelikánová, Němečková and MacGregor, 2021) The study done on Inditex kind of Fast fashion brands reveals that relationship and trustworthiness create a symbiotic relationship between supplier and brands. It makes the supply chain strong enough to face turbulent times. (Opitek and Reformat, 2021)

MOMENTS OF SUPPLY CHAIN MANAGEMENT (SCM)

Covid-19 has made fashion brands shift their focus from lean manufacturing to agile supply chain management. Agile supply chain management is a holistic way to deal with supplier-buyer relations where the main area of concern is transparency and effectiveness in communication apart from partnerships to have strong resiliency. (McMaster et al., 2020) Instead of being empathetic towards the buying practices, payment terms, and communications towards the supplier base the buyers became more demanding, shrewd, and rigid in their trade practices during the pandemic which perfectly establishes the presence of power imbalance in the fashion supply chain. (Kiilunen and Ferrara, 2020) Ninety percentage of Generation Z were seen advocating sustainability stating it is going to lengthen their life, stay connected with buyers, and ensure solid differentiation against rivals. The pandemic led to market ambiguity has made the brands realize the fragile nature of Supply Chain Management (SCM). (Pardo, Seara and Razvi, 2020)

MOMENTS OF ADAPTIVENESS AND CAPABILITY

The agility and adaptability of fast fashion brands may be charted as strategic planning tools because of the surge in demanding digital purchase trends. These two factors can be measured by the "Purchase of concentration model" which is like theorizing ant colony optimization phenomena. Agility concentration in the "Purchase of concentration model" should be made towards the domain of technology, management, and talent to combat these negative occurrences in the fashion trade. Fashion varieties rotation on weekly basis might help in controlling old stock spillage affecting the supply chain overall. Embracing hygiene-based delivery and packaging may be an amendment factor as per as adaptability of the fashion e-business model in the time of Covid-19. (M and Kannappan, 2020c) The readymade garments (RMG) sector in Bangladesh comes second to China when we talk about top fashion brand manufacturers all across the globe. But the outbreak of Covid-19 created a chaotic condition in its manufacturing, workforce, logistics, and other facilities consequently causing a supply-chain failure. Cancellation of bulk orders by brands like H&M, Nike, Columbia Sportswear, Primark, and Inditex has also been one of the key factors which can't be overlooked when it comes to supply-chain failures. Consequently, the sustenance of the supply chain has become a point of concern among industry leaders and policy-makers. They are taking prompt actions and letting their factory run following the govt. directed norms for preventing future damages apart from the flexible chain strength followed. Likewise,

factors to measure resilience framework have also been identified as "capability components of resilience" against vulnerability: flexibility, velocity, visibility, and collaboration Juttner, U. and Maklan, S. (2011). Aligning this capability factor against the vulnerability factor in four by four-quadrant matrix will lead to a multiple-status company that may discover itself. Whereas perfect placement will place them in a state of "balanced resilience". (Ali, Rahman and Frederico, 2021d) Brands should learn to be farsighted after seeing the critical state of the market due to Covid-19. They should strengthen themselves to be self-dependent enough to challenge any kind of crisis shortly (Buheji and Ahmed, 2020) Shifting the company's resources, real-time risk monitoring, sharing risk accountancy, and creating a healthy incentive system kind of actions may lead to a thorough adaptive behavior among fashion supply chains. (Hsu et al., 2021) The deciding factors in stating an e-commerce Company's suitability for facing crisis are Technological readiness, Environmental readiness, and Organizational readiness. It can enable fashion brands to be agile & adaptive. (Chauhan, Banerjee and Mittal, 2020)

MOMENTS OF CONSUMER BEHAVIOUR

Choice overload behavior caused among the consumers by Fast Fashion brands has made the SFR (small fashion retailers) under the stress of inventory turnover ratio disaster. The proliferation of these local brands adopting the overstocking and last-minute discount strategy in the recent pandemic has resulted in the negative drift. Many of these brands are unwillingly selling their remaining stocks at a loss to let their retailing cycle go further by recovering the investment made. Portfolio realignment based on fuzzy logic can alleviate this issue apart from having a healthy return at the end of the day. (Sinha and Sainy, 2021b) A new version of the Theory of Planned behavior emerged recently where threat and coping appraisals concerned with Covid-19 were affecting belief, Intention, and actual behavior respectively. Assessment of severity of threat during the threat appraisal process denoted consumer's belief (subjective norms & attitude) about switching channels online, while the vulnerability explained zero correlation to online switching behavior. (Youn, Lee and Ha-Brookshire, 2021) Covid-19 led havoc has caused a sharp fall in collaborative consumption and shared transport apart from people spending the whole day in internet browsing to get away from boredom. (Esposti, Mortara and Roberti, 2021) Divide seen in face mask acceptance factor also justifies the same, One believes in avoiding face-mask because of comfort, autonomy and liberty it is bringing to them. And the other is seen adhering to the face-mask movement due to the health-concerns, hygiene issues, identity-building, and fashion quotient it carries within. Most of the women relate to the second set, fond of flaunting with this new piece of accessory. (Green, Kozen and Blumenkamp, 2021b) Most people without basic education and proper hygiene were seen avoiding face-mask whenever it was needed. Similarly, people without medical issues like DM & Cardiac arrest were seen avoiding it as they felt they are strong enough to resist the virus attack. Therefore a rational appeal is much needed to make people concerned about following the benefits of wearing PPE (Personal protective equipment). (Pooya MD et al., 2021)

MOMENTS OF CIRCULAR FASHION

Obligation towards Circular-fashion is evident from the loop that entails consumers been avoiding Fast-fashion brands, increased second-hand market purchases, and considering recycling a disposable option. (Cipolla, 2021) It has become a buzzword post-pandemic creating value for the business by generating an opportunity to satiate buyer's demand, innovate and reduce environmental impact too. Rental, subscription, and Recommence are the three methods implemented here to control extra surplus in garments production and are correlated to on-off events, shorter periods, and products of high quality as well as durability. In the same vein, circular design is all about the durability and reparability of garments produced. (Morrison, Petherick and Ley, n.d.) Overnight fashion clothing rental got struck more badly due to diminishing demand in the market because of changing hygiene and lifestyle patterns due to Covid-19. Overall survival of disruptive innovation like collaborative

consumption has been a point to be pondered upon by the Fashion brands mobilizing it. (Brydges et al., 2020)

MOMENTS OF MANUFACTURING AND SUPPLY-DEMAND

For survival, brands have started working on different aspects like strengthening design image, indigenous manufacturing apart from using social media and technology as a tool. Here point which can't be ignored is the investment constraint for forging investment capabilities. Three points appeared during this study: firm-level dynamics, production, and retail as main spots where path-dependent progress of Australian fashion business is found getting affected by Covid-19. Virtual interactions, stress among the workforce, massive supply-chain failure, and off-shore production halt were the severe Covid-19 attack to the firm-level dynamics. Reshuffling in the production and delivery of garments is done to minimize the increased freight charges. Capsule collections like comfort wear were preferred based on working from home at the time of Australian winter. Few local brands were seen involved in harnessing local manufacturing by making comfy knitwear and Zoom tops which were generating instant cash and employment as well for sustenance. The geographical location of manufacturing facilities for smooth running of international brands is seen as a deciding factor due to their covid-19-related Border or factory closure. (Brydges, Heinze and Retamal, 2021) Covid-19 has caused repercussions not only on the demand side but supply-side activities like production, manufacturing, employment, supply chain, and pricing are also found getting affected due to the social-distancing norms to be followed during the pandemic. Indian textile activities are no exception here. (Kanupriya, 2021b) During Covid-19 the cost that occurred for one minute of production in factories got severely influenced by elements like production lag, quality, absenteeism, and management support in the factories. (CHAKRABORTY and BISWAS, 2020) Ultimately this has made the fashion sector cease up to a certain extent. (Kanupriya, 2021b)

MOMENTS OF WORKFORCE

Foreseeing the dire consequences of Covid-19 has created industry people to crusade digital activism against the unfair practices concerned with sustainability in the industry. But "vocal for local brands" campaigns are a bit self-contradictory as many local designers are seen catering to offshore clients with minimum compliance with fair treatments for workforce and production areas. (Khan and Richards, 2021) Alarming levels of mental workload & burnout rate in a workforce of Spain during Covid-19 lowered the shop-floor performance of the fashion industries. (Rodríguez-López, Rubio-Valdehita and Díaz-Ramiro, 2021) Desperate times like Covid-19 have fetched the attention of Industry leaders towards the unequal treatment of the fashion workers till-date. Disparity existing all across the global production networks (GPNs) led to bring solidarity & commonality measures in the industry. To show this resiliency, brands like Prada & Dior have started to focus on worker's livelihood by producing essentials like Personal protective equipment (PPE) and sanitizers in the short supply. (Brydges and Hanlon, 2020b)

MOMENTS OF PURCHASE

People are becoming fearful about clothing purchases as they may carry the traces of the Covid-19 like a virus. This makes them disrupted about non-essential/discretionary purchases to be materialized often. Disruption in consumption is also leading to pent-up demand for the upcoming seasons as people are restricted to controlled purchases due to the outside threat like covid-19. (Liu, Xia and Lang, 2021b) Covid-19 based govt. regulations have caused a surge in online buying behavior. A volatile market and further closure-like situation have also lead to panic buying behavior among buyers. Buying the necessary items has been the trend rather than filling the closet with the extra. (EPRA International Journal of Environmental Economics, Commerce and Educational Management, n.d.) Factors other than controlled purchases like Lifestyle changes, desire to look good, and need for self-actualization are also

moderating the pent-up demands for fashion goods. People favoring comfortable clothes, mismatched styles, recycling wardrobes, and loungewear during this lock-down shows a transition in consumption pattern which is worth mentioning. Overall they are in the mood for revenge consumption (Yang & Kidron, 2020). (Liu, Xia and Lang, 2021b) The volatile market environment led by Covid-19 created a lot of space to break the already established mindset of the so-called cognitive misers. Stocking non-perishable items and variation in online purchase-timing are insisting fashion brands embrace adaptability. Most of the major brands are yet to show their resilience except a few like LVMH and a small Danish firm. LVMH's innovation in the product category by introducing hand sanitizer rather than luxury goods and Small Danish firms known for discount offer discouraging hoarding of items in the short supply by charging massive premium are motivational factors for these fashion brands. Although fashion brands are crossing through a fickle state of business still there is a chance of resilience. For instance, small and mid-tier companies can reap the benefits by having new product trials, exposure, mindshare, and collaborations with a new and wide range of consumers due to the lack of interest shown by major brands in combating negative market behaviors. (Knowles et al., n.d.) A study done during the recent pandemic propounded the fact that the spatial position of physical stores related to fashion was playing a pivotal role in a business transaction to happen. Newly opened physical stores were seen performing well despite the pandemic and their low physical accessibility score. (Park and Lee, 2021)

MOMENTS OF AI, BOTS, AUTOMATION, GAMES, AND WEARABLES

Fashion is entering virtual space and is also losing its lively charm. In the same line, the fashion brands are seeking the help of simulation-based gaming platforms like "Animal crossing the road" to strengthen their market standing in the time of uncertainty. Gaming platforms like this have enabled users to experience a virtual bazaar in parallel to an adrenaline rush moment caused by the simulation exercises. The household chores and daily life activities performed in this platform have made the whole virtual a real touch. Buying a clothing brand in this virtual bazaar gives a sense of ownership and consequently into the existence of self-identity. These gaming apps are updated regularly to give an extra real-life quotient. Updated Advergaming like this have been proved to be a boon to the individual brands and increasing fan-base in the bazaar of fashion. (Gibson, 2021b) AI, BOTS and Automation has been proved the pulse of covid-19 affected e-commerce, fashion & retail. Companies have been successful in optimizing their value chain to attain an acceptable level of return. They are mining past data to predict a trend in design, sales, production, supply, and budgetary allocation. (Candelon et al., 2020) Though zero-defect AI-forecasting is impossible the error reduction by twenty-five percentage compared to the manual one is for sure. (Candelon et al., 2020) Live-streaming fashion shows, virtual avatars, and letting the consumer try clothes by augmented reality-based apps (YOOX mirror) have boosted sales of few fast fashion brands proving the need for innovation. Noticing a defect in garment and knowing buyer's mindset using this kind of AI and Big data mixture are trending nowadays. AI clubbed with various creative pursuits like music, fashion design, and visual-search assistance can be a few permutations and combinations for future innovations. On the other hand lack of interest in online platforms has made fast fashion brands like Inditex and H&M perform badly even. (Casini and Rocchetti, 2020b) The craving for sensory stimuli is also found in the digital ramp-show audience where they are missing the texture, fabric, and embellishments of the ensemble. This kind of gratification is possible only by embracing AR (Augmented reality) and VR (virtual reality) which ultimately give surge to the online traffic. Increasing demand for "virtual reality-based fashion shows" especially in the pandemic by companies like ORDRE is also justifying the same. (Silvestri, 2020a) Unanimously people remarked that the so-called digital or hybrid fashion shows were lacking in forging personal tie-ups because attending shows means bringing business at the end of the day, even the continuous streaming of shows without a single break was too boring for the audience. (Tikanoja, 2021) Similarly, AI (Artificial intelligence) and automation may aid fashion brands to come out of the frozen production, face recognition, fashion forecast, and other value-

chain-related hiccups. AI-enabled Fashion forecasts based on insights generated by e-visual cues by agencies like Heuritech are few leading examples of advancing fashion diaspora. (Silvestri, 2020b) Getting donned with wearable electronic devices is a trend now especially in the time of the pandemic. Gadgets like micro-needle, smart textiles, smart lenses, and electronic epidermal are some of the devices which may be considered as an augmented version of basic products available in the future apart from smart-watches available at present. (Ates et al., 2021) The spread of Covid-19 across the fashion field has generated the demand for connection and affection from the increasingly tech-savvy consumer base. These demands have made the fashion brands become tilted towards biosafety, time, risk, and technology-like variables. (Seibel, Santos and Silveira, 2021)

MOMENTS OF SOLIDARITY & COMMUNITY DEVELOPMENT

Ethnographic research is done to study the responses made to the recent pandemic by the social club of New Orleans (USA) resulted in a set of a diverse set of activities and projects focusing on Creativity, Sociability, and Solidarity. The social fabric woven out of the interactions done in this carnival gathering helped in alleviating existential and material insecurity commonly seen in a pandemic. People were found sharing videos and images full of wearing pajamas and mask selfies representing the Facebook groups like Covid Couture. Technology and social media platforms emerged as a trend to embrace for most of the masses because they helped in socializing and provided solace in this difficult time. Collective mask making, sewing, and donating gave rise to Solidarity mediated by the mere pleasure of being together for a good cause. (Radice, 2021) People are involved not merely because of the community development aspect but the feelings of personal expression, joy, and well-being raised within them by getting exposed to craft creation because it is more acceptable. Just like digital interactions the craft-creation task also let the mass be interdependent rather than individualistic ones and ultimately making them feel relaxed. (Hahn and Bhaduri, 2021b) Unexpected immigration of people has raised the connection and affection for local fashion, organic manufacturing, and personalized shopping moments. It is also going to build a sense of community development and solidarity among the fashion market. (Seibel, Santos and Silveira, 2021) Overall these were a gesture towards an anthropology of the good. (Radice, 2021)

RESULTS

Digital—shift, sustainability, design, communication & advertising, supply chain management, adaptiveness and capability, consumer behavior, circular fashion, manufacturing and supply-demand, workforce, purchase, AI/BOTS/automation/games/wearable and solidarity & community development are the major area of concern during the pandemic and post pandemic also. These all nodes of change are converging and directing towards resilience and change in the industry. This will create a battery of repercussions which will be positive and negative both.

CONCLUSION

Having a quick review of the above-mentioned key findings, one thing is clear that Covid-19 led change in the whole course of the Fashion diaspora has made the industry people ponder upon the present and future of the Fashion Industry. But yes the reshuffling of internal elements may be helpful in instant relief and resiliency. For a more refined picture of these instances, thorough empirical research is a must on different factors mentioned above.

REFERENCES

1) Gibson, J., 2021. When games are the only fashion in town: Covid-19, Animal Crossing, and the future of fashion. *Queen Mary Journal of Intellectual Property*, 11(2), pp.117-123.
2) Sinha, P. and Sainy, R., 2021. How can Indian small-scale fashion

retailers survive COVID-19 disruption?-A Brand Portfolio Optimization Perspective. *Journal of Retailing and Consumer Services*, 62, p.102633.
3) Sahana Shetty and Dr. Ramesh Pai, 2021. IMPACT OF COVID-19 ON ONLINE SHOPPING -A CASE STUDY. *EPR International Journal of Environmental Economics, Commerce and Educational Management*, pp.9-15.
4) Dutra, B. M. F. & Karam, D. J. (2021). Marketing of independent fashion brands through social media. *International Journal of Arts and Commerce*, 10(3), 47-52.
5) Ali, Mohammad, et al. "Capability Components of Supply Chain Resilience for Readymade Garments (RMG) Sector in Bangladesh during COVID-19." *Modern Supply Chain Research and Applications*, vol. ahead-of-print, no. ahead-of-print, 30 Apr. 2021, 10.1108/mscra-06-2020-0015.
6) Deshmukh, A.A. (2020). RESILIENCE IN THE TIMES OF CRISIS BY RETAIL SECTOR LEVERAGING DIGITAL TECHNOLOGIES: A LITERATURE REVIEW. [Online] Available at: <http://www.viirj.org/vol11issue1/42.pdf>.
7) Hude, J. (2020). SURGE IN ONLINE SHOPPING IN CORONA TIMES.
8) M, A.S.R. and Kannappan, S. (2020). Marketing agility and E-Commerce agility in the light of COVID-19 pandemic: A study with reference to fast fashion brands.
9) Radice, M., 2021. Creativity, Sociability, Solidarity: New-Wave Carnival Krewe's Responses to COVID-19 in New Orleans. *Anthropologica*, 63(1).
10) Knowles, J., Ettenson, R., Lynch, P. and Dollens, J. (2020). Growth Opportunities for Brands During the COVID-19 Crisis.
11) Brydges, T., Heinze, L. and Retamal, M. (2021). Changing geographies of fashion during the Covid-19: The Australian case. *Geographical Research*
12) Nurnafia, A.N., Chandra, C.G., Marion, S.N. and Ananda, A.S. (2021). Instagram Marketing Activities Of A Fast Fashion Brand In Response To Covid-19 Pandemic.
13) Elverina, G.R. and Furinto, A. (2021). Digitalization of Fashion: A Case Study On Digital Marketing Strategy of Modest Fashion Company During Pandemic.
14) Rossi, G. (n.d.). How bloggers and influencers created the pandemic narrative: a new stage representing the (fake) everyday life.
15) Casini, L. and Rocchetti, M. (2020). Fashion, Digital Technologies, and AI. Is the 2020 Pandemic Really Driving a Paradigm Shift? *ZoneModa Journal*, 10 n.2 (2020)(2611-0563).
16) Silvestri, B. (2020). The Future of Fashion: How the Quest for Digitization and the Use of Artificial Intelligence and Extended Reality Will Reshape the Fashion Industry After COVID-19. *ZoneModa Journal*.
17) Tedjomurti, F. and Suyanto, B. (2021). Behavior Trend of Buying Mask as A New Lifestyle for Women in The City of Surabaya During Pandemic. *The Journal of Society and Media*.
18) Seibel, S., Santos, I.H. and Silveira, I. (2021). Covid-19's Impact on Society, Fashion Trends and Consumption. *Strategic Design Research Journal*.
19) Gjoni, A. (2021). The Impact of Covid-19 on the Creations of Fashion Designers. *Arts and Design Studies*.
20) Zhao, L. and Kim, K. (2021). Responding to the COVID-19 Pandemic: Practices and Strategies of the Global Clothing and Textile Value Chain. *Clothing and Textiles Research Journal*.
21) Green, D.N., Kozen, F.H. and Blumenkamp, C.K. (2021). Facemasking Behaviors, Preferences, and Attitudes Among Emerging Adults in the United States During the COVID-19 Pandemic: An Exploratory Study. *Clothing and Textiles Research Journal*.
22) Hahn, K.H.Y. and Bhaduri, G. (2021). Mask Up: Exploring Cross-Cultural Influences on Mask-Making Behavior During the COVID-19 Pandemic. *Clothing and Textiles Research Journal*.
23) Liu, C., Xia, S. and Lang, C. (2021). Clothing Consumption During the COVID-19 Pandemic: Evidence From Mining Tweets. *Clothing and Textiles Research Journal*.
24) KIM, R.Y. (2020). The Impact of COVID-19 on Consumers: Preparing for Digital Sales. *IEEE ENGINEERING MANAGEMENT REVIEW*.
25) Graham, L.D. (2021). The right to clothing and personal protective equipment in the context of COVID-19. *THE INTERNATIONAL JOURNAL OF HUMAN RIGHTS*.
26) Peiyu, W. (2020). Analysis on the Different Response of Fast Fashion Brands and Luxury Brands to the Epidemic. *Advances in Economics, Business and Management Research*, 155.
27) Li, J.L., Li, W., Wang, Z., Wang, Z. and Zhang, X. (2021). The Future

of Marketing Chinese Luxury Brands: An Analysis of Current Consumer Behavior and Future Implications. *Advances in Economics, Business and Management Research*.

29) Kanupriya (2021). COVID-19 and the Indian Textiles Sector: Issues, Challenges and Prospects. *Vision*, pp.7–11.

30) Brydges, T. and Hanlon, M. (2020). Garment worker rights and the fashion industry's response to COVID-19. *Dialogues in Human Geography*, 10(2), pp.195–198.

33) MORAN, M.J. (2021). Suiting Up when Showing Up for the Practice of Law in the COVID-19 Virtual Legal Environment. *THE LEGAL EDUCATOR*.

34) Tidy, J. and Olsen, D.A. (n.d.). Consumer mindset in a time of crisis: Exploring the role of social media for Gen Z's fashion consumption in 2020.

35) Gupta, 1Dr. P. and Sharma, Dr.N. (2020). A Review of Changing Contours of Retail during COVID 19 pandemic in a Post- Digital World. *International Journal of Psychosocial Rehabilitation*, 24(05).

36) Tran, A.N. (2021). Sustainable Marketing in the Fashion Industry.

37) Kreetta, A. and Valonen, H. (2021). Make-to-order business model: slow fashion as a strategy.

38) Candelon, F., Reichert, T., Duranton, S., Carlo, R.C. di and Bondt, M.D. (2020). THE RISE OF THE AI-POWERED COMPANY IN THE POSTCRISIS WORLD. BCG Henderson Institute: Boston Consulting Group.

39) Grilec, A., Vukusic, D. and Dujic, D. (2020). COMMUNICATION STRATEGIES OF LUXURY BRANDS DURING COVID-19 CRISIS. *International Scientific Conference on Economic and Social Development*.

42) Chen, N.N. (2021). Digital Fashion Metamorphosis: Fold and Unfold by Neo Nuo Chen A thesis presented to OCAD University in partial fulfillment of the requirements for the degree of Master of Design in Digital Futures Toronto, Ontario.

43) Cipolla, C. (2021). European customers' demand within the apparel industry. Shifting from fast fashion to circular fashion.

44) Gangadharbatla, H. (2021). Covid-19 and Advertising: The Case for a Paradigm Shift. *JOURNAL OF CURRENT ISSUES & RESEARCH IN ADVERTISING*, 42, pp.1–18.

45) Covid-19 and the retail sector: impact and policy responses. (2020). OECD, pp.1–4.

46) Buheji, M. and Ahmed, D. (2020). Foresight of Coronavirus (COVID-19) Opportunities for a Better World. *American Journal of Economics*, pp.97–108.

47) Gruenwald, Dr.H. (2020). Covid-19 The Big Winners.

48) Comunian, R. and England, L. (2020). Creative and cultural work without filters: Covid-19 and exposed precarity in the creative economy. *CULTURAL TRENDS*, 29, pp.112–128.

50) Chauhan, S., Banerjee, R. and Mittal, M. (2020). AN ANALYTICAL STUDY ON IMPULSE BUYING FOR ONLINE SHOPPING DURING COVID-19. *Journal of Content, Community & Communication*, 12.

52) PRIAMBODO, I.T., SASMOKO, S., ABDINAGORO, S.B. and BANDUR, A. (2021). E-Commerce Readiness of Creative Industry During the COVID-19 Pandemic in Indonesia. *Journal of Asian Finance, Economics and Business*, 8.

53) Alfayyeh, S., Haseebullah and Belhaj, F.A. (2020). The Impact Of Coronavirus (Covid-19) Pandemic On Retail Business In Saudi Arabia: A Theoretical Review. *European Journal of Molecular & Clinical Medicine*, p.

55) Huskey, M. (2021). Exploration of Small Fashion Retailers' Green Efforts in Supply Chain Management and their Coping Strategies during COVID-19. University of Arkansas, Fayetteville: ScholarWorks@UARK, pp.1–22.

56) Silchenko, K. and Visconti, L.M. (2021). Facemask: from pandemic to marketplace iconicity. *CONSUMPTION MARKETS & CULTURE*, pp.1–25.

57) Youn, S., Lee, J.E. and Ha-Brookshire, J. (2021). Fashion Consumers' Channel Switching Behavior During the COVID-19: Protection Motivation Theory in the Extended Planned Behavior Framework. 39(2), pp.139–156.

59) Khan, R. and Richards, H. (2021). Fashion in "crisis": consumer activism and brand (ir)responsibility in lockdown. *CULTURAL STUDIES*, 35.

61) Kiilunen, S. and Ferrara, E. (2020). Systemic Changes for a Sustainable Fashion Supply Chain. MALMO UNIVERSITY: Main field of study – Leadership and Organisation.

62) Brydges, T., Heinze, L., Retamal, M. and Henninger, C.E. (2020). Platforms and the pandemic: A case study of fashion rental platforms during COVID -19. *COMMENTARY*, pp.1–7.

63) Nadia, N., Hasbullah, Sulaiman, Z. and Mas'od, A. (2020). The Effect of Perceived Value on Sustainable Fashion Consumption in the Era of Covid-19: A Proposed Conceptual Framework.

64) Rao, P., Vihari, N.S. and Jabeen, S.S. (2017). E-commerce and Fashion Retail Industry: An Empirical Investigation On the Online Retail Sector in the Gulf Cooperation Council (GCC) Countries.

65) Rodríguez-López, A.M., Rubio-Valdehita, S. and Díaz-Ramiro, E.M. (2021). Influence of the CoViD-19 Pandemic on Mental Workload and Burnout of Fashion Retailing Workers in Spain. *International Journal of Environmental Research and Public Health*, p.

69) Choi, Y.-H. and Lee, K.-H. (2020). Changes in consumer perception of fashion products in a pandemic - Effects of COVID-19 spread. *The Research Journal of the Costume Culture*.

70) Jílková, P. and Králová, P. (2021). Digital Consumer Behaviour and e-commerce Trends during the COVID-19 Crisis. *International Atlantic Economic Society*.

71) Bretas, V.P.G. and Alon, I. (2020). The impact of COVID-19 on franchising in emerging markets: An example from Brazil. *Global Business and Organizational Excellence*, pp.1–11.

72) McMaster, M., Nettleton, C., Tom, C. and Xu, B. (2020). Risk Management: Rethinking Fashion Supply Chain Management for Multinational Corporations in Light of the COVID-19 Outbreak.

73) Opitek, A.D. and Reformat, K.B. (2021). To What Extent Retail Chains' Relationships with Suppliers Make the Business Trustworthy—An Empirical Study on Fast Fashion in Pandemic Times. *J. Risk Financial Manag.*

74) Kumar, R.K. (2020). Effectiveness of Fashion Industry in Post Pandemic World. *Journal of Textile Science & Fashion Technology*.

75) Li, J. and Liu, X. (2020). The Study of Sustainable Strategy in Design of Protective Clothing and Accessories After Coronavirus (COVID-19) Outbreak. *Journal of Physics: Conference Series*.

76) Sethuraman, R. (2020). How the COVID-19 Pandemic May Change the World of Retailing. *Journal of Retailing*, pp.169–171.

77) Pooya MD, A.A.A., MD, A.N., MD, S.S., D, M.S.P., Nabavizadeh, S.A. and MD, Z.B. (2021). Mask Wearing Hesitancy During the COVID-19 Pandemic in South Iran. *Society for Disaster Medicine and Public Health*.

78) Tikanoja, S. (2021). The Past, Present and Future of Fashion Shows. Aalto University.

79) Achille, A. and Zipser, D. (2020). A perspective for the luxury-goods industry during—and after— coronavirus. *McKinsey.com*, p.

80) Grace, P.I., Osman, Z. and Razli, I.A. (2021). Me or others? Hard Luxury Purchase Intention during the COVID-19 Pandemic. *Journal of Marketing Advances and Practices*.

82) Rotimi, E.O.O. and Hopkins, J. (2021). Towards A Conceptual Framework of Sustainable Practices of Post-consumer Textile Waste at Garment End of Lifecycle: A Systematic Literature Review Approach.

84) Prince, S.E., Chen, H., Tong, H., Berntsen, J., Masood, S., L. Zeman, K., Clapp, P.W., Bennett, W.D. and Samet, J.M. (2021). Assessing the effect of beard hair lengths on face masks used as personal protective equipment during the COVID-19 pandemic. *Journal of Exposure Science & Environmental Epidemiology*, pp.1–8.

85) Ates, H.C., Yetisen, A.K., Güder, F. and Dincer, C. (2021). Wearable devices for the detection of COVID-19. *Nature Electronics*.

86) FOX, Z. (2020). PANDEMIC INSPIRED FASHION SHOW OF 2020. 303 *MAGAZINE.COM*. 21 Dec.

88) Kuruppu, G. and Zoysa, A.D. (n.d.). COVID-19 and panic buying: an examination of the impact of behavioural biases.

89) CHAKRABORTY, S. and BISWAS, M.C. (2020). Impact of COVID-19 on the textile, apparel and fashion manufacturing industry supply chain : Case study on a ready-made garment manufacturing industry. *JOURNAL OF SUPPLY CHAIN MANAGEMENT, LOGISTICS AND PROCUREMENT*.

91) D'Adamo, I. and Lupi, G. (2021). Sustainability and Resilience after COVID-19: A Circular Premium in the Fashion Industry. *Sustainability*.

92) Esposti, P.D., Mortara, A. and Roberti, G. (2021). Sharing and Sustainable Consumption in the Era of COVID-19. *Sustainability*.

93) Hsu, C.-H., Chang, A.-Y., Zhang, T.-Y., Lin, W.-D. and Liu, W.-L. (2021). Deploying Resilience Enablers to Mitigate Risks in Sustainable Fashion

Supply Chains. Sustainability 2021, pp.1–24.

95) Pelikánová, R.M., Němečková, T. and MacGregor, R.K. (2021). CSR Statements in International and Czech Luxury Fashion Industry at the Onset and during the COVID-19 Pandemic—Slowing Down the Fast Fashion Business? Sustainability 2021.

96) Park, S. and Lee, K. (2021). Examining the Impact of E-Commerce Growth on the Spatial Distribution of Fashion and Beauty Stores in Seoul. Sustainability 2021.

97) Morrison, H., Petherick, L. and Ley, K. (n.d.). THE FUTURE OF CIRCULAR FASHION A COLLABORATIVE REPORT BY ACCENTURE STRATEGY AND FASHION FOR GOOD ASSESSING THE VIABILITY OF CIRCULAR BUSINESS MODELS. A COLLABORATIVE REPORT BY ACCENTURE STRATEGY AND FASHION FOR GOOD.

98) AMED, I., BERG, A. and Et al. (2021). The State of Fashion 2021. MC KINSEY AND COMPANY.

103) SOOKAROMDEE, P. and WIWANITKIT, V. (2020). NEW DRESS FASHION DURING COVID-19 PANDEMIC.

104) Pardo, C.M., Seara, Dr.J. and Razvi, A. (2020). Rebuilding a More Sustainable Fashion Industry After COVID-19. BCG.

105) Brydges, T., Retamal, M. and Hanlon, M. (2020). Will COVID-19 support the transition to a more sustainable fashion industry? Informa UK Limited, trading as Taylor & Francis Group.

106) Pinville, T. (n.d.). Trends during and post Covid-19. Heuritech's Instagram analysis.

107) Mollard, M. and ET.AL (n.d.). Trends & Behaviors: The Covid Consumer. Heuritech's Instagram analysis.

108) He, H. and Harris, L. (2020). The Impact of Covid-19 Pandemic on Corporate Social Responsibility and Marketing Philosophy. Journal of Business Research, [online] 116(1), pp.176–182. Available at: <https://www.sciencedirect.com/science/article/pii/S0148296320303295>.



ROLE OF CONSUMER PERCEPTION ON GENDERLESS FASHION IN DECONSTRUCTING GENDER STEREOTYPES IN INDIAN SOCIETY

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ABSTRACT

This study is intended to examine how Indian consumers perceive Gender Neutral Fashion. It aims to find the meaning of Genderless Fashion as per the people in Indian Society and how they connect it to gender stereotypes. India has similarities in clothing for both genders since its mythology, history and among tribes but has gradually got decreased. Even it's the same for Indian crafts, anyone can wear Bandhani, Ikat, and Weaves. Also today, the problem is people take genderless clothing as clothing for the LGBT community, while according to the functionality it can be said that genderless clothing has relations to gender equality. It's true that women have started wearing bifurcated garments for a long time and has now become common but the author wants to know through this research that even today straight men have not inclined towards Feminine wardrobes. There is a need to understand the psychology behind this perception of genderless clothing. The way there is no difference in laptops, furniture, or cars for both genders, the researcher wants to ask why clothes are confined to gender stereotypes? People look at it daily but hardly question that how all types of showrooms are common but in clothing, there are separate sections for menswear and womenswear rather than a common section. This research uses random surveys, literature reviews, and text analysis in the context of Indian society. This study is intended to be able to identify public confusion over understanding Genderless fashion and also may be a source for designers who want to know the limitation and acceptance rate for Genderless fashion in India.

KEYWORDS

Consumers, equality, genderless fashion, perception, stereotypes

Fashion in India has been neutral over millennia, we can find facts that our goddesses were bare-chested. Our clothing for men and women was not much divided like kurta, pajama, and dhoti. India has lost that gender-neutral clothing over the ages and it's coming back again with the urge of representing one's personality. Gender expressive fashion is a way of dressing where individuals can show what gender role, they are filling that day. Someone who identifies as gender-fluid may change their role every day because they do not identify with anyone's sex. But, the way of thinking and Indian Society has lots of stereotypes about clothing and gender.

HYPOTHESIS

The research uses random surveys, literature reviews, and text analysis in the context of Indian society. This study is intended to be able to identify public confusion over understanding Genderless fashion as fashion is not treated as an article but as a basis of gender identity according to Indian society. People are not ready to accept clothing as per their

personality but they wear it as per their gender. Although, women have got fewer eyes judging them while wearing pants than a man wearing a puff-sleeved shirt.

The research will help to understand this clearly as per the research tools used. It will depend on the validation of the response by the target group of people and a small sample size due to lack of time and resources.

METHODOLOGY

A survey was conducted to examine the issues in the consumer perception of Genderless Fashion in India. It consisted of both open and closed-ended questions including MCQs and Semantic Differential Scale. The sample size was kept between 80-100, and the resultant size was 96 in the age group 18-30 including all genders of the Middle class (upper and lower). The target sample was consumers in north Indian states - Uttar Pradesh, Rajasthan, Haryana, and Delhi. The sample was narrowed down to consumers from non-creative fields as creative fields get more exposure with their creative field institutions and workspaces. They are already exposed to a lot of platforms where people have their individuality and they think out of the box (without depending on what society has to say).

The tools used in the study are all created under the guidance of academic mentors and every help that is taken from online websites is cited. The questionnaire is developed by the objective of the study with the help of Google Forms. All the participants who are taken as a sample were agreed to participate and are informed about the purpose of the study.

ANALYSIS AND RESULTS

The researchers received 96 responses: 55 male and 41 female. They are as: Uttar Pradesh-75; Delhi-13; Rajasthan-5; Haryana-3. They belong to non-creative fields (Student, Engineer, Doctor, BAMS, student, Government job, CA, Marketing, Executive, Developer, Teaching, Management, Analyst, Advocate, Navy, Supervisor in food tech, Businessman, Coder, IT, Consultant, Cricketer, SRF). 56.3% of them are aware of Genderless Fashion and 22.9% are not aware while 20.8% are not sure if they know what is genderless fashion.

The researcher asked if according to them, there is any connection of gender with some given articles and the responses are shown in Fig. 1. Around half of them i.e., 52.1% think that Fashion is related to genders and 38.7% think that lifestyle is that article while 35.4% think that none of the articles has any relation with gender. When asked the reason for their choice of the article that relates to gender, they gave a variety of responses that were very interesting to know. Some say Fashion and lifestyle accessories are made according to the body types of different genders, while some say it's according to their taste. People also think that due to the habit of seeing this for ages they cannot think of fashion as genderless. Some of the respondents think nothing is related to

gender as these articles are a matter of choice for a person regardless of gender.

–focus areas happenings related to the fashion diaspora as a whole.

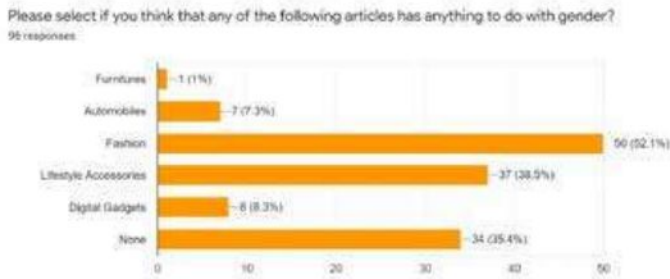


Fig : 1

They were asked what they think genderless fashion is and it came up with thoughtful responses from them. According to most, genderless clothing is clothing by choice regardless of gender, color, design, or silhouette of the garments. They also gave examples of garments like jeans, trousers, hoodies, and sweaters. Some say they are designed in a way keeping in mind to be able to worn by both the genders before thinking to what sex it belongs to. They say that they are formless, shapeless, and oversized. Some of them take this to gender equality and state that it is the clothing to makes people realize that both genders are equal. They also stated some Indian laws that are made for gender equality and their right to choose. When they were asked if they own any trousers or skirts, the response was quite predictable. 99% of respondents own trousers irrespective of their gender but only 37.5% own skirts. As per the data received it can be said that 37.5% who own skirts is female portion of the respondents and males do not own any skirt. And it can be seen all of them own trousers for sure be it male or female.



The respondents were asked to rate on a scale of 1 to 5 (where 1 is weird, 3 is neutral and 5 is pleasant), how would they feel if they spot a woman wearing a tuxedo and a man wearing a skirt with the images A and B shown here as references given to them. As in Fig. 2, 71.9% rated the girl wearing a tuxedo to 5 (pleasant) and only 1% rated it to 1 (weird). Fig. 3 shows, 32.3% rated the man wearing a skirt to 3 (neutral), 25% rated 1 (weird) and 10.4% rated to 5 (pleasant).



Fig 2

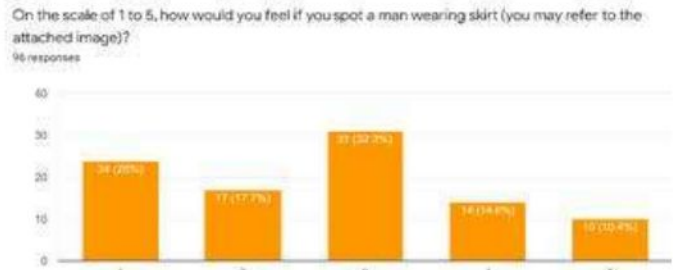


Fig 3

When asked about what one's style of clothing should identify, in Fig. 4, 83.3% of respondents chose personality, 46.9% chose the state of mind and 12.5% chose gender. Then the question was asked if they think gender identification is crucial for clothing, most of the people expressed that it's the choice of one's self to what to wear. They think that clothing is something that fulfills people's needs and they should not identify gender through it. Clothing should be according to one's convenience and aesthetics and not what the gender tags describe. Some of them thought it is important as per the mentality of society. The society standards we grew up with, where men and women had to wear certain types of clothing concerning their gender. But this should not be the case now.

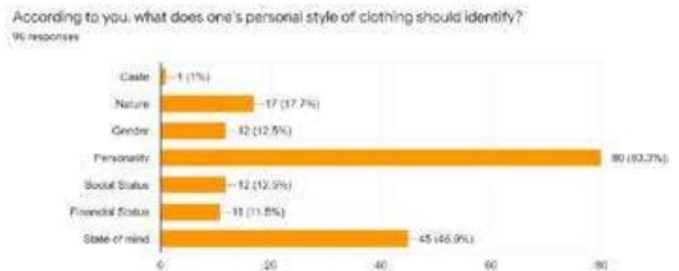


Fig 4

When asked if they feel much difference in our ancestors' clothing between different genders, this is questionable as 40.6% of them replied with yes and 30.2% with no, and the remaining 29.2% are not sure and replied with maybe.

When asked about their perception of gender to the sentence "our ancestors wore dhoti", their response was interesting as 74% of people find it more related to male while only 21.9% think it's related to female. According to most of the respondents, dhoti is something that males used to wear. But when asked how would they like if someone ask them to drape around a dhoti for their party, most of the respondents showed not much of their willingness and 45.8% of them rated the scale to neutral while only 22.9% rated to happy and 7.3% felt sad with this.

Do you think separate sections for genders are perfect for shopping?
96 responses

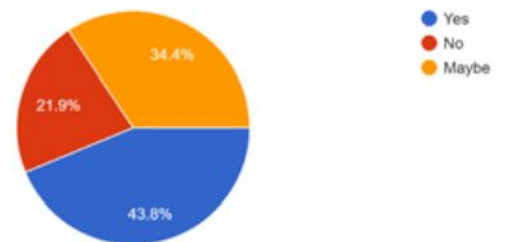
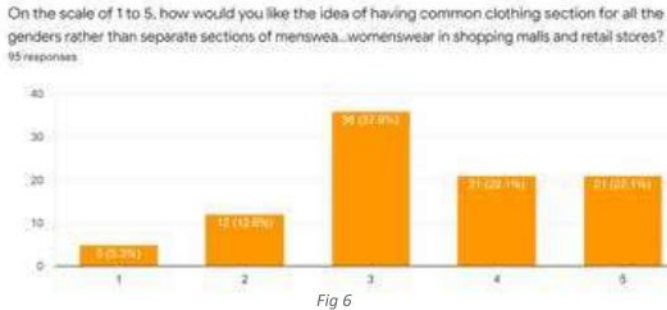


Fig 5

Fig. 5 shows their response when asked if they think the idea of having separate sections for shopping is perfect.

When asked, how would you like the idea of having a common clothing section for all the genders rather than separate sections of menswear and womenswear in shopping malls and retail stores, Fig. 6 below shows their responses? 22.1% of them think the idea is perfect, other 22.1% also think the idea is good and 37.9% reacted neutrally to this idea and only 5.3% of them think that the idea is stupid.



They were asked the reason for their reactions to the previous question, some replied with neutral that they don't feel any problem or comfort with the idea. Some of the respondents feel that it's perfect for one can choose whatever they want to wear without looking at the gender labels and according to one's personality. It would be a place to find clothes according to one's comfort. They say they can be separated based on the type of clothes like jackets, jeans, shirts, traditional, western, etc. rather than separation based on gender for having it organized and less chaotic. Usually, girls say that there can be other means of segregation and they don't have to switch from one to another section to find their comfy, relaxed, and oversized hoodies or tees that they usually have to buy from the men's section. Some people think that separation is necessary to avoid chaos and get their type of clothes as they would not like to wear other gender clothes. As easily understandable, men had this kind of response.

CONCLUSION

The most fashion active age group thinks their personality and choice are more crucial in clothing than their gender. They have the realization that their way of clothing depends on how society would accept and so they try to adjust with the already existing ways of clothing rather than creating their own. This case is not similar for both males and females. Females are freer to wear their style without facing much weirdness of society while males are still in their silhouettes and if they try something new it's hard for them not to be accepted by society. The basis of everyone's clothing is comfort and personal style. Be any garment, people do have this notion that they will wear it only if it's comfortable to them and belongs to their style. But the interference of society in their style and gender identity is also in existence in Indian Society and they are aware of it. Clothes don't come with gender tags, it's the way different people style them, the way they want to represent themselves. A person who wants to wear a piece of garment can wear it easily but if it's something that may be too much for society to digest, they back off from it and choose a little similar way to represent themselves. This helps them not to get conscious or lose their confidence in just thinking about what would people think. It is the way Indian society knows genderless fashion and it will take time to get over that gendered division of clothes. The researcher thought of a notion of common displays in showrooms for both genders, but it still needs to be thought upon the challenges that come with it as per the respondents.

REFERENCES

Pambudi, N. S. H., Haldani, A. and Adhitama, G.P. (2019). Jakarta Society Preference Study on Genderless Fashion, Jurnal Rupa [online], 4(1). Available from: https://journalstelkomuniversityacid.translate.googleusercontent.com/view/2249?_x_tr_sl=id&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=nui,sc (accessed 10 November 2021)

Luna, C.P. and Barros, D.F. (2019), Genderless Fashion: A (Still) Binary Market, Latin American Business Review [online], 20. Available from: <https://lifestyle.livemint.com/fashion/trends/india-s-long-history-with-genderless-clothing111607941554711.html> (accessed 10 November 2021)

Reis, B., Pereira, M., Azevedo, S., Jerónimo, N. and Miguel R. (2018). Genderless clothing issues in fashion, Textiles, Identity and Innovation: Design the Future [online], 1. Available from: <https://www.taylorfrancis.com/chapters/edit/10.1201/9781315100210-47/genderless-clothing-issues-fashion-reis-pereira-azevedo-jer%C3%B3nimo-miguel> (accessed 10 November 2021)

Balkon, N.R. (2018). Genderless danshi: An emerging force against Japan's hegemonic masculinity. Graduate Research [online]. Available from: <https://www.croft.olemiss.edu/images/BN710956520T18.pdf> (accessed 10 November 2021)

Raniwala, P (2020), India's long history with genderless clothing, Mint Lounge. Available from: <https://lifestyle.livemint.com/fashion/trends/india-s-long-history-with-genderless-clothing-111607941554711.html> (accessed 11 November 2021)

D'Souza, O. (2018). The rise of genderless fashion in India., DNA. Available from: <https://www.dnaindia.com/just-before-monday/report-the-rise-of-genderless-fashion-in-india-2657979> (accessed 14 November 2021)

Anyanwu, O. (2020). Decoding Genderless Fashion, The Future of the Industry, WWD. Available from: <https://wwd.com/fashion-news/fashion-features/genderless-fashion-future-of-industry-1203381685/> (accessed 1 December 2021)



HINDU MYTHOLOGICAL DESIGNS IN AIRPORTS OF INDIA AND MEANINGS BEHIND IT

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ABSTRACT

Our physical environment is constantly influencing our emotions and general well-being, we aren't always aware of it. According to experts, interiors have a great impact on attitudes of people working in it as it is combination of science and arts. A perfect interior design helps in enhancing the quality of life. Interior design theme, colour of interior affects the behaviour, moods and efficiency of a person. S. Carr explains, "places are proposed, built, and assessed with assumptions about what should be done in them which is mostly based on the goals of space designers, their clients, and space managers and does not address people's needs or the ways that public places can function to serve these needs."

Amidst all the announcements, queues, checking and boarding there are other lot more emotions and thoughts that passengers go through and think about. Now a days airports are changing the experience of travellers and tourists by art & architecture. Design components are considered as the visual dialogue and straightest path for the understanding of divergent culture, religion and tradition.

The study investigates the matters that professionals take into consideration when designing and making decisions about airports with Hindu Mythological décor and architecture and meanings behind it. It covers airports of Bengaluru, Chennai, Delhi and Mumbai. It also explores the features of public spaces that are significant, incidental or destructive within a social, environmental and physical context.

This study is significant as it provides professionals a practical guide that can be utilised to assist in the design of places that are sensitive to the natural responses of people. It will also be informative for Planners, architects, designers, local government. Individuals who are curious about mythological motifs and designs will also find this study insightful.

KEYWORDS

Mythological Design, Airport Design, Airport Décor, Mythological Décor, Mythological Architecture

1 INTRODUCTION

Art has the amazing ability to create delight during a passenger's journey through our airport, and will provide a bit of wonder to the otherwise mundane act of boarding a flight. Airports are important platforms for local tourism sectors to promote a country's economic capacity and attractiveness as a destination. On an average starting from arrival to the aircraft, a passenger spends 133 minutes in an airport. The most important activities like security check and boarding often take 20% of passengers time and are associated with negative feelings such as anxiety and stress. The other 80% is known as discretionary time in which they enjoy airport facilities and it has been proved that it is associated with positive feelings such as excitement and expectation.

(Anon., 2018)The airport architecture and design should support the management and airlines to streamline all procedures and ultimately

allowing travellers to board their flights with ease. Clarity in signs and graphics as well as decorative patterns on the walls and floor makes it easier to navigate the airport terminal.

The airport of the city is capable of telling several stories either directly or subtly. It can talk about the wealth of country along with its history, culture and traditions.

1.1 Significance of Airport Design

(Cappelletti, 2021) Airports can make the first cultural connection and a memorable final lasting impression as an ambassador for the local city. For the travellers on connecting flights airport serve as a brief stop in the journey and their only experience of the local culture.

(Ashford, n.d.) The passenger terminal becomes more important element of the airport as passenger throughput increases at the airport attaining a dominant status in the largest facilities. The airport terminal design that is ultimately adopted depends principally on the passenger volumes to be served and the type of passenger involved.

(Gupta, n.d.)The key point about any design is to decipher its target audience and objective about it. In the case of airports, the main purpose is to enable smooth and short movement of the user/commuter throughout. Since at the airport commuter spends significant amount of time before boarding the plane, indoor space is dedicated to activities to keep the people occupied and experience leisure. (Daudén, 2020) It is a challenge to make interiors comfortable and experience pleasant due to the scale of the construction and because of that the choice material used, furniture and lighting might transform the atmosphere completely. (Business, 2021) Designer needs to be working on the assumption that the all airport activities are considered as irksome by passengers. The challenge is to attempt to offset the sense of inconvenience with calming atmosphere and design which is logical in its layout and easy to use. Working on the assumption that passengers regard. (Nugent, 2019) According to InterVISTAS, an airport design consulting firm, after security check the passenger transforms from "stressed-out traveller" to "valuable customer".

1.2 Hindu Mythology

Hindu mythology has rich history, enigmatic characters, resounding stories, and a surprisingly innate association with modern science. Mythology refers to the sacred tales and fables of various cultures that deal with numerous aspects of human life. There is a significant role of Mythology in shaping the customs of civilizations around the world. Although myths are often associated with religious and sacred beliefs, yet they are not merely limited to them. Myths have been a binding social element that urged the members of their society to cooperate since ancient times. Therefore, these myths were extremely crucial for the survival of the community and given a physical manifestation in the form of art and architecture.

2. FINDINGS

Hindu Mythological designs in four airports of India and meanings behind it

2.1 Bengaluru

(Kempegowda International Airport, 2020) The terminal at Bengaluru Airport has an intriguing mix of art installations, mosaics, oils, etc., which are reflective of the culture of both India and Karnataka. (Gupta, 2020) Bengaluru airport called for artworks in 2020 through the art programme in which selected art became a part of the Kempegowda International Airport's Terminal-2. The themes of the artworks were, the arts and cultural heritage of Karnataka and "Naurasa" as put forward in Bharata's Natyashastra.

Artworks inspired by Hindu Mythology at Bengaluru Airport are: Ashta Mangala

Installation, conceived by Siddhartha Das, showcases the rich South Indian cultural heritage. The artwork combines two traditional art forms, Mysuru painting with a focus on the Hindu god – Vishnu and the Chola-style bronze sculptures, placed in the front of the Mysuru painting to create a welcoming atmosphere for passengers.



Figure 1. Ashta Mangala, One Dance at BLR Airport Halt Station, Source: Bengaluru Airport Art & Culture

Many Beats, One Dance

This unique mural, depicting various mudras and dance movements is made by using sustainable wooden mango crates waste. The inspiration was a Yakshagana Dancer, who evokes myriad shades of human emotions through facial expressions and bodily movements. The stories in Yakshagana are drawn Mahabharata, Bhagavata and Ramayana. The colour scheme and the cement that binds the colourful mosaic tiles, characterise the beautiful shades of Mother Earth. Nails, wires, and ropes and decoupage newspaper cuttings are used in the form of various forms of dance.



Figure 2. Many Beats, One Dance, Source: Bengaluru Airport Art & Culture

Protecting the Heritage

This painting showcases the cultural heritage of India. The figures on both the ends, are workers who are engaged in excavation of art, hidden underground. Person in first panel, dislodges a large boulder to unearth an object, and in the last panel it displays frenzy of action – unearthing sculptures and revering the figure in admiration.



Figure 3. Protecting the Heritage, Source: Bengaluru Airport Art & Culture

2.2 Chennai

(AAI, 2017) Inspiration was taken from Kolam for the interiors. Kolams are thought to bring prosperity and positivity to a space. Display of local art forms, sculptures, abstract patterns derived from Kolam and local crafts have given a local yet modern touch to the airport.



Figure 4. Mural Painting opposite Gate no. 17 Chennai Airport, Source: Chennai (MAA) Airport Twitter

(LAKSHMAN, 2020)The artworks at Chennai airport are designed by Sunny Systems, an art gallery based in Chennai. The art gallery is associated with Chennai airport since 2013. It was decided at the time of association that the artworks in the airport will focus on the culture of Tamil Nadu. It has completed implementing 37 mural artworks and two sculptures in the premises of the airport. In 2015, the art gallery did a replica of Mahabalipuram temple in the domestic departure area.



Figure 5. 16-foot temple in the domestic terminal is modelled after the 7th- and 8th-century stone carvings at Mahabalipuram, a UNESCO World Heritage Site about an hour south of Chennai. Source: Birds'Words

(S, 2019) There are two concepts one for the departure and one for arrival. The former depicts how Chennai has become gateway for people of South India to go abroad.

(Krupa, 2013) Manisha Raju (design team) explains lot of time has been spent on ideation. They tried to avoid themes like meditation and peace which have been executed in other airports. People of Chennai are connected to culture and have wonderfully balanced with it with the demands of modern world. Shivram (design team) says that he has travelled across Tamil Nadu to know more about culture. Instead of simply decorating the space with meaningless nothings just to beautify, there are art installations that offer people a clear portrait of our heritage. People at public space perceive art very differently than in art gallery. They feel sense of ownership and it was visualised by designers what would they like to see. The Tamil people take pride in their architecture and temples.



Figure 6. 12-foot sculpture, known as a "Nataraj," is a traditional depiction of Shiva performing the "cosmic dance." Source: Birds'Words

2.3 Delhi

(Anil K Bhat, 2015) The Indira Gandhi International Airport (IGIA) in Delhi is the busiest airport in India. IGIA has a 240-meter wall, called Canyon Wall because of its bronze and copper finish at the entrance of Terminal 3. There are 9 mudras (hand gestures) that form an integral part of classical dance forms of India, yoga, and the visual arts designed by Jaipur-based designer Ayush Kasliwal. The mudras are Abhaya, Varada, Akasha, Mayur, Chatura, Tripataka, Prana, Trishul, and Pranayama. They are used alone or combined to create different meanings. Each sculpture is approximately 2.75 meters high and weighs 150 kg, mounted on a row 3 meters above the ground fabricated using steel skeletons with molds made of clay, resin, and plaster of paris. Abstract flower in the center of the palm in the sculpture represents energy flow. 675 concave and convex discs flanking the mudras on the wall are made of copper-plated aluminium. The designers deliberately used the female hand shape to achieve a more graceful look. (Lahiri, 1999) Designer Ayush Kasliwal explains, "The artwork represents an open-ended symbology rather than a religious philosophy."



Figure 7. Hands Sculpture, Source: Delhi Magic

2.4 Mumbai

(Iyer, 2019) Scattered throughout the four levels of Terminal 2 of Mumbai's international airport are more than 5,500 pieces of Indian art and handicrafts. One can see around 7000 artifacts from 1000's of artisans which are spread across a span of 3.2 kms. Blend of ancient cultural artefacts into a modern space like airport is a challenging task performed by Rajeev Sethi. The artefacts are made of wood, clay, mud, glass, steel, stone and more made by artisans of India. Few of them are several centuries old, requiring conservation, treatment and utmost care. There's no other airport in the world which has such vast collection museum. The art museum is called Jaya He. Tejal Mor, head initiative of museum points out "It brings a touch of 'softness', a 'pause' and a 'moment of reflection' to all who pass by as they transit from one destination to another." The artworks are from Kashmir to Kerala, from real to symbolic, from sacred to profane.



Figure 8. Kerala artist Suresh Muthukulam's drawn mural on traditional Indian themes, Source: Forbes India

(Thomas, 2014) In Indian culture, the five elements of Life – Water, Air, Space, Fire & Earth also known as Panchabhootas plays a significant role. Based on these important five elements the gallery has beautiful artworks with this theme. Rajiv Sethi comments "In the act of doing the namaskaram, we connect the elements to welcome you in a wholesome way. All of us, and whole of us, welcomes you."



Figure 9. "Moving Constant," a gilded depiction of Indian gods and goddesses by N. Ramachandran and V. Anamika that nods to the traditional Tanjore style of painting. Source: Travelwithme247blog



Figure 10. Jaya He Art Museum, Source: Times of India

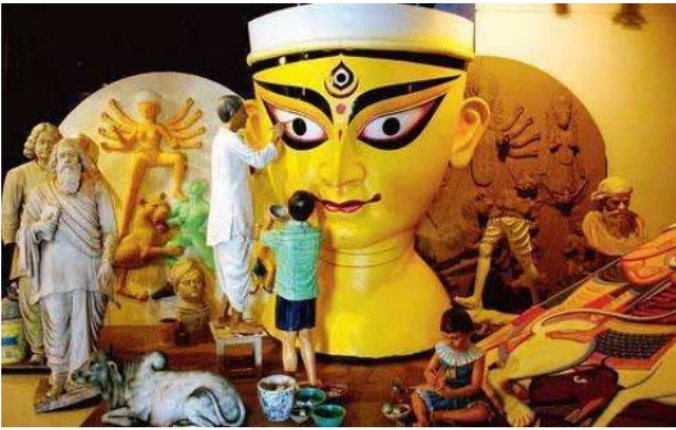


Figure 11. Making of Bengal folk art for Mumbai airport, Source: The Telegraph

3 CONCLUSION

India is known for its rich cultural heritage and vast mythology. We have been storytellers since the time of caves. Art and craft are essential activity of human mind featured with imagination, innovation and ornamentation by colours, shapes and textures. Aesthetic excellence is emphasised through design element. Design is considered as the visual dialogue of the space and straightest path for the understanding of divergent cultures, myths, religion and tradition. The design has internal and external aspect that forms a relationship between art and person. In past, airports were considered as “non-place” but now they are becoming a place, perhaps, of its own. They are evolving into the place in between the city and rest of the world. Airports are a great place to reflect the culture of the state and of the nation.

4. REFERENCES

AAI, 2017. Airports Authority of India. [Online]
Available at: <https://www.aai.aero/en/services/domestic-projects>
[Accessed 19 December 2021].

Anil K Bhat, J. N. K. A. M. A., 2015. The Hand in Art: The Hand Mudras of the T3 Terminal at the Indira Gandhi International Airport (IGIA), Delhi, India. *The Journal Of Hand Surgery*, 40(12), p. 2.

Anon., 2018. How Airport Design Affects Your Travel Experience. [Online]
Available at: <https://rmjm.com/how-airport-design-affects-your-travel-experience/>
[Accessed 18 December 2021].

Anon., n.d. Passenger terminal layout and design. [Online].

Art, A., 2014. Anjali Thomas, Mumbai: Forbes India.

Ashford, N. J., n.d. Passenger terminal layout and design. Britannica.

Business, A., 2021. Airport interior design holds key to improved passenger experience. [Online]
Available at: <http://www.airport-business.com/2010/10/airport-interior-design-holds-key-to-improved-passenger-experience/>
[Accessed 28 October 2010].

Cappelletti, A., 2021. Beyond the terminals: How airports are helping strengthen communities and promote culture. [Online]
Available at: <https://www.stantec.com/en/ideas/topic/mobility/beyond-the-terminals-how-airports-are-helping-strengthen-communities-and-promote-culture>
[Accessed 20 December 2021].

Daudén, J., 2020. 6 Airport Interiors that Enhance Traveling Experience. *ArchDaily*, 27 March.

Davies, N., 2018. Designing the Therapeutic Space: Using Layout, Color, and Other Elements to Get Patients in the Right Frame of Mind. [Online]
Available at: <https://www.psychiatryadvisor.com/home/practice-management/designing-the-therapeutic-space-using-layout-color-and-other-elements-to-get-patients-in-the-right-frame-of-mind/>
[Accessed 14 September 2021].

Gupta, B., n.d. India's Best Airports: 5 Best designed airports in India.

[Online]
Available at: <https://www.re-thinkingthefuture.com/rtf-fresh-perspectives/5-best-designed-airports-in-india/>
[Accessed 24 December 2021].

Gupta, L., 2020. BIAL: Call for Artwork 2020-2021, Bengaluru: Bangalore International Airport Limited .

Iyer, M., 2019. The Jaya He Art Museum in Mumbai is an artistic marvel, Mumbai: The Free Press Journal .

Kempegowda International Airport, B., 2020. Kempegowda International Airport, Bengaluru. [Online]
Available at: <https://www.bengaluruairport.com/travellers/passenger-services/voice-of-blr/art-and-culture-at-blr-airport-.html>
[Accessed 19 December 2021].

Krupa, L., 2013. The Chennai Art-port, Chennai: The Hindu.

Lahiri, T., 1999. Q&A: Delhi Airport's 'Hands' Sculpture [Interview] (29 November 1999).

LAKSHMAN, R., 2020. Chennai Airport's Indigenous Artworks Showcase Tamil Nadu's Culture To The World, Chennai: Aviation Scoop.

Malik, S., 2014. <http://www.ameradnan.com/blog/the-relationship-between-interior-decoration-and-human-behavior/>, Lahore: Amer Adnan Associates.

Nugent, A., 2019. The tricks of airport design. BBC, 1 May.

Ricci, N., 2017. The Psychological Impact of Architectural Design. *Claremont McKenna College*, 4 December, p. 44.

S. Carr, M. F. L. G. R. a. A. M. S., 2006. Needs in public space. In: S. T. Matthew Carmona, ed. *Urban Design Reader* . s.l.: Architectural Press; 1st edition, p. 11.

S, G., 2019. Have you seen the new installations at the Chennai airport?, Chennai: The Hindu.

Thomas, A., 2014. Airport Art, Mumbai: Forbes India.



A WAY AHEAD TO REJUVENATE THE STATUS OF KHADI FROM BEING TRADITIONAL TO MODERN.

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ABSTRACT

India is known for most hand-skilled artisans in the world and has a prosperous textile heritage. Khadi is a versatile fashion fabric and has been used as a tool to navigate India through its hard-won independence. The roots of "Khadi" fabric are found only in India. Unlike from other fabrics, khadi has marked as evidence of India's past and is evidence that "Old is truly Gold." Khadi represents our heritage tradition, nationality and culture that was inspired with contemporary. Known as the "Fabric of India", khadi has proven to be a culture in itself, one that precisely speaks the pride of our country's achievements. Khadi has a rich potential for Indian market. It cannot be competed with the mill made fabric, but should create its own niche with the uniqueness of its weaving and raw textured look. In the present market scenario khadi has not witnessed much change in terms of design, colour and readymade khadi apparel. It needs repositioning in designing of apparels and building up a new image for old fashioned khadi bhandars and sale outlets as well as designing of khadi readymade apparel. An attempt has been made to find out various aspects which involves in making khadi being old fashioned and not the first choice of the customers. The present study aims to analyse the present status of khadi and suggests measures to reposition khadi from being old fashioned to meet today's need of the market.

KEYWORDS

Customer, Designing, Fashion, Khadi, Market, Need, Promotion

INTRODUCTION

Traditional Khadi is hand-spun and hand-woven cotton fabric, also manufactured from wool and silk, known as khadi silk or woollen khadi. Hand-spun yarns which are counted as high as 200 are hand-warped and knitted into attractive fabrics. The counts are so finely twisted that it cannot be visible to human eyes. Due to complicated techniques and skills of weaving and spinning by hand, it can only be acquired by few. The fabrication of khadi is an exceptionally sensible activity which focuses on the environment right from the beginning of the yarn spinning to the whole process of weaving. This makes khadi textures to have exceptional features in regard of assembling, and unfeasible in correlation with machine-made textures.

In India, Khadi is not just a cloth, it is a movement started by the father of the nation "Mohandas Karamchand Gandhi". "Revival of the hand spinning and hand weaving makes the largest contribution to the economic and moral regeneration of India" (Gandhi, 2009). It is evident from the history that, khadi has experienced numerous changes and amendments from the primitive period, to the nation's freedom and now to the contemporary time. Khadi represents our heritage tradition, nationality and culture that was inspired with contemporary times and each tradition has experienced little changes to remain pertinent. On one side the whole world is proceeding towards the industrial fashion,

but another side Khadi constantly generates income for the rural poor prompting the country of its heritage of sustainable living and self-sufficiency.

Despite being fabric of India, Khadi is still facing many problems in terms of getting acceptance from the mass population. The fashion is changing every now and then but Khadi is still lacking in the race. Government and Khadi institutions are working hard to make khadi fabric for one and all but still there is a gap in adopting new techniques and technology in terms of modern designing, uniqueness, cost of Khadi apparels etc. Some of the problems associated with Khadi are listed below:

- High manufacturing cost of Khadi apparel and goods.
- Mismatch and unevenness in fabric production.
- Old fashioned and unsold stocks at Khadi sale outlets.
- Lack of innovation in designs and techniques.
- Poor customer services.
- Lack of awareness among buyers.
- Unrecognized customer demand and competitions according to latest fashion trends.

Now a days, khadi is becoming a fashionable fabric but still it is not much popular among mass population especially youngsters and teenagers. A lot of designers are experimenting with designing in khadi apparel such as various cuts, styles and silhouettes, but the unique texture of khadi restricts its use in designing. Various studies reveal that designing in khadi apparel is limited to its surface embellishment such as patch work, thread embroidery, uses of beads, sequence and application of dyeing techniques.

OBJECTIVES OF THE STUDY ARE

- To study and analyze the present scenario of Khadi apparel.
- To study and analyze the consumer's perception towards Khadi apparel.
- To suggest measures to enhance and promote Khadi.

LIMITATIONS OF THE STUDY

- The sample size is limited to 1500 respondents only.
- Only Punjab and Haryana states were selected to conduct the survey.
- The age group of the respondents were limited to 18 to 35 years of age.

LITERATURE REVIEW

Raghani and Trivedi (2020) in their study highlighted various aspects associated with khadi in swadeshi movement and the role of khadi in fashion world and economic development of India. Fashion industry has done a great work in projecting each garment in its best way to suit the one's purpose, style and personality. Government of India has joined hands with various fashion designers in enhancing the image of khadi from being a freedom symbol to a fashionable fabric. Variety of new designs with innovations are being developed to meet the consumer's

need. Despite all the efforts made by the designers and the Government of India, it was found that khadi is still not accepted in the apparel industry as a fashion garment.

Kulhar (2019) stated that, in India, most of the families including children and women are engaged in making khadi. For them making khadi is not only the source of their income but it is their lifestyle. There are certain problems associated with khadi such as huge cost of raw material, hard competition in market with other foreign brands, slow speed hand equipment, improper marketing strategies etc. Traditional khadi products are unable to compete with the present market to fulfil the demand of modern generation. These can be resolved by setting up khadi as a brand, improvising quality of khadi goods, promoting khadi through genuine sources in which e-commerce can play a vital role. In order to meet the demand of the present market, there is a need

for adopting design inventions and modern technologies. Gupta et al., (2017) in their study highlighted the progress of khadi from the time it serves as a tool for independence. Khadi is a natural fabric and has great benefits to wear. The demand for natural products is increasing day by day but Khadi has left behind in race. The obsession of the youth towards international brands is much more in terms of designing, variety, colour preferences etc. and Khadi has a far way to meet the demands of the consumers. The awareness of the youth towards Khadi should be done on a regular basis so that they can understand the importance and uniqueness of the national fabric.

Walia (2017) in her study tries to find out detailed knowledge about the present status of Khadi. It was suggested that, promotion and branding of Khadi should be done in a strong and powerful way so that consumer can get attracted and forced to buy Khadi just like other foreign brands. Upgraded marketing channels and various media like Facebook, twitter, YouTube etc. should be used to promote Khadi as a brand. There is a strong need to renovate and revamp Khadi sale outlets in order to meet the demand of today's consumer.

METHODOLOGY

The present study is mainly based on primary data and is descriptive in nature. To carry out the research a total number of fifteen hundred respondents (750 male and 750 female) undergraduate and post-graduate students of age group 18-24 and working professionals of age group 25-35 year of from Punjab and Haryana states were selected purposively as sample for the study. Interview schedule with open and close ended questions was prepared and required information was collected and expressed through frequency and percentage and chi-square analysis was done to find out the significant relationship between the two variables. Secondary data required for the study was gathered from research articles, magazines, books, newspapers and online websites.

RESULTS AND DISCUSSION

Table 1: Distribution of Respondents According to Awareness Regarding Type of Readymade Apparel Made in Khadi (N=1500)

Awareness regarding type of readymade apparel made in khadi	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Yes	434	57.9	393	52.4	4.530	1	.033*
No	316	42.1	357	47.6			

* Significant at 5%

Table 1 represents the awareness regarding type of readymade apparel made in Khadi among male and female respondents. It was found that maximum of 57.9% of male and 52.4% of female respondents were aware of the variety of readymade apparel made in Khadi. But 42.1% of male and 47.6% of female respondents were not aware of the variety of readymade apparel made in Khadi. The results depicts chi-square value of 4.530 with df 1 and p = .033 which shows that there is an association

between awareness regarding variety of readymade apparel made in Khadi and gender group with significant p-value (.033<0.05); Hence, it can be concluded that awareness regarding variety of readymade apparel made in Khadi is related with gender of the respondent.

Table 2: Distribution of Respondents According to Preference of Wearing Khadi (N=1500)

Wearing of khadi	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Always	32	4.3	50	6.7	110.864	4	.001**
Most of the time	91	12.1	121	16.1			
Rarely	179	23.9	330	44			
Occasionally	251	33.5	129	17.2			
Never	197	26.3	120	16			

** Significant at 1%

Table 2 represents the preference of wearing khadi of the respondents. It is evident from the above results that 4.3% of the male and 6.7% of the female respondents always prefer to wear Khadi, 12.1% of the male and 16.1% of the female respondents most of the time prefer to wear Khadi, 23.9% of the male and maximum of 44% of the female respondents rarely prefer to wear Khadi, majority of 33.5% of the male and 17.2% of the female respondents prefer to wear Khadi occasionally and 26.3% of the male and 16% of the female respondents never prefer to wear Khadi. The results depicts chi-square value of 110.864 with df 4 and p = .001 which shows that there is statistically significant relation between preference of wearing Khadi apparel and gender of the respondents with significant p-value (.001<0.01). Hence, it can be concluded that there is a significant effect of gender regarding preference of wearing Khadi. From the above table it is also evident that for both male and female respondents, Khadi is not the most preferred fabric.

Table 3: Distribution of Respondents According to the Purchase Frequency of Khadi Fabric or Apparel (N=1500)

Purchase Frequency	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Occasionally	101	13.5	176	23.5	26.644	4	.001*
Frequently	87	11.6	89	11.9			
During discount period	89	11.9	85	11.3			
No special reason	295	39.3	254	33.9			
Any other	178	23.7	146	19.5			

** Significant at 1%

Table 3 represents the purchase frequency of the Khadi fabric or apparel by the respondents. It was found that, majority of 39.3% of the male and 33.9% of the female respondents purchased Khadi fabric normally without any special reason, 13.5% of the male and 23.5% of the female respondents purchased Khadi fabric occasionally, 11.6% of the male and 11.9% of the female respondents purchased Khadi fabric frequently. However 11.9% of the male and 11.3% of the female respondents purchased Khadi fabric during discount period, and 23.7% of the male and 19.5% of the female respondents purchased Khadi fabric because of other reasons like fabric liking, colour matching, etc. The results depicts chi-square value of 26.644 with df 4 and p = .001 which shows that purchase frequency of Khadi fabric is highly related with gender of respondents with significant p-value (.001<0.01). Hence, it can be concluded that there is a significant effect of gender regarding purchase frequency of Khadi fabric. It is evident from the above results that the majority of respondents both male and female do not require any special reason to purchase Khadi fabric.

Table 4: Distribution of Respondents According to the Satisfaction Regarding Variety of Fabrics Available in Khadi (N=1500)

Variety	Satisfaction level	Male		Female		Chi-Square	df	p-value
		N	%	N	%			
Colour	Satisfied	339	45.2	392	52.3	7.495	1	.006**
	Not Satisfied	411	54.8	358	47.7			
Texture	Satisfied	355	47.3	404	53.9	6.404	1	.001**
	Not Satisfied	395	52.7	346	46.1			
Weave	Satisfied	367	48.9	440	58.7	14.293	1	.001**
	Not Satisfied	383	51.1	310	41.3			
Designing Patterns	Satisfied	325	43.3	334	44.5	.219	1	.640
	Not Satisfied	425	56.7	416	55.5			

** Significant at 1%

The above table represents the satisfaction of the respondents regarding variety of fabrics available in Khadi. It is evident from the table 4 that 45.2% of the male and 52.3% of the female respondents were satisfied with the colour available in Khadi; though 54.8% of the male and 47.7% of the female respondents were not satisfied with the colours available in Khadi.

47.3% of the male and 53.9% of the female respondents were satisfied with the texture of Khadi available in the market while, 52.7% of the male and 46.1% of the female respondents were not satisfied with the texture of Khadi fabric.

48.9% of the male and 58.7% of the female respondents were satisfied with the weave of Khadi available in the market while, 51.1% of the male and 41.3% of the female respondents were not satisfied with the weave of Khadi fabric.

43.3% of the male and 44.5% of the female respondents were satisfied with the designing patterns of Khadi available in the market while, 56.7% of the male and 55.5% of the female respondents were not satisfied with the designing patterns of Khadi fabric.

Satisfaction of respondents regarding texture and weave available in Khadi are associated with gender group with significant p-values (.001 and .001<.01). In spite of the fact that satisfaction of respondents regarding colour and designing patterns available in Khadi are not related with gender of respondents as p-values higher and are not significant.

Table 5: Distribution of Respondents According to the Satisfaction Regarding Price of Readymade Khadi Apparel (N=1500)

Satisfaction level	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Highly satisfied	87	11.6	93	12.4	17.353	4	.002**
Satisfied	164	21.9	199	26.5			
Neutral	333	44.4	273	36.4			
Dissatisfied	109	14.5	96	12.8			
Highly Dissatisfied	57	7.6	89	11.9			

** Significant at 1%

Table 5 represents the satisfaction of the respondents regarding price of the readymade Khadi apparel. The results of the above table shows that majority of 44.4% of the male and 36.4% of the female respondents were neutral for satisfaction regarding price of readymade Khadi apparel; whereas, 21.9% of the male and 26.5% of the female respondents were satisfied with price of readymade Khadi apparel, and 14.5% of the male and 12.8% of the female respondents were dissatisfied with price of readymade Khadi apparel. However 11.6% of the male and 12.4% of the female respondents were highly satisfied with price of readymade Khadi apparel. Only 7.6% of the male and 11.9% of the female respondents were highly dissatisfied with price of readymade Khadi apparel. The results depicts chi-square value of 17.353 with df 4 and p = .002 which shows that satisfaction regarding price of readymade Khadi apparel and gender group are associated with each other with significant p-value (.002<.01).

Table 6: Distribution of Respondents According to the Satisfaction Regarding the Ambience and Infrastructure of Khadi Sale Outlets (N=1500)

Satisfaction level	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Highly satisfied	25	3.3	60	8.0	37.56	4	.001**
Satisfied	182	24.3	241	32.1			
Neutral	310	41.3	277	36.9			
Dissatisfied	159	21.2	102	13.6			
Highly Dissatisfied	74	9.9	70	9.3			

** Significant at 1%

Table 6 represents the satisfaction of the respondents regarding ambience and infrastructure of khadi sale outlets. As shown in the above table, a large part of 41.3% of the male and 36.9% of the female respondents were impartial for fulfilment with ambience and infrastructure of Khadi sales outlets, 24.3% of the male and 32.1% of the female respondents were satisfied with ambience and infrastructure of Khadi sales outlet, 21.2% of the male and 13.6% of the female respondents were dissatisfied with ambience and infrastructure of Khadi sales outlet. Although 9.9% of the male and 9.3% of the female respondents were highly dissatisfied with ambience and infrastructure of Khadi sales outlet and only 3.3% of the male and 8% of the female respondents were highly satisfied with ambience and infrastructure of Khadi sale outlets. The results depicts chi-square value of 37.56 with df 4 and p = .001 which shows that satisfaction regarding ambience and infrastructure of Khadi sales outlet is highly related with gender of respondents. Hence, it can be concluded that there is a significant effect of gender regarding satisfaction with ambience and infrastructure of Khadi sales outlet.

Table 7: Distribution of Respondents According to the Satisfaction Regarding the locality of Khadi Sale Outlets (N=1500)

Satisfaction level	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Highly satisfied	35	4.7	53	7.1	9.966	4	.041*
Satisfied	265	35.3	301	40.1			
Neutral	300	40	257	34.3			
Dissatisfied	115	15.3	103	13.7			
Highly Dissatisfied	35	4.7	36	4.8			

** Significant at 5%

The above table represents the satisfaction of the respondents regarding the locality of Khadi sale outlets. The result depicts that 40% of the male and 34.3% of the female respondents were neutral for satisfaction with locality of Khadi sales outlet, 35.3% of the male and 40.1% of the female respondents were satisfied with locality of Khadi sale outlets, and 15.3% of the male and 13.7% of the female respondents were dissatisfied with locality of Khadi sales outlet. While 4.7% of the male and 7.1% of the female respondents were highly satisfied with locality of Khadi sales outlet. Only 4.7% of the male and 4.8% of the female respondents were highly dissatisfied with the locality of khadi sale outlets. The results interprets chi-square value of 9.966 with df 4 and p = .041 which shows that satisfaction regarding locality of Khadi sales outlet is associated with gender group as p-value (0.041<0.05) is significant. Hence, it can be concluded that there is a significant effect of gender regarding satisfaction with locality of Khadi sales outlet.

Table 8: Distribution of Respondents According to the Satisfaction Regarding the Customer Dealing Service at Khadi Sale Outlets (N=1500)

Satisfaction level	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Highly satisfied	44	5.9	81	10.8	35.631	4	.001**
Satisfied	231	30.8	286	38.1			
Neutral	295	39.3	243	32.4			
Dissatisfied	121	16.1	71	9.5			
Highly Dissatisfied	59	7.9	69	9.2			

** Significant at 1%

Table 8 represents the satisfaction of the respondents regarding customer dealing services at Khadi sale outlets. From the above table we can conclude that majority of 39.3% of the male respondents were neutral for satisfaction with customer dealing service at Khadi sales outlet, but maximum of 38.1% of the female respondents were satisfied with customer dealing service at Khadi sales outlet. Whereas; 16.1% of the male and 9.5% of the female respondents were dissatisfied with customer dealing service at Khadi sales outlet, and 7.9% of the male and 9.2% of the female respondents were highly dissatisfied with customer dealing service at Khadi sales outlets. 30.8% of the male respondents were satisfied with customer dealing service at Khadi sale outlets, however 32.4% of the female respondents were neutral for satisfaction with customer dealing service at Khadi sale outlets. Only 5.9% of the male and 10.8% of the female respondents were highly satisfied with customer dealing service at Khadi sale outlets. The result depicts chi-square value of 35.631 with df 4 and p = .001 which shows that there is a statistically significant relation between satisfaction regarding customer dealing service at Khadi sale outlets and gender group with significant p-value (.001<0.01).

Table 9: Distribution of Respondents According to Wearing Khadi as Substitute for Normal Clothing (N=1500)

Wearing Khadi as Substitute for Normal Clothing	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Yes	242	32.3	357	47.6	36.757	1	.001**
No	508	67.7	393	52.4			

** Significant at 1%

Table 9 represents the responses of the respondents regarding wearing Khadi as a substitute for normal clothing. It is evident from the above table that according to maximum of 67.7% of the male and 52.4% of the female respondents, Khadi cannot be substitute to their normal clothes. While according to 32.3% of the male and 47.6% of the female respondents, Khadi can be the substitute to their normal clothes. The results depicts chi-square value of 36.757 with df 1 and p = .001 which shows that there is statistically significant relation between responses regarding Khadi as substitute for the normal clothes and gender group with significant p-value (.001<0.01).

Table 10: Distribution of Respondents According to Khadi as their Buying Choice if more Variety Available in Khadi Readymade Apparel (N=1500)

Prefer khadi as buying choice	Male		Female		Chi-Square	df	p-value
	N	%	N	%			
Yes	415	55.3	556	74.1	58.057	1	.001**
No	335	44.7	194	25.9			

** Significant at 1%

The above table represents the responses of the respondents regarding preferring Khadi as their buying choice if more varieties available in Khadi readymade apparel. As shown in the Table 10, maximum of 55.3% of the male and 74.1% of the female respondents would like to buy Khadi readymade apparel if they get more variety in it. Whereas; 44.7% of the male and 25.9% of the female respondents would not like to buy khadi even after getting more varieties in Khadi readymade apparel. The results depicts chi-square value of 58.057 with df 1 and p = .001 which shows that willingness to buy Khadi readymade apparel after getting more varieties is highly related with gender group. Hence, it can be concluded that there is a significant effect of gender regarding willingness to buy Khadi readymade apparel after getting more varieties.

FINDINGS:

- Majority of the respondents were aware of the variety of readymade apparel made in Khadi.
- Khadi is not preferred as the normal clothing choice of the majority of the respondents.

- Majority of the respondents purchase Khadi without any special reason.
- Majority of the male respondents were not satisfied with the variety of colours, textures, weave and designing patterns available in Khadi.
- Majority of both the male and female respondents shows neutral responses towards satisfaction regarding price of readymade Khadi apparel.
- Majority of both the male and female respondents shows neutral responses towards satisfaction regarding ambience and infrastructure of Khadi sale outlets.
- Majority of the male respondents shows neutral responses towards locality of the Khadi sale outlets, whereas; majority of the female respondents were satisfied with the locality of the Khadi sale outlets.
- Majority of the male respondents were neutral for satisfaction with customer dealing service at Khadi sales outlet, but maximum of the female respondents were satisfied with customer dealing service at Khadi sale outlets.
- Khadi cannot be a substitute for normal clothing to the majority of the male and female respondents.
- Maximum number of male and female respondents would like to buy Khadi readymade apparel if more choices are available in market.

CONCLUSION

Khadi has travelled a long path to make its own identity as a fashion garment from the primitive times. Still Khadi is facing a lot of hurdles to get its place in the Indian market. There is a great need to reposition the image of Khadi from being traditional to modern to meet the demand of the modern generation especially the youngsters. A lot of designers and government has left no stone unturned in gaining the right position for Khadi in Indian market, but still there is a major need of improvisation in terms of variety in colours, textures and designing of readymade Khadi apparel. Khadi sale outlets need a new look to meet the modern market competition as well as to attract customers.

From the above data it can be concluded that the quality and designs of readymade apparel available in the khadi sale outlets needs a lot of improvements in order to meet the expectations of the customers. The stiffness of the Khadi cloth and the rough texture does not meet the quality expectations of the customer who wants to buy khadi. Modernization plays an important role in attracting customers and there is a need for attracting customers towards Khadi, as at present, only few people are willing to buy and wear Khadi. Most of the Khadi sale outlets are still lacking in maintaining the outlook and display of the products in sale outlets as per the needs and demand of the customers.

SUGGESTIONS

- There is a need to attract more customers towards khadi in order to increase the sales of khadi readymade apparel. Distribution of products, staff, pricing of the products, utilization of the space, proper lighting and location plays important role in attracting customers and increasing sales.
- In this fast-changing world, where fashion plays an important role in shaping apparel consumerism, khadi has kept itself limited in terms of new designs, styles, patterns, and textures.
- As compared to other fabrics, khadi has built an image of being simple, traditional and plain amongst the consumers. Consumer preferences and fashion forecast for the upcoming year should be kept on priority while deciding on designing of the product range.
- Advanced and modern technologies should be adopted for marketing of khadi for an appealing approach which could help in reaching to its target customers. Proper advertisements and improved marketing techniques should be adopted by KVIC to promote khadi and make it reach to the mass population.
- The display and store outlook of khadi sale outlets should be

improvised as per the need of the hour. There is a great need to train the people associated with Khadi in order to provide a better customer service and experience.

- Feedback always plays an important role in understanding the customer and their needs. Customer feedbacks should be taken seriously and implemented in order to improve customer dealings and adding more happy customers towards Khadi.

REFERENCES

- Gandhi. M. (Ed.). (2009). India of my dreams: The music of the spinning wheel. In Rajpal & Sons (Eds.), Navjeevan trust, Ahmedabad (pp. 111) Kashmere gate, Delhi.
- Gopinath, P. (2008) Technological dualism and the response of traditional household enterprises of India in the post-reform (1991) era: a case study of khadi industry. [Doctoral dissertation, Tata institute of social sciences, Deonar, Mumbai]. <http://hdl.handle.net/10603/2719>
- Gupta et al., (2018). Khadi: An iconic Indian cloth. *International Journal of Applied Home Science*, 5(1), 267-278
- Kulhar. M., (2019). E-Commerce: A key platform to promote khadi. *Research Review International Journal of Multidisciplinary*, 4(2), 24-28.
- Raghani. P. and Trivedi. C., (2020). A conceptual study on journey of khadi: from a freedom fabric to fashion fabric. *Jagannath University Research Journal*, 1(2), 16-22
- Srivastava, M. (2017). Khadi: exploration of current market trend. *International Journal of Applied Home Science*, 4(7&8), 439-446



READING DIMASA CULTURE, COSTUME AND JEWELRIES WITH SPECIAL REFERENCE TO BUSU FESTIVAL

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INTRODUCTION

India is known for its diversities and different communities, where each and every community has their own individual customs and culture. In North Eastern India, especially in Assam we find many tribes and most of them are sub-tribes. They are – The Boro, Rava, Sonwal, Thengal Dimasa, Mikir, Garo, Hajong, Deori, Chutiya, Lalung Hojai, Burman of Kachar, Trippa etc are communities of Kachari origin. Among them the most dominated tribe is 'Dimasa' or 'Dimasa Kacharis'

The Dimasa is one of the important of Kachari tribes. The etymological meaning of the name Dimasa is "the children of big river" i.e. Brahmaputra, where 'di' means water, 'ma' means big, and 'sa' means children. Kacharis seem to constitute one of the early autochthonous ethnic stratum of the north eastern India. The Dimasa live mostly in the northern half of the North Cachar Hills, an administrative district of the ravines of the Jatinga valley and the adjoining land. They also have sizable population in Cachar and Nowgong Districts of the state. In Cachar, following the formal conversion of their king Krishnachandra to Hinduism the ordinary Dimasas have largely adopted Hinduism. These new converts to Hinduism are called Burma of Kachar. On the other hand in Nowgong District the Dimasa have come under the influence of Assamese Vaishnavism, and there they are called Hojai. In north Cachar Hills, a section of the Dimasas is confined within the historical village named 'Semkhor' where 'sem' means salt, and 'khor' means well, meaning 'well of salt' and eventually become a separate group of Kacharis called the 'Sema Kachari'.

1 Man in India, by Babul Roy, 82 (1 & 2): 72-99 DESCENT GROUPINGS, BELIEF SYSTEM AND SOCIAL STRUCTURE AMONG THE DIMASA KACHARIES OF ASSAM

The Dimasa of N.C. Hills, being agrarian people celebrates various agricultural festivals in different ways and at different times. Among the festivals of Dimasas 'BUSU' also called 'BISHU' which is a joyous harvesting festival. It is supposed to be the most important community festival of Dimasa. The festival is usually celebrated in the month of January when all sorts of works of the jhum are completed. In this occasion the Dimasa people put on their traditional costumes and ornaments and dancing in a group which is very attractive. They enjoy this festival very well maintained and proper way. Their colourful costumes and ornaments are so good that everyone easily attracted to them.

The life of the tribal people is simple and placid and often hard. But they have a rich cultural legacy- a myriad, myths and legends which are interesting though rather strange. In the same manner as other communities cherishes the story of their epic or religious books, the tribal people like to relate or listen to the stories of their history. They have usually emotional reactions to their environment, but to older generation, their mythological tales appear to cover almost every aspect of their life.

The Aims & objectives of the paper is to observe "BUSU FESTIVAL", Study the artistic development of their culture, significance of costume and ornament design in their daily life and study the custom and culture of

the community.

The study was focused on SAMPARIDISA, which is located in the northern region and approximately 20-25 kilometers from the town Haflong. It is believed that the "SAMPARIDISA" is the oldest village after "SEMKHOR" means the "the well of salt". SAMPARIDISA is a well maintained valley consisting of compact settlements of homes. Jhum cultivation, animal rearing (pigs, hens, ducks etc) and weaving are the major source of income.

JOURNEY OF THE STUDY

Mr.Samar Dey teacher of History and poet and also a resident of Haflong (N.C Hills) helped a lot for this project, given valuable suggestions and instructions to proceed this task.

The teachers of SAPARIDISA M.E.School had provided all sorts of assistance to meet with Mr. Satyendra Langthasa (Head Master of SAMPARIDISA L.P.School) who is also a resident of the so called village. He helped to communicate with the local natives of the village.

Interviewed with Satyendra Langthasa about- costumes of people during BUSU Festival, its significance and tradition. Discussed about- the traditional ornaments, weaving techniques etc. Photographs taken of traditional ornaments like Chandarwal, Khamauthai, Khadu-dima, etc

Lastly met with Mrs. Bharati Didragede –Join Director of Health Services, Civil Hospital of Haflong (N.C.Hills) had given the latest and modern day ornaments and costumes along with some other authentic information about the tradition of the Dimasa costumes and comparative study from ancient Dimasa culture and modern day changes.

ORIGIN AND HISTORICAL BACKGROUND

Dimasa being one of the indigenous tribe of India's North and North-East, their history is quite old. In the Mahabharata and other ancient Hindu scriptures there are mention about the foothill dwellers of the Great Himalayas called 'Kiratas'. The term Kirata stands for Mongoloid racial communities, but some historian believed that it indicates Kacharis. The Kacharis are the most widely spread tribe in northeast India. They are said to be the earliest inhabitants of the Brahmaputra Valley. The Kacharis belong to the Indo-Mongoloid (Kirata) group which includes the Bodos and their allied tribes. They have prominent Mongoloid features with high cheek bones, slit eyes and a slight growth of hair in the body and scant beard. They call themselves Bodo or Bodo-fisa in the Brahmaputra valley and Dimasa or Dima-fisa or 'sons of the great river' in the North Cachar Hills & Karbi- Anglong district. The earliest Kachari settlements were in the foothills of the Himalayas. From there they moved to the Brahmaputra valley with their Capital at Kamruli (Kamupa).

The Dimasa, (the children of big river) were driven out of the valley of the great river Brahmaputra in historical times, and finally became rulers of what is now known as the Cachar District. There are no written

records of Kachari rule, and the traditions current amongst the people, consist of title more than long lists of kings, on the accuracy of which it is impossible to rely. The Dimasa of North Cachar believe that they once ruled in Kamrupa, and their royal family traced its descent rajahs of that country, of the line of Hatsungtsa. How long this kingdom existed, it is now impossible to say; but what is known with some degree of certainty is, that they were engaged in a prolonged struggle with the Ahoms, a section of the great Shan (tai) race, who crossed the Patkai Hills from the south and east about A.D. 1228 and subdued the Morans, Borahis and other Kachari tribes living in the Northern slopes of this hills.

Originally, the eastern region of Bharata was termed as Kachcha Desha, indicating land of Runn or narrow sea gulf, and the people of this region used to be termed as Kachchari, meaning the inhabitants of the land, called Kachcha. The Ahoms gradually subdued the Kacharis who drove their opponents to take refuge in or about Dimapur on the Dhansiri at the foot of the Naga Hills. In Dimapur the Kacharis were in comparative security and they appeared to have attained a high degree of material civilization evidenced from the architecture and archeological remains though not fully excavated of the Kachari kingdom.

This section of the Kacharis is known as the Dimasas. "Hidimba-pur" (pronounced as Hihimbapur) was the real name of this capital and kingdom. Reference is there in the Mahabharata that Bhima, the second of the Pandava brothers, married the demon princess, Hidimba (Hihrimbaa), sister of the local potentate of terrible ways, and then called Rakshasha... The ruling family of the Kacharis, since the days of antiquity, therefore assumed the distinction of Hidimbbaa-chha, meaning the progeny of Hiddimbbaa, then generic mother. This term Hidimbas-chha, got, distorted into Dimabaachha, and then into Dimachcha or Dimasa in the later phase.

The Dimasa Kacharis could not live in peace and prosperity for a long time because their ancient foes, Ahom, followed them up to their new capital Dimapur, and about the middle of the 16th century the Ahoms succeeded in capturing and sacking Dimapur itself. The Kachari Raja thereupon removed his capital to Maibang which is at a considerable distance from Dimapur (Maibong literary means "much paddy"). At Maibang the Kachari dynasty would seem to have maintained itself for some two centuries. Under the pressure of an attack by the Jaitia Raja the Kachari sovereign withdrew from Maibang from Khaspur in Kachar/ Cachar (1750 A.D.)

RELIGION

The Dimasas believe in the existence of a supreme being Madai – Under whom there are several Madais including family deities and evil spirits. The religious practices of the Dimasas are reflected in their Daikho system. A Daikho has a presiding deity with a definite territorial jurisdiction and a distinct group of followers known as Khel. Every Dimasa Kachari family worships its ancestral deity once a year before sowing the next paddy. It is known as Madai Khelimba. This is done for the general welfare of the family.

2 ETHNOGRAPHIC STUDY NO-7, CENSUS OF INDIA 1961 VOLUME I, MONOGRAPH SERIES PART V-B, DIMASA KACHARI OF ASSAM
3 ETHNOGRAPHIC STUDY NO-7, CENSUS OF INDIA 1961 VOLUME I, MONOGRAPH SERIES PART V-B, DIMASA KACHARI OF ASSAM

And Misengba is for the good of the whole community. They cremate their dead. The dead body is washed and dressed in new clothes, the corpse is placed inside the house on a mat. A fowl is thrashed to death and placed at the foot of the deceased so that it might show the deceased the right path to heaven. The widow does not tie their hair till cremation. The dead body is cremated by the side of a river or stream.

BUSU FESTIVAL

The Dimasas of N C Hills, being agrarian people, celebrate various agricultural festivals in different ways and at different times. Mostly

Dimasas inhabiting North Cachar Hills and Karbi Anglong districts are successful in preserving their age old traditional religious beliefs and practices in and through the celebration of several festivals, with some exceptions, due to being Hinduised.

The Dimasa festival can be categorized into community festivals and local festivals. The local festivals are performed by each village separately, and participation is restricted to the people of the village concerned. The community festivals are Misengba and Busu, while local festivals are Korongfang Gerba and Maisalai Gerba.

Among the festivals of the Dimasas, BUSU called BISHU, which is a joyous harvesting festival. It is supposed to be the gayest and the most important community festival. The festival is usually celebrated in the month of January, when all sort or Works of the jhum are completed. Thus the BUSU is an occasion for relaxation from hard toils. It can, therefore be termed as harvesting festival or a festival of rejoicing and merry making. Hence the participation in this celebration is not restricted to anyone. The festival may be celebration at an agreed time according to the convenience of the village people. But since 1994 as per the decision of Dimasa community of N C Hills, the Autonomous Council of N C Hills had officially declared 27th January as BUSU festival day.

4 ETHNOGRAPHIC STUDY NO-7, CENSUS OF INDIA 1961 VOLUME I, MONOGRAPH SERIES PART V-B, DIMASA KACHARI OF ASSAM
5 Man in India, by Babul Roy, 82 (1 & 2): 72-99 DESCENT GROUPINGS, BELIEF SYSTEM AND SOCIAL STRUCTURE AMONG THE DIMASA KACHARIES OF ASSAM

The grand Busu festival may be divided into three categories:-

Busu Jidap : When the Busu is celebrated for three days, it is called Jidap
Surem Baino : If it is observed for five days, it is called Surem Baino
Hangseu Manaoba : When it is observed for seven days it is called Hangseu Manaoba

In all festivities they used to make a "heih-ho" (Haoba) as to mark the grand festivities and ceremony.

Customs and Ritual Factors:-In Dimasa community the ritual factors are very different from other tribal communities. They used to invite their Hojai or priest by offering rice beer in Lawthesa. It is considered that if a Hojai or priest won't go that particular ceremony after accepting the invitation then it will be considered an offence. In Dimasa community 'rice beer' or 'Zou' is considered an important factor. If a stranger comes anyone's home or village the stranger is treated by offering the Rice 'Beer'.

ORNAMENTS

Ornaments are common favorite to any community and religion. The Dimasa Kacharis are not exception. For them, ornaments are not just to beautify the body but also has significance in daily life and rituals they perform. In BUSU festivals they wear particular ornament which makes the festival more fruitful.

The ornaments used along with the costumes wore during BUSU Festival and embellished with earrings (Khamauthai), armlet (Khadu-dima), Khadu (see fig 02) and necklace (Chandrawal). In general the metal used are silver and in rare case gold, where the designs and motifs are taken from nature. The patterns or designs used in the jewelry are generally on linier and repeated manner with zigzag, floral patterns are often seen as decorative elements in the ornaments. Various beads along with alloys of other metals like zinc were used to supplement the expensive use of silver. The indigenous elements and metal used were confined to silver, mixed with other metals which made definite transition to synthetic materials like plastic beads used repeatedly along with having the same pattern and colour scheme used earlier.

The repetition of colour of the beads makes the particular jewelry piece more gorgeous with the use of red and followed by yellow, blue and green. Having customary significance or symbolic importance to commemorate

the BUSU festival. The whole band and beads consist of more than five to six stands. The simple design of the earring were the now replaced by floral design or motifs in various size and shapes. The earlier designs were intricately designed with motifs like that of flowers. Another piece of jewelry that adorns the festive mode is Rangboesha, (see fig 10) which means the jewelry made with coins. Red and orange beads along with the coins normally 25 paisa with around 20 pieces of such individual coins are used to complete the jewelry piece. The Rangborsha were extensively used during the BUSU festival as a customary to symbolize wealth and prosperity of their hard work of harvesting the crop to earn their livelihood.

Let us explain some ornaments in below –

KHADU-DIMA: It is an armband worn by Dimasa women. The Khadu-dima (see fig 03) is made of silver and the weight is about 150g to 250g, the height of the Khadu-dima is about 1 1/2 inch to 2 inch. Khadu-dima is not connected properly; one side is open for wearing. The design used in the Khadu-dima is very simple and repeated in manner. In the centre and upper most part is containing zigzag curved out lines with curved out dots.

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The depiction of horizontal and vertical lines can be seen in the whole of the armband. It is mostly made in Maibang by a certain group of people.

KHAMATHAI: Khamathai (see fig 01) is the ear top, where 'khamau' means ear. This ornament is quite different from others because of its thickness. It is round in shape and approximately 2-3 cm thick. It is mostly in gold and small circular patterns are found in the inlaying surface of the ear top. The depiction of round and circular pattern can be seen on the top and bottom of the ear top. The whole ear top is looking very gorgeous for its design and metal.

CHANDRAWAL: Chandrawal (see fig 08) is the necklace which is the most important ornament for BUSU Festival. The necklace's main part is consisting of three bunches and each motifs look like blossoming flower patterns connecting one after another. In both of the triangular pattern connecting with bunches of six chain is also containing the same flower motifs and containing six horizontal bands seems to be a form of ladder. The top most part looks like bow shaped, which is composed of mixed metals. Along with it three chain motifs hanging and are joined with the triangular metals designs. If we go to the top of the chain we can find a hard boat shape piece of metal and in the middle of that a flower motif is depicted. This necklace is very decorative and very gorgeous.

PHUWAL: (See fig 09) It is another necklace made of led and red beads gradually one after another. The led piece is octagon shape along with red beads. In this necklace the red beads symbolizes purity and led is used to get rid of evil eyes.

MODERN ORNAMENTS: Modern ornaments of Dimasa (see plate 04) are the modified designs of earlier. Here we can find the depiction of gorgeous things like stones, bright colour and other similar design. The modern ornaments are diversified from the earlier ornaments like Chandrawal, Phuwal etc. In today's ornaments the remarkable thing is the colour scheme which is related to their costumes colour. Because in their costumes we can find the colours like yellow, blue, orange, green, black and brown as their ornaments. If we observe new ornaments, there we find a little influence of other tribal communities like Naga, Kuki, Hmar etc.

COSTUMES

One of the important household industries amount the Dimasas is the culture of the eri silk-worm and the manufacturer of the eri cloth. They also manufacture muga cloth. The loom employed for weaving the eri silk is tension loom and is made from the material available in the village. The loom is unlike the loin loom. The loom is usually kept under a thatched cover which protects the weaver from the scorching sun. The weaving

is always done by the lady of the house or by one of her daughters. The cloth which they weave is mainly for their personal use and if there is any surplus they sell it in the market. But this does not happen very often as almost all the households are having their own looms. Among Dimasa women weaving is a must; a woman who does not know the art of weaving is looked down upon in the society.

Along with the jewelry as the accessories, the dress materials or the costumes also play a significant role during the festival. The process of weaving is essentially manual with the setup of looms in every house. The looms were very rude and simple in their techniques. The main sources of such intricate costumes were from Eris. The designs were complex mixture of patters and motifs belong to the culture with bright colour like yellow, green, red, black which are repeated on a base colour in terms of spike like structure and parallel lines. The designs are basically geometric in nature with diagonals, hexagonal, or triangles repeated to give a lineal to the design subjected to use of variety of colours. The designs are repeated followed by beads or strips of different colours to make it more appealing. Some designs are intricate in their calculation with colours like blue, pink, black were used frequently. Suggestions like temples as we see in Manipuri dresses, resemblance the manner of repetition. The dress or the costume is divided into three parts like the scarf or shawl on the shoulder with mekhla at the bottom. The colour scheme and designs remain the same for all age of women, particularly the girls and married women but not elderly person.

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Let us explain some costumes in below:-

BEREN: It is one of the important costumes of Dimasa women. It is usually worn in the middle part of the complete dress. Beren (see fig 04) is made by weaving process and threads from eris. In Beren we can see the depiction of various colours and designs which are used in a strip and repeated in manner. Generally in Beren, half of the complete costume is left to white and there is no design. In Beren they used very contrast colour. In Beren every stripes of designs are consist of several spike lines and all are coloured in deep tone of the base colour. There are 20- 22 vertical stripes in a Beren. In the bottom of the Beren we can find the horizontal stripes with designs like crisscross, octagon shaped design and other formal lines in a continuing manner. They termed this type of designed as 'Phanthau bubar' means the blooming flower of brinjal. In the lower part black and brown is mostly used in the Beren. It is very colourful and gorgeous.

REMAI (see fig 06) It is another important costume of Dimasa women, which is used as the scarf from back to front. The thread of this costume is very smooth and made up by 6weaving process. It is small in size and having good design like square which the Dimasa people termed as 'Riphu-dima'. It is the common design found all of their costumes. In Remai both side is designed with spike lines and other design like dots or square shape design. In lower part of the Remai we can find stripes line with colour and design also. Remai's are mostly of yellow colour and a very important part of their traditional dress.

CONCLUSION

After study of the Artistic and Cultural behavior of the Dimasa community. It can be said that among the different communities of North-Eastern India, the Dimasa is one of the creative tribes. The creative works of their community which can also consider as their traditional profession. Because now-a-days they can earn. The Traditional Materials which they basically used in their Costumes and Jewelries are highly artistic. By study their cultural activities it can also be said that they are not only sound in Artistic Creativity but in culture also.

There are many aspects which can be related to ancient art works like the jewelry KHADU which can be related to the bangles of Dancing Girl of Indus Valley. These ornaments are not just for embellishment but also a sign of boldness and strength. In their tradition one can easily identify the aesthetical value of the material and the activities which they have implements in their tradition as well as in their culture. The design which

are seen in their day-to-day use cloths and jewelries are quite creative and artistic. Though the other tribes of the North-East also maintain their traditional activity through creative work, the work of the tribe 'Dimasa' is comparatively fascinating to see.

They have not only maintained the origin of their culture, they also emphasized on the artistic creativity through their craft work. The main attracting thing of this tribe is their Handloom culture and crafts which are very much close to the other tribes but far different in aesthetical values. Since they have taken their traditional activities as a creative thing, they have also developed their designs and motifs which they have used in the craft works to compare with the modern world. In the age of globalization they have accepted the new technology and new thoughts to give enlighten on their creative works.



Fig- 01 (Khamauthai)



Fig- 02 (Khadu)



Fig- 03 (Khadu dima)



Fig- 07 (Chandarwal)



Fig- 08 (Phuwal)



Fig- 09 (Rangborsha)

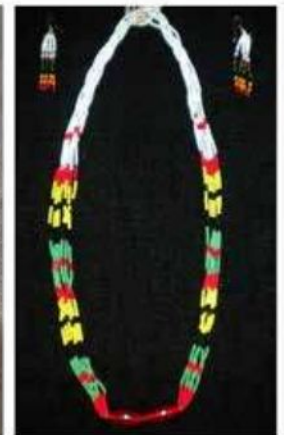


Fig- 10 (Modern Jewelry)



Fig- 11 (Modern Chandarwal)

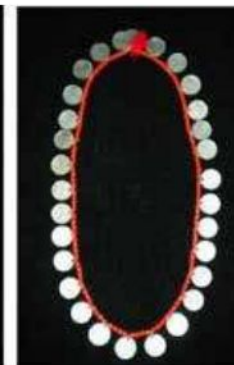


Fig- 12 (Modern Rangborsha)



Fig- 13 (Modern Jewelry)



Fig- 14 (Modern Jewelry)

REFERENCE

Man in India, by Babul Roy, 82 (1 & 2): 72-99 DESCENT GROUPINGS, BELIEF SYSTEM AND SOCIAL STRUCTURE AMONG THE DIMASA KACHARIES OF ASSAM

Jewellery And Ornamentation Of The Dimasas: A Historical Survey By Suranjana Hasnu

Man in India, by Babul Roy, 82 (1 & 2): 72-99 DESCENT GROUPINGS, BELIEF SYSTEM AND SOCIAL STRUCTURE AMONG THE DIMASA KACHARIES OF ASSAM

Ethnographic Study No-7, Census Of India 1961 Volume I, Monograph Series Part V-B, Dimasa Kachari Of Assam

The magazine reference is Norm-East at a Glance. Published in January 2nd, 2010.

Interviews

Mr. Samar Dey. (History Teacher & Poet) based in Haflong

Mr. Satyendra Langhasa (Head Master of SAMPARIDISA L.P.School.)

Eminent personality of Haflong Mrs. Bharati Didragede (Join Director of Health Services - Civil Hospital of Halong. N.C Hills).

Internet References

[www.google.com/dimasa tribe](http://www.google.com/dimasa%20tribe). Assam, March 23. 2010

[www.google.com/festival of Assam](http://www.google.com/festival%20of%20Assam), April 3, 2010

[www.eastern panorama.in](http://www.eastern%20panorama.in) 1st news magazine to know your north-east India.

THE FLUX

By Students of Foundation Department

"The eyes that could see becoming colors were once limited to have a narrow choice of colors. The minds that were meant to unfold the beauty in every single object were forced to solve mathematical sums because earlier we could not think beyond medical, engineering and administrative jobs. But now the terms have changed and we can be whatever we want to be. This installation is an initiative to show how beautifully our society has reformed and how it has transformed beyond imagination."



A FRAMEWORK FOR ASSESSMENT OF CREATIVITY A CASE RESEARCH ON FASHION DESIGN AT NIFT

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INTRODUCTION

Fashion design education is both creative and applied in nature, and the overall assessment strategy of a fashion design programme, as part of the interlinked triad of Teaching, Learning and Assessment, perhaps to have a significant intent towards the assessment of creativity in the form of structured and objective measurement of outcomes and a process that interlinks creativity, innovation and design.

Fashion design education in India took firm roots only in the late '80s. The National Institute of Fashion Technology (NIFT) was founded by the Ministry of Textiles in 1987 in New Delhi (Bhavana, Gropious & Eames, 2005). Over the years, NIFT has expanded to seventeen campuses across India, offering under-graduate and post-graduate programmes spanning design, management and technology. With respect to fashion design education in India, there were only a handful of fashion institutions as late as 2010, but the period after that has seen a proliferation of fashion design institutes.

Although fashion design education in India has grown significantly in recent years, it appears there is not much evidence of research pertaining to assessment of creativity in fashion design in India, especially with reference to core design subjects. Although there have been some studies in India on the subject of assessment of creativity, these have tended to be mostly in the areas of generic design education or in the realm of engineering and technical education sectors in India (Bhavana et al., 2005; Carlisle, 2007; Kasturi, 2007; Katiyar and Bhatikar, 2007; Martin, 2007; Normoyle, 2007; Vaughan, 2007; Sarkar and Chakrabarti, 2008; Sarkar and Chakrabarti, 2011; Koshy, 2012; Gemmel & Vyas, 2016; Chatterjee, 2019). These studies do not appear to examine adequate contextual and domain analysis as far as fashion design education is concerned. This research seeks to address this apparent gap with a fundamental understanding of design education, and subsequently a more detailed examination of fashion design education in India and assessment of creativity that sets the contextual relevance of this research.

RESEARCH METHODOLOGY

Based on an initial background study of design education, and particularly fashion design education in India, this research studies prevailing methods of assessment of creativity in selected professional fashion design programmes in India, and whether there are relevant gaps in such methodology in comparison with known models of assessment of creativity. It also includes a generic understanding of creativity and its key parameters to gain relatable insight into the assessment of creativity, especially assessment criteria relevant to a fashion design programme in India. Accordingly, prevalent methods for assessing creativity in fashion design education in India have been explored, and these are compared in terms of relevance and suitability with selected models on assessment of creativity. Relevant and applicable parameters of assessment of creativity in core subjects of the NIFT Fashion Design (FD) programme are identified based on triangulation of secondary and

primary data to finally propose a framework for assessment of creativity of core design subjects for the FD programme at NIFT.

The study deploys a hybrid research design, combining exploratory research and conclusive research, and a combination of qualitative and quantitative techniques. This research uses an inductive approach based on the relative lack of data on assessment of creativity for fashion design education in India and related limitations of adequate understanding to frame a hypothesis. This inductive approach therefore uses a smaller sample size, diverse sources of data, and an extensive use of qualitative data.

The subject of the research as well as the assessment process was limited to the NIFT 4-year Under-graduate (UG) Bachelor of Design (B. Des.) FD Programme. This study adopts a case study research method in a real-life context of assessment of creativity for the NIFT FD programme and based on multiple sources of evidence. At a sub-level, an embedded case study strategy has been employed to examine core design subjects of the FD programme at NIFT Gandhinagar. The case study is supplemented by a survey of FD students and faculty members for which quantitative analysis has been used for statistical and descriptive inferences to examine and interpret relationships between variables.

CREATIVITY, INNOVATION AND DESIGN

Fundamentally, creativity has been sought to be defined as an ability to generate new ideas and concepts involving a continuous search for exploring alternatives and selecting appropriate solutions (De Bono and Zimbalist, 1970; Gomez, 2007; Tsai, 2016). Although there has been significant research attempting a precise description, except for certain overlaps a final unassailable definition appears to be elusive (Trnova, 2014; Benedek, Nordtvedt, Jauk, Koschmieder, Pretsch, Krammer & Neubauer, 2016; Plucker & Makel, 2016). In spite of different viewpoints and expressions on creativity, in recent years, there appears to be some consensus on core elements of creativity (Treffinger, Young, Selby & Shepardson, 2002; Barbot, Besancon & Lubar, 2011; Jones, Rodgers & Nicholl, 2014). Researchers have investigated creativity as an concept encompassing both process and output, and in this context, has been defined as being connected to a wide variety of factors, including individual cognitive skills, knowledge, personality, as well as environmental, cultural, organisational and operational factors (Ferrari, Cachia & Punie, 2009; Dagny, Balder & Gorm, 2015; Bertola, Vacca, Colombi, Iannilli & Augello, 2016). Significantly, creativity appears to be domain-specific, meeting certain required characteristics, because the nature and relevance of creativity can differ according to the context of a particular domain (Barbot, et al., 2011; Benedek et al., 2016).

Design has been defined as a conscious decision-making process that links creative ideas to successful implementation of ideas) results in new Design (a tangible outcome that caters to a specific purpose (von Stamm, 2003). While creativity generates new ideas, it is the successful implementation of these ideas through innovation that leads to either new or improved outcomes (Anderson, Potočník & Zhou, 2014).

TEACHING, LEARNING & ASSESSMENT (TLA)

Teaching, Learning and Assessment (TLA) are three cornerstones of an academic structure and process. Assessment is a continuous process that measures outcomes based on a sample from a given domain of content and skills that allows inference of the student's understanding of a larger domain (Badders, 2000). Assessment in general has multiple roles, and teachers often have to factor in variations in assessment objectives to arrive at a holistic assessment approach (Earl, 2012). It is extremely important that both the teacher and the student realize perceive assessment not merely as achievement of grades, but more importantly, as a clear indicator towards acquisition of lifelong skills (Toomey, Chapman, Gaff, Mcgilp, Walsh, Warren & Williams, 2006). Progressive learning or education emphasizes instilling in the students not only curriculum-based learning but also a lifelong connect to industry and community, equipped with inter-disciplinary skills, proactive learning, and collaborative social participation (Kohn, 2008). The aim of TLA is to develop confident individuals with high quality achievements, skills and attributes that are valued by students, prospective and actual employers, the specific industry and the community in general (Strickland, McLatchie & Pelik, 2011).

Assessment methods and strategy need to ensure that integration of TLA occurs throughout the core curriculum (Fletcher & Shaw, 2012). Of several key components of any curriculum design, a comprehensive integration of the TLA specifications defined to address learning outcomes is an indispensable element (Michael G. Dolence & Associates, 2013). Hence, assessment methods and tasks need to line up with the institutional and programme objectives and need to be innovative in order to empower students towards imbibing core skills and concepts as well as to increase their eventual employability (Iannone & Simpson, 2012). Therefore, faculty members engaged in the assessment process require evidence of students' performance based on professional benchmarks that can be clearly observed and recorded (Davis, 2017).

A BASIC UNDERSTANDING OF A FRAMEWORK FOR ASSESSMENT OF CREATIVITY

Salamon (2008) defines an assessment framework as a system that encourages idea generation, reflection and independent learning in the student, and accommodates both product and process, including both formative and summative assessment. An effective assessment framework needs to be structured and supportive of the assessment of appropriate level of knowledge, and must also facilitate the student being provided adequate opportunity and time towards improvement of intended outcome(s) (Blamires & Peterson, 2014). A formal assessment framework of creativity needs to address domain-specific criteria of assessment, including a coding scheme for creative tasks and evaluation criteria related to novelty and value (Lee, Gu & Sherratt, 2011). The importance of inherent diversity in a framework of assessment of creativity is also highlighted in terms of evaluation of creative output linked to processes leading to the output and within relevant contextual and environmental attributes (Donaldson, 2017). A framework for the assessment of creativity therefore must include objective and clearly defined constituents of measurement for assessing outcomes that may otherwise tend towards individual or subjective interpretation and evaluation. These components may need to consider holistic measurement of domain-relevant outcomes, the creative process leading to those outcomes, and ensure flexibility and encouragement towards independent learning by the student.

ASSESSMENT OF CREATIVITY

For this research eight existing models of assessment of creativity were examined, with the objective of identifying key parameters, while maintaining focus on the relevance of such parameters to fashion design. The salient features of these models are summarised in Table 6.1 below:

Table 6.1 Comparison of Salient Features of Models on Assessment of Creativity

Author/ Model	Objective	Focus	Keywords
a) J.P. Guilford (1967)	Measuring a person's creativity	Divergency of output	fluency, number, flexibility, types, originality, detail, uniqueness, elaboration
b) Frank E. Williams (1969)	Hierarchy of eight creative thinking skills	Cognitive skills and affective skills	fluency, flexibility, originality, elaboration, risk-taking, imagination
c) Robert J. Stahl (1980)	Categorisation of "behaviours of products"	Physical expression of product, purpose behind creative output	product behaviour, modifying, replicating, substitution, combination, new, optimisation
d) Teresa Amabile (1988)	Definition of creativity	Individual and collective creativity	product, innovation, implementation, creative ideas, motivation, domain
e) Mihaly Csikszentmihalyi (1999)	Measuring social value of creative work	Relevance of creative work to domain	person, domain, field, acceptance, endorsement, changes in domain, context
f) Mark A. Runco (2007)	Definition of creativity	Divergent and cognitive thinking	self-expression, divergent and convergent thinking
g) Peter Nilsson (2011) Taxonomy of Creative Design	Measuring novelty of creative work	Degrees of novelty or uniqueness	imitation, variation, combination, transformation, original creation
h) Peter Nilsson (2012) Requirements Model	Measuring creative work against defined criteria	Responsiveness of creative output to given objectives	criteria, requirements, objective measurement

of these, four models focus on definition, hierarchy or categorisation of assessment of creativity, as indicated in italics in Table 6.1 above. However, considering the importance of measurement of creative and the domain-relevance elements, the following four were identified as key models relevant the measurement of creativity for the FD programme at NIFT:

A. The Guilford Model – Measuring A Person's Creativity (Guilford, 1967)

This model basically aims to measure a person's creative output in terms of divergency of output in terms of four parameters of measure:

- Fluency – the number of responses by the person, to generate adequate number of responses to a creative problem to have a sufficient pool of alternatives from which to reflect, select and arrive at a final set of solutions.
- Flexibility – the types of responses by the person, to produce a variety of ideas and approaches towards creative output, since generation of sheer numbers without variation is likely to end in inadequate alternatives to reflect upon.
- Originality – the uniqueness of responses by the person, to produce new creative output that results in sending a clear communication of novelty and its subsequent acceptance and endorsement by the target audience.
- Elaboration – the detail included in the responses by the person, or "the highest elaboration presented", to develop relevant detailing in the product.

B. The Csikszentmihalyi Model – Measuring the Social Value of Creative Work (Csikszentmihalyi, 1999)

The Csikszentmihalyi Model postulates that the creative value of a work is defined by the interaction of three entities – the person or his/ her work (Person); the category to which the work belongs (Domain); and the other people who are connected to the work (Field). According to this model, a creative work can be termed successful if (a) the Field accepts and endorses it, and (b) the creative work brings in noticeable changes in the Domain. The above is very relevant to fashion design, because the Person (or the student) works in the Domain of Fashion/ Design, and his/her work is open to scrutiny by the Field comprising of (i) the industry and (ii) the target audience/ customer. This approach to the assessment of creativity therefore also factors in the existing domain knowledge and the progressive experiences of the student as he/ she moves up increasing levels of complexity of learning and application.

C. The Taxonomy of Creative Design – Measuring the Novelty of a Creative Work (Nilsson, 2011)

This model examines the degree of novelty of a creative work with respect to both form and content of the final product along five stages of a spectrum of novelty:

- Imitation - the creation mirrors a product or outcome that already exists and is virtually the same with hardly any modification or addition of novelty.
- Variation – the creation includes a marginal change to a product, but essentially retains the original identity or category of the existing product.
- Combination – the creation is a mixture of two or more existing products and is a combined representation of existing products without creating a new product.
- Transformation – the creation manages to address a new context that is distinct from any existing product, although elements of an existing product still exist, the new product offering is a distinctive transformation of the existing product.
- Original Creation – the creation has no semblance to any existing product, and although it may be a combination of many existing products or concepts, manages to create a unique, distinct identity and category of its own.

D. The Requirements Model – Measuring Creative Work Against Defined Criteria or Requirements (posted by Nilsson, 2012)

The Requirements Model assesses creative work against defined criteria or requirements. These requirements are defined as discrete elements of information that contribute to the objective measurement of creative work. In terms of fashion design, these requirements can be translated in terms of programme objectives in an overall sense, and specifically in terms of Level learning outcomes and/or Module learning outcomes, and clearly linked to assessment requirements and expectations. Such assessment of creative output in fashion design against specific requirements such as learning outcomes was a key aspect of this research, and hence the parameters from the Requirements Model provide relevant linkages for further examining this aspect.

The main objective was to examine criteria of assessment of creativity from these four models and map these against existing NIFT assessment criteria for the FD programme with respect to the student's divergency of creative output, degree of novelty, responsiveness to given objectives, and domain-specific contextual relevance.

Analysis of End-Semester Jury Observations – Field Notes and Statistical Analysis

As part of primary research, jury observations were conducted during the NIFT FD end-semester juries across two components:

- a) recording of field notes through observations of the end-semester jury assessment process for selected core design subjects
- b) recording of Jury scores based on (i) scoring parameters from the Guilford and the Taxonomy Models; and (ii) parameters from the NIFT FD end-semester juries.

Statistical Analysis of Evaluation made during the FD End-Semester Jury

The jury members were asked to record the students' work in terms of the Guilford and the Taxonomy models after they had recorded scores as per the NIFT Jury format. The (Paired) t-Test does not indicate the ascendancy or the magnitude of difference between the NIFT and Guilford/ Taxonomy models, but primarily indicates varying quantitative outcomes in terms of evaluation from the two sets of scores. The NIFT Jury Scores and the subsequent Guilford/ Taxonomy Scores were recorded for a common set of students for the given subject, and for the same work submitted. To minimise bias, a time gap was maintained between the recording of the two sets of scores.

The **null hypothesis** proposed for the six subjects observed was proposed as:

H₀ : There is **no difference** between the **Guilford/ Taxonomy Average Scores** and the **NIFT Jury Average Scores** for (the subject observed):

of the six NIFT jury score sets mapped against the Guilford/ Taxonomy models, significant differences were recorded in four. The tabulated scores are at **Table 6.3.1**:

Table 6.3.1 Results of t-Tests for End- Semester Jury Scores

Subject, Semester	t-Test Sig. (2-tailed)
Fashion Styling, FD Semester VII	0.013 Alternative Hypothesis Is Accepted
Portfolio Development, FD Semester VII	0.013 Alternative Hypothesis Is Accepted
Prototype Development, FD Semester V	0.006 Alternative Hypothesis Is Accepted
Research Based Design Development, FD Semester V	0.121 Failed to Reject Null Hypothesis
Integrated Term Project, FD Semester III	0.81 Failed to Reject Null Hypothesis
Integrated Project, Foundation Semester I	0.001 Alternative Hypothesis Is Accepted

Analysis of Census Survey (Questionnaire) and Correlation with Findings from Jury Observations Analysis

The second part of the primary data collection was conducted through a Census Survey of 154 NIFT Gandhinagar Fashion Design (FD) students, and 30 faculty/ guest faculty members. The questionnaire was based on parameters drawn from the Csikszentmihalyi and the Requirements models. These were sought to be examined from both students' and teachers' perspectives, and to map factors where such perspectives between students and teachers may differ significantly. Based on the distribution of data and the ordinal scale of measurement used, appropriate non-parametric tests were conducted to test statistical differences, if any, among the student and faculty groups.

The Mann-Whitney U Test produced significant statistical difference (between students and faculty members) for the following statements, in **Table 6.4.1**:

Table 6.4.1 Results of Mann-Whitney U Test (Students and Faculty Members)

Statement	Dimension
Formative Assessment is not as important as Summative Assessment	Formative & Summative Assessment
Feedback through formative assessment allows the student to use the feedback for further improvements and corrections	
Feedback through formative assessment provide the student adequate time to reflect and improve within given assessment timelines	
The assessment system for FD at NIFT includes peer feedback also	Assessment Workload and Weightage
The number of assessments per subject is appropriate in relation to the requirements of that Level/ Year	Multi-disciplinary Relevance of Assessment
A multi-disciplinary approach to assessment of creativity for FD at NIFT allows the student to integrate their learning across modules into integrated creative applications	End-Term Jury
The End-term Jury has clear parameters of assessment which are linked to the Learning Outcomes	
The End-term Jury is provided with a record of the student's formative feedback and performance in in-course assessment	

The Kruskal-Wallis Test produced significant statistical difference (amongst students from FD Semesters IV, VI and VIII) for the following statements (Table 6.4.2 below):

Table 6.4.2 Results of Kruskal-Wallis Test (three FD student groups)

Statement	Dimension
The assessment briefs given to FD students in the defined NIFT format are easy to understand in terms of language	Assessment Briefs and Learning Outcomes
The assessment briefs given to FD students in the defined NIFT format are easy to understand in terms of assessment expectations	
The assessment briefs given for a particular subject are clearly linked to the defined Learning Outcomes of the respective module	
The Assessment Briefs-Learning Outcome linkages are clearly understood by both the teacher and the student	Formative & Summative Assessment
Feedback through formative assessment allows the student to use the feedback for further improvements and corrections	Assessment Forward & Backward Linkages
The assessment system for FD at NIFT includes peer feedback also	
NIFT FD in-course assessments are linked to end-semester assessments	End-Term Jury
The End-term Jury has balanced representation of jury members in terms of the relevant subject area(s)	
The End-term Jury is given sufficient time to interact with the student during the jury and able to assess all aspects of the assessment brief	

The above statements reflect key findings from the end-semester jury observations, in terms of:

- a) Evaluation parameters in jury briefs vis-à-vis the jury evaluation sheet
- b) Specific definitions of key words in the Assessment Criteria
- c) Assessment matrices and the clarity of scoring parameters within
- d) Contextual relevance of students' presentations
- e) Forward linkages of internal submissions to the end-semester assessment
- f) Opportunities for the student to utilise jury feedback for improvement
- g) Students' presentations as a collaborative exercise with domain requirements
- h) Group-based vis-à-vis individual-based evaluation
- i) Holistic interlinking of assessment parameters and variables

CONCLUSIONS

The framework developed as the final outcome of this research is a deductive model based on secondary and primary research. It proposes an objective assessment model with balanced emphasis on formative and summative assessment. The Framework of Assessment of Creativity for the NIFT FD programme proposes three major components:

Formative and Summative Assessment as complementary constituents, including Forward and Backward Linkages

The Framework proposes a robust and observable formative assessment component (the degree of improvement of the student) to balance and support the summative assessment component (the degree of achievement or performance by the student). This essentially involves:

- 1) Observations of the student's work process through a **logbook** that records the student's progressive creative activities involving **reflection, iterations, exploration and problem-solving**
- 2) **Sharing and discussing** relevant elements indicated above by the concerned faculty member
- 3) Facilitating **peer feedback**, which not only provides feedback, but also ensures familiarity with relevant skills and knowledge by the student's peers
- 4) Provision of **exemplars** of best works relevant to a particular module

- 5) Tracking and monitoring the student's **degree of improvement** in relation to relevant exemplars

Distinct Descriptions of assessment requirements linked to Learning Outcomes

The fifteen subjects from the FD curriculum identified as core subjects for observations during the end-semester jury evaluations were based on a survey of NIFT FD faculty. These subjects have a wide range of around seventy evaluation parameters as derived from their respective assessment briefs/ jury evaluation sheets. Through content analysis, these parameters were clubbed into sixteen consolidated evaluation parameters, based on the congruency of the nomenclature in terms of nearest fit, which were then further categorised into **Categories of Creative Activities** that sum up the various creative activities the student is expected to respond to given Assessment briefs for NIFT FD core design subjects:

- A) Activities involving **Product/ Prototype Development** – development of a product/ range based on understanding and interpretation of design brief, conceptualisation, ideation, and design development leading to an original product.
- B) Activities involving **Visual Representation and Communication** – manual or digital visual presentation of the product developed, including interpretation of design concept, and associated renditions, variations and representation of product details.
- C) Activities involving **Demonstration of Technical Competency** – demonstration of technical capabilities in terms of interpretation of style concept, accuracy and fit of component parts, application of relevant technical tools and processes that combine to form the overall technical competence of the product.
- D) Activities involving **Exploration of Alternatives and Problem-Solving** – evidence of the student's ability to explore new ideas and alternative solutions based on systematic and documented research, and the convergence of such explorations through synthesis of learning towards holistic solutions.

The mapping of the consolidated parameters against the four categories of creative activities described above indicates a multi-parameter match, as given in Table 7.1 below:

Table 7.1 Categorisation of Generic Evaluation Parameters of FD Jury Assessments into Categories of Creative Activities

Generic Evaluation Parameter	Category
Systematic process of concept and design development	A, C, D
Visual thinking and communication	B
Development of technical drawings	A, C
Presentation Skills	B
Design and Execution	A, C, D
Technical Accuracy and Competency	C
Neatness in execution and handling	C
Exploration and usage of techniques and material for product development	C, D
Development of Concept	A, D
Originality/ Novelty of Design Conceptualisation/ Execution	A
Representation of Appropriate Detailing	C, D
Overall creativity (Exploration, Ideation, Interpretation, Adaptation)	A, D
Evidence of Research and Exploration	D
Synthesis of Learning	D
Documentation of Work Process	B, D
Integration of multi-disciplinary learning	A, D

Represented below at Table 7.2 and 7.3 are two exemplars of mapping specific evaluation parameters for the subjects covered during the jury observations against Categories of Creative Activities A, B, C and D listed above:

Table 7.2 Mapping of Categories of Creative Activities - Prototype Development Semester 5

Prototype Development - Evaluation Parameter & Category	Weightage
Presentation style - B	10
Concept & design development - A, D	10
Fit & accuracy – C	10
Neatness & finishing - B, C	10
TOTAL =	40

Table 7.3 Mapping of Categories of Creative Activities - Design Collection Semester 8

Design Collection - Evaluation Parameters & Category	Weightage
Conceptualisation (choice of theme/ inspiration and interpretation of the same) - A, D	NA
Creativity (in terms of colour composition/ styling and silhouettes/ proportions and combinations of composite fabrics and embellishments) - A, C, D	NA
Wearability - A, C	NA
Overall impact including accessorisation and stage presence – B	NA
TOTAL =	40

[Note: A=Product/ Prototype Development; B=Visual Representation and Communication; C=Demonstration of Technical Competency; D=Exploration of Alternatives & Problem-Solving]

The Framework therefore suggests a uniform code for definition of the evaluation parameters and allows categorisation into four categories of creative action. Such categorisation of evaluation parameters is an indicative categorisation that can be utilised for all FD subjects, based on relevant subject-wise evaluation parameters.

Marking Descriptors related to Categories of Creativity Actions and Evaluation Criteria

Another important component of the findings is the Evaluation Criteria derived from the four examined models of assessment of creativity. These factors are not mere derivatives from these models but have been developed based on the relevance corroborated during the end-semester jury observations and the evaluation parameters from the NIFT FD Jury Briefs and Jury Assessment Sheets. The Evaluation Criteria represent three broad areas pertaining to novelty, utility and aesthetics

that emerge from the jury observations, and represented against the relevant model of assessment:

- a) **Degree of Novelty** including originality of idea, complexity of creative output, design Transformation (**Guilford/ Taxonomy/ Csikszentmihalyi** models) - to assess the student's creative output with relevance to domain or fields norms
- b) **Utility of Output**, including domain/ functional relevance, contextual fit (**Requirements/ Csikszentmihalyi** models) - to assess the student's creative output against given learning outcomes and assessment briefs including multidisciplinary relevance and domain linkages
- c) **Aesthetics**, including Aesthetic Appeal (**Requirements** model) - to assess requirements of aesthetics crucial to fashion design in terms of **form, composition and expression of intent**.

These are represented in tabular format at **Table 7.4** below and with respective descriptors at **Table 7.5**:

Table 7.4 Break-up of Evaluation Criteria

Degree of Novelty (40% weightage) (marks in any ONE of the following spectrum, based on degree of novelty)	Utility of Output (40% weightage)	Aesthetics (20% weightage)
a. Variation (1-10)	a. Domain & Functional Relevance (20%)	Aesthetic Appeal (20)
a. Combination (11-20)		
b. Transformation (21-30)	b. Contextual Fit (20%)	
b. Original Creation (31-40)		

Table 7.5 Descriptors for Evaluation Criteria

Degree of Novelty (40% weightage)	
a.Variation (1-10)	The creation includes a marginal change to a product or outcome, but essentially retains the original identity or category of the existing product. The student uses a limited number and variety of responses with elaboration only sufficient to indicate marginal changes
b.Combination (11-20)	The creation is a mixture of two or more existing products or concepts, and is a combined representation of the existing products without creating a new product, concept or category. The student uses a satisfactory number and variety of responses with adequate elaboration to indicate a combination of concepts or elements.
c. Transformation (21-30)	The creation manages to address a new context that is distinct from any existing product, although elements of the existing product or concept still exist. The student uses a wide range of responses and variations with excellent application of elaboration to be able to achieve a distinctive transformation of an existing product.
d.Original Creation (31-40)	The creation has no connection or semblance to any existing product or concept, and although it may be a combination of many existing products or concepts, manages to create a unique and distinct identity and category of its own. The student uses an extensive range of responses and variations with outstanding elaboration to be able to create a distinctly novel creation.

(cont'd)

The Evaluation Criteria for Degree of Novelty incorporates parameters from both the Taxonomy and the Guilford models, in terms of (a) the degree of novelty and (b) the number and variety of responses and extent of elaboration in the creative output of the student.

The four primary parameters of assessment – Variation, Combination, Transformation and Original Creation are based on the Taxonomy model of graded measurement of the degree of novelty. These parameters, representing a spectrum of progressive degree of novelty, are mutually exclusive, and hence were allotted a successive range of 10 marks each out of a total of 40, within the bands of 1-10; 11-20; 21-30; and 30-40, with each band corresponding to the respective degree of novelty (Variation; Combination; Transformation and Original Creation).

While there are statistical measures and methods of scaling, and although a “scale” may be considered a continuum or continuity along

which items are marked/ graded in terms of some attribute (Garrett, 2014), it is important to note that the scale for measuring the Degree of Novelty takes into consideration scale intervals of equal width and in gradations of 10 points/ marks each. This is primarily because the first category (Variation) does not include “Zero”. There is no ground for the inclusion of “zero” in the first category, since given the definition of variation (“...a creation that includes a marginal change to a product or outcome...”) a scoring of “Zero” will essentially classify the work assessed with absolutely no variation, and hence an exact imitation or copy of an existing product or concept. In such as case the entire scoring matrix then becomes redundant. It is assumed that the student will submit work with a minimum level of measurability of the degree of novelty for core design subjects, and any work not fulfilling this minimum criterion will be considered as work of no merit.

Table 7.5 Descriptors for Evaluation Criteria (cont'd)

Utility of Output (40% weightage)	
a. Domain & Functional Relevance (20)	Adherence to subject learning outcomes and assessment requirements and demonstration of appropriate application of domain skills and concepts
<i>Outstanding (16-20)</i>	Outstanding demonstration of appropriate domain skills and concepts that goes beyond subject learning outcomes and assessment requirements
<i>Very Good (11-15)</i>	Proficient demonstration of appropriate domain skills and concepts as per subject learning outcomes and assessment requirements
<i>Average (6-10)</i>	Satisfactory demonstration of appropriate domain skills and concepts as per subject learning outcomes and assessment requirements
<i>Poor (5 or below)</i>	Marginal or very little demonstration of appropriate domain skills and concepts as per subject learning outcomes and assessment requirements
b. Contextual Fit (20)	Multidisciplinary relevance and linkage to domain or industry norms and requirements; and contributes to creative output relevant to the domain of fashion design
<i>Outstanding (16-20)</i>	Compelling contextualisation of creative ideas and multidisciplinary relevance as per domain or industry norms
<i>Very Good (11-15)</i>	Effective contextualisation of creative ideas and multidisciplinary relevance as per domain or industry norms
<i>Average (6-10)</i>	Satisfactory contextualisation of creative ideas and multidisciplinary relevance as per domain or industry norms
<i>Poor (5 or below)</i>	Marginal or very little evidence of contextualisation of creative ideas and multidisciplinary relevance as per domain or industry norms

The Evaluation Criteria also includes Aesthetics as an important criterion. Aesthetic objects and events arouse feelings and emotions, and aesthetic experiences are intrinsically derived from the product or event characteristics, and not primarily driven by external stimulators (Woods, 1991). While the models of assessment of creativity mentioned above primarily refer to evaluation of novelty and utility, it also important to include the element of aesthetics in the evaluation criteria as a reflection of fashion design domain expectation and requirements. The element of Aesthetic Appeal includes the student's intrinsic expression of form and composition that synthesis the student's expression of aesthetic intent. Indicative examples of form are silhouette, colour, texture and detailing; while composition normally includes symmetry, balance and harmony). This is an indicative but not an exhaustive or mandatory list: the actual selection of these elements will depend on the respective assessment brief and/ or learning outcomes.

Specific demarcations of evaluation criteria will tend to ensure that both teacher and student would share a common understanding of assessment requirements and expectations, a feature noted during the jury observations and again emerging as a significant factor of assessment in the questionnaire survey. Secondly, a combination of the evaluation criteria listed above also underscores the importance of multidisciplinary integration of learning and application by the student, a factor relevant to responding to domain requirements.

The Framework Matrix therefore combines Generic Evaluation Parameters linked to Categorisation of Creative Activities and Evaluation Criteria (Table 7.6 below):

Table 7.6 The Framework Matrix for the Assessment of Creativity

Generic Evaluation Parameter	Category	Evaluation Criteria (% weightage)		
		Degree of Novelty (40%)	Utility of Output (40%)	Aesthetics (20%)
1. Documentation of Work Process	B, D			
2. Exploration and usage of techniques and material for product development	A, C, D			
3. Integration of multi-disciplinary learning	A, B, C, D			
4. Neatness in execution and handling	B, C, D			
5. Originality/ Novelty on Design Conceptualisation/ Execution	A, B, C, D			
6. Presentation Skills	B			
7. Representation of Appropriate Detailing	B, C			
8. Systematic process of concept development	A, B, C, D			
9. Systematic process of design development	A, B, C, D			
10. Technical Accuracy and Competency	C, D			
11. Visual thinking and communication	B, D			

The above Framework Matrix is presented as an exemplar at Table 7.7 below, for the FD Integrated Term Project (Semester III), highlighting an Existing Evaluation Criteria (in italics) from the NIFT assessment system against the corresponding Framework Evaluation Criteria indicated in bold in the left-most column of the table and with the corresponding serial number from Table 7.6 above.

Table 7.7 The Framework Matrix - An Exemplar of Mapping Existing Subject

Subject and Evaluation Parameters & Category (FD Integrated Project Semester III)	Degree of Novelty (40%)	Utility of Output (40%)	Aesthetics (20%)
a. FASHION DESIGN & ILLUSTRATION			
<i>Design & Presentation (A, B)</i> 8. Systematic process of design development (A,B,C,D)			
<i>Representation of Colour, Fabric and Style (B, C)</i> 7. Representation of Appropriate Detailing (B, C)			
b. PATTERN MAKING BASICS			
<i>Accuracy (C)</i> 10. Technical Accuracy and Competency (C, D)			
<i>Fit and Hang (B, C)</i> 4. Neatness in execution and handling (B, C, D)			
<i>Presentation (B)</i> 6. Presentation Skills (B)			
c. DRAPING BASICS			
<i>Accuracy of Proportion & Style Interpretation (A, C, D)</i> 2. Exploration and usage of techniques and material for product development (A, C, D)			
<i>Fit & Hang on Dress Form (B, C)</i> 4. Neatness in execution and handling (B, C, D)			
d. GARMENT CONSTRUCTION BASICS			
<i>Fit and Finish (A, C)</i> 2. Exploration and usage of techniques and material for product development (A, C, D)			
<i>Neatness & Procedure (C, D)</i> 4. Neatness in execution and handling (B, C, D)			

From the above table, it can be seen that although the mappings in terms of Creative Activities are similar, the Framework Parameters allow for a more comprehensive and objective linking to Framework Evaluation Criteria. The Framework is also based on given or established evaluation criteria, and hence can be applicable for online or hybrid modes of assessment too.

The Framework as an outcome of exploratory research is not conclusive but attempts to identify domain-specific parameters for the assessment of creativity of core design subjects in the FD Programme at NIFT, as perhaps a pioneering study in India with respect to Fashion Design. The Framework developed is also not comprehensive in terms of higher education in fashion design but focuses on core design subjects of a particular fashion design programme as a case research. The development of this Framework should be considered as a point of departure for further studies on the assessment of creativity in fashion design or other fields of design.

REFERENCES

- Amabile, T.M. 1988. 'A model of creativity and innovation in organizations'. *Research in organizational behavior*, 10(1), pp.123-167.
- Anderson, N., Potočník, K. and Zhou, J. 2014. 'Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework'. *Journal of Management*, 40(5), pp. 1297–1333. doi: 10.1177/0149206314527128.
- Badders, W. 2000. 'Methods of assessment'. Available at <http://www.eduplace.com/science/profdev/articles/badders.html>
- Barbot, B., Besancon, M. and Lubart, T.I. 2011. 'Assessing creativity in the classroom'. *The Open Education Journal, Bentham Open*, 2011, 4, pp. 58–66. <https://doi.org/10.2174/1874920801104010058>
- Benedek, M., Nordtvedt, N., Jauk, E., Koschmieder, C., Pretsch, J., Krammer, G. and Neubauer, A.C. 2016. Assessment of creativity evaluation skills: A psychometric investigation in prospective teachers., 21, pp. 75–84. <https://doi.org/10.1016/j.jtsc.2016.05.007>
- Bertola, P., Vacca, F., Colombi, C., Iannilli, V.M. and Augello, M. 2016. 'The cultural dimension of design driven innovation: A perspective from the fashion industry'. *The Design Journal*, 19(2), pp. 237–251. <https://doi.org/10.1080/14606925.2016.1129174>.
- Bhavana, K., Gropious, W. and Eames, C. 2005. History of design education in India. Available at www.designindia.net/thoughts/history/design-education
- s, M. and Peterson, A. 2014. 'Can creativity be assessed? Towards an evidence-informed framework for assessing and planning progress in creativity'. *Cambridge Journal of Education*, 44:2, pp. 147-162, DOI: 10.1080/0305764X.2013.860081
- Carlisle, H. 2007. 'The significance of design research for the design education curriculum, or "Why the theory bit is important'. In Katiyar, Vinay Singh & Mehta, Shashank (eds.), *Design Education Tradition and Modernity* (Scholastic Papers from the International Conference DETM 05) (pp. 288-297). Ahmedabad, National Institute of Design
- Chatterjee, A. 2019. 'Design education in India: An experiment in modernity'. Published as presented at the Frame Conclave 2019. A Content Initiative by Matter. Available at <https://www.stirworld.com/think-opinions-design-education-in-india-an-experiment-in-modernity>
- Csikszentmihalyi, M. 1999. 'Implications of a systems perspective for the study of creativity'. In R. J. Sternberg (ed.), *Handbook of creativity* (pp. 313-335). New York, NY, US: Cambridge University Press.
- Dagny, V., Balder, O. and Gorm, G. 2015. 'Product creativity assessment of innovations: Considering the creative process', *International Journal of Design Creativity and Innovation*, 3(2), pp. 95–106. <https://doi.org/10.1080/21650349.2014.954626>
- Davis, M. 2017. *Teaching design : A guide to curriculum and pedagogy for college design faculty and teachers who use design in their classrooms*. Simon and Schuster
- De Bono, E. & Zimbalist, E. 1970. 'Lateral thinking: A textbook of creativity'. (pp. 1-32). Penguin Books (Vol. 3). <https://doi.org/11.0002/bies.10094>
- Donaldson, J.P. 2017. 'The creativity landscape framework and design of learning'. In American Educational Research Association Annual Meeting, San Anotnio, TX
- Earl, L.M. 2012. *Assessment as learning: Using classroom assessment to maximize student learning*. California. Corwin Press.
- Ferrari, A., Cachia, R. and Punie, Y. 2009. 'Innovation and creativity in education and training in the EU member states: Fostering creative learning and supporting innovative teaching', JRC Technical Note, 52374, p.64.
- Fletcher, A. & Shaw, G. 2012. 'How does student-directed assessment affect learning? Using assessment as a learning process', *International Journal of Multiple Research Approaches*. Available at <http://search.proquest.com/docview/1470806236/AACD51DDE3D84697PQ/1?accountid=38977>
- Garrett, H.E. 2014. *Statistics in psychology and education*, 14th Indian reprint, New Delhi: Paragon International Publishers.
- Gemmel, A. & Vyas, P. 2016. 'The future of design education in India 2, (November)'. Retrieved from https://www.britishcouncil.in/sites/default/files/thefuture_of_design_education_in_india.pdf
- Gomez, J.G. 2007. 'What do we know of creativity', *Journal of Effective Teaching*, 7(1), pp. 31-43. Available at <http://files.eric.ed.gov/fulltext/EJ1055657.pdf>
- Guilford, J.P. 1967. *The nature of human intelligence*. New York, NY, US: McGraw-Hill.
- Iannone, P. & Simpson, A. 2012. 'How do we assess our students? A survey of current assessment practices in UK universities', *MSOR Connections*, 12(1), pp. 7-10.
- Jones, P., Rodgers, P.A. and Nicholl, B. 2014. 'A study of university design tutors' perceptions of creativity, *International Journal of Design Creativity and Innovation*. 2(2), pp. 97–108.
- Kasturi, P.B. 2007. 'Why designer? Designers' roles, and impact on design education'. In Katiyar, Vinay Singh & Mehta, Shashank (Eds.), *Design Education Tradition and Modernity* (Scholastic Papers from the International Conference DETM 05) (pp.17-25). Ahmedabad, National Institute of Design
- Katiyar, V.S. and Bhatikar, R. 2007. 'Developing a system of educational excellence in design: The NID way'. In Katiyar, Vinay Singh & Mehta, Shashank (Eds.), *Design Education Tradition and Modernity* (Scholastic Papers from the International Conference DETM 05) (pp. 94-100). Ahmedabad, National Institute of Design
- Koshy, D.O. 2012. 'Designing design education for 21st century India: contexts + concerns + challenges'. Available at <http://www.darliekoshy.com/downloads/designedge.pdf>
- Lee, J.H., Gu, N and Sherratt, S. 2011. 'Developing a framework for evaluating creativity in parametric design'. From principles to practice in architectural science-ANZASca2011. The University of Sydney, Abstracts Book, 17.
- Martin, P. 2007. 'Putting design school in its place'. In Katiyar, Vinay Singh & Mehta, Shashank (Eds.), *Design Education Tradition and Modernity* (Scholastic Papers from the International Conference DETM 05) (pp.10-16). Ahmedabad, National Institute of Design
- Michael G. Dolence & Associates. 2013. *The curriculum-centred strategic learning process*. Available at <http://www.mgdolence.com/resources/ccspm/lcca.aspx>
- Nilsson, P. 2011. 'The challenge of innovation. In critical thinking and creativity: learning outside the box'. Paper presented at the Proceedings of the 9th International Conference of the Bilkent University Graduate School of Education (Turkey), Ankara, 54–62. Ankara, Turkey: Bilkent University. Retrieved from <https://drive.google.com/file/d/1IH9wkpvBkWBnOkzpbVX15EvpWcKohmK/view>
- Nilsson, P. 2012, March. *Assessing creativity*. Retrieved from <http://www.senseandsensation.com/2012/03/assessing-creativity.html>
- Normoyle, A. 2007. 'Preparing design students for their future industry profession'. In Katiyar, Vinay Singh & Mehta, Shashank (Eds.), *Design Education Tradition and Modernity* (Scholastic Papers from the International Conference DETM 05) (pp.128-135). Ahmedabad, National Institute of Design
- Plucker, J.A. and Makel, M.C. 2016. 'Assessment of creativity', *The Cambridge handbook of creativity*, (March), 48–73. <https://doi.org/10.1017/CBO9780511763205.005>
- Runco, M.A. 2007. *Creativity: Theories and Themes: Research, Development and Practice*. Amsterdam: Elsevier.
- Salamon, M. 2008. 'Developing a strategy for assessing creativity: the Creative Spiral', *Investigations in university teaching and learning*, 5(1), pp.73-79
- Sarkar, P. & Chakrabarti, A. 2008. 'Studying engineering design creativity in developing a common definition and associated measures'. In J. Gero (ed.), *Studying design creativity*. Springer Verlag
- Sarkar, P. & Chakrabarti, A. 2011. 'Assessing design creativity', *Design Studies*, 32(4), pp. 348–383. <https://doi.org/10.1016/j.destud.2011.01.002>
- Stahl, R.J. 1980. *A Creatively Creative Taxonomy on Creativity: A New Model of Creativity and Other Novel Forms of Behavior*.
- Strickland, K., McLatchie, J. and Pelik, R. 2011. 'Reflections on the

development of a dynamic learning, teaching and assessment strategy'.
Campus-Wide Information Systems

Toomey, R., Chapman, J., Gaff, J., Mcgilp, J., Walsh, M., Warren, E. and Williams, I. 2006. 'Lifelong learning and the assessment and evaluation practices in some Australian faculties of education', 4587(May 2015), pp. 37-41. <https://doi.org/10.1080/13674580100200243>

Treffinger, D.J., Young, G.C., Selby, E.C. and Shepardson, C. 2002. 'Assessing creativity: A guide for educators', RM02170). Storrs: University of Connecticut, The National Research Center on the Gifted and Talented.

Trnova, E. 2014. 'IBSE and creativity development', *Science Education International*, 25(1), pp. 8-18.

Tsai, K.C. 2016. 'Fostering creativity in design education: Using the creative product analysis matrix with Chinese undergraduates in Macau', *Journal of Education and Training Studies*, 4(4), pp. 1-8.

Vaughan, L. 2007. 'Keeping off the straight and narrow'. In Katiyar, Vinay Singh & Mehta, Shashank (Eds.), *Design Education Tradition and Modernity (Scholastic Papers from the International Conference DETM 05)* (pp.142-148). Ahmedabad, National Institute of Design

von Stamm, B. 2003. 'Innovation, Creativity and Design', *Management of Innovation, Design and Creativity*. John Wiley & Sons, Chichester, pp.1-18.

Williams, F.E. 1969. 'Models for encouraging creativity in the classroom by integrating cognitive-affective behaviors', *Educational Technology*. 9 (12), pp. 7-13.



DESIGN-BUSINESS INTEGRATION IN LARGE ORGANIZATIONS

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ABSTRACT

Drawing from the author's 18-year experience from Designer all the way to Chief Designer with four major home appliances and consumer electronics corporations (Philips, HP, Panasonic, and Changhong) in Europe, North America, and Asia, this paper discusses the different organizational structures in which design and business interact in large enterprises around the world, analyzing the advantages and disadvantages of each structure.

The first structure, common in Europe, Japan, and China is the Independent Design Center, which operates with different degrees of autonomy from the mother company and has an internal reporting structure: all designers report at the end to the Head of the Design Center. This structure makes it easier to achieve cross-business consistency in terms of design for the whole company.

The second structure on the other hand, traditionally more common in the United States, incorporates small teams of designers into each Business Unit. In this case, designers report to the Head of each Business Unit. This structure permits an easier integration of the design teams with their business unit, as they work together on a daily basis with their Engineering, Marketing, Product Management, and Business Strategy colleagues. On the other hand, it makes it difficult to achieve cross-business design consistency.

The third structure is a Matrix Structure, which is a combination of the former two. Trying to capitalize on the advantages of the previous two, designers are located inside each Business Unit, but in addition to reporting to the Head of the Business Unit, they also report to the Head of Design in a matrix system. While sometimes the most difficult structure for designers to navigate due to the double reporting line, this structure is the one that best balances a good integration of the design teams with their Business Units and design consistency across different Product Divisions.

KEYWORDS

Design, business, design-business integration, organizational structures, design in corporations

There are mainly three different organizational structures in which design and business interact in large enterprises around the world. Let us describe their characteristics and analyze the advantages and disadvantages of each structure.

THE FIRST STRUCTURE: The Independent Design Center

The first structure is the Independent Design Center, which operates with different degrees of autonomy from the mother company and it

has an internal reporting structure: all designers report at the end to the Head of the Design Center (in most cases called Chief Design Officer, but in some cases even named CEO, which shows that the Design Center operates almost like an independent company).

In large corporations, such design centers have typically a headquarters in one location and branches in different locations around the world. This structure maintains Design as a unique business function, that differently from all the others (Engineering, Operations, Marketing, Finance, etc.) operates quite independently from the main company, making it easier to achieve cross-business consistency in terms of design for the whole corporation.

This structure is common in Europe, Japan, and China. Companies such as Philips, Panasonic, and Haier operate in this way. In the case of Philips, a total headcount of over 400 employees, mainly designers, work for Philips Design, with headquarters in Eindhoven in the Netherlands and several branches around the globe. Panasonic's Design Center is headquartered in Kadoma (Osaka Prefecture, Japan) and, with a similar amount of employees, it has or has had branches in Shanghai, London, and New York.

Different factors determine where the headquarters and branches are located. In most cases, for historical reasons, the headquarters are situated at the same location of the headquarters of the mother company, which it is typically the place where the company was originally founded, although in some cases for strategical reasons the company headquarters have been moved to more important locations from a business point of view. This is the case of the Philips company that moved its headquarters from Eindhoven to Amsterdam in 1997, while its design department, Philips Design, remained in Eindhoven.

Another important criteria when deciding the location of the different branches of the design department is to have them close to the 'client', in this case meaning the internal client, the Product Managers responsible for each product category. Although we are getting more and more used to work on the distance -in particular during the recent times with the Covid 19 pandemic-, because of the nature of the industrial design work that requires physical models and prototypes to be evaluated and discussed in person, during a typical product design project, several face-to-face meetings between the design team and the product managers are still preferred. This was the reason why Philips Design moved all their Audio Products designers from the Netherlands to the Far East at the end of the last century, to Hong Kong in the case of Portable Audio products and to Singapore in the case of Audio Systems, as those were the locations where Product Management had moved to increase competitiveness against the Japanese manufacturers that dominated the industry at that time. In addition to the historical reasons mentioned before, this is also a reason why most design departments' headquarters are located at the same location as the mother company's headquarters, as it is there where many Business Units and their Product Managers are typically located.

The next criteria is to have the design teams close to the customers, in this case meaning the end customer of the manufactured products. In order to design successful consumer products, designers need to understand the target customer of the products that they are designing, their behaviors, needs and wants, preferences, and requirements, using several types of user research methods and techniques, many of which require talking directly to customers. This was the main motivation for Panasonic to decide to open Design Centers in London and New York City back in 2008-2009, to be able to better understand and get insights about European and American customers.

The final criteria is to have the Design Team close to the Development Team, meaning the engineers that work on the implementation of the designs for mass production. Product Designers and Mechanical Engineers work together in order to develop successful products, and to be in the same location certainly helps. For companies that use the OEM (Original Equipment Manufacturer) model, in many cases, not only the manufacturing of the products but also their development is carried out by the manufacturing partner, and therefore the location of the Development Team is the location of the OEM company.

And for fresh graduates and early career designers who are considering joining a large corporation, in particular in the Home Appliances and Consumer Electronics industries, this first structure will supply them a good opportunity to learn about design itself (provided they join a world-class organization with lots of talented and experienced designers in its ranks), but probably not so many learning opportunities in the Engineering and Business fields. The large majority of members in an independent Design Center are indeed designers, and typically no engineers or business people work there, with the few possible exceptions of some Materials Engineers that may work in the CMF (Colors, Materials & Finishes) Design Team, and Business Strategists that may work in the Design Strategy Team.

In general, we could say that the Independent Design Center operates in a similar fashion as Design Consultancies do. Although in some cases Design Firms do have some engineers in their teams, their staff is comprised to a large extent by designers.

THE SECOND STRUCTURE: The Integrated Design Teams

The second structure on the other hand, incorporates small teams of designers into each company Business Unit. In this case, each team of designers reports at the end to the Head of each Business Unit. This structure permits an easier integration of the design teams with their business unit, as they work together on a daily basis with their Engineering, Marketing, Product Management, Business Strategy, and Finance colleagues.

In this structure, designers can get more familiar with the business operations and performance of their division; they participate in the same way as all other employees in all the important meetings where company results are communicated by management, and in this way they may better understand the impact of their designs in the business results of the company. They also tend to think of themselves as business people (designers, yes; but business people as well). This integration with other business functions may also foster a sense of “being all on the same boat”, instead of confrontation between designers who always want to innovate and Business Management that in some organizations tend to be more conservative and risk-averse.

The downside of this structure, especially when different Business Units are located across different geographies, lays in the fact that it may be difficult to achieve cross-business design consistency (as the design teams do not report to the company’s Head of Design).

This structure is traditionally more common in the United States, but it can also be found in other parts of the world. For example, the Chinese domestic appliances manufacturer Midea is organized in this way. In the case of HP, headquartered in Palo Alto (California), several company

divisions are spread along the US West Coast, the state of Colorado, and Houston, with some design operations outside the United States such as Barcelona and Singapore. And, in order to ensure company-wide industrial design consistency, the company has a Corporate Design Department located at headquarters.

In fact, in this type of structure, such corporate design departments play a critical role. They lead initiatives with the objective of aligning design philosophy and design language across all company divisions. For example, back in 2002, former HP’s Vice President of Design Sam Lucente led the One Voice initiative, succeeding in creating a design ADN for the company and bringing together in terms of design a previously dissimilar product offering. This type of initiatives can have far-reaching consequences; in the case of the above-mentioned example from Hewlett-Packard, we can observe still today its influence in the current product line-up from the company.

For fresh graduates and young designers who are considering working for a large corporation, in particular in the Home Appliances and Consumer Electronics industries, this second structure will provide them with a good opportunity to learn not only about design in the strict sense of the term, but also about Engineering (in particular Mechanical Engineering) and Business disciplines (in particular Marketing and Business Strategy).

THE THIRD STRUCTURE: The Matrix Structure

The third structure is a Matrix Structure, which is a combination of the former two. Trying to capitalize on the advantages of the previous two, designers are located inside each Business Unit, but in addition to reporting to the Head of the Business Unit, they also report to the Head of Design in a matrix system.

While sometimes the most difficult structure for designers to navigate due to the double reporting line that can eventually create some conflicts of interest, this structure is the one that best balances a good integration of the design teams with their Business Unit and design consistency across different Product Divisions.

This structure is still somewhat rare for design departments, but it is possible that we may see an increase in its utilization in the future. It is certainly the most complex and difficult to manage, but its advantages as a result of drawing from the positive points of the previous two may prove worthwhile its adoption.

Similarly to the previous structure, here, designers are exposed to all business functions within the organization, providing a great deal of learning opportunities about the corporate world as a whole. On the surface, this structure may seem not to differ too much from the previous one, as teams of designers are integrated into each Business Unit; yet, when we analyze it more deeply, we will see fundamental organizational differences with far-reaching implications.

CONCLUSION

There is no universal solution to decide which is the most appropriate structure for a given company. This will depend on several factors; namely, the corporate culture, the breadth of businesses the firm is involved in, and the geographical dispersion of the different company divisions, among others. In most enterprises, the existing structure responds to historical reasons; the way design started to be incorporated into the company several decades ago dictated the way design is organized in the company today. We do not find in this field many examples of complete reorganization, mostly we see evolution. For instance, Philips went progressively from design as an integrated function in the company, to a department called Philips Corporate Design, to finally become an independent design organization called Philips Design. New, emerging companies that are growing and expanding the product categories in which they are active, like Xiaomi in China, can choose from the onset the structure they consider most appropriate according to their business strategy.

And finally, for designers who are considering working for large manufacturers, in particular in the Home Appliances and Consumer Electronics industries, they can make an informed decision on which kind of company they would like to work for. In general, we could say that designers who are interested in the integration and collaboration between Design, Engineering, and Business may find themselves thriving in the second or third structures (the Integrated Design Teams or the Matrix Structure), while the more 'artist' type of designers who tend to see Engineering and Business as limitations to Design, may find themselves more at ease in the first structure (the Independent Design Center). This decision has important implications not only in the way of working, but also in the type of knowledge designers will acquire during the course of their careers.

My personal pieadvice is for designers to try both types of companies (on the one hand the first structure, and on the other hand the second or third structure), for this will provide a richer variety of experiences and learning opportunities, and will help young designers to discover their preference from their own experience.



ROLE OF AN ARCHITECT IN PROJECTS INVOLVING EPC CONTRACTS

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ABSTRACT

Engineering, procurement and construction (EPC) contracts are on the way to become the most usual form of contracting applied by the private sector to undertake construction works on large scale infrastructure projects. EPC expands to Engineering, Procurement and Construction. It is a type of contract where the contractor has the complete accountability for timely and guaranteed quality completion of the project. Contractor has to undertake activities from initial designing, procurement to site execution and Commissioning of the project. It is a type of Turnkey contract where the contractor takes responsibility in completing and safely handing over the complete project to the client. Contractor in case of failing to complete the project within time may involve scope for a penalty.

In every project, it is necessary to have good connection between all the consultants involved in EPC projects and the client in place. This connection is firmly built by an Architect; otherwise it may lead to failure of the project for all parties involved – the client, contractor, lenders, government, etc. Such failures may include a delayed schedule, cost overruns, quality, safety and more.

A qualitative approach was applied in order to analyze the critical points of EPC contracts based upon reviews of related case studies from the public sector and supplementary interviews with professionals in the field. The system level changes that could be brought about will be explored by interviewing the professionals in the field of architecture and also from successful project managers, for a broader and better understanding. Suggestions from the students would also add to the existing knowledge.

KEYWORDS

EPC, Contractor, Architect, Tenders, Workflow, Construction Management.

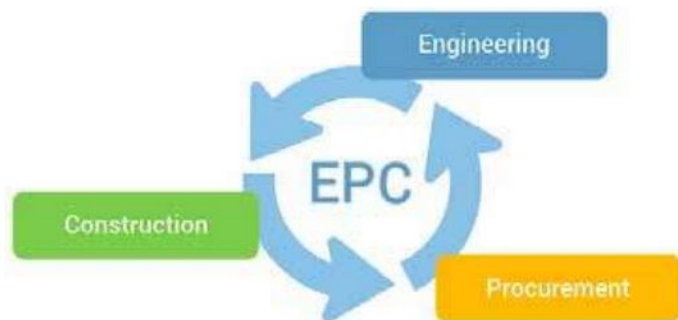


Figure 1: Cycle of EPC Projects
 Source: Aveston.com

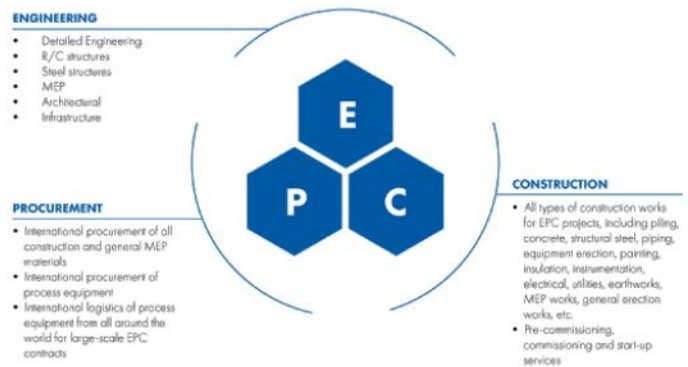


Figure 2: Components of EPC contract
 Source: uechm.com

RESEARCH QUESTION

What is the role of an architect in the projects involving EPC contracts? And what is the workflow in such contracts?

IMPORTANCE

A. The procurement of projects on turnkey based contracts best suits the owner when the project being financed by him. Also, EPC contracts are Turnkey type where it's the contractor's responsibility to complete the project within time and guaranteed quality and deliver to the owner.

B. By this route, funders and Owners expect to get the degree of certainty as to time and costs that they require.

C. The international federation of consulting engineers, FIDIC provided appropriate standards for EPC contracts in its book "The introduction of its conditions of contract for EPC/Turnkey Contracts" also known as FICID silver book.

D. Difference between EPC & Turnkey contracts

1. EPC contractor makes the detailed design based on the basic engineering provided to him by the employer.
2. In turnkey, the employer provides only some technical specifications, whereas contractors prepare both the basic engineering and detailed design.
3. For Commissioning and start-up in Turnkey, the contractor gets the responsibility to perform. Whereas in EPC, it's done by any third person.

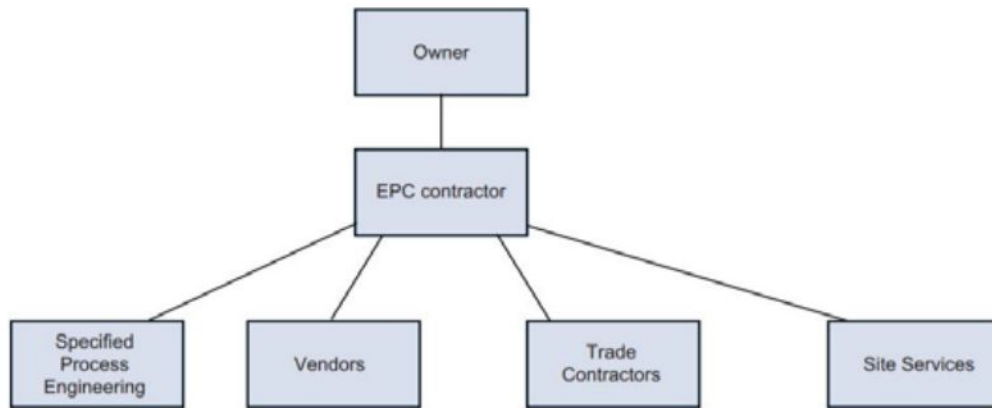


Figure 3: Stakeholders of EPC
Source: www.answer.com

	EPC	EPCM
Accountability	Contractor fully accountable	Owner has multiple points of accountability
Risk	Contractor holds risk	Owner holds risk
Time	Fixed date for completion	No fixed completion schedule
Price	Fixed price contract	Schedule of Rates / Cost Plus
Procurement	Contractor responsible for procurement	Procurement as agent for the owner only
Quality/Performance Guarantee	Contractor guarantees performance of completed facility	Contractor does not provide performance guarantees
Owner's Involvement	Contractor in control	Owner in control
Defective works/services	Contractor to rectify any defects	Assists owner to manage rectification of defects

Figure 4: Different parameters to understand EPC
Source: Aveston.com

SCOPE & LIMITATIONS

EPC Projects include civil works, Electricity instalments, Fire Protection, Security, Interior Design, and Maintenance. EPC projects are studied only through the lens of a newly graduated architect and not as any other professional

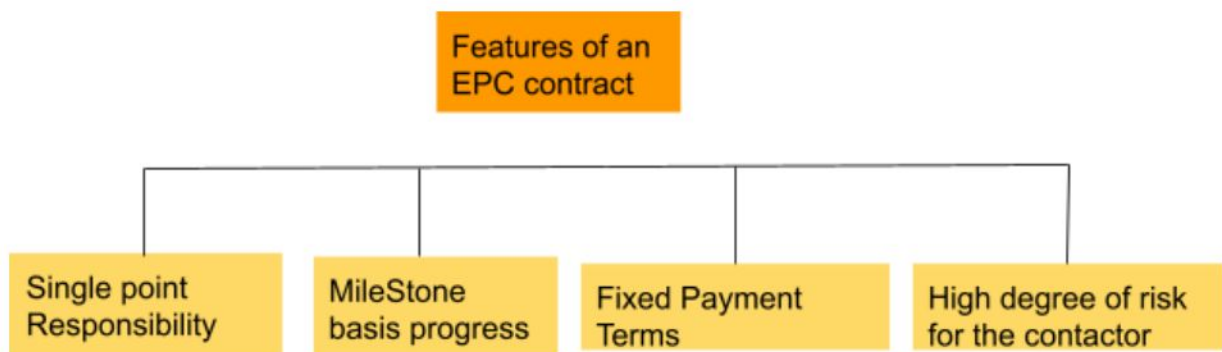


Figure 5: Features of EPC contract
Source: Author

Single point of Responsibility

· The project owner hires only one EPC contractor, while all the other subcontractors are managed by him.

Milestone basis progress

· The total contract activities will be segregated into various sets of activities with certain milestones to accomplish. The overall project has one milestone including these sub milestones.

Fixed Payment Terms

· The payment terms are fixed and specific in EPC contracts and linked to the milestone based performances of the EPC contractor and also has some kind of tension on the bills of payment until the contractor executes and delivers a successful product on time.

High degree of risk

· EPC contractor has single point responsibility in completing the project and he is the one who is accountable for failing to deliver on it on time. Therefore, Contractor endures the high degree of risk since he is bound to responsibilities.

INCENTIVES

- Percentage of amount to be deducted on computing the damage caused due to stated delay on the part of contractor.
- On completing the work before the stipulated time a bonus amount is paid to the Contractor.
- The Contractor shall have Obligation to rectify construction defects minimum up to 5 years from the day of completion of project.

RESPONSIBILITIES & ROLE OF ARCHITECT-FUTURE AMENDMENTS

- The responsibilities and importance of an architect will remain the same, be it a government project or a private one. Hence, the EPC contracts should also take place between the client and the architect, instead of that between a contractor and client.
- For the activities from designing to commissioning of the project Architects are also held responsible but given less importance in the current scenario and the EPC Contractor is given more importance.

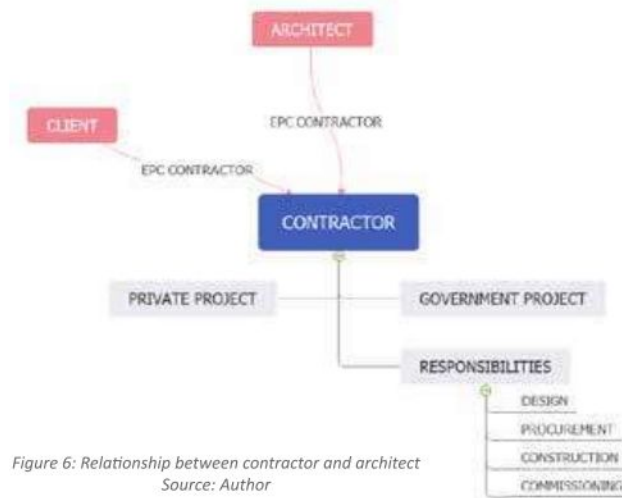


Figure 6: Relationship between contractor and architect
Source: Author

RESEARCH FRAMEWORK

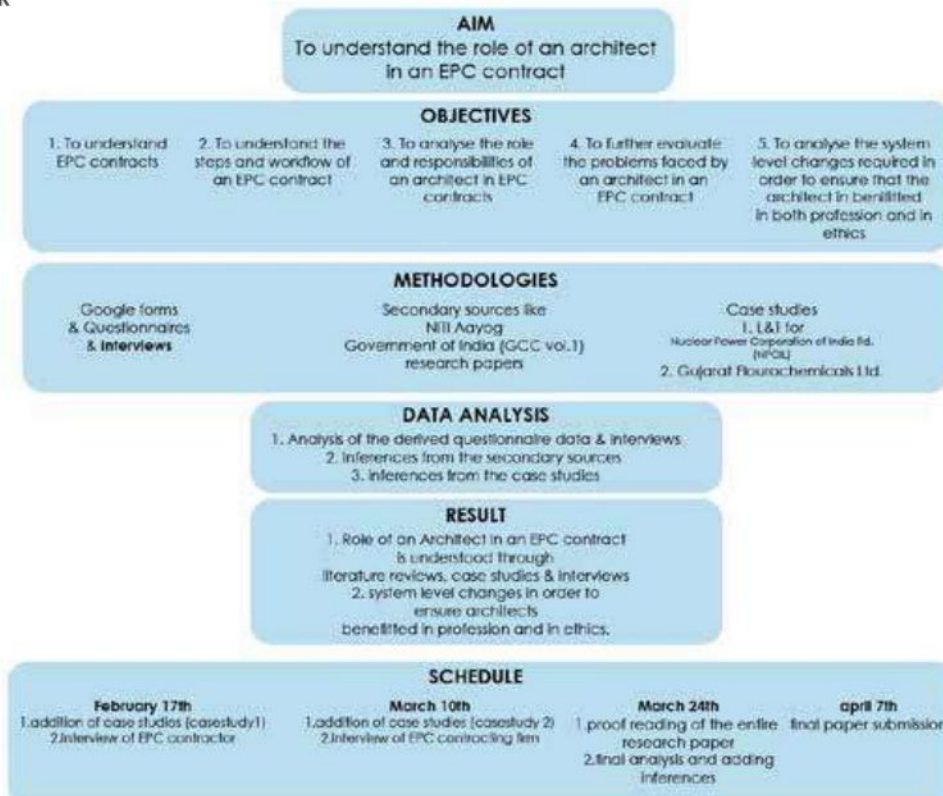


Figure 7: Research framework
Source: Author

What are the steps and workflow of the EPC contract?

Pre contracting activities

· Before signing the contract agreement, the project financial and technical feasibility to be pre analysed carefully. The Energy consumption and savings programmers, specifications and program of energy equipment also needs to pre pre-determined.

Implementation

· In the EPC contract document a provision for Maintenance and Project Execution details are also clearly mentioned so as to maintain or improve the quality of project implementation.

Measurement and Verification (M&V)

· It is suggested to maintain the Measure and Verification plan to analyse the project performance and to establish the projected savings. A M&V plan includes the measure of frequency, equipment and other variables.

To ensure proper calculations it's suggested to use a standard in M&V calculations. In EPC all the payments are based on M&V results making it an important stage.

End of contract:

· Many factors influence the implementation of EPC projects which include the tendering process, Financing, Equipment and Energy supply. Generally, it takes 2-3 years for the implementation measures of EPC from the beginning to end of the project.
 · The Client as a part of full benefits might assume the energy management and the equipment ownership is generally assumed by the client at the end of the EPC contract and the contract might be amended or extended based on when the client and Energy Savings Corporation (ESCO) deem it appropriate.

Workflow of an EPC Contract

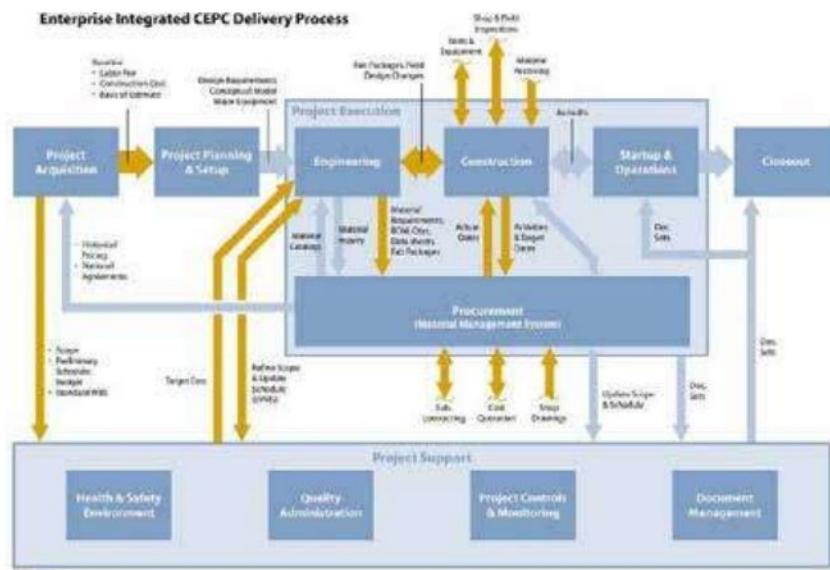


Figure 8: workflow of an EPC contract
 Source: <https://insights.globalspec.com/article/9421/factors-to-consider-when-beginning-your-epc-project>

When an architect is involved with an EPC contract and further understands the responsibilities of an architect.

Design & Layout of Project Facilities

· The sequence of the steps involved in the projects are described by the destinations of each member roles and responsibilities in the design project and how the estimation of costs of a new renovated projects facility are made by introducing the work typically performed by a consultant in the design process.

The Project Team the Owner's Representative the Architect

- The Engineers
- The project Facilities Design Consultant
- The Interior Designer
- The General Contractor
- The services Contractor

The Owner's Representative – Typical Roles and Responsibilities

· The typical role of the owner's representative is opting for team members which include Architects, Consultants and Others who are involved in the design process and project execution. Owner's representative is also involved in acquiring funds, establishing the operational goals of the project and approving the recommended equipment and materials needed in the project.

The Architect: Typical Project Roles and Responsibilities

· The architects work includes from designing, making detailed drawings to reviewing the work at site and inspection. Unlike in many Architectural projects the sole responsibility lies with the architect, In EPC projects the architect needs to work in coordination and following the guidelines of the contractor.

CONSTRUCTION WORKFLOW TEMPLATE



Figure 9: Construction workflow template
Source: smartsheet.com

Schematic Design

· Schematic design of the building shows the entrances, movement pattern and location of major building components. It is presented and revised by the owner several times. In the end of the schematic design phase a preliminary cost estimation is prepared.

Construction Documents

· Construction documents generally include Site Execution Details like fabrication methods, Installation methods, Specification related to materials, structural systems and workmanship. It also includes designations of responsibilities, General contracting conditions and payments schedules.

Types of Specifications

· Important characteristics of the material are identified by Descriptive Specifications and Product specifications are identified by the proprietary specifications of product, manufacturer and model number and performance criteria is relatively independent of product specification.

Construction Coordination

· Contractor prepares the review of drawings and equipment submittals by Examining the construction progress and identifying where the work fails to meet the requirements of the contract documents by checking with the “punch list”.

CASE STUDY-1

Project:

· Inter-State Bus Terminal, Commercial Complex, and Multilevel Car Parking

Location:

· Katra, Jammu & Kashmir

Client:

· (K.D.A) Katra Development Authority

Scope of the Project:

· Project scope includes Interstate Bus Terminal (ISBT) Katra, Jammu Kashmir, a Commercial Complex and a multilevel car parking. Architect under the supervision of the contractor involves in

- Preparation of Detailed Architectural Drawings, Projection Execution plan
- BOQ(Bill of quantities) needs to be prepared and getting approval from CPWD after reviewing if it's satisfying the related specifications,
- Preparing and reviewing the structural design.
- Architect involves in Construction and Commissioning related works in reviewing and coordinating with the contractor.
- In this project the Architect needs to review and get approval of the project from Katra Development authority at every design stage. The Bidder needs to emphasise the requirement of pre-engineered structures and procure them based on load calculation by the approval of KDA and the designs have to be proof checked.

Project Details:

ISBT

· The approximated area of the bus terminal area is 12,060 sq. excluding bus bays. and development is to be done catering the future requirements.

COMMERCIAL COMPLEX

· The approximate minimum area given for development of Commercial Complex is 83,100 sq. which includes its FAR and excludes the Basement Area. The Commercial complex should be built according to the existing regulations controlling the development programs at site.

MULTILEVEL CAR PARK

· The approximated total built area is 24,880 sq. for the proposed multi-level car parking. For all types of levels in Bus terminal projects the ramp based conventional car parking systems are used.

The Role of an Architect in the Project:

- Architects need to cover the detailed design for project execution, detailed architectural and preparation of all related drawings by the architect, concerned with the execution of the Bus Terminal Facility.
- Architect needs to design the passenger facilities which include the mainly the parking zones for both public and private uses, Public toilets which are essentially provided in public areas, drinking water facility, Indoor Waiting Halls and Outdoor seating arrangement and others services like dustbins, lighting design and placement for retail stalls which generate revenue.
- Design program of the architect also includes the Bus Terminal Facilities like mainly ample circulation area, Waiting Halls, Bus stands/bays, Counters for Ticketing services, Enquiry, Pre-Booking and Reservation Purposes.
- Bus Terminal Infrastructure Facilities Drinking Water supply, Sanitation facilities, Water and Water management facilities and Information and communication systems to be also designed by the architect along with his design team.
- The Architect needs to be in coordination with the other design team and the contractor in carrying out all construction works, bidding and contract, design negotiations and inspection of design and construction process.

Construction Coordination:

- The contractor does the work in coordination with architects, engineers and other design consultants in reviewing the drawings and other construction works. Contractors examine the progress of the construction and identify where the work is failing to meet the requirements by checking with the "punch list" and other construction-related documents.

Liabilities and Responsibilities of an Architect:

- The architect has to detail out to a certain extent where nothing is missed out. So the chances of the inaccuracy of design can be eliminated.
- It's more of teamwork in EPC contract where there's rolling involvement of all consultants and architects
- In the EPC model is the whole design team is in the control of the contractor
- As the EPC contract begins with the design stage the role of the architect becomes of utmost importance, also since the contract is bound till the end of the project there's a constant involvement of architects.
- The architect is one of the many team members in the project listen to the Contractor and gets paid based on his performance
- Architects should also ensure that the contractor meets those rules and schemes.

CASE STUDY-2

Project:

· The project is to design Gandhinagar Railway Station for redevelopment and 300 Rooms Hotel Building developments above the railway station.

Location:

· Gandhinagar, Gujarat

Client:

- GARUD (Gandhinagar Railway & Urban Development Corporation Limited) Architect:
- Kamlesh Parekh Architects

Scope of the Project:

· To design a Redevelopment of railway station and a 300 rooms capacity Hotel Building above the railway station based on Turnkey Contracts.

The project location is at Gandhinagar, Gujarat.

- Under the supervision of Contractor Architect works on
- (a) Preparation of detailed designs and project execution plan.
- (b) Reviewing the Construction and Commissioning of the Project Coordinating with other design team and Consultants.
- (c) Procurement of pre-engineered Structures by the approval of the owner.
- (d) Getting approval of the Project by the owner at different stages of design.

Architects role in Project Organization

1. Architect & Engineers, Managers and including all the technical staff are under the control of EPC contractor to satisfy all the required documents as per EPC agreement.
2. To avoid the duplication of any designation, architects and engineers will allot the required designations to different project teams before adoption under the consultation of the contractor.
3. For emergency purposes the control room radio communication connects the senior official's residences on site to all the important site offices, plants, workshops areas, off site offices and other important areas present in the site. Also emergency vehicles are provided at the control room which are kept ready to reach the rescue.

Architect role in Design Phase

Design phase:

- The main requirements of the Design Phase are
- The Preliminary Design,
- The final Design
- The Construction Reference Drawings
- As a part of the EPC document the architect should make sure he clearly understood the technical proposal of the contractor and the design development should be in compliance with the regulations and standards and conforming to the Outline Design Specifications and all other provisions of the EPC Agreement.
- Engineering studies and comparative evaluations shall be performed to ensure that the designs incorporate features to achieve optimum performance. In addition, Building Services design, shall be reliable, energy and cost efficient with due considerations to local climate and conditions, safety, ease of operation, maintenance, future replacements, etc.

Preliminary Design:

1. Architect prepares the Preliminary Design which shall be based on the Drawings attached here to in Schedule-I, Drawings for Mandatory Project, and, developed to sufficiently detail and define the main structural elements.
2. The Contractor's Preliminary design technical proposal shall incorporate the following:
 - (a) The QA Plan for the design of the Mandatory Project;
 - (b) A conformity of the standards and specifications attached to the h Agreement, including specifically those set out in Schedule- 9 (Standards and Specifications);
 - (c) Submission of the design manuals, with the proposed design software;
 - (d) Preliminary maintenance analysis;
 - (e) Submission of specifications proposed for the works;
 - (f) Identification of design codes and standards;
 - (g) The CAD procedures;
 - (h) The preliminary station sizing, including main structural components;
 - (i) The preliminary construction methodology;
 - (j) The preliminary traffic management plan;
 - (k) The preliminary passenger movement plan for various phases of the construction;
 - (l) The utility diversion plan;
 - (m) all the primary architectural drawing layouts and materials
 - (n) all the proposed surveys

(o) The working plan under railway operations, including requirement for traffic and power blocks (and other Block Works);

Definitive Design:

1. Final Design shall present with and include the Preliminary Design and shall be developed to the stage at which all the structures are fully defined and specified.
2. While preparing the final Design, the Contractor has to finish all the required surveys and necessary tests to complete the design of the construction Works.
3. The final design submission shall be clear and with the complete set of documents, properly combined and indexed and shall fully describe the Mandatory Project. In particular, it shall define:
4. structural elements and members' dimensions
5. calculations and analysis of all the design
6. every significant element is delineated
7. every test and trails and sections of equipment and materials are need to defined in the required documents
8. Shall take full account of the effect on the Permanent Works of the Mandatory project of the proposed methods of construction and of the Temporary Works.
9. Potential forces and movements due to all possible loadings and actions on the structures, and their accommodation;
10. Standard details;
11. Details for Project Utilities and Project Facilities (as required to be provided under the Agreement) and their interaction with the structures;
12. Erection methods;
13. Design commentary about use of prefabricated and precast elements for minimising Block Works;
14. Utilities to be diverted/ supported;
15. All the methods to predict movements and vibrations due to the railways operations
16. all the Details of the civil services and traffic services affected
17. Drawings showing the general arrangements, architectural elevations, perspectives and landscaping; Structural elements layout; Structural and surface drainage; Passenger access pathways and temporary road works; pumping systems, fire detections and alarm and firefighting systems; station ventilation and air-conditioning; electrical plant room such as UPS, DG sets; existing utilities and proposed Project Utilities:

Reference Drawings of Construction in accordance with Mandatory Project:

1. Design packages are made by dividing the definitive design and that will be submitted in advance.
2. Essential parts of proposed design are clearly identified by the design packages.
3. Design Packages are made and submitted in a sequential and progressive manner.
4. For the important elements of the proposal separate definitive designs are made and procured by sub-EPC agreement on the basis of design specification and outline design.
5. To illustrate the mandatory project works and the drawings that guide the construction, upon issued by the notice the contractor needs to complete all the design and construction requirements with respect to the definitive design.

CASE STUDY - 3

Project:

· Indian Institute of Management, Nagpur

Site area:

· 132 acres

Architect:

· Rajender Kumar and Associates

Contractor:

· Ahluwalia contracts

Cost:

· Entire Project cost is INR 291crores.

Duration:

· Time duration for the entire project is 2 years, but sadly because of the covid pandemic the construction has been halted and has been resumed in the last month, giving the contractors an extension of 6 months because of the pandemic. So the new deadline is 5 months' way which is by end of May. They are left with 20-30% of the works to be completed in these next 5 months.

Typology:

· This is an institutional campus with site area is 132 acres. Academy buildings, classrooms, multipurpose hall, dining and other external development areas including spill out, oat, sports area, amenities etc. Client is IIM Nagpur, they are handling the external agencies and looking into amenities. The contractors also Hired external consultants, and different agencies. Contractor company cannot hire all the consultants required so they take help from outside consultants. Architect has to take care of the client delivery, time period and the specifications of the contract.

Data Collection:

- The following data consists of interviews taken from architects and project managers who are professionals in the field and the collected data is in tabular format. The interviews are conducted online through phone calls and text messages. The target interviewees were chosen in such a way that they are currently working in an architecture firm / under a doctorate. The questionnaire consists of 2 major questions and 1 optional question. The questions were formed to bring out the role of an architect in an EPC contract and to get to know the challenges of an upcoming architect to work for an EPC contract.
- From where was the data collected?
- The data was collected through interviewing project managers, senior architects, and professionals who have been working on the projects involving EPC contracts for over 2 years and above.
- When and over what time period was the data collected?
- The data was collected from professionals who were in the service for the past 2 years and above, and on their personal experience, so the collected data varies over the past 20 years.
- What form was the data taken in so that this might be useful to the purpose of your study?
- The form in which the questions are framed is to bring out the challenges of an architect working in projects involving EPC contracts and their personal experience about working on EPC contracts (if any).
- The following is the data collected.
- Table 1: Interview Data.
- Source: Author

Interviewee	What is the role of an architect in projects involving EPC contracts, based on your experience?	What are the challenges faced by a newly graduated architect when involved in projects involving EPC contracts?	What are the challenges faced by women in projects involving EPC contracts?
Shruthi, Project manager and associate professor at SPA-New Delhi.	<p>As the EPC contract begins with the design stage the role of the architect becomes of utmost importance, also since the contract is bound till the end of the project there's a constant involvement of architects.</p> <p>It's more of teamwork in EPC contract where there's rolling involvement of all consultants and architects</p>	<p>More than a challenge I would rather say it as getting an opportunity to be part of all teams of the designated work. However here the key things become how to gain knowledge to one's own benefit rather than getting confused with varied data. The drawback of EPC if not managed is a lack of coordination. Or dependency of one team on another.</p>	<p>Again let's not target women susceptible to a contract type, it's more of learning, as good as for a male counterpart.</p> <p>Well, I am not sure of the compensation, I could say compensation could be the only challenge for women.</p>
Ar. Ravindra Singh Verma, Experienced real estate professional and visiting faculty at SPA-New Delhi.	<p>The whole idea of an EPC contract is, traditionally we used to have architects and the architect does detailing and drawings and the contract responds to a tender document. Once the construction starts the contractor starts the blame game, blaming the architect for not giving details and drawings on time (scope creep). The advantage of the</p>	<p>Historically it is the contractor who listens to the architect. In the EPC bid architect has to take instructions. Because the architect's employer is the contractor and there could also be a conflict of interest. The contractor wants to detail out the things a bit. In the EPC model is the contractor who becomes the interest of the project. The</p>	
	<p>EPC model is the whole design team is in the control of the contractor, and the detailing has to be done later on. The architect has to detail out to a certain extent where nothing is missed out. So the chances of the inaccuracy of design can be eliminated.</p>	<p>contractor will have greater control over the architect in this model. When the architect is part of EPC contracts in many cases the fee is compromised, the contractor might not pay the architects according to the guidelines.</p>	
Ar.Premendra Raj Mehta, former president COA India, former member Expert Group of Ministry of Commerce and Services and Director, City neon DAG India Pvt. Ltd	<p>The role of an architect doesn't change in any project. Regardless of any project.</p>	<p>The challenges faced by a newly graduated architect remain the same, be it an EPC contract or any other project.</p>	

<p>Ar. Anil Dewan Professor, Architecture dept. at SPA-New Delhi. Founder and chief advisor Ivysure consulting</p>	<p>As the council of architecture, the traditional role of an architect is like a boss. Everybody else listens to an architect, the architect is the god and everybody listens to him/her. In an EPC contract, everybody is at an equal level. The out of the box idea might come from any person working on the project. All stakeholders are equal. In the profession, we listen to the person who signs our check. It is the reversal of the role of an architect. The architects are being felt bad regarding this. The architect is one of the many team members in the project and not like the most important person.</p>	<p>The new person thinks that he is the god and like that when it comes to practice he gets to know that he doesn't know anything. That realization has to come as soon as possible. You have to start your learning. In most cases, you have to unlearn the facts from the college and relearn the new methods. The school should prepare you for the last job to be done in the profession, not the first job. School should broaden our horizons to take up the challenges in real life.</p>
<p>Ar. Sonia Kapre Founder and director at Mathur and Kapre associate, visiting faculty at SPA-New Delhi.</p>	<p>There are variations in the kind of contract depending on the kind of project. In EPC, the entire responsibility is given to other agencies. They know their financial liabilities and they know their time limit.</p>	<p>The contractor himself can make different kinds of contracts, the client is not concerned about the contractors taking their respective jobs.</p>
	<p>The client may even get the drawings in the beginning. As an architect, your work will be restricted to the office itself. Get the design and the coordination with the other colleagues. Making specifications, calling tenders. And finally, report to the senior. Now the difference is there may be a specified thing mentioned in the starting. Be it the time limit or finance. On-site EPC will need a supervising team, architects will supervise the work. The client is going to give money and you will have a time limit to submit the project.</p>	
<p>Ar. Sreeram Asokan Project Manager at FHD Group, Hyderabad.</p>	<p>There are two types of contracts mostly used in India, turnkey and the second type is consultant type. We hire a separate contractor.</p>	<p>No matter what you take 2-3 years you take to cope up with the real-world practice.</p>

	<p>The architect is considered as an advisor to the client. A normal client would not be having the expertise to ask what to ask the contractor. Architects should also ensure that the contractor meets those rules and schemes. Because the client can't know the project quality by looking at the building.</p>	<p>When you study in college there is a standard EPC format, but in real life no two projects are similar. So architects have to adapt to the given scenario. This can be learned from practicing in the real world.</p>
<p>Aruni Sharma, Ahluwalia Contracts, Ltd.</p>	<p>In EPC we design and construct parallel In general, perspective what architects can do in EPC is the best form of tender because architects built the optimised design and avoid over reinforcement Architects can avoid the over design and it should be in sync with the drawings</p>	<p>Newly graduated architects needs to be tuned by the senior architects Construction is the least digitised sector, Architects needs to be more updated with technology They have to go through the specification thoroughly</p>
	<p>Architects play a very important role in building information modelling Architects coordinate with structural, interior, and others to avoid clashes Architects make all the details and conceptual drawings Architects proactively contact clients and suggest better specifications In EPC projects, architects need to be more cost-efficient</p>	

A. From the above-listed interviews, the following points are observed clearly.

1. In an EPC project, unlike traditional ways of an architect being an important lead, there will be other people who also influence the design of the project. The architect's role is to help the contractor to get the details right and to supervise the entire project.
2. A contractor needs to complete the project in the given limited time and the architect has to help the contractor in detailing the design.
3. On-site, every project is different from one another and there is nothing like a standard EPC contract protocol. The workflow may vary from project to project and the architect has to adapt to the upcoming challenges throughout the project.

Content Analysis (interviews):

B. Data collection in the form of interviews from architects, EPC contractors & Project managers has been documented in a holistic approach to understand the reality of projects involving EPC contracts.

C. The table below gives the description of analysis of interviews which leads to inferences.

D. Table 2: Content analysis of interview data.

E. Source: Author

Name	What is the role of an architect in projects involving EPC contracts, based on your experience?	What are the challenges faced by a newly graduated architect when involved in projects involving EPC contracts?
Shruthi, Project manager and associate professor at SPA-New Delhi.	Architects are of utmost importance, teamwork is important.	Interdependency of consultants & coordination with consultants.
Ar. Ravindra Singh Verma, Experienced real estate professional and visiting faculty at SPA-New Delhi.	Design team will be in the control of the contractor.	Architect has to put extra effort in detailing
Ar.Premendra Raj Mehta, former president COA India, former member Expert Group of Ministry of Commerce and Services and Director, City neon DAG India Pvt. Ltd	Role of Architect doesn't change.	Same as in any other project.
Ar.Anil dewan Professor, Architecture dept. at SPA-New Delhi. Founder and chief advisor Ivysure consulting	All stakeholders are equal in EPC contracts and the architect's role is not treated as most important.	Realisation about the practice. Taking up real life challenges in profession.
Ar. Sonia Kapre Founder and director at Mathur and Kapre associate, visiting faculty at SPA-New Delhi.	Work is restricted to the office itself. Design and coordination with other colleagues. Making specifications and calling tenders, reporting to the senior. Onsite supervision	Power in the hands of the contractor. Quality checks, PERT analysis. In time completion of project.
Ar.Sreeram Asokan Project Manager at FHD Group, Hyderabad.	Architect is an indirect advisor to the client. But, has to ensure that he meets the contractor's requirements.	In real world practice no two projects are similar, architects have to adapt to the scenario which can be learned while practicing in the real world.
Matcha Aditya, Contractor at Sri Sai Constructions, Visakhapatnam.	Coordination between contractors, providing dwgs,site checks, sending data for BOQ, site inspection along contractors, fixing fees	No business knowledge, lack of coordination, site dealing.
Aruni Sharma, Ahluwalia Contracts, Ltd.	Perspective what architects can do in EPC is the best form of tender because architects built the optimised design and avoid over reinforcement Architects can avoid the over design and it should be in sync with the drawings Architects play a very important role in building information	Newly graduated architects needs to be tuned by the senior architects They have to go through the specification thoroughly

modelling
 Architects make all the details
 and conceptual drawings
 In EPC projects, architects need
 to be more cost-efficient

· From the Analysis above, the role of the architect in an EPC contract is not of utmost importance and is equal as any other stakeholder. The challenges faced by the freshly graduated architect when involved in an EPC contract are to face the real life projects in practice and might be restricted to office. There is also interdependency of consultants and no two projects are similar in nature. Hence, timely PERT analysis check, coordination with consultants, and in time completion of project along with quality analysis becomes the challenging aspect in EPC contracts; for a newly graduated architect.

Analysis (Case study):

· The analysis of the case study shows that the role of the architect is of utmost importance since there is a constant involvement of the architect from the beginning of the project and also it becomes the prime responsibility of the architect to detail drawings for the project execution and timely completion.

· The challenges faced by the architect is that

1. Architect has to listen to the contractor in terms of the design process
2. Architect based on their performance
3. Construction coordination
4. Site supervision
5. Bidding and contract negotiation

· Table 3: Case study 1 analysis.

· Source: Author

Case study-1	What is the role of an Architect in projects involving EPC contracts, based on your experience?	What are the challenges faced by a newly graduated architect when involved in projects involving EPC contracts?
Inter-State Bus Terminal, Commercial Complex, and Multilevel Car Parking	All the required architectural drawings, provision of passenger amenities for project execution works of design team will be under control of contractor	More efforts in detail to prevent inaccuracies, architect is one of the many team members in the project listen to the contractor and gets paid based on his performance

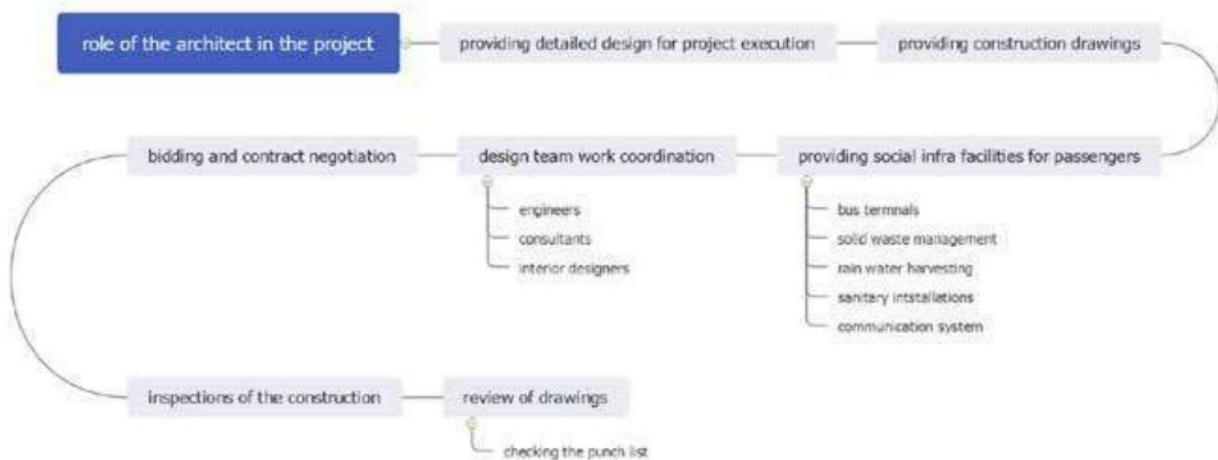


Figure 10: Role of the architect in the project.
 Source: Author

· Table 4: Case study 2 analysis.
Source: Author

Case study-2	What is the role of an Architect in projects involving EPC contracts, based on your experience?	What are the challenges faced by a newly graduated architect when involved in projects involving EPC contracts?
Gandhinagar Railway Station for redevelopment and 300 Rooms Hotel Building development above the railway station.	All the required architectural drawings, provision of passenger amenities for project execution works of design team will be under control of contractor	More efforts in detail to prevent inaccuracies, architect is one of the many team members in the project listen to the contractor and gets paid based on his performance

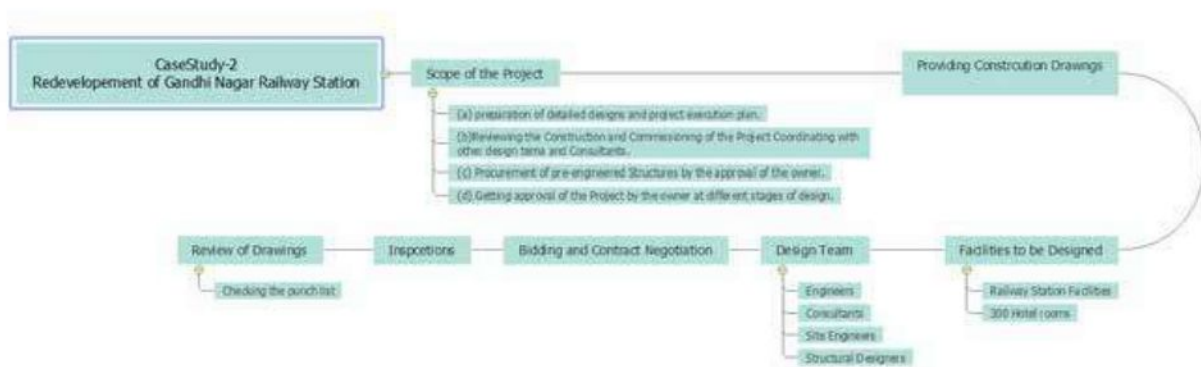


Figure 11: Case study 2 workflow
Source: Author

INFERENCE AND LEARNINGS

- The importance of the architect in EPC contract is as follows:
- Apart from the architect involved from the contractor's side, there is an architect involved from the client's side as well in larger contracts. This ensures that the EPC project takes place as per the specifications and also to ensure the completion of the project on time. It also ensures that the project is done within the specified budget.
- From the data collected and the case studies done, the following inferences are derived regarding the roles and responsibilities of an architect in an EPC contract.

1. Importance of an Architect
2. Importance in comparison to other stakeholders
3. Role of an architect in EPC contract
4. Liabilities of an architect
5. Role of a freshly graduated architect in an EPC contract
6. Relationship between an EPC contractor and an architect
7. Challenges faced by a freshly graduated architect

1. Importance of an Architect

· Architect is not given utmost importance in an EPC contract. In other architectural projects which may not be taken up in turn key method or any other contract like EPC model, the architect is treated like a keystone to an arch, where he is treated like a superior who is involved right from the design stage to the procurement and construction. EPC contracts do not involve direct interactions of the architect with the client and hence, not given the importance as the EPC contractor. This can vary depending on the scale and type of project as well. The interviews taken imply that the architect is given equal importance as other consultants, but is not

given the utmost importance. Hence, EPC model is now taking forms of the EPCM model.

2. Importance in comparison to other stakeholders

· Like it is mentioned above, the architect's role is equal to the other stakeholders in the project like the consultants (electrical, structural, plumbing, HVAC). But in comparison to other consultants, architects are constantly involved in the project execution and coordination hence, the architect's importance in comparison to other stakeholders is definitely greater.

3. Role of an architect in EPC contract

- The role of an architect in an EPC model (Engineering, procurement, construction) starts from the design stage.
- In Engineering, specifically, architecture and infrastructure engineering.
- In the construction phase, the architect is responsible for pre-commissioning and commissioning services, including piling, concrete, structural-equipment erection, instrumentation, earthwork, MEP work, etc., coordination with consultants.
- In the procurement stage, international procurement of all constructions and MEP material, process equipment is undertaken.
- Hence, the role of the architect involves the design, execution, construction, coordination, and site supervision along with commissioning and procurement of material in large scale projects.

4. Liabilities of an architect

- The architect has to detail to certain extent to eliminate the inaccuracy of design
- Consistent team work of architects with other consultants of EPC

contract is the key to success of an EPC contract.

- Careful examination and analysis for completion of project using project evaluation review technique (PERT) becomes the responsibility of the architect as any delay in the project has to be avoided through multiple PERT charts in profession.
- The architect should ensure that the contractor meets the requirements of the client since he is liable to the contractor.
- There is consistent involvement of the architect and the consultant which demands for teamwork and construction coordination.

5. Role of a freshly graduated architect in an EPC contract

- The role of a freshly graduated architect is limited to the office.
- The architect here will be responsible for getting the design and coordination with other colleagues, making specifications, calling tenders, and finally reporting to the senior.
- Onsite EPC will also demand for architects to look over the work.
- The architect is responsible to submit the project in time, to be paid.

6. Relationship between an EPC contractor and an architect

- In most of the projects involving EPC contracts, the architect has to follow the EPC contractor, even in terms of designing in some cases. It becomes evident that once the construction starts the contractor will start a blame game and this will lead to the scope creep of the project increasing the demand for the detailing. When the architect is a part of the EPC contract the fee is compromised sometimes and the contractor may not pay the architect according to the guidelines. The contractor has the opportunity to hire individual item rate sub-contractors for completion of the project and this will ultimately lead to the architect being a stakeholder of lesser importance as the architect gets paid based on the performance. More effort has to be put in by the architect.

7. Challenges faced by a freshly graduated architect

- Projects involving EPC contracts are diverse based on the nature and scale of the project. Hence, no two projects are similar in the workflow and a freshly graduated architect will find it difficult to work with the EPC contractor. The architects have to learn to adapt to the real life situations which can be learned from practice and experience over the years. The college doesn't prepare the architect for the real life projects involving the EPC model. Hence, the theoretical knowledge gained in college is important in such circumstances to understand the reality of the practice. Like in other projects, some of the contracts like the turn key contract or the EPC style of working architect is not the head of the project therefore, working in such projects will require the architect to accept the fact that he is equally important to any other stakeholder in the project and has to make himself adapt to accepting ideas and exchanging information with the other consultants.

CONCLUSION:

- The role of the architect in an EPC contract is not crucial and is equal to other stakeholders involved in the project.
- Also, EPC contractors have the power to dictate the workflow of the project and hence, architects might have to compromise in terms of the design, compensation, etc. it becomes important to understand that coordination with consultants is the key for a successful EPC project. Therefore, a freshly graduated architect must be well aware of the theoretical aspects of the different types of the contracts in profession and also the techniques of analysis like PERT etc. to avoid delay and to submit the project in time.

REFERENCES

- Phil Loots and Nick Henchie November 2007, Worlds Apart: EPC and EPCM Contracts: Risk issues and allocation.
- NITI Aayog : Government of India 2017, Engineering, Procurement and Construction of Civil Works MODEL AGREEMENT VOL.1 GENERAL CONDITIONS OF CONTRACT.
- http://niti.gov.in/writereaddata/files/new_initiatives/CIDC-Model-EPC-Agreement-22032018.pdf <https://toppicks.co.in/top-epc-companies-in-india/>

- <http://jkhudd.gov.in/pdfs/KDA%20EPC%20Agreement%20Design,%20Engineering,%20Procurement%20&%20Construction%20for%20ISBT%209.5.2018%20Etendering.pdf>
- <http://irsd.in/sites/default/files/epc-agreement-f.pdf>
- https://morth.nic.in/sites/default/files/circulars_document/EPC-2012.08.17-Model%20EPC%20document.pdf
- <https://help.leonardo-energy.org/hc/en-us/articles/202947081-Which-are-the-steps-to-follow-for-developing-an-EPC-contract>
- <https://www.scribd.com/document/72879592/Dhari>
- <https://www.slideshare.net/suhainadarlina/chapter2-slides-45346721>
- <https://www.scribd.com/presentation/394902781/Chapter-2-Foodservice-Design>
- <https://www.slideshare.net/DrKMSONI/epc-and-other-types-of-contracts>
- <https://www.caclubindia.com/articles/basic-understanding-of-an-epc-contract-17604.asp> https://www.answers.com/Q/What_is_the_difference_between_EPC_and_turnkey_contract <https://www.linkedin.com/pulse/whats-extra-m-demystifying-epcm-contracts-risk-management-singh>



HARMONIOUS LIVABILITY

PINK HARMONY

By Student of Jewellery Design Department

"These flimsy flamingoes with flippy pink feathers pond, celebrates elegance, charm, balance and innocence, by coming back to their desert wonderland in rajasthan. Sambhar is known for its vast silver salt bed, age old temple ruins, wetlands and various species of flamingos that call it home every year"



IDENTIFYING THE CRITICAL SUCCESS FACTORS OF SME FASHION RETAILERS OF ASIAN ORIGIN, OPERATING IN THE NORTHWEST OF ENGLAND

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ABSTRACT

It is significant that family firms of Asian origin, within the Northwest of England, have engaged in the fashion and textiles business for an average of 40 years; with many such firms now being handled by third generation members and some of which have evolved to become dominant global players in online fast fashion retail (e.g., Boohoo, Missguided, I Saw It first, Public Desire). Although Leicester has long been associated with fashion manufacturing within the Asian community, there is a unique concentration of long-standing Asian fashion retail SMEs in the northwest of England that seem to have outlived their non-Asian or high street fashion retail counterparts. Over several decades business families of this study have immersed each generation of children into retail environments from a young age, providing a climate of intensive training and awareness from a young age, especially an acute understanding of consumer behaviours.

Most literature regarding the strategies, successes, and failures of fashion retail firms are focused on the large multi-national firms operating in a clicks and mortar format, little if any attention has been given to localised SMEs, and the relevance and impact of cultural factors in Asian family-based firms, that have evolved and remained profitable despite the onslaught of internet shopping and decline in high street footfalls.

This research aims to fill the gap in knowledge about the experiences of such SME businesses, specifically based in the Northwest of the UK, to gauge the factors that have contributed to their success and survival through several generations. Oxborrow & Brindley (2014), having conducted such a study in Leicester, suggested the need for further discussion in the prevalence of ethnic minority SMEs in the fashion apparel sector. Several themes have emerged so far in relation to Familiness, Localisation strategy, Supply Chain Dynamics and Cultural Factors.

KEYWORDS

Fashion Retail, SME, Asian, Family business

BACKGROUND

The author of this research is from an extended family of businesspeople in the fashion industry, all based in the Northwest of England. She is also a director of a family firm that imports and supplies many small and large fashion retailers across the area.

The author's own experiences spanning three decades of business growth, failure and re-invention in this sector have facilitated the interest in this field. Over the past decade an emergence of many high-profile fashion retailers from within this network has prompted a need to delve into the reasons why this area (especially Manchester) and ethnic group has fostered so many significant new players in the sector, especially when mainstream high street retailers have seen rapid and sustained decline.

RESEARCH QUESTION

How have Fashion Retailers of Asian SME Family businesses sustained a successful business presence in the Northwest of England, over several generations, when mainstream fashion retail has seen a rapid decline?

Objectives

- To critically evaluate the correlations between cultural factors and business survival in SME fashion retail businesses in NW England.
- To critically evaluate the nature of family and business networks in the local fast fashion supply chain
- To critically evaluate the extent to which cultural and family dynamics contribute to success and longevity in Asian Fashion SME business in the NW of England

Literature Review

A dependence on family and cultural networks has been identified as quite common in the Asian business sector of the business population (Jolly, 2004). Proximity to the fashion wholesale sector within Manchester is also a significant factor in facilitating the existence of such firms.

Oxborrow & Brindley (2014) focused on a similar ethnic SME cluster in the textile industry in Leicester and recognised the relevance of process and product innovations as well as cultural influences that contributed to successful business models in the contemporary fast fashion infrastructure. They also suggested the need for further discussion in the prevalence of ethnic minority SMEs in the fashion apparel sector.

Family business research has discussed social capital as a creation of 'familiness' and a contributor to family firms behaving in an entrepreneurial or innovative manner (Habbershon, 2006). Succession in family firms or the lack of, has also been well researched from an SME perspective, as Magasi, (2021) identified the challenges of continuity as being of a major concern, with many family-owned businesses. However, for the SME fashion sector, especially in the north-west of England, succession within families has played a huge part in the sustainability of some organisations as well as being a factor in many third-generation members opting into such roles.

Dhaliwal & Grey (2008) explain the origins of the Asian business community:

'The first-generation migrants of interest to this study arrived in the UK in the late 1960s and early 1970s. The main countries of origin were India, Pakistan, Bangladesh and Sri Lanka,' (Dhaliwal & Grey. 2008. p223).

For this research Asian families are of Indian and Paskistani origin, and current generations being of British Birth.

In the fast fashion environment that has seen dramatic change, upheaval and a growth of competition, resilience can be seen as a firms ability to recognise, adapt and transform or to embrace change (Moore & Manning, 2009) and to facilitate long-term sustainability. Much of resilience literature emphasises the detection and activation of appropriate organisational response (Burnard & Bhamra, 2011) to

significant external events enabling it to adapt to such change. The term 'Familianness' from a concept perspective, is used to describe what constitutes a unique bundle of resources and capabilities resulting from family relationships and influences (Belkhdouja & Daghfous, 2021), and will be used in a similar context in this study, as well as enabling identification of those unique group of resources and capabilities. The study does acknowledge the need for further research in family business relational dynamics impact. It fills a gap in knowledge around resilience in family organisations and suggests that family business performance can be superior when compared to their non-family counterparts (Adhikari and Sutton, 2016).

In the fast fashion sector, innovation for SMEs is often characterised by knowledge-intensive entrepreneurship (Szirmai et al., 2011) with an emphasis on product and process innovations, such as those within the supply chain interactions or product design that elevate the competitive advantage required to keep them ahead in terms of in demand products.

RESEARCH GAP

This research will contribute a valuable set of knowledge from within the largely elusive Asian family business cluster of fashion retailers, in the northwest of England. Most importantly knowledge about the Asian businesspeople in the region and its significance in shaping the evolution of contemporary businesses that are now leading the world. A combination of family business internal resources, influenced by cultural factors, and the geographical significance of Manchester as a wholesale hub will shape a new picture of how micro businesses have sustained a level of success in their sector where large multinationals have failed to remain relevant.

Asian family origin, SME fashion retail businesses in the northwest of England, have a unique set of internal resources that are largely influenced by cultural factors. This combination of factors has never been explored in this context to determine the extent to which success and longevity can be contributed to it. There is a further gap in knowledge about how these factors link into the wholesale supply chain community in Manchester, and how there is a reciprocal competitive advantage created that could be used to inform more stable business models in this sector.

RESEARCH METHODOLOGY

Through the lens of constructivism/interpretivism, research will be undertaken inductively allowing variations in participants experiences and interpretations to be recorded. Semi-structured interviews will form the main source of data collection from participants; supplemented with participatory observations within the network of the businesses to add to the fullness and richness of data collected. This will allow for a well-grounded and in-depth analysis, where context can be related to the themes that emerge from analysis (Saunders et al., 2019).

The ontological and epistemological assumptions of this thesis lie within the paradigm of interpretivism. Within the world of SMEs, there is no single reality and each business or individuals within, create their own reality through experiences that need interpretation, to discover underlying meanings within the same reality. Research methods will be of a qualitative nature as interaction, involvement and rapport are required to gain greater validity in the research data, using the case study strategy with semi structured interviews (Saunders et. al, 2019).

This thesis involves an exploratory study of an inductive approach using a few groups of SME family businesses in the fast fashion retail sector, in a specific geographical area of the UK, namely the northwest of England. There is an element of ethnographic research, as the author is immersed in the supply-chain of the group of businesses under scrutiny and has been for many years. Ethnography is a type of field observation that requires the researcher to observe the culture of a group by being involved with, or indeed part of a 'tribe' with a view to gaining a deep understanding of how their society works (Remenyi et al., 1998).

The data collection methods can be summarised as follows: -

a) Observation, reflection & anecdotal evidence from author's involvement in family business

b) Semi structured interviews with SME retail fashion business owners/managers, followed by further interviews with other members of same business network

Sampling Technique

This study will use a small sample of case studies of SME fashion businesses in this region that are engaged in retail in some format and are managed/owned by second or third generation business families. Some of these businesses are limited companies and some are sole traders. Size of business is varied, (from single bricks and mortar retail outlet, retailing on social media to multi retail outlets with a wholesale and website presence); all sell core products of fashion clothing, accessories or footwear.

The nature of the research has inevitably required a purposive sampling technique as the author's subjective judgement (Saunders, 2019), and network of contacts formed the basis for the research. Initially, possible participants were approached from the population sample under study with a view to getting co-operation from a variety of geographical areas within the north west of England, to give meaningful data that fulfil the research objectives (Becker, 1999).

The sampling technique had elements of 'self-selection' as participants were invited informally (Saunders, 2019) and 'heterogenous-purposive' sampling as there is a clear population from which to select participants, based on the author's judgement and expertise. Approximately 5 Business owners/managers will be the participants in semi-structured interviews using the instrument of interview topic guide of questions. All participants are from the business network of the author, and some are extended family members.

Data Collection

A multi case study method will be adopted including the business of the author who is main researcher. This empirical inquiry will allow investigation of contemporary phenomenon (Yin, 2014) in its real world context (i.e. sme fashion businesses in NW England region).

The author will be acting as 'observer-as-participant' and collecting data and reflecting during their normal business activities, within the supply chain network that all other participants use. This role is completely overt and has the added advantage of allowing complete focus on the research role (Saunders et.al., 2019).

From a research ethics perspective, it could be deemed that the author is too involved in the research sample and that confidentiality or anonymity may be compromised. However, the lack of historical data on this small business community emphasises the notion that there is reluctance to be involved in such research, and the author's links have instilled a level of confidence in participants. Confidentiality issues have been addressed through the participant information documents, and the verbal assurances offered by researcher to participants that their co-operation is purely voluntary and withdrawal is ultimately their right. To date only one person from the sample has been reluctant to participate.

Data Analysis

Data analysis will involve elements of Content analysis and Narrative analysis from the interview transcribes and researchers notes. Thematic analysis will be used to enable extraction and interpretation of rich data that fully addresses the research objectives.

From this stage there will be a process that involves several elements of coding the data. NVivo is strongly advocated by King (2004) as a method of data management and in helping the process of segmenting text to themes; linking research notes to coding, or to execute the more complex search and retrieve operations to aid the identification of relationships and themes.

FINDINGS/DISCUSSIONS

Several themes have emerged in the research so far such as Localisation, Family resilience, Cultural factors and Innovation. Many factors have been identified as either directly or indirectly impacting the success of these family firms, sometimes from within the family dynamic and within the dynamic of the supply-chain.

Before this research, little if anything has been documented on the

importance of the involvement of children in retail fashion businesses from a young age, and how that regular immersion in the dynamics of retail fashion have equipped them with an unrivalled awareness and knowledge of consumer behaviour and preference, as well as the ability to align product with market, through familiarity with suppliers. Some of the case study subjects had been present in their family outlets, on weekends and holidays from an age as young as 10 on average; and that is based on memory.

Cultural values also contribute to the ease at which retailers can enter this market or establish their cashflows; word of mouth recommendation, favourable and informal credit terms, informal loans from parents/family etc. are just some features of a system of doing business between Asian people in this sector. Parents and other next of kin see it as a moral duty to financially support younger family members in their aspirational quest for success.

The notion of honour plays a large part in the cultural dimensions of this cluster of businesspeople. Even the 'reputational integrity' of previous generations adds value to the current generation's scope for success in terms of the supply chain and accessibility to credit and exclusivity to product lines. Some businesspeople have suggested that the status and standing of families back in the 'mother-country' will also impact on a willingness to do business in a more informal manner.

The transfer and depth of knowledge is a factor that contributes to longevity and one that creates a barrier to non-Asian entrants to the market. Many extended family members that traditionally arrived in the UK during the 1980's was introduced to this business by gaining immediate employment in family retail or wholesale locations. This activity was widespread at a time of large migration to the UK and produced a rich learning environment with access to highly experienced mentors, a strongly established supply network and an inbuilt system of interfamily financial support.

This ongoing research will be contributing a valuable set of knowledge from within the largely elusive Asian Family business cluster of fashion retailers, in the north-west of England. Most importantly it will generate knowledge about the Asian businesspeople in the region and its significance in shaping the evolution of contemporary businesses that are now leading the world in fast-fashion retailing.

REFERENCE LIST

Adhikari, H. P. and Sutton, N. K. (2016) "All in the Family: The Effect of Family Ownership on Acquisition Performance," *Journal of Economics and Business*, 88, pp. 65–78. doi: 10.1016/j.jeconbus.2016.08.001.

Becker, H. S. (1998). *Tricks of the trade: How to think about your research while you're doing it*. Chicago, IL: The University of Chicago Press.

Belkhdja, O. and Daghfous, A. (2021), "Exploring the double-edged sword of familiness from a knowledge-based perspective", *Baltic Journal of Management*, Vol. 16 No. 1, pp. 71-96. <https://doi.org/10.1108/BJM-12-2019-0416>

Burnard, K. and Bhamra, R. (2011) "Organisational Resilience: Development of a Conceptual Framework for Organisational Responses," *International Journal of Production Research*, 49(18), pp. 5581–5599.

Habbershon, T. G. (2006) "Commentary: A Framework for Managing the Familiness and Agency Advantages in Family Firms," *Entrepreneurship Theory and Practice*, 30(6), pp. 879–886. doi: 10.1111/j.1540-6520.2006.00158.x.

Jolly, C (2004) *Factors influencing ethnic minority business participation in national business support initiatives: A study of the hospitality industry*. PhD Thesis. School of Management. University of Surrey.

King, N. (2004). Using templates in the thematic analysis of text. In C.Cassell & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 257–270). London, UK: Sage

Magasi, C. (2021) *THE EFFECT OF SUCCESSION PLANNING ON THE SURVIVAL OF FAMILY -OWNED MANUFACTURING FIRMS IN DAR-ES-SALAAM REGION CHACHA MAGASI A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY DEPARTMENT OF MARKETING AND ENTREPRENEURSHIP OF THE OPEN UNIVERSITY OF TANZANIA 2020*.

Martins, J. M. and Fernandes, M. T., (2015). "Too small to innovate. Creating value with fewer resources." *Journal of Business Strategy* 36(2):

25-33.

Moore, S. B. and Manring, S. L. (2009) "Strategy Development in Small and Medium Sized Enterprises for Sustainability and Increased Value Creation," *Journal of Cleaner Production*, 17(2), pp. 276–282. doi: 10.1016/j.jclepro.2008.06.004.

Oxborrow, L. and C. Brindley (2014). "Disintermediation in the apparel supply chain." *Journal of Fashion Marketing and Management* 18(3): 252-268.

Remenyi, D., Williams, B., Money, A. and Swartz, E. (1998). *Doing Research in Business and Management: An Introduction to Process and Method*. London, SAGE Publications Ltd.

Saunders M.N.K, Lewis, P. & Thornhill, A. (2019). *Research Methods for Business Students*. 8th ed. New York. Pearson Education Ltd.

Szirmai, A., W. Naudé and M. Goedhuys (eds), *Entrepreneurship, Innovation and Development*, Oxford, Oxford University Press, 2011

Yin, R. K. (2014). *Case Study Research: Design & Methods*. 5th ed. California, Sage Publications inc.



DISSECTING CURRENT PEDAGOGY IN INDIA USING 'PLAYPONICS' AS A PROBE - ENABLING SHIFTS FROM 'ROTE' TO KINAESTHETIC LEARNING

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ABSTRACT

Playponics (<https://playponics.in/>) amalgamates diverse and seemingly unrelated fields of STEAM education, horticulture, kinaesthetic learning, health and sustainability. The project was introduced in India by Sheffield Hallam University's Lab4Living (<https://lab4living.org.uk/>), has taken root in the Indian setting, and is now expanding into the UK. Playponics is a multifaceted initiative, however, its key objective is to instil in current and future generations awareness of environmental sustainability issues and help develop user empathy and skills to tackle and contribute to environmental preservation.

There are many dimensions to the Playponics initiative. This paper has a focus on its educational values. To form deeper understandings of these aspects of the project, iterate concept integration, and address various curricula challenges in the Indian context, the team collaborated with two educational experts, one from the United Kingdom (Lyndsey Stanton) and one from India (Rashmi Chari). Each hold deep understandings of implementation, local pedagogy and learning modalities. Their subsequent reports and analysis of a pilot study informs our strategy towards local uptake and importantly commercialisation.

Recommendations to overcome a diverse range of school settings, education boards, curricula, and the manifoldness of geographical, social and economic structures of the country, have been made. The research highlights the potential positive impact of integrating Playponics in Indian curricula. The UK expert report describes a holistic understanding of the structure and function of the Indian system. It focuses on 'how' and 'where' the different aspects of Playponics can be used to kinaesthetically, as opposed to 'rotely' influence syllabus. The report from the Indian expert informs practicalities of lesson introduction into current pedagogy and challenges of (industrial scale) implementation. Both the experts have kept in mind added advantages Playponics may bring considering the introduction of the New Education Policy 2020 (NEP 2020) and explores how we may integrate infused STEAM and EE lessons into the new curricula.

INTRODUCTION

Playponics is a multifaceted initiative (see Figure 1.). However, it's key objective is to instil in current and future generations awareness of environmental sustainability issues and help develop in users both empathy and skills to tackle and contribute to environmental preservation. Essentially, Playponics set ups provide play learn environments that take the form of 'playground gardens' (Figure 2.). These can be implemented in schools and other social as well as community settings and in practice, energy expended by users when using the 'play' component of the set ups is used to help sustain crops in the 'garden' component. In this way users can learn about a variety of social, technical, horticultural, and environmental issues in tangible or less rote ways.

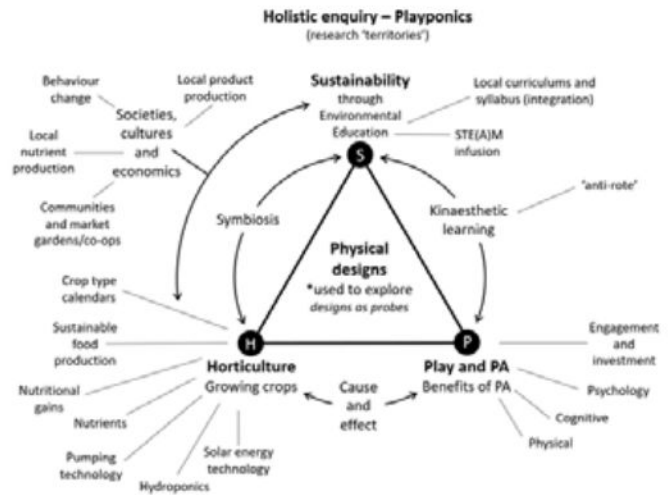


Figure 1. Holistic scope of the playponics research. Designing health, wellbeing, and sustainability interventions.

The playponics research is highly applied and utilises the playground garden format product prototypes (Figure 2. and 3.) to explore and expand the topics of interest. Playponics set ups have been technically demonstrated to TRL7+ and TRL4 regarding learning context development. The concept involves the augmentation of existing and/or bespoke playground furniture and equipment with systems enabling 'play energy capture'. Once stored this energy is used to help facilitate crop growth/horticulture practices. This is enabled by the fitting of water pumps to playground seesaws, swings and the like (Figure 2. and 3.), that move nutrient rich water to elevated holding tanks. These subsequently gravity feed and irrigate conventionally or hydroponically grown crops. Therefore, as users play, they can see and experience their play effort contributing to crop health in what we term play and learn environments. As engagement in play continues, notions and knowledge around technology, community, cooperation, natural systems, symbiosis, cause and effect are built in the participants.



Figure 2. The physical framework for playponics comprises of playground equipment or outdoor exercise equipment fitted with pumps that move water around a closed system when the equipment is used. The water is pumped to an elevated holding tank where it can be infused with nutrients. It is then gravity fed into 'growing frames'. (11th GRIHA Summit, Delhi, December 2019)



Figure 3. The pilot study installation at Khanpur Garbi, Uttar Pradesh, January 2021.

CONTEXTUAL CHALLENGES

As suggested thus far the challenges present in this context are broad ranging from social, economic, structural and environmental.

Environmental Education (EE), for example, has been a compulsory subject in all formal education systems in India since July 2004. The Supreme Court of India ordered curricula to be prepared to make the necessary 'inclusions' in December 2003, in response to a Public Interest Litigation filed in 1991 by Shri M. C. Meheta. However, as structurally India recognises 3 national boards and numerous state boards for conducting exams in schools (formal education) the curricula is different for different boards. Even with the variation in the subjects and the approach in teaching, this is one of the few orders that apply to all levels of formal education. The government recognised the need for creating awareness in the minds of children about environmental issues, the idea to integrate EE into the taught subjects like Science, Social Studies, Mathematics, language, etc. instead of introducing it as a separate subject all together. Infusion was considered a suitable approach as environmental topics and issues are multidisciplinary. The Ministry of Human Resources and Development (MHRD) set up a National Curriculum Framework (NCF), a national steering committee and 21 National focus groups to develop a tool to promote critical thinking and problem solving approaches to sensitize the future generations on the issues pertaining to environmental degradation. The introduction of practical ways of learning was new to the education system that is primarily based, and remains, 'rote learning'.

Further, in 2005, upon the recommendation of the NCF, the NCERT

(National Council for Educational Research and Training) put in place a new system for 'infusing' EE into the education system. Since a lot of focus areas in the different boards at different levels of education did not allow easy integration of EE into the existing syllabi, it was introduced as a separate subject that was compulsory for students at all levels of education. Exam boards had the freedom to make independent adaptations to their curriculums as needed. Various efforts have been made by the NCERT to create awareness among the students and the teachers and promote EE. These efforts have not, however had the desired effect and there are many underlying reasons for that.

Both, the teachers and the students are not used to practical learning methods. The aim of the education system is more inclined toward promoting literacy rather than educating children. Although the government and the Central Board of Secondary Education (CBSE) felt the need to implement EE as a part of the curriculum, the results seem to be inadequate, the students are not learning because even though efforts were made to integrate EE with STEM subjects in the hope that the teaching would be carried out practically, the curriculum remained largely 'textbook' and was overlooked. In some cases, the students are asked to memorize the syllabus instead of using it to challenge their creativity and problem solving abilities.

Socially India is a 'young country', a third of the total population of the country are children between the ages of 0 to 14yrs. Economically, agriculture, with its allied sectors, is the largest source of livelihoods in India. 70 percent of its rural households still depend primarily on agriculture for their livelihood, with 82 percent of farmers being small and marginal. In 2017-18, total food grain production was estimated at 275 million tonnes (MT). India is the largest producer (25% of global production), consumer (27% of world consumption) and importer (14%) of pulses in the world. About 118.7 million people are farmers or cultivators and 114.3 million agricultural workers and labourers with little or no access to farming aids, most of the work they do is manual. The resource intensive ways of Indian agriculture has raised serious sustainability issues too. Increasing stress on water resources of the country would definitely need realignment and rethinking of policies. Culturally, while there have been developments in the field of agriculture, the Indian farming population does not stand to benefit because the work is so labour intensive, returns insufficient to cover expenses, while many farmers migrate to cities in search of work, women take over the work in the fields that is treated as an extension of their household chores. This can be compounded by gender disparities, with the number of girls and boys in formal education in India heavily weighted in favour of males.

The government of India continues to make efforts to improve the education system. In July 2020, a New Education Policy (NEP 2020) was announced that introduces vocational subjects and gives the students more freedom to choose the subjects they would like to study with a target to provide quality education for all by 2040 (synonymous to the agenda of Playponics).

The team devised a pilot study to evaluate the hydroponics concept in context. Interactions with families from farming villages in Uttar Pradesh included the installation of a playponics prototype/probe at Khanpur Garbi in January 2021 (see Figure 3.). The primary school had a high student drop out rate; the parents who have not received any formal education themselves expressed their reluctance to send their children to school. They believed it would be more productive to have the children help out in the fields. Some communicated that although they take their children's education seriously, they could not afford quality education. A lot of adults who had to drop out of school at a young age have shown interest in participating in learning programs, specially, if it enables them to be more efficient in their day to day activities. With playponics, we planned to create learning modules not only for the children but for the adults too who had to drop out of schools to support their families. The set up will enable the participants to understand various STEAM subjects practically in the hope that they will be able to implement their learnings in their farming practices and empower themselves and their families to live better lives.

Together, the initial premise, the prototypes, the iteration of topics of interest and the Khanpur Garbi Pilot Study formed the briefing materials for the educational experts.

BRIEF FOR THE EDUCATIONAL EXPERTS

The team decided to consult two educational experts, one from India and the other from the UK. They both have in depth understanding of the pedagogies in their respective countries and a familiarity with the practices of the other. The team believed that would be a good balance to learn from and implement the best practices of both contexts. They were both asked to review the concept, critically analyse it with respect to the various curricula and inform on the shortcomings and potential challenges of implementation. They were also asked to suggest frameworks for synthesis into the current education system and the advantages and in turn, the challenges associated with those methods.

UK EDUCATIONALIST EVALUATION

The report by the UK educational expert comprises of a qualitative analysis, summary and recommendations for integrating Playponics as a tool into the various Indian curricula. It compares the different pedagogies in the Indian and the British education systems. The report considers the overall experience of children navigating the Indian education system keeping in mind the socio economic, cultural and health related challenges faced by the children which results in a high dropout ratio by the time they reach the senior secondary level and the policies implemented by the Indian government to tackle these challenges. It takes into consideration the announcement of NEP 2020 and the impact of the pandemic, especially on primary education, poverty and languages.

A comparison between the old curriculum (1986) and NEP highlights how the latter overlaps with Playponics. The report further dissects the various components of Playponics and provides a detailed exemplar of a framework that integrates these components with the principles of the National Curriculum (2005) and, separately the principles and pedagogies of NEP 2020. It evidences a relationship between the principles that power Playponics and the core subjects of the National curricula and NEP 2020 with a special focus on the synergy between Environmental Education (EE), STEAM as well as vocational subjects. It further offers and explores a variety of learning theories taking into account the current education climate of the country.

“This recognition of, and focus upon STEAM and climate change, along with a recognition of imminent upcoming changes in employment needs provided fertile ground for Playponics to enter the educational arena, and position itself. Playponics can be tool of innovative and creative learning, scaffolding children’s STEM learning and supporting the aspirational New Education Policy (2020).”

PEDAGOGY REPORT CONCLUSION

The report concluded that the concepts defining Playponics are in line with both the National Curriculum (2005) as well as the NEP 2020. Considering the ‘adaptability’ of playponics and tailoring each set up to the needs of the local community, one of the learning theories discussed was the ‘Learning from TESS- India’s Approach to OER Localisation across Multiple Indian States.’ Perryman, Hemmings- Buckler and Seal (2014) that defines the ‘localization considerations’ when transferring education to another location or country and the associated challenges. Our expert concludes “When you consider potential issues with embedding Playponics into a new school or culture, it becomes clear that a one directional flow of knowledge and resource creation should, in the long term, be avoided. Rather a collaborative approach should be considered as being embedded readily within the use of Playponics. This should enable a rich consideration of localisation needs and facilitate creation and use of shared knowledge. This partnership approach with communities and schools should prove mutually beneficial in the sharing of expertise and contextual understanding around how best the resource (Playponics systems and infrastructure) can be applied, allowing the resource to grow and develop iteratively and uniquely with each community. This should allow room for stakeholder ownership and eventual ownership of the embeddedness of the Playponics resource into the curriculum and upkeep of the Playponics resource and related

teaching materials.”

INDIAN EDUCATIONALIST EVALUATION

The Indian Educational expert provided the team with an interesting first hand account of the pedagogy of the current education system, it’s challenges, considerations and insights on NEP 2020. The report highlights the effect of the pandemic on the students in India and the challenges faced by the various educational bodies to manage the learning crisis.

The social and economic inequalities became more pronounced because of the pandemic, “In India only 24 per cent of the households have internet access. In urban areas the condition is better with 42 per cent of households having access to the internet as compared to 15 per cent in rural areas. As a result, online education could only cater to the need of the rich and urban students.” Playponics provides low cost, ‘localized’ learning tools that can be adapted to accommodate for different sizes of ‘installation sites’ by enabling children with practical means of learning. Further, by introducing to them the different components of Playponics can and how they can be used to understand and explore their syllabi, we can equip them with tools that assist learning and promote creative problem solving skills.

The reports reaffirmed the team’s initial decision of consulting with the two experts hailing from different backgrounds. Both the reports were synonymous and the information provided by both complimented the other’s to fill in the gaps “While the report is a detailed analysis of the Indian school system well supported by facts, figures and references, it overlooks contribution of a major stakeholder in education- Private Un-aided Schools that account for 25% all Indian schools and 40% of the total student enrolment in India. The Indian school system is one of the largest in the world with more than 1.4 million schools with 250+ million students enrolled. The Indian education system suffers from two major challenges- access and quality.”

The report categorizes and analyses potential acceptance in two major categories- (a) Pedagogical Potential & Impact (b) Socio-economic Potential & Impact across different levels of education.

“The change that is waiting to happen in Indian classrooms can be ushered in universally, effectively and strategically using Playponics. Playponics as a learning resource is valid across both, the rural and urban, school-scape of India, hence its universal appeal. It is evidence based hence suited to the enquiry based, discovery and experiential pedagogies. It is holistic as it involves the development of cognitive, psycho-motor and affective capacities of the learners. Its multidisciplinary natures make it suitable for integration across all the subject areas and facilitate critical thinking as learners analyse issues to connect the dots and construct their understandings.

Since it suggests a solution to critical issues and worldwide problems such as hunger, poverty, conservation of resources, protection of environment, education of children, it has an undeniable relevance in the 21st century. Hence its integration in the learning content is not forced or alien, in fact it sets the stage for discussions on the relevant issues to happen in the classrooms and may provide youth the motivation to think of more sustainable solutions to the world problems.

In 21st century knowledge has a very short shelf life, what children need to learn is ‘how to learn’ as this will help them regularly create new knowledge and solve problems of the world in which they will live. Playponics as a learning resource has the potential to bring into teacher use the experiential pedagogies that will train learners in these critical and creative thinking skills that NEP2020 wishes to introduce in the Indian education system. The Inter-disciplinary and multi-disciplinary nature of these pedagogies makes them best suited to the 21st century world of work and life.”

OBSERVATIONS AND DISCUSSION

Based on the experts’ analysis, conclusions and acceptance from the various stakeholders in the education sector we have interacted with, the team arrived at the following conclusions and plan of action subject to securing further funding to support the work.

The discussions of the various learning theories with the UK educational expert, the NEP 2020 is, as highlighted by Indian expert in her report “a shift in the school vision and philosophy from an examination oriented system to a flexible, inclusive, holistic and multidisciplinary system of learning.”, which is also defined as a potential challenge faced during the implementation of NEP 2020.

‘Indeed, with the quickly changing employment and global ecosystem, it is becoming increasingly important that children not only learn, but learn how to learn. Education must thus, move towards less content, and more towards learning about how to think critically and solve problems, how to be creative and multi-disciplinary, and how to innovate, adapt, and absorb new material in novel and changing fields. While learning by rote can be beneficial in certain contexts, pedagogy must evolve to make education more experiential, holistic and integrated, discovery oriented, learner centred, discussion based, flexible, and, of course, enjoyable. The curriculum must include basic arts, crafts, humanities, games, sports, languages, literature, culture, and values, in addition to science and mathematics, in order to develop all sides of learners’ brains and make education more well rounded, useful, and fulfilling to the learner.’ National Education Policy, 2020

“The Illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn” Alvin Toffler

Based on the objectives of NEP, the conclusions from both UK and Indian educationalists we conclude that Playponics offers an ‘In house’, ‘one stop solution’ for addressing and practically implementing the STEAM subjects as well as the vocational subjects being introduced since the implementation of the NEP. Some examples, as suggested in the report by the Indian expert include using the setups to provide a more hands on learning for commerce based subjects like accountancy, business studies and entrepreneurship exercise modules wherein students can hone their skills in these subjects by developing business modules to grow and sell hydroponic crops, explore expenses and profit margins etc. Similarly other aspects of the system can be used for other streams like science, computer applications, mathematics, arts, creative practices, life sciences, life skills and other vocational subjects.

Playponics has added advantages beyond the educational system. India being a largely agrarian country could greatly benefit with the use of technology and practices that involve growing crops in ways that are not dependent on weather conditions like rains for irrigation, this could significantly improve the conditions of the farmers in India. And smaller plots of land. Educating people beyond the classrooms is one of the many facets of the Playponics systems.

With the help of educational experts, we plan to develop learning modules comprising of STEAM subjects with environmental sustainability at their core, that fall in line with the ethos of the NCERT’s ‘infusion’ approach but are tailored to the specific needs of the different sections of society.

ACKNOWLEDGEMENTS

We would like to thank Lyndsey Stanton and Rashmi Chari for providing their expert reviews and advice to facilitate and progress the project. Also, GCRF and E3 funding programs for their support.

REFERENCES

Leigh-Anne Perryman, A. B. T. S., 2014. Learning from TESS-India’s Approach to OER Localisation Across Multiple Indian States. Journal of Interactive Media in Education.



CREATIVE SOCIAL ENGINEERING FOR HARMONIOUS LIVEABILITY

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BACKGROUND

"You are a teacher", the man declared.

"What kind of an astrologer are you?" I asked. "Can't you see that I'm not a teacher but a graphic designer?"

He smiled and nodded, "I'm sorry ma'am but in this life, your purpose is to be a teacher! Your mission was not accomplished in a previous lifetime."

I humored the gentleman whose expertise my mother had sought for other reasons and since then had forgotten this conversation over the 21 years since I returned to the US.

Fast forward to 21 years later...it struck me that I had indeed evolved into a teacher! What happened to the graphic designer, desperately seeking a job in advertising, corporate design, visual communications, publishing, web design, animation, digital media, interior design... wherever I thought my graphic design skills were ideally required? Those are, after all, the logical professions that a graphic designer would naturally pursue. How did I end up as a teacher? Does it mean I am no longer a designer?

Our paths evolve in the most unpredictable manner. Our purpose mysteriously unfolds within Life's grand design just like a project that continuously evolves while on the drawing board. I embarked upon a simple journey with the humble purpose of communicating with consumers to sell a service or product and stumbled upon a most extraordinary path.

Somewhere during the course of 36 years as an immigrant, the designer in me found synergy with the teacher in me. The designer manifests in varied professions just as a genie assumes many forms. Once you have been touched by Design, you live it. It flows within every cell of your blood and bones and your vision turns inside out, upside down and beyond! Design is not something you do... just as yoga is not something you do, but you are in yoga no matter what you do. When you are in design, every occupation, is enhanced with unique perspectives, out of the box ideas and infinite possibilities... be it cooking, composing music, gardening, writing, counselling, healing, managing a business, teaching....

At the core of Design consciousness is clarity: the ability to identify a problem and to seek solutions for it. Simply put, a positive, constructive mind. I would strongly advocate a design curriculum for young children from elementary school age, to sensitize them to extraordinary dimensions of life and help develop a problem-solving mind.

IDENTIFYING THE PROBLEM

Upon my arrival in the US, I was confronted by a distressing phenomenon known as "ABCDs" (American Born Confused Desis)¹, children of immigrants from the Indian subcontinent, who suffer from a deep shame and contempt for their ethnicity. They are uncomfortable with the Indian culture, avoid eye contact with other Indians and wish they could be like their white peers. As a result, they are distanced from their parents, who are still rooted in Indian culture. On a broader platform, I

watched fear and hostility increase within American society. I shuddered to think of the impact of such an environment upon my own children.

MY OBJECTIVE

I wanted to help create a generation of confident "Indian Amerikids"; to help them come out of the closet and live with pride as Americans of Indian origin. I had to first identify the source of the problem. Why did these children feel the need to reject their ethnicity?

PROBLEM SOURCE

My observations helped me connect the dots. I realized that mainstream American society was unaware of Indian culture due to lack of exposure. I concluded that the source of the ABCD syndrome was IGNORANCE! Ignorance due to superficial knowledge about India and the Indian culture. Indian culture was alien and disconcerting to Americans then, many of our customs and food seeming 'weird' and strange ... This led to distrust and disrespect.²

Second generation children of Indian origin in the US struggled to balance their dual cultural identity. This, combined with the pressure to "assimilate" into the dominant cultural milieu resulted in a sense of inferiority. The Indian community was ignorant of its heritage; its scientific and historical achievements and its rich culture of diversity and inclusion, while the much-hyped American culture demanded "assimilation" or threatened exclusion. Prejudice in mainstream American society was rampant due to lack of multicultural awareness. Americans educators were oblivious to the significance of the Indian civilization. Most people were influenced predominantly by Eurocentric history lessons and misrepresentations about India in textbooks and the media.³

Indian Americans therefore felt obliged to reject their Indian customs and traditions and embrace only American culture.

SOLUTION

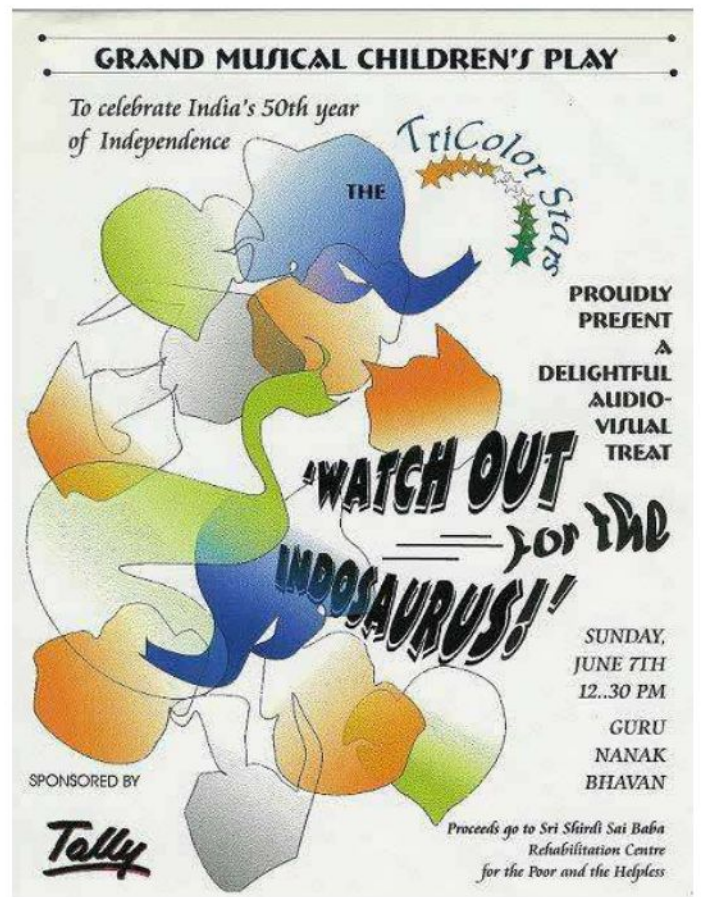
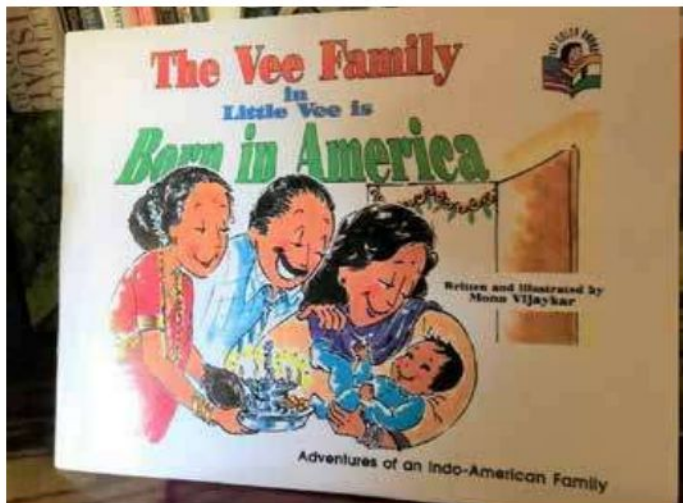
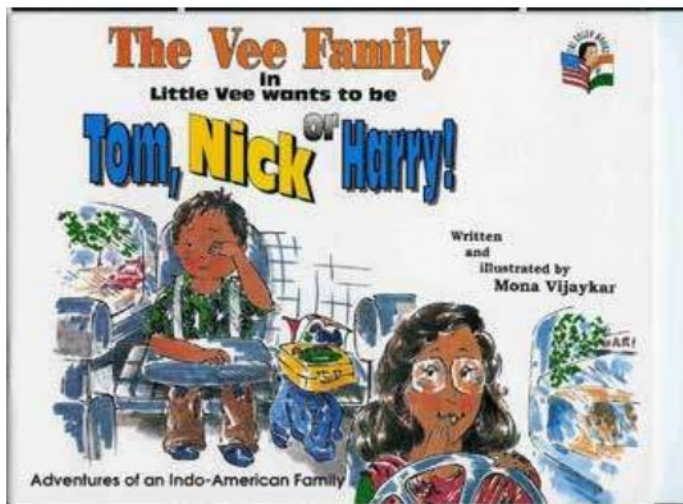
Vedanta reveals that the source of all human problems is our confused identity: The Reality vs the Illusion. Once that confusion is sorted with knowledge, there is clarity and no more fear or anxiety. I figured that the answer to the ABCD problem was identical. If we could, with KNOWLEDGE, dispel stereotypes and bring a deeper, meaningful understanding of the Indian civilization, we could help children discern the real Indian culture from its superficial perception.

In this painting below, I presented the core reason for multicultural education portraying Saraswati, She who flows in and through aall. The vast ocean of Knowledge brings waves of Understanding and upon those waves rides the solid shell of respect.... within it lies the precious pearl of acceptance and peace. I concluded that the solution to the ABCD problem was to generate so much public awareness that would help create ABCDs (American Born CONFIDENT Desis).



What I did not know then was how DESIGN would profoundly influence my efforts in the next three decades! I was about to build a very special product, "India Awareness". Generating awareness about India within mainstream American society required a multi-pronged design strategy. Over the next 36 years I would find that I had, in fact applied my knowledge of advertising, corporate design, visual communications, publishing, web design, costume design, animation, digital media, interior design, stage design and more... all rolled into one. I would Write and illustrate a series of children's books

- Create a children's page for a popular magazine (Visual currently unavailable) It was critical to first distinguish between Native Americans and Indian Americans for the benefit of the burgeoning Indian American population. It is no longer politically correct to refer to Native Americans as Indian but by their respective Nation.
- Write and direct a children's musical





This was a unique production with animation projected on the backdrop



The children had an opportunity to paint their costumes in fluorescent colors of the Indian flag. These would shine when they swirled under ultra violet lights.

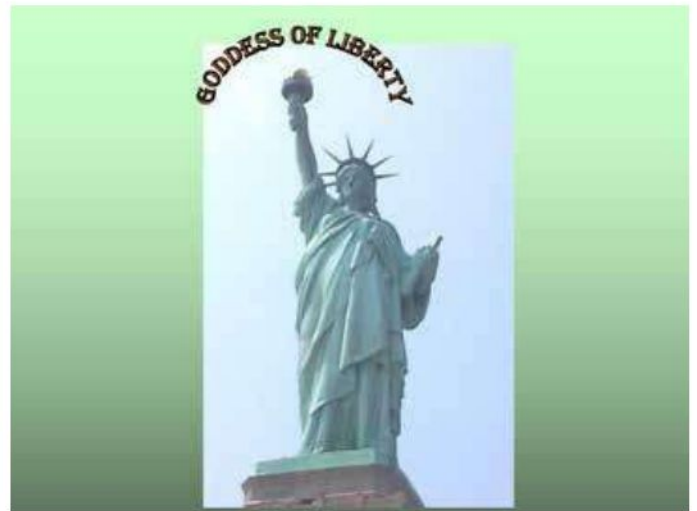
- Design a teacher assistance program INDIA IN CLASSROOMS to help dispel stereotypes and bring a deeper understanding about the Indian civilization in schools.



While cultural awareness is easier to achieve, academic awareness is far more challenging. Schools in America would diminish the significance of the Indian civilization and culture. In 2003 I drew attention to this serious situation and pioneered the effort to correct textbook content in American history textbooks. <https://www.scribd.com/document/16354710/Mona-Vijaykar-battles-to-change-perceptions>

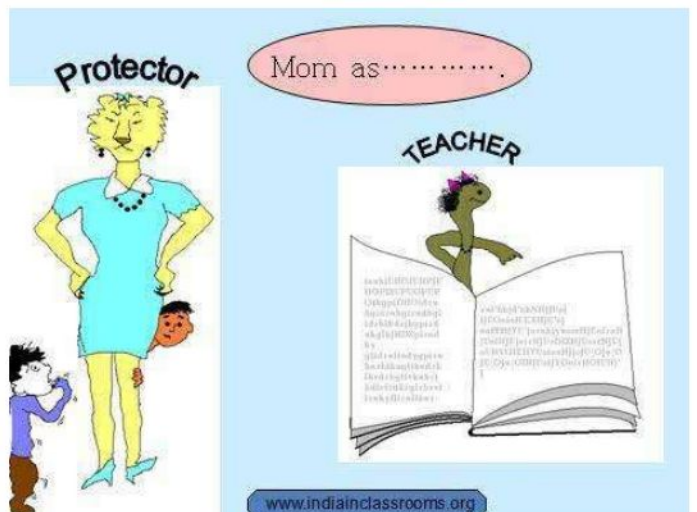
As a result, I founded a program for schools, 'INDIA IN CLASSROOMS' to help bring accuracy in their understanding of Indian history and Hinduism, unfortunately the most misconstrued religion. Hinduism would be explained thus: The Statue of Liberty represents something

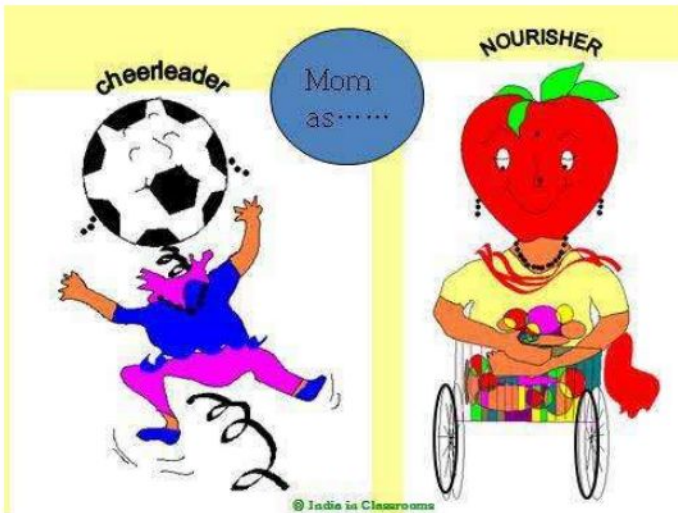
important and sacred. One would not disrespect this idol. Similarly Hindu idols represent important values.



My study of Vedanta provided me with insights into the similarities of all religious philosophies and more importantly, the universal spiritual connection. Alongside, my study of visual communication and symbolism revealed the profound universal principles of Energy that were brilliantly designed and represented in ancient India as sacred embodiments, (God and Goddesses). I had discovered the tools to illustrate the fine line between our diversity and similarity by decoding the many forms of "God" worshipped by Hindus.

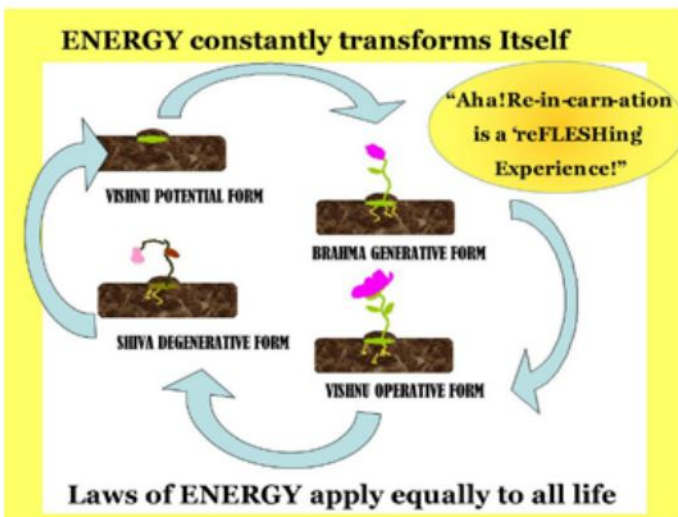
>> Infinite representations of the same God are just like infinite representations of my mother as.. Protector, Teacher, Cheerleader, Nourisher.....





Basics of Hinduism were explained thus:

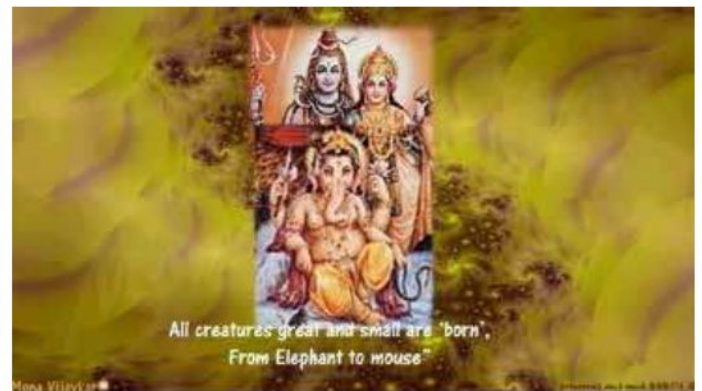
- Laws of Energy govern all life equally, regardless of religious differences
- Energy cannot be created or destroyed. It can only change its form (Therefore all bodies transform into new bodies...they re-in -carne-ate)



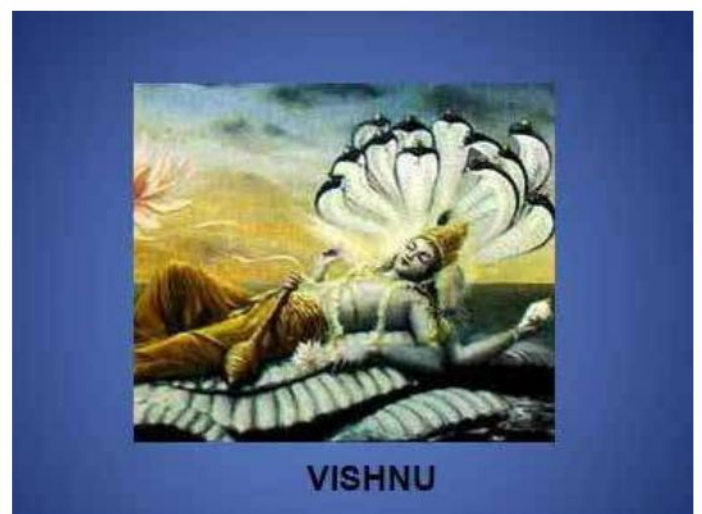
- GOD is another word for Energy in all its forms



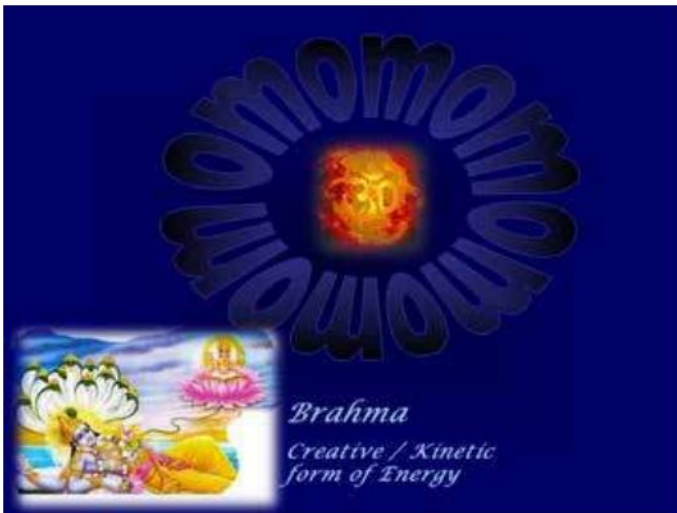
THREE REPRESENTATIONS of the DIFFERENT FUNCTIONS of the SAME GOD or POWER



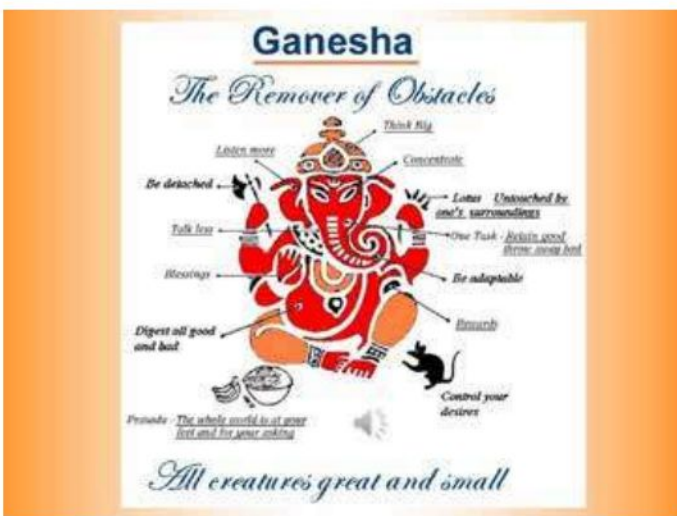
>> When Gross and Subtle forms of Energy unite, all forms of Life, or Ganas, are born



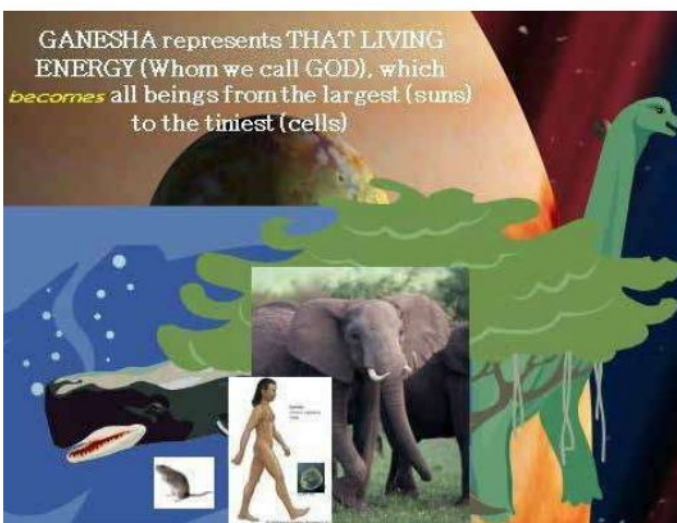
>> Energy as dormant with Potential to awaken is shown asleep and called VISHNU



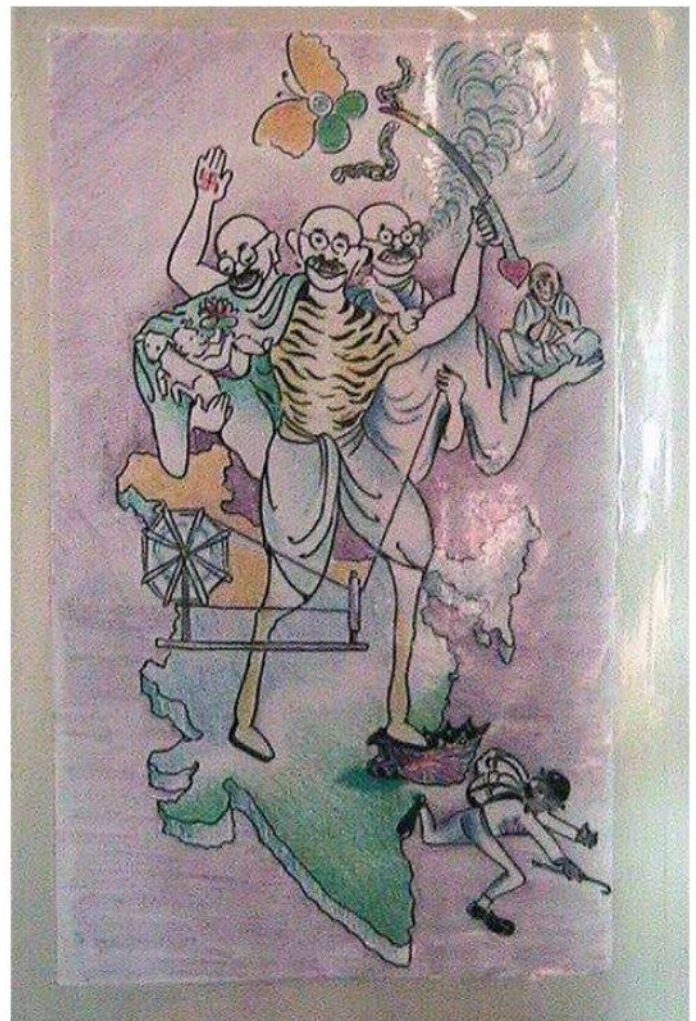
- When Energy stirs and awakens Hindus call It BRAHMA



- Everything that exists is a form of Energy from elephants to mice (Therefore Hindus see everything that exists.... all Ganas...as a form of God.)



- Students learned to decode symbols. Here Mahatma Gandhi's three heads represent "See no evil, Speak no evil, Hear no evil". The sword represents the weapon of Truth, Peace and love. His tiger's body shows fearlessness and camel's legs ...His ability to walk across the country.



- The most powerful aspect of design is the freedom to re-vision. People in India have worshipped forms of Gods for centuries. Over time these forms have lost their original meaning and therefore, their sanctity. They have been misconstrued with layers of superficial explanation. So, to revive their original significance, I recreated Durga and Laxmi for the benefit of my students.





- I would take students on field trips across the Bay Area to experience the diversity of Indian culture; visit religious architectural monuments and shops. They would watch musical and dance performances from across India, learn different art and cooking techniques, wear diverse costumes and discover a variety of weaves; Understand the true meaning of swastika and that "yoga" means to balance your Body-Mind-Spirit.



The core essence of the program was to highlight global cultural similarities





Compose songs for children
https://www.youtube.com/watch?v=2DuG5A_H5aE

Organize inter-cultural events



events Everyone came dressed in a costume other than their own



This poem titled ROOTS was written to celebrate our individual identities
 Present author readings
 Make



Make infinite presentations in temples, churches, libraries, art galleries, schools and rotary clubs.

Produce videos for Youtube

- * <https://www.facebook.com/116430971709250/videos/1054723987879939>
- * <https://www.youtube.com/watch?v=hL3Jno8rct4&t=4s>
- * <https://www.youtube.com/watch?v=Ng9a5kLrPzU>
- * <https://www.youtube.com/watch?v=eCvy9nwXYgI>
- * <https://www.youtube.com/watch?v=z4gXlGLLo-g>
- * <https://www.youtube.com/watch?v=FvMTJCQESnY>
- * Transmit a podcast for a global adult audience (VISUAL not currently available)
- * Broadcast a radio show



The Globasaurus Show was designed to initiate mutual appreciation of culture



Set up booths at fairs

The underlying theme in all of these projects was 'UNITY IN DIVERSITY', which is the essence of Indian culture. The Sanskrit phrase "Vasudhaiva Kutumbakam" literally means 'The world is a family'. What greater success that infinite such letters from students?



India in Classrooms highlights the fact that we share global cultural similarities in spite of our superficial differences and that we are all connected.



1. https://en.wikipedia.org/wiki/American-Born_Confused_Desi
2. <https://www.aljazeera.com/economy/2020/11/10/amazon-delists-briefs-doormats-with-sacred-hindu-symbols>
3. <https://www.thehindu.com/thread/reflections/are-foreign-journalists-ignorant-of-the-true-india-or-is-their-focus-on-news-that-sells/article19416256.ece>



TRANSFORM VS. REFORM TRANSFORMATION THROUGH COMMON GROUNDS IN INDIAN ARCHITECTURE

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BACKGROUND

The 13th century poet saint Gyandev created a children's game called Moksha Patam. The British later named it Snakes and Ladders & diluted the entire knowledge - instead of the original Moksha Patam. In the original one hundred square game board, there were squares where the ladders were found and one could move ahead faster, and squares where the snake waited with its mouth open. The 100th square represented Nirvana or Moksha. The tops of each ladder depicted a God, or one of the various heavens (kailasa, vaikuntha, brahmaloka) and so on. As the game progressed various actions were supposed to take you up and down the board as in life.

This paper explores the sense of community in India through architecture, the dissolution of the inside-outside limits and the inhabiting of a society flowing throughout a sequence of spaces organized by gradients of intimacy, understood in a spiritual and metaphysical fashion.

The title of the research proposal aims at bringing together the theoretical-practical approach to the question whilst directly representing the hypothesis raised: the differential aspect in the understanding of qualitative orders of space in the East and the West.

The objective of this proposal is to introduce the sociocultural factor in traditional Indian dynamics, in the theory, research, practice and education of the inhabited environmental education realms. Aiming for a contribution to building the foundations and reorienting the architectural discourse in order to promote a systemic thinking that fosters respect for the social intangible values offered by design in Eastern architectural and environmental spaces.

The contribution of this work aims to open fields of study and nurture ideas in the perception of space, covering in particular the Eastern, Indian architectural perspective presenting space as an asset of a unique multidimensional culture of humankind rights. This positioning involves disciplines named after geodesic astronomy, vernacular architecture, urban design, cultural sociology and anthropology, philosophy of life and a certain degree of acknowledgement over the foundations and the transformation of civilizations.

KEY WORDS

Social, Communitarian, Common, Architecture, East, West

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1. TITLE

1.1 TITLE AND SUBTITLE

The sense of community in India through architecture. The dissolution of the inside-outside limits. The inhabiting of a society flowing throughout a sequence of spaces organized by gradients of intimacy. From the public to the private versus from the social to the sacred or the community sense of "the common" in India.

Connecting and transition elements between social spaces: terrace, balcony, "verandah", "kutir", "otlas", "khadki", "chowk" or courtyard, "parsal" o "osari"

Analysis through works in Ahmedabad, Maheshwar, Colombo (Sri Lanka): Pols, Mohallas and Havelis; Gandhi Ashram; Gandhi Memorial, Charles Correa; CEPT University, BV Doshi; REWA Handloom Weaving Society, Maheshwar; Ahilya School, Revathi Kamath; Bawa Studio, Geoffrey Bawa.

The title of the research proposal suggests gathering the theoretical-practical approach of the question. The title represents directly the hypothesis raised: the differential aspect in the understanding of qualitative orders of the space in the socio-cultural dwelling in India. This hypothesis is understood as a premise subject to modifications inherent to the development and progress of this work.

The objective of this proposal is to introduce the social cultural discourse into the theory, research, practice and education of the inhabited environment, the latter being a more suitable term than constructed. Contributing to building the foundations and reorienting the discourse to promote the systemic thinking that encourages the respect for the social intangible value offered by each proposal of organization and design of the inhabited space, through the use of interdisciplinary methods to gather under one umbrella the scientific, ecological, technological, philosophical and socio-political dimensions of the theme of inhabited - rather than constructed- environments addressed from a culturally sensitive perspective.

The contribution of this work aspires to open areas of ideas in the perception of the space as a culture's asset. This stance involves vernacular architecture, urban design, sociology and cultural

anthropology and philosophy of life.

The personal vital experiences in different work environments and geographies motivate and support the momentum of this intention and accompany it in this sense of professional abilities in transnational education and the markedly different correlation challenges and activities between cultures experienced over nine years living in India and Sri Lanka. The original search for knowledge is committed to contributing to the design, preservation and integration of culturally sensitive environments.

2. METHODOLOGY

The analytical prism of this study is both of a sociological and architectural and urban nature, understanding the unequivocal interrelationship between both practices from a perspective of neighbourhood or urban area.

Method of study.

In India, customs are sacred and are not foreign to the variety of specificity within individuals. In other words, regardless of one religion or another, all individuals agree on the value of a sacred culture of "something in common", be it religion or none religion, the specificity that is practiced under this very premise of "something in common". As Maheshwari & Werd (2020) state "With Vedic architecture the individual is well connected to the local laws of nature as well as to the universe as a whole."

This means that the intellectual development of the architect cannot be used neither as the only nor as the central method of reference or only evidence in a study, despite this being of such an importance in the history of 'Western-centric' traditional architecture. In the light of the great uniformity in the understanding of space and time in the collective way of thinking and the sense of being in India, the method will rather be a social vital approach than purely architectural.

Theoretical models may help in dealing with internal structures of the city. However, the way the city relates to the common "outside" is the key in here. It is more the relevant when we come to recognize the difference between analysing and conceiving it. The first designs are at the core of this essential difference in standpoint terms: where is the limit? Is it a line segregating the territory or is it other or none?

Mahadevia (2007) quotes (Badcock: 1984) stating that "these are, a) the morphological models, b) the urban ecology models, c) the trade-off models, d) the behavioural theories and e) the structuralist theories. The first one is based on the paradigm of morphology, the second and the third on that of logical positivism and the last two on behaviouralism and structuralism respectively."

In this way, the topic will be better approached from a specific, social, humanist, experiential and housing point of view. An analysis will be carried out of the spaces that surround, form and enclose indoors and outdoors and all the intermediate points and gradients conceived from the very beginning of the development process of inhabited spaces and of the buildings themselves, as a whole and as a constructed act and gesture, given up to a superior order of things. The study displays an anachronic comparative – out of the order of time, as it is understood in the oriental culture –, instead of opting for trying to trace its chronological development over linear time.

2.1 JUSTIFICATION OF THE METHODOLOGICAL METHODS ADOPTED IN THE RESEARCH

A central and fundamental reason is that studying certain cases as different ways of understanding the inhabited space – term that goes beyond the domestic space and refers to the lived space – aims at the direct expression of values, images, changing perceptions, and ways of life, as well as the presence of certain proofs, which become an essential theme worth of study.

Another important aspect in this regard is the need of transcultural studies and comparisons, which are useful in two ways: from the practical point of view, since they are different cultures or subcultures that live together in an urban fabric of a strong social nature, with the consequent expression according to the needs of different patterns of spatial configuration and settlement; from a perspective focused on establishing comparisons of this kind, the cases can provide an idea of the

basic nature and the essential nature, the idea of shelter, of cohabitation and ultimately that of living as a way of being in this world and thus approaching an idea of the design process and the meaning of cultural needs. However, this need of intercultural comparison goes beyond that. With the aim of understanding the culture and its relationship to the way of living, we need to try ensure an intellectual encounter with the idea of man in the world in all its cultural varieties, including key examples, however primitive, old, or insignificant they might seem.

"The glaciers of Mount Kailash are the source of two important river Valley Civilizations –(a) SINDHU or INDUS Valley Civilization from its Pre-Harappan (7000 BCE) to Post-Harappan diaspora (1000 BCE) in the West and (b) the SANPO or Brahmaputra Valley Civilization in the East." (Sen 2022).

From an anthropological point of view, we see how Western cultures raise institutions around the idea of the government's power, social control and money. Meanwhile, we witness how the ancestral culture in India has built its institutions around the search for the understanding of life in all its full magnitude of existential dimension.

"The Colonial historians have repetitively avoided the East-West trajectory of Indian Civilization. They forged an Invasion Myth from the West through the Eurasian Steppes to intelligently contain the Vedic culture within the 2000 BCE. The archaeology of the Indus Valley was therefore misinterpreted and de-contextualized." (Sen 2022).

The differences between the kinds of buildings in different locations and of different programmatic nature are the practice and evidence of the differences in culture, rituals, cultivation of understanding, wish and vital positioning, ways of life and social organization, as well as climate, landscapes, and available materials and technology. Similarities are the evidence not only of areas where some or all these factors have coincided, but also of some basic proofs in the needs and wishes of human condition.

Buildings can be studied in different ways. One can look at them chronologically, tracing the development over time from any of the architectural techniques, forms and ideas or thoughts, or one can study them from a specifically socio-architectural perspective, as living remnants of particular cultural conceptions and dynamics. In this case, the latter is understood as the most useful and convenient.

The buildings and residential enclaves that are object of this analysis have been chosen responding basically to a logic of a nature that is not chronological; the reason for their selection is the product -which they are- of the culture they represent.

3. OBJECTIVES

The objectives of this research work are three: to broaden and complete the due academic understanding of the diverse conceptions of architecture and the historical analysis thereof; to build bridges of informed dialogue between the disciplinary areas that approach the question of the instructed and informed architecture according to the traditions in India, the East, and those which govern the order of life in Europe and the United States, the West; to clarify architectural directions and open possibilities to new ways truly inspired by the depth of the way of seeing things in India and by the opportunity offered by means of this review to make an interpretation of both directions – the East and the West – throughout the ages.

3.1 ABSTRACT AND KEY WORDS

ABSTRACT (500 WORDS)

The 13th century poet saint Gyandev created a children's game called Moksha Patam. The British later named it Snakes and Ladders & diluted the entire knowledge - instead of the original Moksha Patam. In the original one hundred square game board, there were squares where the ladders were found and one could move ahead faster, and squares where the snake waited with its mouth open. The 100th square represented Nirvana or Moksha. The tops of each ladder depicted a God, or one of the various heavens (kailasa, vaikuntha, brahmaloka) and so on. As the game progressed various actions were supposed to take you up and down the board as in life.

From the public to the private space in the West versus from the social to the sacred space or the communal sense of "the Common" in the East.

This paper explores the sense of community in India through architecture, the dissolution of the inside-outside limits and the inhabiting of a society flowing throughout a sequence of spaces organized by gradients of intimacy, understood in a spiritual and metaphysical fashion.

The title of the research proposal aims at bringing together the theoretical-practical approach to the question whilst directly representing the hypothesis raised: the differential aspect in the understanding of qualitative orders of space in the East and the West.

The objective of this proposal is to introduce the sociocultural factor in traditional Indian dynamics, in the theory, research, practice and education of the inhabited environmental education realms. Aiming for a contribution to building the foundations and reorienting the architectural discourse in order to promote a systemic thinking that fosters respect for the social intangible values offered by design in Eastern architectural and environmental spaces. The use of interdisciplinary methods serves the purpose of bringing together humanistic and scientific dimensions under the same umbrella: ecological, technological, philosophical and socio-political parameters on the subject of inhabited environments are approached from a culturally sensitive perspective.

The contribution of this work aims to open fields of study and nurture ideas in the perception of space, covering in particular the Eastern, Indian architectural perspective presenting space as an asset of a unique multidimensional culture of humankind rights. This positioning involves disciplines names after geodesic astronomy, vernacular architecture, urban design, cultural sociology and anthropology, philosophy of life, and a certain degree of acknowledgement over the foundations and the transformation of civilizations.

The diversity found in architectural typologies as a response to various programmatic specificities and as a response to specific locations is evidence to the numerous differences in not just East and West cultures but in Modern forms in the current global reforming culture times and Traditional forms as a transformation possibility in the ANCIENT times.

Thus, the subject will be studied from a social, humanistic, experiential point of view, analyzing the transformative Eastern (Indian) factor in different buildings and offering an anachronistic view in comparison to the rather usual Western way of choosing to trace its chronological reforms and developments throughout different periods of time.

KEY WORDS

Social, Communitarian, Common, Architecture, East, West

3.2 JUSTIFICATION, GROUNDS AND REASONS FOR THE RESEARCH AND REFLECTION ON THE IMPORTANCE AND NEED FOR SUCH A RESEARCH STUDY

It is implicitly accepted that there exists a link between the cultural behaviour in the use and understanding of the space and the architectural form and composition thereof. This link exists in two senses: first, in the sense of an understanding of the behaviour according to cultural patterns, including psycho-social desires, motivations and feelings, of an essential nature for the understanding of the built form; and second, in the sense that the forms, once they are built, affect or have an impact on the behaviour and way of life. Each of these two aspects is of great interest for architecture and for all disciplines devoted to, involved or interested in the habitat of the human being. The question then is in what ways and to what extent the changes in culture expressed in the experiential behaviour relate to the changes in the inhabited environment and its manifest physical form – understanding the said changes beyond the tangible aspect and the climatological tangible and intangible factors.

It is possible that, even without having a detailed knowledge about the way, style and dynamics of life, and only having the formal object itself – building or settlement – as the only evidence, we can recognise and appreciate the parameters or vertebral axes of a given culture. However, in the light of this premise, the idea of architecture as a possible fact outside a given culture needs to be taken into account; this is, architecture as a human technique that envelopes and goes beyond the culture on which it is based.

Establishing links between these outlined forms, taken as physical manifestations of life patterns, beliefs and desires presents the challenge of understanding the architectural form outside the context

of its environment, culture and lifestyle it accommodates. It seems then interesting to try to identify which of the forces acting on the inhabited form of the outlined and the constructed space –including indoors, outdoors, surroundings and intermediaries and constructions –could be considered as crucial and essential, which as primary necessary and which could be considered as secondary or complementary. This kind of situationist analysis brings us closer to understanding how an architectural form originates from and expresses itself through the understanding of the human question embedded in its culture.

It is interesting to note that the variation between the architectural typologies recognised on the basis of its climatological response is relatively smaller than the number of types of architectures – let us say, houses – which are often located in areas with a similar climate, than the one we find between different cultures.

The specific task then is to identify, extract, select and analyse these characteristics of the constructed habitat or architecture-environment which seem to be more universal and examine them in the different contexts chosen. A research work of this nature aims at better understanding what is that breathes life into the dynamics of itineraries and times and schedules of rooms and spaces, the forms and orders adopted by these buildings or groups of buildings and their surroundings, while approaching a question of a more abstract nature: what is it that enables us so easily to identify, often at a glance, the programme, culture or even subculture to which a building, environment or settlement belongs? Instead of trying to describe or classify the differences in the logic and tectonic of the shapes of these buildings, their materials and parts, the focus on this nature of work aims at asking what these differences can be attributed to, and in what way they are related to the human being's conception, philosophy, condition and dynamics in life; at the collective image of living, at the social organization, at the concepts of territoriality, at the way of handling the "basic needs", the link between the habitat, the building, the surroundings and the settlement pattern, etc.

Such an attempt has particular obstacles such as the fact that there is not a quantity of study material or documented records uniform in both quantity and quality. On the other hand, the same aspects are not addressed in these materials and, therefore, cannot be compared neither fully nor directly. It is thus necessary to become aware of the complexity when studying human, community, collective and social interactions in an environment and the general nature of living in the environment, as well as when understanding some of the socio-cultural facts – and their meaning— of ancient civilizations.

3.3 STATE OF PLAY. BACKGROUND OR CURRENT STATUS

The 13th century poet saint Gyandev created a children's game called Moksha Patam. The British later named it Snakes and Ladders & diluted the entire knowledge - instead of the original Moksha Patam. In the original one hundred square game board, there were squares where the ladders were found and one could move ahead faster, and squares where the snake waited with its mouth open. The 100th square represented Nirvana or Moksha. The tops of each ladder depicted a God, or one of the various heavens (kailasa, vaikuntha, brahmaloka) and so on. As the game progressed various actions were supposed to take you up and down the board as in life.

In contrast, we find that the main cities in India in 1900 consisted of mainly three parts categorised according to the analysis and conception model of the space in the West: the traditional medieval town, the city as a canton and the city based on civil lines of mobility. The residential native areas in the cities went on to have three basic forms: the "basti" or informal settlements such as "slum" – already described by Bernier in 1671 – which had a low density back then; the residential areas occupied by the native population – in the big colonial cities –; the communities grouped into a walled city model (the "Pol", "mohalla", "paras" or "stores") and the neighbourhoods on streets that were aligned with houses.

The model of the walled city had in many cases its origins in the native settlements of the pre-colonial period. By the end of the 19th century, they already exceeded the fortified area which was originally occupied by its walls and disposed of them partially or totally. The in-plant configuration reflected a cultural identity based on the community,

with social systems based on castes (occupation) and spiritual practices (religion), as well as on climatological aspects.

“The old walled city housed Dalits, Muslims and Hindus within individual pols”, by contrast, “the more recent shift westwards accounts for exclusive and resource-intensive corridors intentionally neglect the other Ahmedabads, and instead build their identities upon ecologies of the consumption of high end brands.”

Diwadkar (2013) seconds this information quoting historians Achyut Yagnik and Suchitra Sheth (2005) who “frame these changes through three separate Ahmedabads”

The research proposal aims at bringing together the theoretical-practical approach to the question whilst directly representing the hypothesis raised: the differential aspect in the understanding of qualitative orders of space in the East and the West.

This paper explores the sense of community in India through architecture and the inhabiting of a society flowing throughout a sequence of spaces organized by gradients of intimacy, understood in a spiritual and metaphysical fashion. The main focus being the controversy in the divergent approaches: space organized in a sequence moving from the public to the private space in the West versus the dissolution of the inside-outside limits and the formal dynamics in architecture in the East, where environmental organization of space moves from the social to the sacred space or the communal sense of “the Common”.

Pols, mohallas, paras or stores.

In the 20th century, the city of Ahmedabad still had these three residential clusters of physical-social consistency in its traditional town. Both the Pols and the Mohallas in Ahmedabad find their structured sectoral expression in a symbiotic way in each house, devoting the ground floors to workshops and trade and the upper ones to residence. This inhabiting is understood from the Western perspectives, as constituted almost in a Corbusian way, as an order of day-to-day developed activities personally but not individually, and this is what makes the difference.

Pols and Havelis:

A Pol is a residential neighbourhood with well-defined boundaries.

The different communities were structured in different forms of clusters, and within them there were groups of communities depending on their religion and social occupation.

The three communities inhabiting the city – Jains, Hindus and Muslims – lived in similar houses. Most of them were of longitudinal and deep base, with a narrow façade opening onto the narrow street. The Pol houses share common walls with their immediate neighbours, contrasting with the typical Anglo-Indian model of the bungallows. Here, the house usually occupied the whole space of the plot, which results in a highly dense built fabric, with open spaces consisting of streets and yards between the houses.

The very occupational density in communities with groups of houses and narrow streets is a clever climatological response since it provides a constant shade. The passive systems of corridor-houses with spaces in different indoors and outdoors gradients have inner courtyards and sometimes basements, small rooms with holes or small windows – ensuring privacy as well – and convection air movement ducts. Facades had balconies adding shades to the community streets. The space open into the sky consisted of the flat roof, used as a terrace during the day in winter and as a cool bedroom in summer – during the dry seasons – and the spaces open onto the community of houses at the street level. These community spaces had a water fountain (cisterns), a tree, a temple or sanctuary and constituted a space of reverence for the work exposed to trade and exchange, and were located in the crossroads and convergence of the streets, which were formed by a natural enlargement of the width of the streets. The main streets were facing the East-West axis, following the sun direction and ensuring direct light and continuity in the air circulation, favouring some breeze.

The streets had a well-defined hierarchical order, being the first order the commercial one across the entire business range, the second one was commercial as well although specific in its specialization and the third order was reserved for local businesses which supplied the houses with basic needs. The fourth and fifth orders were occupied by the so-called “**mohallas**”, **areas with several communities and which had a**

school, a temple or mosque and a bazar based on exchange.

Pol communities in Ahmedabad.

Pols and Mohallas. Ahmedabad had this kind of clusters, Mohallas, which were usually Muslim while also free of the stratification of its inhabitants by castes. The Mohallas of the Bohras communities are an example thereof. Ahmedabad had also Pols, being mostly Hindus, and in a good proportion Muslims as well.

In a Pol there is an entrance through a main entrance door, a street, and side streets along which there is a group of adjoining houses.

A haveli typical from Ahmedabad has a central place called chowk, from which many rooms open up and where all domestic activities take place and where members of the family gather.

The following are elements of indoor-outdoor transition in the Havelis of the Pols:

- Carved fenestrated windows
- Balconies
- Otlas (transition platform between the street and the entrance to the house, protecting it from water and dust – but not from the transit of cows and goats – and offering a seat surface like a step or low bench)
- Khadkis or entrance area
- Chowks (there where the streets get broader in intersections and crossroads. There was a tree, a pavilion, a well, a temple or sanctuary that turned the chowk into a node. The open spaces have an irregular form and the otlas of the adjoining houses provide a gathering place for men to smoke and chat. The open spaces in the immediate vicinity represent the areas of community social day life outdoors) and gullis (cul-de-sacs).
- Parsal or osari (social space of transition – between the khadki and the chowk or between the chowk and the most interior and private rooms of the house-, where relatives or close friends could be welcomed, with the presence of a swing that served as a fan while providing a dynamic breeze to the room)
- Rasodu

Each pol had its own communitarian space where they could celebrate weddings and other ceremonies, and had a small temple at the foot or around a tree and with a “kuva” that supplied water to drink or to take a bath. The reverence to the elements of the physical world and its transcendence in the sphere of the universal is a constant in India, where nature is recognised as the supreme guidance of human life in this planet. This area is made up of rooms, small seats and trees.

The configuration of each pol was based on community and social cohesion principles of interaction, interdependence and cooperation, with a participation in the responsibilities of each pol, being this much more than a street with a narrow group of houses with an entrance and well-defined boundaries. Thus, a pol becomes a socio-spatial configuration at community level and a life guidance or handbook on earth.

Pols and the Pol Houses: The Culture and the Community

Historically, the persons who lived in a pol used to belong to the same caste and tradition or religion. Pols were often named after the castes living in the pols, and castes were based on the occupation of a group of people which was extended across generations such as goldsmith, tailor, merchant, etc. There was no segregation between rich and poor, and people lived in harmony. There were very little pols inhabited by people from different castes. Each pol had a tree, a temple, a bird feeder and a well. Each pol had its own board, chosen by the people from the pols, called panch. The panch handled all matters from the pols, which included settling disputes between families, raising collective funds, publishing news (a wall with chalk and marks on stone), making arrangements for different festivities, and carrying out the necessary repairs in the pol. If a person within a pol wanted to sell their house, they were required to offer it first of all to the people in the pols and then offer it to someone of the same caste.

There seemed to be a successful system implemented for the maintenance of the pols where people lived in accordance to rules and regulations. Most of the panch systems in the pols are not working anymore. Nowadays, what constitutes a community has changed. Over the years, as people’s incomes increased, they started to move from the walled city with the hope of having access to facilities and a lifestyle

consistent with the requirements of a globalised economic system. Over time, this resulted in the arrival of the people living in rural areas in search of better jobs and opportunities. Most of the people in the pols keep their job in the manufacturing or commercial sector in the commercial streets of the walled city. Some of the pol houses have been turned into warehouses or small businesses. Some persons work in the first floor of the pol house and live in the second floor. Currently, pols are inhabited by persons of different income groups, different castes and different occupations. Despite this diverse group of people living in a pol, they make up a community based on their lifestyle, culture and traditions. People are very receptive to the new members moving into the pols. The link between the people becomes deeper as they share different festivities of a deep significance in India, such as Diwali, New Year, Holi, Navratri, etc.

The configuration of in-plant space in a Pol house

The bathroom of the house is located in the entrance and sometimes it has no door. Secondly, the kitchen, in most of the houses, is located in the rear side of the pol house, and there are no windows, which indicates that it used to be used as a warehouse and place for food preparation instead of a space for handling water or fire (in India, kitchens are oriented facing the rising sun).

Symbolically, doors at rear facades are avoided as well as windows at facades that do not open onto the common space.

In rural areas in India, the common typology uses the verandah as a front element, contributing to the transition between the common space and the more private space in close proximity to the private and rest areas.

Sense of the common in the communitarian settlement. Urban factory and intimacy

Human value, common value, social value: the Pol houses or Havelis represent a social platform from which life, cultures, festivities and joy can be shared among the inhabitants. This space and comradeship between the inhabitants are what has kept the walled city as living heritage for more than six hundred years. This socio-communitarian use or the understanding of the space as contributing to the exchange of culture is the most valuable asset of the pol houses. Inhabitants value the pols because of the inherent sense of belonging that they feel in this space, where people take care of each other, in a constant exercise of the human power and duty of transcending the understanding of what means to be a family. These cultures, traditions and festivities are represented in its purest form in the pols. The vital value of the human within the social is the main reason why the walled city has prospered and still does as a settlement inasmuch as communities live in social cohesion and shared values.

Historical value: the settlement of the pols takes place in the walled city since the 15th century. The imprint of the settlement pattern and the layout of the houses in the pols is an important attribute that has been preserved in a positive way in its character.

3.5 PROVISIONAL ORDERED STRUCTURE OF THE RESEARCH

- "Community Ethos" and the philosophy of "the common" or society and way of living in India.

Different societies have an impact on the different kinds of buildings and, therefore, the kind of evidence that we need to take into consideration varies from one case to another. -

The differentiation in the use of space also permeates other areas of life and thought. In India, there is no separation between a person's life, work and the practice of religion and its direct application on the surroundings, and little differentiation, if any, between the sacred and the profane. The religion and the spiritual conception of life are closely linked and prove to be inseparable from life and social needs.

"There are no scale to measure the quality of Hindu Temples. The existing Hindu Temples in Malaysia are of many scales; from icons under trees to medium scale temples." (Gunasagaran 2002)

It is also worth stressing the no differentiation between man and nature. And we find its expression in the manifestation of absence of vectorial axes in the open spaces between constructions of the same condominium, as these are a whole with the immediate surroundings in which they find themselves and beyond.

As Sejal (1987) pointed in her study on the modern city form, it follows

a "law based on control, congruence and responsibility, all of which would be attributed to the owners, rulers, designers and inhabitants of the designed place for it to be a good settlement. All qualities of the human mind." And goes beyond reflecting on N.J.Habraken's theory, "from built environment as "a reflection of the patterns of Control" to "the 'patterns of transformation', through which the built environment reveals its most permanent structure"

The concept of unity in India is a genre that comprises both spiritual and material and social elements. It is an indivisible whole and manifest in all its parts in its no differentiation between the religious and the secular. This is applied to the action as a vital act as sacrifice in general, which is undifferentiated or, as we could say, not segregated from the common whole, and therefore it is applied to the way the space is used. As spaces become more specific, they become more articulated and differentiated, increasing the number of kinds of spaces, and differentiating themselves in their degree of intimacy, not in their title or programmatic package and never in their surrender and reverence to the gravitational order – not merely tectonic- and origin that supports them.

- Temples in India

In the ancient planning system, "the central space in a town diagram was attributed to the Brahma, the "ultimate," while the peripheral sections represent the lower gods." (Shah 1982)

In the Orient, in particular in India, the maximum degree of the intimate is occupied by the sacred, which is the Common par excellence. Temples are a spatial representation of these gradients understood from the collective to the most intimate: the sacred.

The sequence is radically different from the way it is understood in Western cultures, where public and private are nearly analogous to collective and intimate.

At the same time, the private in India is mainly collective, and it is such in a very characteristic and specific way, making evident the marked link between the architectural form and life patterns. The spatial reading of space is a spiritual direction or guidance: the gradation of spaces is marked from the public to the most intimate or sacred, which is represented as a small and secluded space, this means, towards one self's inside (the East), and not grandiose or magnificent, nor external and indifferent to one self's phenomenon (the West). "The central court and the rear court were personal spaces which can rarely be seen. For architectural preservation, those transformed and transfigured spaces need to be addressed and re-adding those features will rejuvenate this ethnic identity with more economical prospect and ground." (Jafar, Habib, Ahmed 2019).

- Cultural regionalism or "Critical Regionalism"

The term "critical regionalism" was coined in 1981 by the architecture theorists Alexander Tzonis and Liane Lefaivre in their essay "The Grid and The Pathway". Kenneth Frampton took it up in 1983 in his text "Towards a Critical Regionalism: Six Points for an Architecture of Resistance", presenting it as a nostalgic or antiquated position and opposed to the universalism of modernity in architecture. Cultural context, geography and climatology were identified in his essay as integral parts of the buildings. The critical regionalist architecture is not a direct consequence of regionalism or the vernacular traditions but represents a conscious interest in mediating between the global and local points of view through the technique, the configuration of the space and the planning of modern schemes reconciled with the materials and methods of local construction as a response to the challenges of the places and cultures themselves. Variations of the approach emerged worldwide at the end of the 20th century and this mainstream direction is still alive and valid, exercising a significant influence in the conception of contemporary architecture. However, it is far from being a holistic or inclusive perspective that achieves to expose – not even explain – the 360° panoramic displayed by so many exemplary statements of architecture, systems and inhabited environment that are present today since its origin: the traditions of a great human civilization with its epicentre in India.

"In so many areas of art and science, our situation demands that we think in terms of heterogenous systems and porous boundaries." (Zhang 2018)

"Structures dating to 2000 BC, built in the design of yantras, have been unearthed in northern Afghanistan. There is ample evidence for a continuity in the religious and artistic tradition of India from the

Harappan times, if not earlier. These ideas and the astronomical basis continued in the architecture of the temples of the classical age. Kramrisch has argued that the number 25,920, the number of years in the precessional period of the earth, is also reflected in the plan of the temple." (Kak 2002)

- "The courtyard system"

The courtyard system in the West has the square system as a reference. The Mediterranean cities of 2500 years ago were delineated by hieroglyphs, stripes ploughed on the ground that demarcated the territory between the known, separating it and protecting it from what was feared as it was unknown and not controlled. Thus, the inhabited world was framed and closed, becoming in this way a world that was typified, sketched, cut, divided and separated from the whole in which it was – and is.

This conception of a mediated world represented in the form of a pattern in a grid was replicated in Ibero America over centuries and in more than 40 000 cities built by Spaniards. This pattern of a Spanish city in Ibero America has a centre that replicates the Roman model of the West. In this Roman model the city is organised around a centre, an open space where the palace of the governor is located, as well as the city hall, the prison, the church and the market. In the beginning, this open space was square, becoming then, in the Renaissance of the 15th century, circular, in the expert demonstration of the recently acquired chord technique, employed to make traces on the ground following the Fibonacci sequence. Successive examples of geometry treatises would become the rules of order of the traces in a city, so that geography and geometry become almost the same thing. This is the case both in the city of Pompeii, in Thomas More's city erected as an almost perfect square next to the Anyder river, the city of Sforzinda with its fortifications based on a double square, the city of Palmanova with its nine gates mounted on the triple triangle, and even the stylobates framing the horizon making use of the meaning of limit of the Greek word "horizon".

The Roman city in the West is then based on the idea of a built, finite, limited, delimited, defined and drawn world. The same happens to the spaces built as interiors of buildings or as open spaces imbued in the same buildings. The best example of this dissonance of the West in the conception of the space is the Pantheon in Rome. A building dedicated to all gods ("pan"), which longs for being able to build, representing the whole, the perfect sphere, the empty interior space shaping a complete sphere. However, the challenge was structurally impossible, since it is not possible to close the sphere at the top without it falling down. And here is where – due to this technical limitation, and due to this conceived wish and conception of the perfect world – the opening at the top of the dome emerges: a void of 10 metres, the exact measure that is not possible to cover structurally, in this sphere of 100 metres of diameter and 1 metre of thickness in its envelope.

A perfect example of segregation and division in the Western line of thought. "In so many areas of art and science, our situation demands that we think in terms of heterogenous systems and porous boundaries." (Zhang 2018)

So the Pantheon's bay does not open into the sky worshipping it on behalf of all gods, but it displays the idea of a conceived world: a "perfect" world, a world closed on itself and separated from everything else.

"The way we see, the cultures we foster, and the technologies we build consolidate an aesthetics that defines what we think the system is: and in turn, our place and identity within it. These techniques demarcate what is knowable and thinkable; what is self-evident and what is left out." (Zhang 2018)

After all, what is science and what is not? How can anyone claim that Vedic Vastu Science is not a scientific approach? Fortunately few things are being redirected in the Western arenas, even when it comes to accuracy as per scientific standards. "Ana Reyes Sanchez, an MIT senior majoring in mathematics and philosophy, has long been drawn to problems involving ethics, decision-making, and rationality." (Armijo 2021)

By contrast, we find the constructed open space in the East understood as a space open into the sky and ordered by the man according to magnetic-gravitational laws.

"According to the Sthapatya Veda (the Indian tradition of architecture), the temple and the town should mirror the cosmos (...) The Harappan

cities have a grid plan, just as is recommended in the Vedic manuals. The square shape represents the heavens, with the four directions representing the cardinal directions as well as the two solstices and the equinoxes of the sun's orbit." (Kak 2002).

The courtyard system in India was based on the old Vastu Purush Mandal. This system adopts the old design principles according to which it is described in which position is located the centre: where Brahma is located, from whom everything emerged in the cosmos. "The temple construction begins with the Vastupurusha mandala, which is a yantra, mostly divided into 64 (8 x 8) or 81 (9 x 9) squares, which are the seats of 45 divinities. Brahma is at the centre, around 'him' 12 squares represent the Adityas, and in the outer circle are 28 squares that represent the nakshatras." (Kak 2002)

Similarly, the courtyard has its place in the centre and all the spaces emerge only from this point.

"Each tribe has its own way of settlement pattern on the basis of their culture and lifestyle like Saharia has circular, Bhil has scattered and Korku has linear. These activities have evolved the necessity of a community space like a courtyard or chaupal in their settlement pattern. These patterns resulted in a strong social binding within the community. The central space in Saharia is 'chaupal' where grandparents chat and look after grandchildren while the parents are working on fields." (Patidat & Raghuvanshi 2014)

In the case of the Haveli in Gujarat, the house may have a courtyard or a series of courtyards depending on the social status of the people living there. The houses with several courtyards used to have this variety or different purposes: the outdoor courtyards were used for a more public use and the inner courtyards were more intimate. Outdoor courtyards in most cases used to be baithak (guest room) or a place for the stock, storage, etc. The inner courtyard used to be the area of activity for women, with kitchen and laundry area. The inner courtyard is also used as a space for family gatherings as well as social and cultural gatherings between people with a close relationship.

The understanding of the common space and the communitarian cohabitation through the programme package presents the space as a common space around Brahma, being this order embedded in the collective mind or way of thinking and thus present in both the public and the private.

This way, all spaces, both rooms as well as those of transit, are conceived as connecting elements of transition and delineated experiential gradient and represented in the socio-spatial disposition and configuration.

Verandah, balconies, roof tops, courtyards and the traditional physical-social schemes in Pols and Mohallas are evidence of configuration in spatial gradient. All of them follow in essence the experiential scheme that is represented in the spatial sequence in a traditional temple in India.

Community settlements and traditional societies in India.

This research project is committed to proceed in following chapters to exhaustive case-studies based on the following works:

- Mahatma Gandhi Ashram. Ahmedabad.

Gandhi mentioned complex ideas in his words about architecture and space in Sabarmathi Ashram. In his texts, he refers to an inner void residing within an external form. The degree to which architectural terms such as internal and external have had an extra-architectural meaning in Gandhi's erudition in general – existential categories such as internal and external – encourages thinking about how deeply these existential categories resounded as architectural categories in his discourse on the inhabiting, on the meaning of things and on the way of being or existing.

- Gandhi Memorial. Ahmedabad. Charles Correa

At the Gandhi Smarak Sangrahalaya the courtyards are the main characteristic of the project. There are four courtyards. The one with a water platform is a little bigger and is made up of four grids. The three others are the same size.

Charles Correa was an Indian architect, activist, urbanist and theorist. He was a key figure in the Indian architecture of the post-independence period, acclaimed for his responsible and sensitive approach to the context who combined modern concepts with vernacular elements and, particularly, for his refined understanding of the conception of the transcendent space, with direct implications over the lived space and the experiences offered by it. His projects used courtyards, terraces, spaces

open into the sky, local materials and techniques of passive cooling, which had the historical construction traditions used in India as a basis. In his work "Quest for Identity" he clarifies the following:

"I find that climate helps determine form on two different levels: One, it is an immediate determinant, finding expression in courtyards (hot, dry) or in through-ventilation (hot, humid). Two, at a much deeper level, climate helps determine the patterns of culture and rituals. And in that deeper sense, since it is a primary determinant of ritual, it also determines built form."

"Living Patterns.

In a warm climate, people have a very different relationship to built-form. One needs but a minimal amount of protection, such as a Chatri (i.e.: an overhead canopy), during the day; in the early morning and at night, the best place to be of course, is outdoors, under the open sky.

"... and the monumental temples of south India are experienced not just as gopurams and shrines, but as a movement through the great open-to-sky spaces that lie between them. This movement—which is unknown in a cold climate- has always been a decisive factor in the spatial and functional organization in Indian architecture (from Fatehpur-Sikri to Shrirangam)"

On the matter of how the brain navigates cities, Trafton (2021) argues that "we seem to be wired to calculate not the shortest path but the "pointiest" one, facing us toward our destination as much as possible. This strategy, known as vector-based navigation, has also been seen in studies of animals, from insects to primates."

- Ahilya Primary School, REWA Handloom Weaving Society. Maheswar. Revathi Kamath

The work was completed in 1991. Built by local masons, the project was promoted by the REHWA Society and is co-funded by the Bremern Overseas Development Association, Germany.

"The spatial design of weavers' house has been integral to the tradition. Semi-open spaces and other rooms act as additional work areas, and open spaces or verandas as dyeing areas." (Khare 2019)

In this building, riddled with spaces capturing the void and the space open into the sky, the syntax in the configuration of spaces is adapted to the context.

A multifunctional verandah connects the rooms used as library and nursery, making up two of the sides of a courtyard. The two other sides are defined by the walls of the Maheshwar fort itself. The natural gradient of the land has been used to organize, on different levels, the different spaces- classrooms, located in platforms that open onto the amphitheatre in the outdoor space with "neem" trees forming a portico. Spaces are then articulated in a concatenated way, with a minimum mass on the facings that differentiate one another, which present wide bays ensuring the transparency and permeability of the spaces towards visibility, light and air circulation. This continuity also lays down usage patterns rooted in the ancestral traditional culture in India and acts as a declaration of principles and intention in its application within the educational framework. "These communal spaces were soul of the weaving heritage. Interactive character of such spaces played a dual role by integrating social space with the work place within a single household." (Jafar, Habib, Ahmed 2019)

Cantilevered brick brackets replace the traditional ones carved in wood, complemented by arched wall studs made of wrought iron, underpinning the structure covering the span in the courtyard.

Wood is saved exclusively for use in doors - minimum number - and window frames and carpentry.

The roof structure is made of steel.

The use of materials that in essence avoid the use of cement is deliberate, trying to keep the vernacular tradition both regarding the materials and the scale and resolution of the spatial configuration based on the continuity of spaces.

This school was built when the weavers living in the Maheshwar fort felt the need of an intermediate school in the vicinity of the houses and the community centre. Built on the site adjacent to the "akhaada" and the former residence of Diwan, the Ahilya School finds itself in harmony with the traditional urban fabric of Maheshwar establishing a continuum with the city.

Programmatically, besides the design of a school, there is a space for eating accompanied by a kitchen to serve meals for the children, and

another one for the nursery.

The building is characterized by a composition of brick brackets and steel trusses and brackets supporting stone roofs and chajias that replicate those present in the work by Charles Correa, which are in turn a tectonic allusion to the symmetry relationship sky-earth.

- NID Building. Ahmedabad. BV Doshi

It was Douglas Enslinger from the Ford Foundation who first recommended a school of design to the Indian Government. In 1956, the government invited the American designers Charles and Ray Eames to travel around the country, and get to know writers, artisans, architects, scientists and industrialists. The result was the India Report in 1958. Strongly involved in the education at NID, the Sarabhais, together with the renowned Indian expert in art and aesthetics, Prithwish Neogy, and the architect BV Doshi, felt that Ahmedabad, not Bangalore or Fatehpur Sikri, as had been suggested by the Eameses, was the most appropriate place given its architecture and had to be the location for the new institute, considered for decades the "Harvard of design in India". This building is a magnificent example of architecture written in modern language and nonetheless transcribing the essential guidelines of architecture according to Indian traditions. A building delineated between stairs and slabs, with landscaped spaces and passages. A polyhedral meshed network of outdoor classrooms combined with others between walls and covered, between buildings and under the tree, between classrooms with balconies and others in tubular form, without windows and walls on the facades - only handrails- and completely open onto outdoor corridors.

Michael Coates (2002) quoting Read, "The artist is not a special kind of man, but every man is special kind of artist". claims "That precise argument is the one I would make for Architecture and Architects, as a mode of cultural production, as a form of elitist and privilege" and that "the questions, which are being asked in many circles about architecture's role in society now, about its lack of user focus, its insular professionalism, have been asked before."

It could therefore be inferred that the art of living in this world is the special kind of art one and all could be represented by through architecture. That being the very mere act of existing in this universe. Thus, the cosmos, not just the world of few, "a world of ours" and certainly not any of the versions of it constantly suggested in the Western line of thought.

"The changes in culture and architecture are reciprocal. The impact of one is reflected on the other. India's rich cultural heritage is vanishing due to the influence of urbanization and globalization" (Patidat & Raghuvanshi, 2014)

4. MEANS

4.1 MEANS AND RESOURCES

The next chapter of this research project includes an analysis and a detailed study of several traces of philosophical principles of cultures and civilizations, social paradigms, evidence of the inhabitant's - not only the user's - experience as a response from a society and its culture. This study will be based on letters, diaries, architectural theories, publications and conferences, plans, drawings and photographs.

REFERENCES.

Sen, J. (2022) India's Sacred Space. The story of civilization. Book 1: Our Oriental Heritage. From East to West & Return to Asia, Nehru Museum of Sciences & Technology, Indian Institute of Technology Kharagpur & Centre of Excellence for Indian Knowledge Systems (IKS)

Sejpal, S. (1987) Theory and city form: The Case of Ahmedabad, Massachusetts Institute of Technology, Cambridge

Lynch, K. (1960) Image of the City, MIT Press, Cambridge

Lynch, K. (1981) Theory of Good City Form, MIT Press, Cambridge

Lynch, K. (1980) City Design: What It Is and How It Might Be Taught, Urban Design International, Cambridge

Shah, S. (1982) *Street developments: Case of Ahmedabad, India*, Massachusetts Institute of Technology, Cambridge

Diwadkar, V. (2013) *Entrepreneurial Governance and the Ahmedabad Gujarati Bazaar: Erasure of the Sabarmati River as Commons*, Harvard University, Cambridge

United Nations Development Programme (2004) *Human Development Report 2004*, United Nations Development Programme, New York

YAGNIK, A. & SHETH, S. (2005) *The shaping of modern Gujarat: plurality, Hindutva, and beyond*, Penguin Books, New Delhi

YAGNIK, A. & SHETH, S. (2011) *Ahmedabad: From Royal City to Megacity*, Penguin Books, New Delhi

Kak, S. (2002) "Space and Cosmology in the Hindu Temple", Paper presented at *Vaastu Kaushal: International Symposium on Science and Technology in Ancient Indian Monuments*, New Delhi, India, November

Kak, S., 1995 *The astronomy of the age of geometric altars*, Quarterly Journal of the Royal Astronomical Society, NASA, Baton Rouge, LA

Kramrisch, S., (1946) *The Hindu Temple*, The University of Calcutta, Calcutta

Volwahren, A., (2001) *Cosmic Architecture in India*, Prestel, New York, and Mapin Publishing, Ahmedabad.

Gunasagar, S. (2002) *A Study on Hindu Temple Planning, Construction and The Vaastu*

Coates, M. (2018) "To Hell with Architecture: An Architecture of Anarchism.", [online], *The Palgrave Handbook of Anarchism*, https://www.academia.edu/19256155/To_Hell_with_Architecture_An_Architecture_of_Anarchism

Read, H. (1974) *Anarchy & Order*, Condor Books, London

Read, H. (2002) *To Hell With Culture*, Routledge, London

Maheshwari, A. & Werd, M. (2020) *Creativity and Workforce Development: A Preliminary Empirical Study of Maharishi Vedic Architecture*, Journal of Maharishi Vedic Research Institute, Oxenford

Jafar, Habib, Ahmed (2019) "An Empirical Study on Continuation, Transformation and Transfiguration of Homestead Layout and Space Organization of Handloom Communities in Bangladesh", Paper read at Conference: *ARCASIA Forum 20 - Architecture in a Changing Landscape*, Dhaka, Bangladesh, November

Patidat, S. & Raghuvanshi, B. (2014) "Changes in Culture and Architecture from Vernacular to Modern: M.P., India", Paper read at *XXXth International Plea Conference*, CEPT University, Ahmedabad, India, December

Astha Khare, A. (2019) *Maheshwari handloom weaving tradition: a living cultural heritage*, Journal of Social Sciences and Humanity, Malaysia

Mahadevia, D. (2007) *A city with many borders – beyond ghettoisation in Ahmedabad*. In: Annapurna Shaw (Ed.) *Indian Cities in Transition*, Orient Longman, Hyderabad

Zhang, G.Z. (2018) *Systems seduction: the aesthetics of decentralisation*, Journal of Design and Science, MIT Press, Cambridge

Trafton, A. (2021) *How the brain navigates cities*, MIT News Office, Cambridge

Armijo, A. (2021) *An aspiring human rights lawyer, wielding tools from mathematics and philosophy*, MIT News Office, Cambridge

Calhoun, C. & Sennett, R. (2007) *Practicing cultures*, Routledge. Taylor & Francis Group. London and New York



ETHICAL REFLECTIONS IN THE PURSUIT OF GLOBAL ENVIRONMENTAL SUSTAINABILITY

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ABSTRACT

Promote prosperity and global well-being of people without harming the environment leads to sustainable development

Earth provide enough to satisfy every man's need but not every man's greed.

-Gandhi ji

Prosperity can eradicate poverty while climate change and nature's challenges can be tackled to protect environment and the well-being of people.

'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'-Brundtland Report

People, planet, prosperity, peace and partnership are the important aspects of sustainable development. Out of four main types of sustainability that is human, social, economic and environment , my focus is on living environment that refers to the area in which we live and the natural life on earth and the global ecosystem.

The non-sustainable patterns of consumption and production has hampered the eco system to a great extent. Human beings due to their egoistic tendencies seek possession of everything surrounding them. Thus human being in this way have disturbed and destroyed global ecosystem by expanding their living spaces through modernization and urbanisation. Many dams and roads are being constructed at the cost of cleaning forest & destroying the habitats of many birds and animals.

Earth is the only place where human can dwell; but as if to set fire on one's own house, man's indiscriminate use of natural resources is leading to depletion of fossil, fuels, drinking water and oxygen which threatens the sustainability of earth.

By living in harmony with surroundings man can gain everything, however man's arrogance and sense of entitlement , called as 'Anthropocentric' (man-centred) nature has been harming the environment.

Global warming can cause floods and tsunamis by making glaciers melt. Sea levels increase can submerge cities near coastal areas owing to climate change disasters, many human beings will become 'climate refugees'.

Climate change films like 'The Day After Tomorrow' , ' Water world' and 'Mad Max - Fury Road' pictures dystopian world where the excess as well as the lack of water became crucial in controlling and governing the lives of people who have become Nomads.

In the climate fiction 'Polar city Red' living a nomad like life people hunt for their food , share resources including the female womb. It also points that the climate change will affect the children, the women and the marginal the most.

Although these novels appear to be scary , they try to give us a jolt to our indifferent and complacent approach towards caring of our environment.

However, in order to prolong the life of human beings as a species on this earth, we need to help the environment by being mindful, respectful and careful and making genetic use of it.

In the time to come caring of environment is a very crucial. Water conservation , electricity conservation, preventing enormous fossil fuel consumption and sensitize your children. We need to ensure that all people have the same opportunities to live a better life without compromising our planet.

Nature is not a place to visit but it's home.

-Garry Snyder

KEY WORDS:

Habitat conservation ,Ecological mindfulness, Sustainability , Ecocide, Habitat Degradation, conservancy.

INTRODUCTION

With the spread of human civilization the conflict between the economic development and ecosystem started but this conflict accelerated with the Industrial revolution 200 years ago. The human stride in the field of science and technology exacerbated the crisis to a dangerous proportion that compelled the modern humanity to think about the restraining of the increasing carbon footprint so that the civilizational crisis of existence maybe averted. The philosophy of ethical environment is gaining currency today so that the tenacious balance between the development and ecological environment is maintained for the benefit of humanity as well as other species on the planet earth. A sustainable development is the need of the hour for the global environmental sustainability.

HUMAN ACTIVITIES AND THE ENVIRONMENT

Human activities impact the environment more intensively than those of other species on planet earth. With the enormous development in the field of science and technology, the human activities gained dangerously enormous capacity to impact the eco system of earth in such a manner that the danger is looming large on the very existence of humanity. The over exploitation of natural resources with the highly efficient technological tools has created many a problems such as overpopulation, deforestation, environmental pollution, greenhouse effect, over exploitation of fossil fuels, over-consumption, soil erosion, drinking water problem, social and economic inequality, hunger, disease, weapons of mass destruction, receding of glaciers, water scarcity, waste disposal etc. The modern model of development has totally failed to solve the problems that humanity is facing today.

1.2 Sustainable development

According to Reyes(2001) "Development is understood as a social condition within the nation in which the needs of its population are satisfied by rational and sustainable use of natural resources and systems."

Sustainability can be defined as a balancing factor between the satisfaction of the needs of humankind to survive and the preservation of the limited natural resources for the generations to come. Collins dictionary defines sustainability as "Avoidance of the depletion of natural resources in order to maintain an ecological balance."

In simple words that sustainability is a human endeavour to reconcile between the economic development and preservation of ecosystem so that the quantitative existence of human race as well as the environment is ensured.

There are three pillars of sustainability viz economy viability, environmental protection and socially equity.

The modern model of development has become unsustainable in respect to the three pillars of sustainability. The irrational use and over-consumption of natural resources are endangering the existence of human race. "The mother earth can satisfy the basic needs of humankind but it cannot fulfil the greed of the vast population"(M.K Gandhi) Limited natural resources(water, coal , petroleum etc) are depleting, hence can't leverage for long. The modern economy model in the near future would collapse and hence is not viable in the present form. It is playing havoc with the environment and has failed to provide to a large section of the population a quality life.

The economic model has created social inequality and has created a wide gap between have's & have nots. The wealth is constantly concentrating in a few hands.

Keeping in view of the crumbling economy order a new model of sustainable development is required if we want to give humanity a better life along with the protection of ecosystem.

"Sustainable development is development that meets the need of the present without compromising the ability of the future generations to meet their own needs."(Brundtland report 1987)

1.3 Global environmental sustainability

Environmental sustainability can be defined as the responsibility of human beings to conserve natural resources to give better life to the present population and the generations to come.

The sustainable development and environmental sustainability are the two faces of the same coin; the former is anthropocentric and the latter is biocentric. Both the concepts can't be understood in isolation as they are interrelated. The Sustainable development can be possible only when the environment is preserved and secured.

The environmental sustainability is the need of the hour for the entire global community as the conflict between the economic development and the conservation of the eco system has reached such a dangerous stage that human race faces the devastating consequences of its extinction. Therefore, the concerted efforts at the global level are required to conserve and replenish the limited natural resources as that a sustainable development is ensured for the well-being of the human beings.

The goal of sustainability environment has an immense importance for the global community, hence, the concerted efforts are required to respond to the threat of climate change led to Paris agreement on climate change in 2015 at the level of U.N and adopted the 2030 agenda for sustainable development and 17 sustainable development goals.

Though the goals are lofty for the benefit of humanity but they are difficult to achieve as the enormous cost is involved. The developed

nations who exploited the poor nations and left a vast carbon footprints are not ready to help the less developed nations in achieving the desired goals set by the United Nations. They have polluted the planet for their economic development and have become rich but dishonestly are not bearing the responsibility of cleaning the environment polluted by their economy activities. The polluter should foot the bill, but the developed nations are diverting their burden of responsibility on the shoulders of the less developed countries. The lack of cooperation on the part of the developed world in this regard will hamper the achievement of the goals set by the UN. Thus, the global community collectively failed to prevent or slow down the rapid acceleration of worldwide environmental degradation and depletion of valuable natural resources .

1.4 Environmental Ethics

Environmental ethics is a discipline which deals with the moral and ethical relationships of human beings to the environment. It means that it does a moral duty of a human being to preserve and respect the biodiversity surrounding him so that he live a meaningful life in harmony with the environment and other species.

The positive attitudes of different communities worldwide plays an important role in maintaining the global environmental sustainability. In India the concept of non-violence and compassion to the animals particularly the cow and the respect for water bodies and plants plays a very important role in the preservation and protection for the environment.

FINDINGS

2.1 Bishnoi sect and harmony with the environment

The Bishnoi sect in Rajasthan founded by Jambhaji (1451-1536 AD) follows the prescribed 29 rules suggesting maintenance of harmony with the environment such as the prohibition on cutting green trees and animal Slaughter (Maheshwari 1970) of the 29 principles laid down by Jambhaji as fundamental for the sect eight were prescribed to conserve and protect environment and ecology. The hard life of the desert in Rajasthan made them realise the importance of the eco system and they developed a respectful attitude towards the environment and the biodiversity for fulfilment of their needs. They could be able to live a simple and prosperous life without disturbing the harmony with nature. The Bishnoi sect is the classical example of ethical reflections in the pursuit of the global environmental sustainability.

The Bishnois not only adopted the environment friendly attitude but also sacrificed for the protection of the environment. The king of Jodhpur sent his army in 1730 AD to cut trees to build his palace(Vardhan 2014). Men and women and children from 83 different villages embraced to the trees to protect them and 363 people sacrificed their life for the protection of trees and compel the king to stop cutting of the trees in the Bishnoi areas. The Govt. of India commemorated the massacre by naming the Khejarli Village as the first National environmental Memorial (Clarke 1991).

Thus the Bishnois are considered as the pioneers of environmental movement and are the role model for the environmentalist in India.

2.2 Chipko Movement to protect the environment

The Chipko Movement(clinging to trees) was started in 1973 to protect the environment in the Himalayan region of Uttarakhand (then the part of UP) under the leadership of Sunder Lal Bahuguna, a renowned environmentalist. The lopsided development of the area by the govt. resulted in deforestation, water logging , flood etc and the people of the area had to face many hardships. Hence there was an organized movement to protect the ecosystem as their life was dependent on forest .The environmentalist resisted the devastated effect of the economic activities on the livelihood of the people of that area.

2.3 Save the silent valley movement

In the 1978, a movement under the Kerala Sastra Sahitya Parishad (KSSP) an NGO, a movement was started to protect the silent valley, the evergreen forest and the government was compelled to declare the silent Valley as protected area under the pressure of the environmental protest.

2.4 Jungle Bachao Andolan

The tribal of Singhbhum district of Bihar started a movement against the governmental decision to replace the natural Sal forest with the Teak trees. This movement later spread to the adjoining areas of Jharkhand and Orissa.

2.5 Appiko Movement

The Appiko Movement, the southern version of the Chipko movement was started in 1983 in Karnataka against the destruction of natural forest and to promote the afforestation on the denuded land.

2.6 Narmada Bachao Andolan

A social movement as a protest for not providing proper rehabilitation and resettlement of the displaced persons due to the construction of the Sardar Sarovar dam. These dam projects also cause immense ecological damage through the inundation of forests, including prime habitats of rare species.

2.7 Tehri Dam Andolan

In 1990's, a protest was started against the displacement of inhabitants of Tehri town. Also the dam was planned in the Central Himalayan seismic gap, a major geologic fault zone. This movement raised many environmental issues but it failed to fructify.

CONCLUSION

There is a widespread consciousness regarding the conservation of the environment and the United Nations is trying its best to persuade the community of nations to contribute to the achievement of the goals set collectively by the humanity. The developed nations are striving to attain these goals for themselves but shirking their responsibility to help the poor nations in this regard. The Governments of the different countries are engaged in this endeavour according to their abilities. The most important role can be played at community level throughout the world by the enlightened citizens of the respective countries by cultivating the environment friendly attitude so that the planet earth may be a better place to live in harmony with ecosystem.



TOWARDS ZERO-WASTE KITCHEN: AN EXPLORATIVE STUDY TO IDENTIFY SUSTAINABLE FOOD MANAGEMENT PRACTICES FOR COMMERCIAL KITCHENS

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ABSTRACT

About one-third of global food production is wasted along the food supply chain generating environmental, economic, and social impacts. With food waste accounting for 8% of greenhouse gas emissions globally, the environmental impact of food wastage is as significant as its economic and social ill-effects. Increasing population, accelerating economy, the exponential rise in urban community living have significantly increased the food waste generation in India also. At the Asian level, restaurants inhabit the second-highest rank in categorising bodies accountable for food waste generation. A considerable percentage of restaurant costs “goes” to waste. However, few studies have been carried out on this type of waste factor and its managerial importance. The purpose of this study is to identify and examine the current and potential practices for reducing food wastage in commercial kitchens. The paper offers a comprehensive view of the importance of sustainable food management practices and radical food waste reduction methods in commercial kitchens. This paper concentrates on data collected in 10 restaurants in Jaipur, Rajasthan, to understand how food waste in restaurants is connected to cooking and clients. The results show that the perspective of restaurant managers and styles of menus, served, and restaurant size play notable roles.

KEYWORDS:

Food wastage, recycling food waste, indigenous waste reduction practices, Indian food industry

INTRODUCTION

Worldwide 1.3 billion tons of food, equivalent to one-third of the global food production, is lost or wasted every year along the food supply chain (Gustavsson et al., 2011). The value of the food wasted globally is roughly 1000 billion dollars per annum, and this figure grows to 2600 billion considering the obscured environmental costs that result from the phenomenon (FAO, 2013). Food waste is characterised as the use of food meant for consumption by humans for non-consumption purposes, the redirection of food to feed animals, or the disposal of edible food (FAO, 2014). It includes the edible and inedible parts of food that get removed from the food supply chain, which can be retrieved or managed through disposal (Östergren et al., 2014).

Furthermore, food waste can be grouped into three different parts : (a) avoidable waste, that is, food that was edible at some moment in time but has become inedible by the time it reaches disposal; (b) unavoidable waste, which directs to specific items like eggshells that are not edible; and (c) potentially avoidable food waste which involves to particular unavoidable wastes that are consumed sometimes, but not always, like potato peel (Papargyropoulou et al., 2014).

Scholars also claim that these three broad categories of food waste may

vary in several cultural contexts (Liu, 2014). A couple of scholars have employed the term ‘food loss’ as a synonym of food waste (e.g., Betz et al., 2015). However, others have differentiated between the two. Food loss denotes the gone food waste at the beginning of the value-added chain. In contrast, food waste means food lost at the end (Parfitt et al., 2010). Considering both views, we’ve treated food loss and food waste the same. Therefore, we argue that food loss or waste is observed at distinct phases of the organic phenomenon, including the consumption stage (Martin-Rios et al., 2018). Waste at the extent of consumption generally occurs at the household stage (home dining) or the restaurant stage (out-of-home dining). The hospitality sector, symbolising out-of-home dining, is usually subdivided into three sections: commercial, non-commercial, and other food services (Betz et al., 2015).

The hospitality sector food waste is quickly becoming a critical problem since its contribution to food waste has been nearly 12% of the total trash in the recent past (Tostivint et al., 2016). Furthermore, with the increasing tendency of out-of-home dining, prompted by increased incomes and tourism, hospitality waste has evolved into an essential issue for developed and developing countries (Wang et al., 2017). Although the amount of food-related waste created by this sector is usually discussed within the media, it’s not gained enough academic attention (Filimonau and De Coteau, 2019). Other researchers have also recognised that the difficulty of food-related waste during this sector has been examined less rigorously, even after being identified as a critical challenge (Principato et al., 2018; Wang et al., 2017).

According to WRAP (2013b), the leading cause behind restaurant food waste production occurs in the preparation phase (45%) or are due to food deterioration (21%) and leftover food left by clients (34%). Decreasing food waste has a positive effect on the environment and lowers associated economic expenses. While from the financial point of view, it has been revealed that for each rupee spent for decreasing food waste, there is a return of investment of 14 rupees. Restaurants appear to be the businesses with the highest returns. Indeed, restaurant managers’ behaviour and attitude towards food waste can significantly effect the quantity of food waste yielded. In fact, a more significant amount of food waste is generated (above all in commercial kitchens), mainly if restaurant managers do not sense limiting food waste as a cost-reduction opportunity.

Extant literature concerning food waste in the hospitality sector has concentrated on an assortment of topics, such as food waste quantification, the composition of waste, doggy bags, waste handling, demographic factors, governmental regulations, consumers’ attitude, interventions, etc. nudges, landfills and composting. While the researchers have embarked into the visible expanse of food waste’s subdomains, most of the results remain in various silos, have a narrow focus and scale, lack generalizability, and restricted geographical scope.

For instance, many scholars have noted that corresponding research has largely overlooked the managerial element of food waste mitigation.

Likewise, despite the more prominent issue in developing economies, some scholars have argued that the extant literature is skewed towards developed nations. With the reduction of food waste being a critical goal at both national and international levels due to its association with food sustainability and implications in terms of expanded use of natural resources, the presence of such narrow academic literature is quite worrying. Momentum needs to be given to research in this area. The embryonic condition of prior literature, both in terms of depth and width, strengthens the difficulty to obtain the fragmented results together to push future research.

OBJECTIVES

- The purpose of this study was to identify and examine the current and potential practices for reducing food wastage in commercial kitchens.
- This paper offers a comprehensive view of the importance of sustainable food management practices and radical food waste reduction methods in commercial kitchens.
- This paper concentrates on data collected in 10 restaurants in Jaipur, Rajasthan, intending to understand how food waste in restaurants is connected to cooking and clients.

METHODOLOGY

Through its qualitative research that includes exploration of various food waste reduction practices and surveying the same with ten foodpreneurs in the city of Jaipur, the study identified effective and rational methods that commercial kitchens can adopt to propel zero-waste philosophy. 4 out of 10 foodpreneurs claimed to have no policy regarding food waste management at their restaurants. The rest do keep some sort of check on food wastage.

While discussing the varied kinds of food wastage, the focus of the study was to reflect upon the raw material waste created in the kitchens, i.e., the peels, the seeds, and other parts of the food products that have an inherent usage or recycle value but are thrown into waste. When questioned about menu engineering, an excellent method in restaurants for food waste control, 70% of foodpreneurs claimed to use menu engineering to help them in controlling food wastage. For example, one foodpreneur says that they use extra cut vegetables to make soups to prevent wastage of food.

The foodpreneurs filled out the questionnaire, suggesting easy-to-follow and inexpensive ways of treating, reusing, recycling and minimising such different types of food wastage. They were given several questions exploring how and when they manage food waste in their restaurants. When asked to select what method they regularly use in their restaurants, these were their choices:

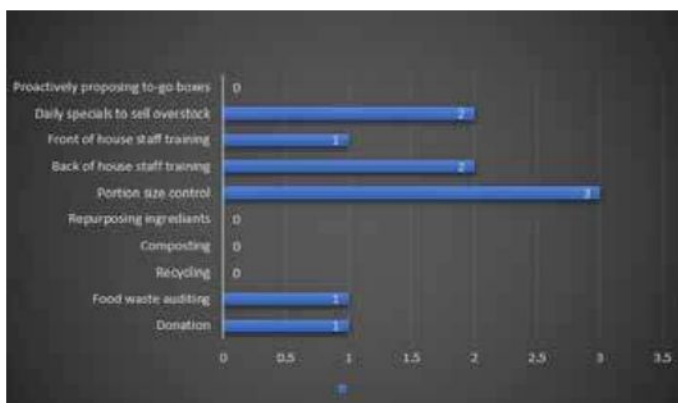


Fig 1. Food Waste Reduction Exercises Practiced by Restaurants

30% of foodpreneurs depend on portion size control and find it compelling compared to composting or recycling. 20% believed that their restaurants managed food wastage more efficiently by employing the daily specials to sell their overstock. The other 20% thought of training their back house staff. The rest 10% adhered to donation, 10% to food waste auditing and the final 10% to front house training of their team and personnel. These have proved to be very successful in controlling food wastage at their respective restaurants.

Surprisingly, none of the foodpreneurs chose to compost their leftover or extra food. Composting can be considered one of the most efficient ways to control food wastage. The commercial kitchens can throw in all types of food articles, like our avoidable, unavoidable and potentially avoidable food products, along with the leftover food from the customers.

When asked about the awareness of food banks in their city, 50% of foodpreneurs responded to being aware of them while the rest 50% were not. It is essential to know about the food banks in our city, especially for commercial kitchens, as it can help avoid food wastage and donate most of their food to the hungry. The food banks strive to feed the hungry and make sure no one sleeps with an empty stomach.

The study also navigated through the current policies and guidelines by central, state, and local authorities to tackle the growing problem of food wastage. Although 60% were unaware of India's food waste control act, 40% were aware. The FSSAI (The Food Safety and Standards Authority in India) launched the "Save Food, Share Food, Share Joy" initiative to distribute food that could be generally thrown away.

Furthermore, it is crucial to check the amount of food wasted and then ensure proper usage of that leftover food. 60% of foodpreneurs revealed that they keep a check on the amount of food wasted in their restaurants, 20% claimed to do so sometimes, while the other 20% do not keep a check. Our study revealed a positive outlook of restaurant managers towards food wastage in their restaurants and measures to control them.

The study also revealed that restaurants are not solely blamed for food wastage. The customers waste much food that adds to the food wastage done by restaurants. The clients who relish these out-of-home dinings tend to leave tons of food on their plates that ultimately get thrown away because no one prefers to reuse half-eaten food. Therefore, restaurants should train their staff in educating their customers not to waste food and get their leftover food packed in go-to environmental friendly boxes.

Results

The conclusions highlight that healthy and complete use of food products and other residual materials has inherent Indian food culture and history. With multiple references by the foodpreneurs, the study indicates the requirement for people in the industry to reconsider the indigenous food waste reduction practices as the first step towards becoming zero-waste kitchens. They must step up and opt for environmentally-friendly management methods. The critical solutions proposed in the study are sourcing the raw materials locally, eliminating single plastics or wasteful packaging, and utilising every part of the raw materials.

This study also indicates that lack of awareness, rapid urbanisation, and an increased sense of instant gratification are amongst the top drivers of food wastage. While creating awareness can be worked upon, the other two are more complex and have multiple layers that require a more holistic approach towards finding a community-wide solution to the problem of food wastage. A donation to food banks like Robin Hood Army is the most efficient way to donate excess leftover foods in restaurants and control food waste.

The findings also reflect the absence of any impetus from the government to encourage food waste reduction, bringing into light their critical role in introducing various awareness & incentive/penalty programs to accelerate the adoption of sustainable and effective food wastage

solutions amongst all sizes inherent businesses in the food industry. A strict law or act needs to be implemented in a country of 1.3 billion. More than 33 lakh children are malnourished in India. By controlling this wastage of food, we can bring these numbers down and move towards a harmonious environment where no one sleeps hungry at night.

CONCLUSION

This study is one of the first to stress factors, behaviours and attitudes related to food waste at the restaurant level from a managerial perspective.

The distinction between food waste rendered in kitchens and customers allowed us to highlight the factors and elements of food waste in the hospitality sector. From this standpoint, the study's exploratory nature may enable us to effectively address the research problem and advise researchers to carry out further studies on this issue and restaurant managers and business decision-makers. At the same time, it is not feasible to expand this generalisation to restaurant outlets. On the other hand, we must stress the significance of distinguishing between the food waste generation phases and pinpointing specific factors related to each stage.

Moreover, exploring the reasons underlying the provision (or not) of to-go bags by restaurants is an exciting topic for further research. From a theoretical perspective, an influential system should be implemented to encourage the adoption and diffusion of to-go bags to improve our food waste recycling rate and reduce food waste's environmental and economic impact.

Further research is strongly advised in the foodservice sector, which causes approximately 12% of the overall food waste. Moreover, it would be fascinating to gain insights into the causes for the amount of kitchen food waste generated in restaurants; therefore, qualitative and in-depth interviewing with kitchen staff should be conducted. Similarly, consumers (i.e. restaurant clients) are highly required to be aware of food waste. They can provide insight into individuals' attitudes, behaviours, and motivations of individuals consuming meals out-of-home that lead to the wastage of food by customers.

BIBLIOGRAPHY

- * Betz, A., Buchli, J., Göbel, C. and Müller, C., 2015. Food waste in the Swiss food service industry – Magnitude and potential for reduction. [online] PubMed.gov. Available at: <<https://pubmed.ncbi.nlm.nih.gov/25305683/>> [Accessed 15 December 221].
- * Eprints.utm.my. 2016. The conceptual framework for the study of food waste generation and prevention in the hospitality sector - Universiti Teknologi Malaysia Institutional Repository. [online] Available at: <<http://eprints.utm.my/id/eprint/71638/>> [Accessed 15 December 2021].
- * Fao.org. 2011. Global food losses and food waste: extent, causes and prevention. [online] Available at: <<https://www.fao.org/3/mb060e/mb060e00.pdf>> [Accessed 15 December 2021].
- * FAO, 2013. Food Wastage Foodprint; Impacts on Natural Resources Summary Report. Göbel, C., Langen, N., Blumenthal, A., Teitscheid, P., Ritter, G., 2015. Cutting food waste through cooperation along the food supply chain. Sustainability 7 (2), 1429–1445.
- * Filimonau, V., and De Coteau, D. A. (2019). Food waste management in hospitality operations: A critical review. Tourism Management, 71, 234–245. doi:10.1016/j.tourman.2018.10.009
- * Forschung.boku.ac.at. 2017. University of Natural Resources and Life Sciences, Vienna (BOKU) - Research portal. [online] Available at: <https://forschung.boku.ac.at/fis/suchen/publikationen_uni_autoren?sprache_in=en&ansicht_in=&menue_id_in=106&publikation_id_in=97011> [Accessed 15 December 2021].
- * Liu, Gang., 2014. Food Losses and Food Waste in China. [online] Available at: <https://www.oecd-ilibrary.org/food-losses-and-food-waste-in-china_5jz5sq5173lq.pdf?itemId=%2Fcontent%2Fpaper%2F5jz5sq5173lq-en> [Accessed 15 December 2021].
- * Martin-Rios, C., Demen-Meier, C., Gössling, S., and Cornuz, C. (2018). Food waste management innovations in the foodservice industry. Waste Management, 79, 196–206. doi:10.1016/j.wasman.2018.07.033
- * Östergren, K., Gustavsson, J., Bos-Brouwers, H., Timmermans, T.,

Hanssen, O.J., Møller, H., Anderson, G., O'Connor, C., Soethoudt, H., Qusteded, T., Easteal, S., Politano, A., Bellettato, C., Canali, M., Falasconi, L., Gaiani, S., Vittuari, M., Schneider, F., Moates, G., Waldron, K., Redlinghöfer, B. (2014). FUSIONS definitional framework for food waste – full report. FUSIONS Report. Goteborg, Sweden: Swedish Institute of Food and Biotechnology.

* Parfitt, J., Barthel, M., Macnaughton, S., 2010. Food waste within food supply chains: quantification and potential for change to 2050. Philosophical Transactions of the Royal Society B: Biological Sciences, 365, 3065–3081. <http://dx.doi.org/10.1098/rstb.2010.0126>.

* Principato, L., Pratesi, C. A., and Secondi, L. (2018). Towards zero waste: An exploratory study on restaurant managers. International Journal of Hospitality Management, 74, 130–137. doi:10.1016/j.ijhm.2018.02.022 Sharefood.fssai.gov.in. n.d. IFSA - SAVE FOOD, SHARE FOOD, SHARE JOY. [online] Available at: <<https://sharefood.fssai.gov.in/>> [Accessed 15 December 2021].

* Tostivint, C., Östergren, K., Qusteded, T., Soethoudt, H., Stenmarck, A., Svanes, E., O'Connor, C. (2016). Food waste quantification manual to monitor food waste amounts and progression. Fredrikstad, Norway: FUSIONS Project.

* Wang, L., Liu, G., Liu, X., Liu, Y., Gao, J., Zhou, B., ... Cheng, S. (2017). The weight of unfinished plate: A survey-based characterisation of restaurant food waste in Chinese cities. Waste Management, 66, 3–12. doi:10.1016/j.wasman.2017.04.007



INDIAN TEXTILES AND LOW CARBON FUTURE

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THE 'NEW NORMAL'

In the last couple of years, the world is gripped with the Covid 19 pandemic and we have suffered its dire consequences. This dreadful, fast-spreading virus blocks our lungs, stops us from breathing, and sometimes kills us. Breathing is what we do when we are alive; we take it for granted and air is free. We have seen people suffering this illness and, seen painful deaths of our dear ones helplessly. We are unable to even hold their hands to comfort them and to show we love them. Because, by mere touch, we would catch the deadly virus! Touching, loving, comforting and breathing is human, and that has become deadly.

What has happened to us?!

Covid19 has made us stay at home with our families. And be alone with ourselves. We work, children study and we can live satisfactorily without moving out much. The fear and pain of the pandemic and physical distancing has, in fact, enhanced our social bonding, not reduced it. We have bonded more with people that matter to us. With networks and connectivity we have available now, we can get connected virtually with people and groups; we can be almost anywhere we wish to.

Apart from the anxiety, pain, loss Covid19 has brought on some, for most of us we have an opportunity to learn to appreciate what is of real value to us; to be grateful of good health, fresh air and people in our lives. We have appreciated nature and our place in it. We see that nature and our other co-inhabitants of this planet, have done well when we have lived with low impact, low activity, and with low interference, just for a few weeks! How selfish and uncaring we have been by encroaching upon their space and their lives?

We now realize that traffic jams and choked public places are not essential. Too much glamour and flamboyance has no meaning anymore. The expensive car we "own", big and luxurious house we "own", the fashionable and expensive clothes and accessories we "own", do not mean anything. No one thought about "going" to malls for shopping, or "going" to the next exotic vacation. Last couple of decades, living a consumerist, toxic, capitalist lifestyle, we have acquired enough 'things' to last us for the next few years!!

World economists are busy working on different financial recovery plans and options for the post – pandemic world. The major concerns and number crunching is about how do we kick start the economy and bring it closer to our pre-pandemic planned growth-line. When the world recession is looming, how do we increase consumption again?

We too are now focused on getting back to work and supporting ourselves. But do we get back on the same bandwagon of rushing to expand financial growth mindlessly? Many of us believe that the pandemic and other calamities are a result of the choices we have made and life we have lived in the last few decades. Do we support mad, polluting, high-growth industries, businesses and services that depletes

the finite resources of our planet? We can now choose to have humane, low energy, low production, and low consumption life options. Can we work for the survival and well-being of ourselves, our people, our other co-habitants and our planet?!

No one still knows what the 'new normal' is going to be, and what life after the Pandemic will be like. When "that normal" happens, I wish we do not forget the lessons "this abnormal" has taught us. We, all nations, have already made certain commitments that we need to fulfill now.

THE SDGS

The Sustainable Development Goals (SDGs) were adopted by all United Nations Member States in 2015. They are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. They apply to all nations and mean, quite simply, to ensure that no one is left behind. The five key elements: People, Planet, Prosperity, Peace, and Partnership. And, Three pillars of sustainable development—economic, social, and environmental. In the post pandemic world, meeting these goals have become even more crucial and we all know that time is running out.

In this context I would like to discuss 'Indian Textiles and Low Carbon Future'. Why Indian textiles? What is low carbon? Is a low carbon future possible? Why and more importantly how?? Let us delve into some very interesting and intriguing stories of textiles.

INDIA - 'SONE KI CHIDIYA'

The history of fabrics of India, like most other crafts, was a group of people's combined expertise, which was converted into trade. For generations, hand spun, hand woven, hand dyed, hand block printed and processed fabrics were a third pillar of the rural economy after farming and animal husbandry. Cotton was grown in many regions in fallow land; it was mostly a rain-fed crop, with no extra water, no chemicals, no pesticides. Each region and each community of India had their own tradition of wearing their clothes. They have their own way of dressing themselves as a community which was their identity and mostly their pride. These diverse clothing needs were met by hundreds of types of fabric making skills, honed by skillful local artisans and they earned regular patronage and income.

The maps produced by Egyptians in the 1st and 3rd century show sea-trade routes in the Eritrean Sea (now known as the Indian ocean) between India, Africa and Southern Europe. The ports were known to trade with ships called 'Dhao' made in Gujarat, with ports in Africa, Europe, the Middle East as well as the far East. One of the oldest ports mentioned was Barygaze – now called Bharuch in South Gujarat. The Kutchi ports and Kutchi vassals find their mentions. Trade was with old countries like Sumer, Phoenicia, Rome, Egypt, Arabia, Iran, Africa, Lanka, Brahmadesh, Malaya, Java, Sumatra and China.

Kutch, Khambhat and Surat/Bharuch of Gujarat were few of the main trading posts. Some adventurous traders used to trade these fabrics to faraway lands. These skills, acquired knowledge from generations, and working with growing trades, brought them immense prosperity. The wealth got distributed in rural households. This was one of the reasons why India was called 'Sone ki chidiya' – a golden bird.

From the beginning of time until the 1950s all textile and clothing produced anywhere in the world were made from natural fibres. Most of these fabrics were made with cotton that was grown in fallow land and without any chemical fertilizers and pesticides. It was what we call now, organic cotton. The cotton buds were removed from the plants by farm workers, cleaned, yarns spun by hand charkhas, fabric woven by hand looms and dyed, printed and processed by hand. There was no electricity used in making fabrics. Thousands of skilled and unskilled workers were earning their livelihood from it. These fabrics were what we call Khadi, hand-spun, hand-woven fabrics, made by people's energy instead. Due to the limited supply of these natural fibres, and hand made, the textile products made from them held a certain deep rooted value and they were loved, worn, used, and preserved for years.

THE TRADING TRIANGLE: SLAVERY AND COTTON

In the 1770s, several inventions in the UK created the first industrial processes whereby raw cotton began to be spun fast and evenly by machines. When the English set up their first textile mills, they were importing raw cotton from India and they started producing cotton cloth in vast quantities.

Very quickly, India's raw cotton was not required either. In the early part of the 19th century, enterprising white American planters invested their capital into cotton farming. By using slave labour, they managed to keep the costs of cotton down. Very soon, the Americas became the main source for raw cotton and they supplied three quarters of the raw cotton in the world markets.

The Americas were linked to England and Africa by the 'transatlantic trade triangle'. British ships sailed to Africa with cargoes of cotton cloth, firearms, trinkets, and brandy. These were sold to the African slave traders and in return, they brought a human cargo of slaves. Once the slaves were on board they were branded with hot irons and they were sold in the Americas to provide cheap labour on the plantations.

Behind this cotton boom lays a trading triangle that sowed the seeds of some of the worst global imbalances and innumerable stories of misfortunes we see even today. America and England became business partners in this first 'cotton revolution' and great fortunes were made for few whites, on the back of the black, the poor and the slaves.

THE SPAGHETTI MACHINE

The invention in the UK and the USA of factory made fibres between 1920s and 1960s dramatically changed the textile landscape again. In the last sixty years, man-made fibres have almost deposed King Cotton. A sea change in the clothing industry and the boom of retail we see now is partly due to that. Though it has made cheap clothing available to the masses, it has its serious dark sides. Behind the label of a cosy fleece lie some uncomfortable truths.

There are two types of man made fibres. The first is cellulosic fibres, sometimes known as artificial silks. Chemically 'melting' wood or other plants into a liquid or dope makes them. Polyester, Nylon, Acrylic, and Polypropylene are synthetic fibres and they are made from oil. Polyester was invented in the UK in 1941. It is made by melting and combining two types of oil derived from plastic pellets.

Whereas cotton and wool can be made into textiles by hand and small-scale units, polyester needs factories with huge capital investments, machinery, concentration of power and chemicals. Thousands of massive plants consuming vast energy resources and creating pollution are constructed to make tons of synthetic fibres. With every garment needing less than a kilo of fibre, billions of garments are made in the factories in poorer countries where the cheapest labour is available. The sweatshops, as they are called now, can produce over 10,000 pieces of clothing a day. Most synthetic fabrics are treated with chemicals

during and after the processing. These chemicals not only leach into the environment, leaving an impact on groundwater, wildlife, sealife, air and soil, but they also sometimes get absorbed and inhaled by us directly. Synthetic fibres consume vast amount of finite energy resources in its manufacturing, creating pollution and they produce non-biodegradable, inert material hazardous to the environment and health so everything we have been making and buying will be with us somewhere on the globe as a polluting waste for about two hundred years to come. It is relatively easy to manufacture. To keep the machinery of the clothing industry going, people are encouraged to buy changing designs and seasonal throw away clothing in the rich countries, while poorer countries feed this fabric frenzy in the name of productivity and increase in market shares.

THE PESTICIDE AND GM BOOM KILLS

The cotton crops today have also become a serious cause of concern. Cotton is grown now as a cash crop and the hybrid seeds are expected to have very high yield. It is particularly prone to insect attacks, hence the use of chemical insecticides and pesticides has increased. Since insects started building immunity to pesticides, the situation has worsened. Cotton crops in India, China, and America use thousands of tons of pesticides and they are sprayed on the fields.

Cotton used in just one T-shirt takes an estimated 150g. of pesticide to cultivate it. Harmful chemicals are literally poured in the cotton plants at a horrific rate. Extensive use of pesticides makes soil barren and useless (Nicaragua – previously one of the biggest cotton growers – has almost entirely lost its trade to pesticides.) The world trade organisation (WTO) has estimated that about 20,000 people die every year because of pesticide use. Many plants and wildlife are wiped out as the pesticides are also sprayed from aircrafts. The situation of cotton farmers has become progressively worse with increased use of pesticides and handling of these dangerous chemicals.

Farming cotton, as it is grown now, is difficult and it is hard for farmers to make a living. They are fighting a triple surge of overzealous pesticide salespersons, concentration of trading cotton in few hands and price fights of cotton against synthetic fibres.

ETHICAL CLOTHING

Let us rewind the clock and go back to our Indian story.

With trading laws, the British protected their markets. The problem now was the cost of cotton fibre. India lost its place as a supplier to the world of fabrics and very quickly, its raw cotton was not required either. They also saw that The British ruled India could become a large potential market for British made cloth. To put an end to Indian competition and to open up the Indian market to British exports, an import duty on East Indian fabrics was imposed in the 1790s.

Luckily, they did not lose out completely, thanks to the strong adherence to traditions and tastes of Indian women and the sarees they wore as a traditional garment. They continued to prefer finer cloths made by their own Indian weavers. This ensured that the Indian industry did not die as in many other colonial countries. It is the women, overlooked by the British as potential buyers of the foreign made cloth, that kept Indian cotton cloth alive in India.

The next wave of Indian textile history was created by Mahatma Gandhi. This is almost a spiritual story, of a hand spun cotton yarn during the freedom struggle in the 1920s. This emerged against the British rule, and them charging heavy taxation on the local textiles production and sale. This was done to promote England-made-mill-cloth. Mahatma Gandhi initiated the movement, in protest of the British. He saw that British law would lose its grip on the spinners and weavers if all Indians would start spinning their own yarn! Thousands of people participated in this peaceful protest, by adopting hand spinning, choosing to wear clothes made from Khadi, and discarding the mill-made. The energy, of single, fragile but resilient, cotton hand spun yarn of Gandhi's Charkha movement, became a competing force against the power of the heavyweight mill industry, and the English rule. Khadi became a fabric

of national dedication, Swavalamban (self-sufficiency), Swabhiman (self-respect), equality, and freedom.

Gandhi, for the first time, made people of India and the rest of the world aware of the ethical side of what one wears. Khadi production was one of the earliest examples of fair trade. It can also be seen as a victory of hand-made over mill-made. This textile story is truly a global history. The awareness and values this has generated resonates, even today.

CONSUMERISM, GREED VS HUMAN RIGHTS & ECO-ACTIVISM

Industrialization and textile production by mills, though with its many faults, did create mass availability of clothing to the world to meet the basic human needs of 'Roti, Kapada, Makan'. The accessibility of goods and a very large scale of multinational exports and trade increased with time, and that too was owned by a few rich traders from a few rich countries.

The modern fair trade movement began in the United States and really took shape in Europe in the 1960s and quickly gained popularity. A movement built on an approach to economies where price is directly linked to the actual production costs and where all producers are given fair and equal access to the markets. The slogan, "Trade not Aid", gained international recognition by 1968. This also allowed customers and distributors alike to track the origin of the goods to confirm that the products were really benefiting the producers at the end of the supply chain. In the 1990's, reports of slavery in clothing factory workers and sweatshop scandals in poorer countries became public. The FairTrade movement gained momentum. Fairtrade is now trading between companies in developed countries and producers in developing countries. Fair prices are paid to the producers, and companies are able to provide workers with a stable income that can improve their lives.

Various environmental and health agencies have suggested that it is best to stay away from clothing that includes acrylic, polyester, rayon, acetate, triacetate and nylon. Many people have also realised that this spaghetti machine-like clothing industry is costing the earth. Clothes made of natural fibres are the best after all. Cotton, linen, wool, and silk tends to breathe better and they naturally wick moisture away from the body.

Some Fair-Trade activists and eco-pioneers were looking for clothing that is fair to all communities in the world in today's global markets and that has lower impact on the environment. Clothing made of cotton produced without pesticides - 'organic cotton' - though a little more expensive than synthetic clothing was becoming popular amongst these people. Organic farming is more environmentally friendly but it is hard to do it without markets. There is a drop in yield with organic farming in the first few years. It is advisable that the farmers convert to organic farming in a 3-5 year period to minimise his financial risk. This is going back to the old ways of cotton growing in India and other places in the past; rainfed cotton in fallow land!

Many times, the garments are produced by garment and textile workers based in poor countries and working at unidentifiable factories. They are many times underpaid and overworked in factories that are often nothing more than death traps. Many times they are trapped in contract labor, bonded labor and forced labor and their basic Human rights are violated.

The mill-made clothing production requires a considerable amount of energy and resources. Fashion produces a tenth of the world's carbon emissions. It depends on toxic fabric dyes and other chemicals that contaminate the land, water and pollutes the air.

The last 60/70 years also saw the rise and rise of consumerism and greedy capitalism. Textile and apparel industry, now called the 'fashion industry', is worth 3 trillion dollars and accounts for 2 percent of the world's Gross Domestic Product (GDP). It is the second biggest employer in the world and also in India. The fashion industry includes many sub categories, such as menswear, womenswear evening-wear, sportswear, casualwear, summer-wear, winter-wear, kids wear, baby wear, shoes,

bags and so on.

Most of the profit-rich buyer houses are in the US and Europe, while most of the producers are in China, India, Bangladesh, Vietnam and other poorer countries. India is the second biggest exporter of clothes after China. Clever/devilish marketing through glossy magazines, fashion shows, lobbying and changing fashion fads, fast-fashion, encouraged/brainwashed us into buying more and more. These companies continue to show growing profits for the shareholders in the meantime. Clothing prices were still kept comparatively cheap using unfair practises, including violating human rights of the workers and flaunting environmental laws. Worldwide people now buy 400% more clothes than two decades ago. (This is not true of our very poor but that is another topic all together.) The volume and speed at which we are now producing clothes, and that too very cheaply and throw them away as well, is killing our planet. Fashion industry is destroying the ecosystem and our planet.

In 2013 Bangladesh, Dhaka, a garment factory, Rana Plaza collapsed, killing over 1100 workers and injured over 2500 workers – mainly women who were the only breadwinners of their families. Rana Plaza is the 4th biggest industrial disaster in the world. The labels they found were of some the richest clothing companies of Europe and the US. They did not care about the well-being of poor people working for them and focused more on making their shareholders rich.

And Rana Plaza was just one of the worst examples of hundreds and thousands of factories spread across the poorer countries. It came in the limelight because big, international names were involved. In India and elsewhere, local large wholesalers are equally or even more exploitative and steeped in unethical practices and the regulatory bodies are slack.

In the aftermath of the Rana Plaza disaster, Fashion Revolution and a few other movements took momentum. Fashion Revolution is a not-for-profit global movement with teams in over 100 countries around the world. We are asked to question the sellers of clothing. 'Who made my clothes?' Fashion Revolution campaigns for reform of the fashion industry with a focus on the need for greater transparency in the fashion supply chain. Its global reach across buyers, students, designers, producers, and authorities brought lots of agencies to the discussion table for change.

GAME CHANGERS?!

The success of these movements opened up floodgates of new ways of thinking by many. The global climate crisis and citizens increasingly are wanting sustainable fabric and clothing that has been made with respect to the grower, weaver, artisan and sewer. Citizens expect transparency. They are fed up with greenwash and want sustainability claims validated and see climate action plans and an end to modern slavery from fashion companies.

A Circular economy is an economic system of closed loops in which raw materials, components and products lose their value as little as possible, renewable energy sources are used and systems thinking is at the core. In textile terms, use only natural materials that can be repaired, re-used, shared, upcycled, and disposed of without creating a residue. We believe that creating an inert waste is a design flaw. In nature there is no waste!

Adopting principles of Doughnut economics is redesigning the fashion industry to sit in planetary boundaries whilst meeting the needs of all the people in the industry. Earth Logic is how this would promote freeing up land for food production to feed people rather than using 20% of freshwater globally to make clothing for western markets. The Degrowth movement captures the need and sentiment of the participants. Significant reduction of production is still highly controversial, and would need to be a massive mindset shift and rethinking of the whole ecosystem. As the less fast fashion is produced, it would reduce pollution and prioritize paying workers at every stage of the value chain a living wage and begin to rapidly restore ecosystems, biodiversity, people and communities' well-being.

INDIA AND LOW CARBON FUTURE

India is the second largest producer and exporter of fabrics and clothing in the world. Our actions, ethos and activism, matter.

During Covid19 Pandemic, India saw thousands of its artisans who solely depended on exhibitions and shop orders losing their livelihood. They had large stocks unsold and no way of getting new orders or money. Many craft activists and enthusiasts got working through Creative Dignity. Creative Dignity is a movement that has brought together diverse creative producers, practitioners and professionals. This is to energise the ecosystem that Indian artisans need in this time of Covid19, and post-Covid19 impact. Their focus is to provide relief, and rejuvenation of the artisans in a bid to ensure their sustained prosperity.

The 'Karigars' - artisans and the 'handcrafted' movement lead us to the most insightful solutions in achieving the SDGs.

In India 20 million people depend on weaving and related activities. We calculate that about 1.1 tonnes of CO₂ is cut by using hand loom produced fabric rather than power loom produced fabric. Therefore a transition to handwoven fabrics and away from fossil fuel powered looms could potentially save millions of tonnes of CO₂ each year. Handweaving and hand production becomes more pertinent in the climate, ecological and social crisis.

Traditional, local and labour-intensive craft based manufacturing, has the capacity to deliver large employment numbers, and meaningful work, when it engages efficiently with modern markets. Relatively frugal capital expenditure, tooling and low energy costs, allow for more jobs to be created with lower capital investment, and a smaller environmental footprint.

Today labour is a tiny fraction of the FOB price of a piece of clothing, approx. 3-5%. Due to less infrastructure costs, the handspun, handwoven makes it possible that up to 30% can be for the maker and still be commercially viable. This promotes livelihoods, gender equality, rural development and self determination and could contribute to the Just Transition for the fashion industry, as we reduce the number of products made and with more jobs, we could create new pricing models and clothes that will be hand made and treasured.

This sector urgently needs investment and for brands to set part of their buying budgets aside for carbon negative hand woven fabrics. In the last seven years, the Indian government has been heavily supporting 'Make in India', 'Skill India', 'Scale up India' and 'Atma Nirbhar Bharat'. They are great reforms. We find most of these lean heavily towards technology and automation led industries which do not increase the rate of employment significantly. The textiles, garment and handloom sector did not get much support.

The new textile story that is emerging from India brings together business strategy, design thinking, execution, inclusive ownership and capital, and can be a decisive force to create employment, without costing the earth. It will help create a new and gentler capitalism, for more purposeful lives. The story is about bringing values and ethics back to clothing in a highly consumerist world community that is distorting our behaviour and destroying our soul.

It looks like we are turning a full circle here! The textiles and crafts that grew out of human talent and energies and respected nature and the environment brought our Indian communities huge prestige and prosperity in the past. In its transformed avatar, it is the handmade that would take us to the more inclusive and fulfilling low carbon future for us and the generation to come after us.

Shailini Sheth Amin

Oct 2021

SYNOPSIS:

The Sustainable Development Goals (SDGs) were adopted by all United Nations Member States in 2015. They are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. They apply to all nations and mean, quite simply, to ensure that no one is left behind. The five key elements: People, Planet, Prosperity, Peace, and Partnership. And, Three pillars of sustainable development—economic, social, and environmental. In the post pandemic world, meeting these goals have become even more crucial and we all know that time is running out. In this context I discuss 'Indian Textiles and Low Carbon Future'.

India is one of the few countries with its rich and living heritage of hand-made fabrics and over 20 million people depending on it even today. With right environmental, people empowerment and craft oriented policies, restriction on excessive carbon footprint producing industries we can convert our textile industry largely as a low carbon footprint industry. By doing that we can fulfill our commitment of income generation for the masses and creating a low carbon future for India.

REFERENCES / FURTHER READING:

SDG goals by the United Nations. <https://sdgs.un.org/goals>

HISTORY OF TEXTILE INDUSTRY OF INDIA - **WIKIPEDIA**

IMAGE FROM V & A MUSEUM COLLECTION

OLD MAP OF ERITHREAN SEA

1658 Jansson Map of the Indian Ocean (Erythrean Sea) in Antiquity

<https://www.alamy.com/stock-photo-1658-jansson-map-of-the-indian-ocean-erythrean-sea-in-antiquity-50535225.html?pv=1&stamp=2&imageid=03E648A1-4590-42F9-9717-C08536DC22C2&p=258833&n=0&orientation=0&pn=1&searchtype=0&isFromSearch=1&srch=foo%3dbar%26st%3d>

KING COTTON

https://en.wikipedia.org/wiki/King_Cotton

POLYESTER

<https://en.wikipedia.org/wiki/Polyester>

SWADESHI MOVEMENT

https://en.wikipedia.org/wiki/Swadeshi_movement

ENVIRONMENTAL IMPACT OF FASHION

https://en.wikipedia.org/wiki/Environmental_impact_of_fashion

CREATIVE DIGNITY

<https://createdignity.org/home-2-3/>

SAFIA MINNEY

PEOPLE TREE - <https://www.peopletree.co.uk/about-us>

CREATIVE MANUFACTURING

<https://creativeconomy.britishcouncil.org/guide/creative-manufacturing-india/>



A CLEAN OCEAN DRIVE

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INTRODUCTION

2004, Tsunami had hit the coastal part of South Asia. Millions of people on the coastline of south India were impacted by it. Rehabilitation camp was set up by Auroville to support the coastal community. People were shaken and children were asking for attention. "What can I do?", I asked the organiser. I was told to take care of the children. Colourful fabric from studio, few scissors and we made groups of six or seven children and one adult as a teacher and we started making dolls.

Why dolls?

No idea, she was in front of me and there was no time to think anything else.

Time was taking it's own decision, logic was yet to catch up with. I ran into a woman who was a living ghost, her eyes were pale. She passed by me but without seeing me, I wished I could make her smile. We got busy with children making small doll, camp was quiet, grown ups could talk and plan. Meanwhile food was getting cooked for the community. Tsunami affected the lives of women, children and families in and around the coastal region of Tamil Nadu. There was a loud cry for help-we did not know what that help would be. Responding to the moment was the only help one could think of. Making doll with children continued for two days. On third day camp shifted to the village. There was despair in the village.

TSUNAMIKA IS BORN

I thought of making dolls with women instead of children. Somehow I had a feeling it would do good to them, move fingers creatively so mind can be busy with something else. It worked.

600 women across 7 coastal villages near Auroville gathered together; making dolls. Soon we had many dolls, of course we started to gift and distribute before we were buried under the dolls ourselves. After a week we brought the dolls back from the fisherwomen community. We decided to give the women money for their work and not give them donation. Doll buying became a good excuse. One lady came quietly to tell that was her first earning all by herself. She was going to buy something for her child. Ladies began talking to these tiny dolls, telling their stories, grievances. Dolls were every where-on the street, inside the house. Every village had hundreds of ladies making dolls. The dolls were made out of waste fabric so there was no shortage of raw material, Upasana was behind and other units started sending their waste fabric as well. Very tiny pieces can be upcycled into a doll. We were upcycling waste into HOPE.



She says my name is...

Dolls project started with such rapidity and swiftness that no one had time to blink.

One morning, Manoj told me your doll has a name.

Hmmm....what is it, he gave me a paper which has this poetry.

A living symbol

She is a symbol, a living symbol with her own life.

As her name suggests, she is a child of tsunami;

The tsunami that changed the lives of millions.

She is the memory of Tsunami...

She has been hand-made by women,

The women who live by the ocean,

The women whose lives changed forever after the tsunami,

The women who are exploring a new way of living,

The women who are empowering themselves.

Tsunamika is an expression of their creative fire;

Through Tsunamika they enter a new & wider world.

She is made out of bits and pieces of cloth

Left over from other works;

Made from what is known as waste.

There is nothing called waste in Nature,

Everything has its creative role.

Everything can be living & beautiful,

As Tsunamika is ...

Tsunamika has arrived, grand, gentle and silent. First copy of the poem along with a letter from project team went to His Holiness Dalai Lama. To our surprise we got a reply from His holiness. "Blessing to Tsunamika and Auroville." She has been travelling all over the world since then.

In the villages, 200 women approached to see if they could continue making dolls.

Funding proposal was written for one million dolls which were symbol of love and unconditional giving to world-for help they provided during Tsunami. Tsunamika comes as thank you from Tamil Nadu, India. this worked again. The project got sanctioned and funded. We were going all over the world. Story of Tsunamika got created by fisherwomen and us and we both wrote the same story. The story was endorsed by UNESCO and translated into seven international languages. The story of Tsunamika soon reached many people around the world. Many organizations, in order to help the coastal women, distributed them as gifts to their employees. In the months following the tsunami, Tsunamika's work started to get its first significant international coverage and thus continued the fortuitous relationship with UNESCO and Tsunamika lands on the front page of UNESCO India Magazine regarding emerging communities post tsunami.

The Tsunamika dolls project continued to grow, as more and more villages become involved in the making and distribution of the dolls and the message.

BIRTH OF AN IDEA-DESIGN & PERSPECTIVE

It is our attitude which decides the outcome. Tsunamika project team chose to stay with the story of love and compassion when world media was focusing on death and destruction. Resilience of life took more space in our narrative and design and social responsibility became a dimension which is going to stay with me in this life. All creative expressions were asked to collaborate with this narrative. People joined in. Born out of trauma to lend a hand to the surviving fishing community; Tsunamika was made to bring back the smile that the tsunami had taken away. Channelling their energy in a constructive manner, they created a doll to overcome their traumatizing experience through handicraft work. It created jobs for the fisherwomen community. It created an inspiring story for others. Industry got to upcycle it's waste in a beautiful way. "WASTE to HOPE." All of us got Tsunamika dolls.



GIFT ECONOMY-NEW WAY TO ECONOMY

Tsunamika soon became symbol of hope. It soon became clear that no one is rich enough to buy Hope and we were not ready to sale Hope. She is beyond market economy.

It became obvious that she is to be gifted, not traded.

The Gift Economy starts when one reaches the status of a giver. Here, in this stage, a new spiritual dynamics comes into play which has a magical dimension to it. When one gives unconditionally, for the very joy of giving, the universe responds and returns that joy multiplied

in unimaginable ways. This is completely beyond planning. It is a spontaneous emergence of a new dynamism which has a greater joy and love in it than mere trading can bring. It opens the doors of a new energy which may be seen as centred in the heart, not in the calculating mind. In this new dynamics the act of unconditional giving nourishes the giver in a multitude of ways that are not possible in the mechanics of trade.

The Open Source movement is an example of gift economy in action where thousands of volunteers are contributing their time and skills to create world class products that are given away free to the world as our common wealth that belongs to no one in particular. You are respected for your capacity to give, not for your capacity to accumulate wealth. That is a fundamental shift in values.

On a small scale, Tsunamika project is a demonstration of Gift Economy in action. The real wealth she is creating is not the income for the fisherwomen but the very movement of joy that enriches everyone who comes in touch with Tsunamika.

It is all about opening the heart!

TSUNAMI IN JAPAN (2011)

Peace, solidarity and love from people of India to people of Japan.

2011 ,When the Tsunami wave hit the coastal regions of Japan. Tsunamika Village community wrote letters to people in Japan. These were Tamil letters which got translated into Japanese.

With these letter of solidarity 100, 000 Tsunamika dolls were sent from India as a humanitarian gesture. The Peace Boat took this offering of hope, peace and love to Japan. This opened my connection with Japan. It is the gift economy that helped our project to take this leap.

OCEAN MY HOME (2019)

2019, Tsunamika is now 14 years old and she begins to talk. She made it clear that she is NOT only about the tsunami but she is also about the importance of a clean ocean. She says "The Ocean is my home." Even asking if we would please return her home back to her? Her home is full of our garbage because we don't want it in our homes, so it was important that she start getting her message into the schools. Around this time, Lt. Governor Kiran Bedi launched this campaign of "Ocean my home" at Raj Niwas with the launch of a book and a short film.

Over one million seabirds are killed by ocean pollution each year. Overfishing is reducing fish population, threatening the supply of nutritious food and changing marine food chains. Approximately 80 percent of the pollution in the oceans comes from land, and coastal zones are especially vulnerable to pollutants. The biggest sources of pollution in the ocean are septic tanks, plastic waste, trash, oil spills, toxic waste, farms waste, and industrial waste, etc. Fishes are crying out that humans have turned their beautiful homes to a trash can. The waste is killing the fish and other sea animals, and destroying the ecosystem of oceans at a rapid speed.

Tsunamika reminds us that if oceans die, we will die with them, because most of the oxygen that we breathe comes from ocean. Ocean gives us food, and 80 percent of the earth's biodiversity is hosted in the depths of the oceans. Oceans influence our health and well-being. They regulate climate change, provide renewable energy and medicines, and livelihood.

Now Tsunamika is on a new path. In her new journey, she is going to seek your help in the cause of ocean conservation and ocean health. Because a healthy ocean makes healthy people.

KARUNA DOLL (COMPASSION DOLL)- DESIGN TO SERVE (2020)

One of the extraordinary things about Tsunamika is that she never goes away. She appeared after the tsunami and continued to have a voice long after. It's why we could never imagine that the work is done and now she as a doll can be put back on the shelf and forgotten...that's why we can envision her becoming a symbol which can be awarded to individuals and companies that are making a sincere effort in ocean and water conservation.

As I said, Tsunamika never goes away, and with another disaster she

quickly jumps into action with her arms wide open.



This time she is re-awakened during the first wave of international COVID protocols, and her voice transformed into that of a Karuna doll (which stands for compassion) My name is Karuna, I am born in the forest of Auroville, near Puducherry in Tamil Nadu. The lush green forest is my home, full of mango, cashew and the neem trees. I am a warrior in the red earth, my heart is for love and compassion. I love all those who toil for the earth — artisans, farmers, craftsmen, all who work with their hands to create beauty in the world and I have joined hands with The Creative Dignity Movement. Unlike my elder sister Tsunami, I love green, red and pink, this makes me feel at home in my forest.

Her aim was loud and clear and focused on the support of artisans whose livelihoods depended on tourism and human interaction. Karuna became instrumental in focusing on creative dignity, love and compassion.

OCEAN GODDESS : BUILDING ICON OF RESILIENT ECOLOGY (2022)



Little doll made by fisherwomen today stands on her Ocean Mission on the UN platform.

Tsunami has emerged as an Ocean Goddess, the spirit of the ocean. She, along with one million Tsunami dolls, are on “Ocean Mission”. She speaks for children and women – two parts of our society who are most vulnerable during calamities. With Tsunami, they stand up in this journey of the “A Clean Ocean” as change makers.

The oceans are a reminder of our interconnectedness despite being anywhere on our planet. The ocean is the largest ecosystem on Earth, and it is the planet’s life support system. A healthy ocean regulates the planet’s climate and reduces the impact of climate change. Tsunami is on a mission to become a symbol of resilient ecology through her work in spreading awareness on the role oceans play in our lives and forging meaningful connections between different stakeholders to bring about the necessary change.

Tsunami was on live stream with the United Nations Ocean Decade Laboratories-A Clean Ocean part of the 2021-2030 UN Decade of Ocean Science for Sustainable Development on November 19th 2021.

“I want to go home, my home is full of your garbage, can I get my home back?” Tsunami says to her friends. Friends of Tsunami are everywhere, she has already reached more than 80 countries in six million numbers. Tsunami is mobilizing her friends in schools, creative communities, artists, and common people with her in this journey joining hand with A Clean Ocean agenda of UN 2030.

- Tsunami becomes a vehicle of ocean centric conversation amongst children and art spaces, local community and common people. “One million Ocean Tsunami dolls get into distribution during the year.

- Tsunami award to acknowledge Ocean protection activities. Tsunami becomes a symbol of ocean protection no matter who serves the Ocean Cause.

- Changing our relationship with waste starting through school children. Satellite Activity can use “One million Ocean Tsunami dolls” during the year of 1st Nov 2021 TO 25 Dec 2022 across different projects.

To begin there will be action, One million Ocean Tsunami dolls will build conversation around ocean protection lovingly, starting with children and the Mothers.

Tsunami becomes a vehicle of ocean centric conversation amongst children, the Mothers, art community, local community and common people.

ENROLLING COMMUNITY

Art and communication build narrative. Tsunami is building a narrative of a resilient ecology. A Clean Ocean Drive is part of the narrative. She shifts her position from being a simple girl to “Ocean Goddess”. Story of today is base for tomorrow. Tsunami is a beautiful story in the making. We have many icons and we add more icons everyday. Ocean goddess will be a Gift of India. I reached out to design colleges inside India to collaborate in engaging students for conversation around Ocean. Design community from India has resonated very well with Tsunami response. 1000 designers from all over the India are busy working right now on Ocean Drive.

One day Pixar studio will make Tsunami Ocean goddess film for resilient ecology. She will be a new heroine of love and commitment. Future is what we create.

This paper is to describe her drive and iconic journey which started in 2004 and continues to inspire us. Journey of Tsunami from Trauma counselling to being an Icon of A Clean Ocean is a story of resilience and hope. She continues to march towards the future.



PIKU

By Student of Product Design Department

"A name that is considered as the powerhouse of energy and enthusiasm, is a happy and free spirit. Inspired from Rajasthani katputali, Piku is designed as an interactive, ambience light for study table. It works on the concept of motion-sensory light, which glows as its hands are raised, and the light goes off by lowering down its hands with the help of a cylindrical wooden base, giving an essence of movement."

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