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Embracing Femininity in Design

A Pathway to Caring, Collaboration, Well-being and Sustainability

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I am an Industrial Designer with extensive experience in collaborative innovation and sustainable product design. Presently, I hold the position of Assistant Professor in the Department of Design at the Indian Institute of Technology Guwahati. My doctoral research explored Design for Sustainability, specifically focusing on the development of scale-appropriate agricultural equipment. My academic journey began with a Bachelor's degree in Industrial Design from IIT Guwahati, followed by a Master's degree in Integrated Product Design from the Technical University of Delft, Netherlands, culminating in a PhD from IIT Guwahati.

I co-founded the Sustainability and Social Innovation Lab at the Department of Design, IIT Guwahati, which aims to redefine systems for sustainable human consumption and production. Our design interventions strive for a profound transformation of the consumption structure. The lab is an active participant in the

Learning and Education Network in Sustainability (LeNS), a global consortium of over 150 universities dedicated to sustainability. A significant portion of our work focuses on sustainable product-service development projects within the agricultural sector.

My expertise lies in Design for Sustainability, emphasizing the integration of environmental considerations into the design process. This includes Agricultural Product Design, aiming to improve the efficiency and sustainability of farming tools and equipment. I'm deeply involved in Lifecycle Assessment to measure the environmental impacts of products throughout their lifecycle. My work in Sustainable Product-Service System Design seeks to create innovative solutions that blend products and services for better sustainability. Additionally, my efforts extend to Medical Product Design, prioritizing user safety and environmental considerations. My strong foundation in User Experience Design and Human-Centered Design ensures that our products are not only sustainable but also user-friendly and responsive to human needs.

At IIT Guwahati, I teach various courses including System Design for Sustainability, Usability Engineering, User Research Techniques, Product Detailing, Interaction Design, Design Management, and Plastics and Composites. I have also developed a MOOC course on System Design for Sustainability for the SWAYAM platform, sponsored by MHRD.

Over the past few years, my professional journey has taken me across India, Bangladesh, and the Netherlands, collaborating with organizations such as ABB, Philips, Infosys, MIDCO, VU Medical University Amsterdam, Conpax Verpakking, Beat Belly, Botanische Tuin Delft, ACC Ltd, and numerous educational institutes and NGOs worldwide.

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Embracing Femininity in Design: A Pathway to Caring, Collaboration, Well-being and Sustainability

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1.1. Introduction

One fine hot and humid day in the farms of Bangladesh, while talking to a group of farmers, I realized how deeply feminine qualities like care, collaboration, and a focus on well-being are needed in our approach to design for anything and everything. The machine that I was testing to start a redesign exercise was generating a lot of soil dust on the face of the operator (Banerjee, 2015; Banerjee & Punekar, 2020). I mentioned that we will consider this aspect in the redesign. However, all the farmers jumped in and said, "We are farmers—men of the soil. We are hard. Machines are for the hard. We can take the dust." This interaction made me question the narrow definition of masculinity that we have developed in life and design and how it has alienated the feminine qualities that are so crucial for meaningful and impactful design outcomes and a good quality of life. On the one hand, the farmers said they constantly fell sick after operating the machine and had to take sick leave the next day. However, on the other hand, they needed to portray a masculine image of being 'tough' and 'able to handle it.'

As explored in this article, femininity refers to qualities and approaches often associated with women, such as caring, collaboration, and a focus on well-being and how it should become

the core of all Design exercises. These so-called femininity traits are not limited to women but have been historically undervalued in our society and design practices. Design practices have primarily focused on the so-called masculine norms. Traditionally, masculine norms, tenets, or principles (we have used these terms interchangeably in the article) have often dominated design, emphasizing efficiency, functionality, and technical prowess. However, by incorporating feminist perspectives, designers can reframe the design process to prioritize empathy, inclusivity, and holistic considerations (Mellor, 1992) for human and environmental well-being (Dijkstra & van der Bijl, 2016). Embracing femininity for design thinking shift is not about excluding masculine qualities but embracing the complementary strengths that both perspectives bring to the design process.

1.2. Defining Femininity in Design

Femininity in design is not solely about catering to women; instead, it is a broader approach that values characteristics often associated with the feminine, such as nurturing, cooperation, and a focus on emotional and social needs (Mellor, 1992). These qualities can benefit all users, regardless of gender, by creating design solutions that are more responsive to human-centered concerns (d'Ignazio & Klein, 2016). Let us look at some aspects that define femininity in Design and showcase how we at the Sustainability and Social Innovation Lab try to use the strengths of both masculinity and femininity principles.

1.3. Caring, Collaboration, and Well-being Orientation

Feminist scholars have long argued that traditionally feminine traits like empathy, care, and collaboration are essential for addressing complex social and environmental challenges (d'Ignazio & Klein, 2016). Another key aspect of femininity in

design is focusing on holistic well-being rather than narrow performance metrics (Hadi et al., 2020). These qualities are crucial in design, where the goal should be to create solutions that genuinely meet the needs of diverse users and communities while uplifting the overall quality of life of every stakeholder involved.

For example, while designing the game *Sahakarya*, a game which teaches people how to prepare for an impending flood and build resilience for themselves and how to work collaboratively with the community when the flood has hit, our design team focused on incorporating care, cooperation, and community-building as core game mechanics. The game demonstrates a sophisticated integration of feminine and masculine design principles, creating a nuanced learning environment for disaster preparedness. The feminine design principles manifest through:

1. ***collaborative core mechanics emphasizing community survival,***
2. ***care-based elements utilizing kindness points and support for vulnerable non-player characters,***
3. ***holistic problem-solving approaches acknowledging diverse strengths (knowledge, kindness, alertness, etc.),***
4. ***relationship-building mechanisms promoting knowledge sharing and trust, and***
5. ***nurturing elements focused on community resilience and prevention.***

These principles are complemented by masculine design elements, including

1. ***strategic resource management requiring optimization and efficiency,***

2. ***competitive frameworks with distinct winning conditions and achievement metrics,***
3. ***clear objective structures with defined progression systems,***
4. ***individual agency through character selection and autonomous decision-making, and***
5. ***systematic risk management approaches.***

The integration of these principles occurs through several game mechanics:

1. ***balanced motivations combining individual success with community well-being,***
2. ***complementary mechanics where strategic decisions influence social outcomes,***
3. ***hybrid victory conditions (highest knowledge points, highest kindness points, and highest combined points) valuing both achievement and community support,***
4. ***dual-focus design balancing personal survival with social responsibility and***
5. ***multifaceted learning incorporating both technical knowledge and emotional intelligence.***

This careful integration creates a rich pedagogical tool that effectively teaches players practical disaster preparedness skills and social responsibility principles, reflecting the complex realities of community disaster response through a balanced application of gender-archetypal design approaches.

The game demonstrates how traditionally feminine principles of care, collaboration, and community well-being can be effectively synthesized with masculine tenets of strategy, competition, and individual achievement to create a more comprehensive and engaging learning experience. This integration suggests a model

for how gender-inclusive design principles can enhance serious games and educational tools, particularly in contexts requiring individual competence and community cooperation.

1.4. Challenges of the Caring, Collaboration, and Well-being Orientation

Now, going back to the agricultural machine story that we started the article with. What were my customers demanding? They wanted an efficient machine that breaks down less, costs less to operate, is easy to transport from village to village, and is less hectic for the operator. Soil dust is fine. It causes huge fatigue to the operator, so if that can be reduced a bit else, they will manage by tying a sandbag in the front of the machine like how they are doing it now. The engineers and agricultural scientists involved in the project were looking for a robust machine that is efficient (in terms of technical requirements like seed-to-seed distance, errors, and turning radius), breaks down less, and is lightweight but cheap. Despite receiving these customer demands, we felt the story was incomplete. As designers, we grew up to engage in "Design Thinking". Brown (2008) says that design thinking is "a discipline that is built on a designer's approach to understanding the customer's demands very sensitively with what is scientifically possible and assisting in the conversion of customer value into an opportunity to be successful in the marketplace."

So, we decided to talk to some women about the machine. A group of them mentioned that due to some unrest, the police arrested all the men in the village, and it was thanks to this machine that they could complete the sowing activity in time. They wish it was ergonomically suited to their physical dimensions and the kind of clothing they wear. Another woman said that the operator can't operate the machine alone as they need someone to constantly drop seeds into it. So, the operator takes his sister or wife along for

this job. Now, this accompanying lady is not paid anything, and the money that the operator makes is basically one person's wage. A village elder told us that earlier, when we looked for a husband for our daughter, we would see how many cattle one had, and now, it was how many agricultural machines there were. So, a young man added, "This machine looks bad and reduces our reputation in the marriage talks. We want tractor-like machines." Then, the next bystander added, "We don't aspire to own this machine. It breaks down all the time. It makes me feel that I am poor, and hence, I have no other option. The sandbag that I tie in the front of the machine is like a bag that I tie around my neck." The manufacturer, who was also the reverse engineer behind the machine, was the pride of his village and nearby areas. The machine was a symbol of being made in Bangladesh and the ingenuity of the local people. It represented their collective spirit and the capability to engineer and make something out of the resources available. The manufacturer employed a lot of local youth, trained them in sheet metal fabrication, and had a lot of agricultural machinery in his kitty. These young men, ones trained, would usually leave for greener pastures, making him again rely on untrained people whom he would have to patiently train. Despite these challenges, he had succeeded in growing constantly and delivering.

So how, as a designer, should I approach this problem? The narrow customer-demand-driven, technical and efficiency-focused, market-driven approach or the feminine approach focusing on human-centered well-being, considering the holistic impact of a solution on a user's physical, mental, emotional, and social needs. Taking the broad feminine approach, in this case, is desirable. However, will smaller or economically weaker companies be willing to take this approach when they are unsure how to map the economic benefits to the resource investment? Taking the feminine approach involves actively seeking out diverse user perspectives,

deeply understanding their lived experiences, and crafting solutions that improve overall quality of life rather than merely functional optimization. By centralizing well-being as a key design principle, we can create solutions that nurture the whole person and community rather than treating users as isolated, one-dimensional consumers.

However, a well-being-oriented approach seems many a times untenable in low-resource settings for designers and their sponsors or the people who would ultimately manufacture and sell the designed solutions. Similar were the challenges we faced here. The NGO was interested in a well-being-oriented approach, while the scientific institution was more focused on the technical and efficiency-focused, market-driven approach. Other limitations came from the support institutions that need the volume of production to be able to agree to produce high-quality components for the machine or hoist spare parts or financial inclusion schemes. As designers, we took the well-being-oriented approach and designed an aspirable machine that looked like a tractor, fulfilled the technical, efficiency, and market requirements, was easier to operate and maneuver in the field, needed only one operator, and conceptualized product-service systems to operationalize the support ecosystem. However, it still depends on the sponsors and their resource availability if they can implement the caring, collaboration, and well-being-orientated approach or now in this low resource context.

1.5. Femininity's Role in Sustainability-oriented Design Thinking

Several researchers and design thinkers will point out how approaches like participatory design, design for well-being, and design considering a holistic approach where we see the world as a whole in terms of time, space, and quality of life are the key to

achieving sustainability on the triple bottom line: environmental, socio-ethical, and economic. These approaches are also grounded in the feminist approach to thinking. We will highlight one less spoken about that we are focusing on at our lab.

This approach is called the Design for Sustainable Distributed Economy. The term "Distributed economy" was coined by Johansson et al. (2005). Our lab is part of an international network of about 200 universities that call themselves the LeNS network, standing for Learning and Education Network for Sustainability. We published our collaborative research and development work in Design for Sustainable Distributed Economy as a Springer open-access book called Designing Sustainability for All (Vezzoli et al., 2021).

Distributed economy is an emerging concept that contrasts with centralized and decentralized economic models. It emphasizes local, small-scale, community-based economies (van den Dool et al., 2009) and is characterized by greater individual and community control over production and participation (Josh, 2018). Unlike centralized economies, distributed systems leverage peer-to-peer interactions and distributed technologies to integrate knowledge and resources more efficiently (Barile et al., 2017; Burger et al., 2019; Huberman & Hogg, 1995). In the energy sector, distributed energy resources (DERs) are transforming traditional centralized grids into more flexible, decentralized systems (Nadeem et al., 2023). This transition presents both opportunities and challenges, requiring new business models and regulatory frameworks (Hargroves et al., 2023). In computational systems, distributed approaches enable more efficient resource management and scheduling through economic models (Buyya et al., 2005; Jian et al., 2020). While distributed systems offer advantages in terms of flexibility and efficiency, they also introduce new complexities in coordination and control (Barile et al., 2017; Seidel, 2017).

Let's compare the traditional economic development model with the innovative sustainability-focused model of the distributed economy. The traditional model is based on individualism, growth, large-scale operations, competition, centralization, profit, tangible products, reduced ethics, and consumerism, while the distributed economy emphasizes solidarity, development, small-scale operations, cooperation, distribution, well-being, intangible services, ethical practices, and sharing (dos Santos et al., 2021). Very clearly, all feminine approaches! In this design for sustainability approach, we are looking to jointly promote the improvement of welfare, social cohesion, and social equity while significantly reducing environmental impact and resource depletion.

Let's look at some of our projects in this direction.

1.5.1. Case Study: The Baghara Cooperative - Feminine Design Principles in Action

The Baghara Traditional Dress-making Cooperative Society, located in Assam's Morigaon District, provides a compelling case study of how feminine design principles can be effectively integrated into sustainability-oriented practices. This cooperative, engaging 500 weavers primarily in weaving, sericulture, stitching, and embroidery, demonstrates the practical application of distributed economy concepts within a traditional craft sector. The cooperative's structure is a testament to key feminine design principles, emphasizing collaboration through its organization of 20 producer groups, each with 25 members, and the designation of secretaries and Cluster Development Executives. It integrates traditional knowledge with modern management, ensuring sustainable production methods by using locally sourced materials and adhering to cruelty-free and chemical-free practices. The cooperative also takes a care-centered approach, respecting

weavers' religious and cultural commitments, offering flexible scheduling, and incorporating family and community values into training. Decision-making is collaborative, involving group-based problem-solving, shared resource management, and collective knowledge transfer. Furthermore, the cooperative is well-being-oriented, focusing on skills development, economic empowerment, and cultural preservation.

Our study in this cluster and several other women-oriented clusters in Assam, time and again, revealed this distributed economy structure and NGOs or governmental organizations backing them with a care, collaboration, and well-being-oriented approach. They realize that women are balancing their weaving or tailoring jobs with their family responsibilities. Hence, they can only handle a certain number of hours per day, and variability from one day to another is unavoidable. They are formed into larger co-operatives or groups so that they can collectively complete orders. No bulk orders are taken as the women can't commit to the same. Hence, respect for human labor is inherent in the system design of these networked distributed economies. However, there are challenges, too. For example, we observed that the women did not keep a good record of their expenses and income. They don't price their products by comparing the price of similarly placed items or by valuing the time they have put into making the product. The business-oriented mindset is missing largely, and hence, conscious thinking into investing and expansion of their activities was absent. Handling these challenges while respecting their personal well-being (they don't overwork themselves or ignore the well-being of themselves and their families) is a difficult balance to achieve. Thus, when we designed our financial literacy program for these women, we made a conscious attempt not only to teach them a business mindset but also to tell them about the benefits of their current care, collaboration, and well-being-oriented approach to

their craft in line with the distributed economy's philosophy.

1.5.2. Janani Foundation's Eco-friendly, Reusable Cotton Menstrual Pads

The Janani Pads initiative, spearheaded by Aimoni Tumung and Uttam Teron through the Parijat Academy in Assam, presents a compelling case study of how feminine design principles can be effectively integrated into sustainable product development and community empowerment. This initiative exemplifies the distributed economy model while addressing critical intersections of environmental sustainability, social equity, and economic empowerment through a care-centered approach.

Figure 1 Aimoni and Uttam calls us to Bleed with Dignity through their Janani Pads intiative

The project demonstrates several key aspects of feminine design principles:

Care-Centered Product Development Unlike conventional market-driven approaches that prioritize profit maximization through

centralized mass production, Janani Pads embodies a care-centered design philosophy. The product development process began with addressing the fundamental needs of rural women, focusing on both menstrual hygiene management and economic independence. The two-part design of the reusable pads, which facilitates better sun-drying and hygiene, reflects deep consideration for users' practical needs and cultural contexts, moving beyond mere functional efficiency.

Collaborative Knowledge Systems The initiative exemplifies collaborative knowledge creation and transfer through its decentralized production model. Women are trained not just in manufacturing techniques but are empowered with comprehensive knowledge about menstrual health, sustainable practices, and entrepreneurship. This approach aligns with feminist design principles by validating and incorporating local knowledge systems while building collective capabilities.

Well-being Oriented Business Model The Janani Pads model demonstrates how well-being can be centralized in business design without compromising economic viability. Key features include:

- ***Decentralized production units enabling women to work from their communities***
- ***Flexible production targets that respect work-life balance (30 pads per day)***
- ***Income potential of up to ₹18,000 monthly while maintaining community ties***
- ***Pricing strategy (₹80-₹110 per unit) balancing accessibility with sustainability***

Environmental Sustainability Integration The initiative's approach to environmental sustainability reflects feminine design principles through its emphasis on:

- ***Long-term ecological impact consideration (3-year product lifecycle)***
- ***Waste reduction through reusable design***
- ***Local material sourcing and production***
- **Quality control through centralized material procurement**

Social Innovation Through Distributed Economy The Janani model exemplifies how distributed economy principles can be leveraged for social innovation:

1. **Decentralized Production: Small-scale, community-based manufacturing units**
2. **Local Value Creation: Skills development and economic opportunities within communities**
3. **Social Capital Building: Breaking menstruation taboos through community engagement**
4. **Sustainable Scale: Focus on optimal rather than maximum production**

This case study demonstrates how feminine design principles can be successfully integrated into sustainable product development while addressing complex social challenges. The initiative's success in creating both social and economic value while maintaining environmental responsibility provides valuable insights for designers working towards sustainability-oriented solutions.

The Janani Pads model also highlights how feminine design principles can help overcome the traditional tensions between profitability and social impact. By prioritizing care, collaboration, and well-being, the initiative has created a sustainable business model that generates meaningful employment while addressing

critical social and environmental challenges. This approach offers important lessons for designing sustainability solutions that can be effectively implemented in low-resource contexts while maintaining their commitment to holistic well-being.

1.6. Femininity's Role in our Design Processes

Through the case studies presented - the Sahakarya game, the agricultural machinery redesign, the Baghara Cooperative, and the Janani Pads initiative - we have demonstrated how feminine design principles can be effectively integrated into sustainable design processes. These examples offer crucial insights into both the opportunities and challenges of implementing care-centered, collaborative, and well-being-oriented design approaches, particularly in low-resource contexts.

1.6.1. Integration of Feminine and Masculine Design Principles

Our experiences reveal that the most effective design solutions emerge from a thoughtful integration of both feminine and masculine design principles. While masculine approaches prioritize efficiency, technical optimization, and market viability, feminine principles emphasize care, collaboration, and holistic well-being. This integration is exemplified in the Sahakarya game design, where competitive mechanics were balanced with collaborative elements to create an effective learning tool. Similarly, the agricultural machinery redesign demonstrated how technical requirements could be harmonized with broader social and emotional considerations.

1.6.2. Distributed Economy as a Framework for Sustainable Design

The distributed economy model, as demonstrated through the

Baghara Cooperative and Janani Pads initiatives, provides a practical framework for implementing feminine design principles at scale. Key insights from these cases include:

1. **Local Value Creation: Decentralized production systems enable communities to maintain control over resources while creating sustainable economic opportunities**
2. **Knowledge Integration: Collaborative knowledge systems that respect and incorporate local expertise while introducing new technical capabilities**
3. **Flexible Implementation: Adaptable systems that accommodate varying resource levels and cultural contexts**
4. **Social Innovation: Design solutions that address both practical needs and deeper social challenges**

1.6.3. Methodological Implications for Design Practice

Our experiences suggest several key considerations for incorporating feminine design principles into sustainable design processes:

1. Stakeholder Engagement

- ***Moving beyond traditional user research to deep community engagement***
- ***Validating and incorporating diverse knowledge systems***
- ***Building long-term relationships with communities***

2. Success Metrics

- ***Expanding beyond conventional performance metrics to include:***
- ***Social impact indicators***

- ***Well-being measures***
- ***Environmental sustainability metrics***
- ***Community empowerment indicators***

3. Implementation Strategies

- ***Developing flexible frameworks that can adapt to resource constraints***
- ***Building support systems for long-term sustainability***
- ***Creating balanced business models that prioritize both social and economic outcomes***

1.7. Challenges and Future Directions

Our case studies highlight the potential of feminine design principles, yet several challenges remain. One significant issue is resource constraints, as it is often difficult to balance comprehensive stakeholder engagement with practical limitations in low-resource settings. Additionally, there is the challenge of scale and sustainability; we need to develop models that can grow while still maintaining a care-centered approach. Another concern is business integration, where creating frameworks that assist organizations in incorporating feminine design principles must not compromise economic viability. Finally, we must establish robust methods for measurement and validation to effectively assess the impact of feminine design principles on project outcomes.

1.8. Future Research Directions

Based on our findings, we have identified several promising areas for future research. These include the development of practical tools and frameworks for implementing feminine design principles in various contexts, as well as an investigation into how these

principles can be effectively scaled while preserving their essential characteristics. Additionally, exploring new metrics and evaluation methods to capture the full impact of care-centered design approaches is vital. Finally, a study on how feminine design principles can be integrated into existing design and development processes is also crucial for advancing this field.

1.9. Conclusion

Our work demonstrates that feminine design principles offer a powerful approach for creating sustainable solutions that address complex social and environmental challenges. By embracing care, collaboration, and well-being as core design values, while thoughtfully integrating them with traditional design approaches, we can create more effective and sustainable solutions. The distributed economy model provides a practical framework for implementing these principles at scale, though challenges remain in terms of resource constraints and business integration.

The success of initiatives like the Janani Pads and Baghara Cooperative suggests that feminine design principles can be effectively implemented even in resource-constrained environments, creating sustainable solutions that generate both social and economic value. As we move forward, the challenge will be to develop more robust frameworks and tools that can help organizations implement these principles effectively while maintaining their essential care-centered nature.

1.10. In this Guest Editorial

In this Guest Editorial, we explore the integration of feminine design principles into sustainable development practices through multiple empirical case studies and theoretical frameworks. We present the design of a game, Sahakarya, which balances feminine and masculine traits. Next, we discuss the case of women gamers

and explore whether women gamers are the same as men. Is our gaming industry geared to explore the women's gaming market needs, and how big is it? From there on, we weave into the distributed economy, firstly in the Assamese weaving sector and then into the reusable menstrual product market.

Join us in this exciting journey!

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As a third-year design student at IIT Guwahati, I am deeply passionate about the art of animation, the creativity of board games, and the immersive worlds of video games. These interests fuel my creativity and inspire me to design experiences that combine storytelling, interactivity, and visual appeal. I love exploring how design can inspire, connect people, and create unforgettable memories.

I keep these ideas in mind while working on all projects. In the game Sahakarya, I wanted the game to not only be fun but also inspire others to make games themselves and to consider games as a tool rather than an object for entertainment.

For me, design is more than a skill—it's a way of thinking, creating, and bringing dreams to life. With optimism and passion, I look forward to shaping a brighter, more creative future.

Farhan Shaikh

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I'm a 3rd year student currently pursuing my bachelor's in design at the Indian Institute of technology, Guwahati. I've lived in Mumbai since my childhood, although much of of my family is from Goa.

Professionally, I'm interested video game design and development, 3D art, Programming , CGI and VFX. My curious and creative nature helped me acquire these skills that allowed me to express my ideas in a much more expressive way. I've been teaching myself all these skills over the course of about 7 years now.

One of the projects that I'm proud of, Vox Cleaner, is an instant, single click 3D model optimising tool for video game pipelines. It's been used by more than 7,500+ individuals and studios worldwide!

Other than that, some of my hobbies include 3d printing, papercraft and origami. I'm also currently learning gardening and I'm loving learning about plants and succulents!

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Hello, I am Anushka, a UX/UI designer passionate about curating thoughtful and user-friendly narratives through an empathic approach. My design philosophy focuses on addressing real-life problems by blending functionality with engaging visuals to create intuitive interfaces.

Recently, I worked on a board game designed to raise awareness in rural communities where disaster preparedness isn't typically taught. By combining education with engaging gameplay, I aimed to tackle this important issue in an accessible and meaningful way. I am constantly striving to address challenges with an empathetic and innovative approach, using design as a tool for positive change. I'd be happy to hear from you!

Lahar Mahesh

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Hi, I'm Lahar, a third-year design student at IIT Guwahati. I am passionate about crafting intuitive and impactful designs. I enjoy simplifying complex problems and creating solutions that are not only functional but also meaningful and user-friendly.

My interests lie in UI/UX design and physical game design, where I focus on blending creativity with purpose. Whether designing seamless interfaces or engaging hands-on experiences, I always think about how to make things enjoyable and easy for people. In the game Sahakarya, I aim to create experiences that engage users and encourage them to view games as a powerful tool for exploring real-world challenges and inspiring action.

For me, design is about building connections and creating a positive impact. I'm always eager to explore new ideas, collaborate with others, and develop designs that truly make a difference. It would be great to hear from you!

Gosetty Sri Ramya, ***Psychology Postgraduate***

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Hi, I'm Gosetty Sri Ramya, a pre-doctoral research fellow at IIT Guwahati. I am on a journey to blend academic rigor with meaningful real-world applications in psychology. With an integrated master's in psychology (specializing in Clinical and Counseling Psychology) from the Central University of Karnataka, my academic foundation is both deep and diverse from research to clinical practice.

I thrive on the challenge of exploring new dimensions in psychology—whether it's through research, counseling, or education. My work has already gained recognition, including a systematic review on telehealth "Applications, benefits and challenges of Telehealth in India during COVID-19 Pandemic and beyond" published in Springer Nature. These experiences have fueled my desire to bridge psychological theory with impactful solutions. These experiences have shaped my focus on integrating psychology into projects like disaster risk management and sustainable design, where understanding human behavior drives systemic change.

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Disaster Preparedness: Balancing Femininity and Masculinity

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1.12. Introduction

Games are powerful tools for education and social change, yet many fail to strike a balance between traditionally feminine and masculine traits, especially when fostering collaboration and resilience. Femininity in games is shaped by cultural processes, affecting visuals, narratives, and sociability (Fontoura & Amaral, 2019). This article explores the design philosophy behind Sahakarya, a board and card-based game aimed at training communities in flood preparedness. By integrating elements that reward kindness, collaboration, and diverse skills, the game challenges conventional win conditions and encourages players to adopt cooperative strategies. The focus on balancing feminine and masculine traits fosters inclusivity and builds a narrative of collective survival. We discuss key mechanics, such as resource sharing, diverse win conditions, and character representation, and how they promote community resilience while deconstructing traditional notions of individualistic success.

In real-world disaster scenarios, survival often depends on collaboration, empathy, and resourcefulness. However, many games tend to emphasize competition, resource hoarding, and

individual triumph, reflecting traditionally masculine traits that dominate game design. Sahakarya aims to break this mould by incorporating both feminine and masculine aspects, emphasizing teamwork, altruism, and resilience over individualistic achievement. By rewarding kindness, acknowledging diverse skills, and fostering collaborative strategies, the game teaches players the importance of community resilience, making it a valuable tool for disaster preparedness training.

Figure 2 Sahakarya's Game Board, Pawns, Cards and Currency

1.13. Collaboration Over Competition

In disaster scenarios, survival in a team is often easier than going solo. Collaborative skills like sharing resources and helping others can make the difference between survival and failure. To reflect this reality, Sahakarya discourages resource hoarding and instead rewards players for cooperative behavior. For instance, players can trade safety consumables such as floatation devices, safety kits, or medical supplies, fostering friendly dynamics at the table. This design choice encourages players to think beyond individual gain and prioritize community welfare. These skills also aid in the development of problem-solving, communication, and critical

thinking abilities, which may be employed in real-world circumstances. The game also features community upgrades, which allow players to pool resources to build structures that protect the entire village. This mechanic underscores the importance of collective effort over individual advancement, teaching players that resilience is a shared responsibility. The occurrence of learning through collaboration or competition can be supported by the Social constructivist theory, which states that Learning is a social process, and shared goals and social settings enhance learning (Vygotsky, 1978).

1.14. Acknowledging Diverse Skills

"In diversity, there is strength." This principle is central to Sahakarya's design. Players assume roles with unique strengths, such as being caring, intuitive, or knowledgeable. This makes the game more inclusive of feminine traits, providing insights into new perspectives. For example, one character might excel at collecting resources, while another specializes in upgrading community structures. This diversity ensures that every player can contribute meaningfully to the game, regardless of their individual skill set. The winner is determined not by who hoards the most resources but by who helps the most, using their unique abilities. This approach celebrates different forms of intelligence and skill, challenging traditional notions of success in games.

1.15. Rewarding Kindness

In real life, acts of kindness often go unnoticed or unrewarded. Sahakarya flips this script by making kindness a central game mechanic. According to Skinner's operant conditioning, rewarding desirable actions can enhance (Skinner, 1937; Staddon & Cerutti, 2003) the internalizing of the behavior and thus the repetition of behavior, which in the current game is to show kindness and play

collaboratively for social well-being. Players earn points for helping others, whether by trading resources, providing safety consumables, or rescuing NPCs (non-player characters) representing diverse backgrounds. The game includes representation of differently abled individuals, people of varying ages, and even animals, encouraging players to extend their empathy to all. According to the empathy altruism hypothesis, fostering such empathy leads to altruistic behavior (Batson et al., 1981). The focus on kindness in the game serves a dual purpose: it instills helpful behavior in players while highlighting the value of inclusivity. By rewarding altruism, the game reinforces the idea that kindness is not just a moral virtue but a practical survival and community-building strategy.

Figure 3 Sahakarya's game Board with pieces and the flood

1.16. Knowledge Sharing Mechanisms

To ensure that every player benefits from the game's educational content, Sahakarya incorporates knowledge-sharing mechanics. Players must read cards aloud, disseminating information to the

entire group. This causes vicarious learning among the players, where observing one player learn can imbibe similar learning among the other players (Fryling et al., 2011). Even if a card directly benefits one player, its knowledge becomes a shared resource. Additionally, trading mechanisms allow players to share not just physical items but also information, fostering a culture of collaboration. These features ensure that all players, regardless of their role, leave the game with practical tips for disaster preparedness.

1.17. Community Resilience Through Upgrades

One of the game's most innovative features is the ability to upgrade both individual houses and community structures during the mitigation stage. The broaden-and-build theory of positive emotions (Fredrickson, 2004) suggests that recognizing and utilizing diverse strengths (positivity from upgradation) fosters resilience and problem-solving capacity. Players can choose to fortify their homes or invest in community upgrades like flood barriers or evacuation centers. While individual upgrades offer immediate protection, community upgrades benefit everyone, teaching players the value of collective resilience. By presenting players with these choices, Sahakarya emphasizes that survival is not a zero-sum game. The success of the community often depends on individual sacrifices, a lesson that mirrors real-world disaster scenarios.

1.18. Strategic Flexibility

Unlike many games that follow a linear path to victory, Sahakarya offers multiple win conditions. Players can focus on knowledge collection, kindness, or a balanced approach. This flexibility allows players to adapt their strategies mid-game, ensuring that no single approach is inherently superior. For example, a player struggling to

collect resources might shift their focus to helping others, earning kindness points instead. This dynamic gameplay keeps players engaged and reinforces the idea that there are multiple paths to success, both in the game and in real life.

1.19. Gameplay Mechanics: Preparation and Survival

The game begins with a preparation phase, where players have time to adopt various strategies. They can focus on upgrading their homes, collecting resources, or gathering special items. No single strategy guarantees victory; success depends on how effectively players plan and use their resources. As the game provides space and time to prepare oneself, it also allows one to modify one's strategies according to the gameplay of others. This flexibility fosters creative and critical thinking and allows one to learn through observing. One's mistakes are learning to the other in this game as well as how to apply them in real-life scenarios. The knowledge provided and social and observational learning together make the game a multifaceted opportunity for the players rather than just being a game.

As the game progresses, the flood—represented by a linear movement mechanic—forces players to move toward the evacuation site. This creates a sense of urgency and ensures that players remain focused on the end goal: survival. To add depth to the gameplay, each character has unique powers that influence their strategy. These powers allow players to be self-reliant while contributing to the group, striking a balance between individual and collective success.

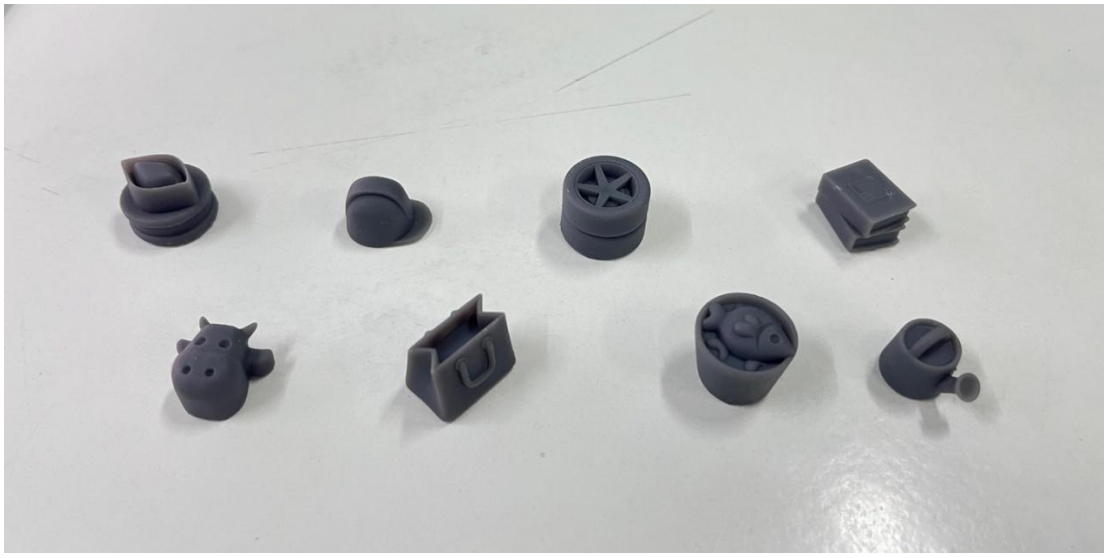

Figure* 1*. Pieces for all the characters one can play as in Sahakarya

1.20. Educational Value

At its core, Sahakarya is an educational tool. It teaches players real-life disaster preparedness tips, such as maintaining a safe distance from floodwaters and collecting essential items like medical kits and floatation devices. The game also emphasizes the importance of community support, showing how collective action can mitigate the impact of disasters. The inclusion of diverse NPCs further enhances the game's educational value. By representing people from all walks of life, including differently abled individuals and animals, the game fosters empathy and encourages players to think about the needs of others in their community. By representing characters from various walks of life, *Sahakarya* challenges players to broaden their social identities, extending empathy to groups that may differ from their own lived experiences. This inclusive representation encourages perspective-taking, a key component of empathy. When gamers assist NPCs who vary from them, they participate in cognitive and emotional processes. This is consistent with research demonstrating that exposure to diversity in controlled situations, such as games, lowers prejudices and promotes prosocial attitudes (Pettigrew & Tropp, 2006).

1.21. Balancing Fun and Realism

While Sahakarya aims to educate, it also prioritizes player enjoyment. The game's mechanics are designed to be engaging, with elements like trading, role-specific powers, and multiple win conditions keeping players invested. By balancing fun and realism, the game ensures that players remain motivated to learn and collaborate.

Sahakarya exemplifies how game design can balance traditionally feminine and masculine traits to create an inclusive, educational, and engaging experience. By emphasizing collaboration, kindness, and diverse skills, the game challenges players to rethink conventional notions of success and adopt strategies that prioritize community resilience. In a world increasingly threatened by climate change and natural disasters, tools like Sahakarya are more important than ever. By teaching players the value of empathy, collaboration, and preparedness, the game equips communities with the skills they need to face real-world challenges. Through its innovative design, Sahakarya not only entertains but also empowers, making it a model for future educational games.

1.22. About the team

Sahakarya Design Team: Pallavi Sarkar, Farhan Shaikh, Iha Gupta, Lahar Mahesh, Anushka Mittal

The team consists of students in their 3rd year of college and a 4th year intern learning design from IIT Guwahati. They are students at the Sustainability and Social Innovation Lab in the Design Department.

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Saptarshi Samanta, ***PhD Student (3rd Year)***

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About me

I am an experienced industry professional with more than 12 years of working experience. At present, I am pursuing my PhD in Design in the Department of Design IIT Guwahati. My area of research is determining the relationship between haptic experience and game design requirements for entertainment digital games.

I graduated with a B.Tech in Mechanical Engineering from Haldia Institute of Technology, West Bengal, in 2007. After graduating, I started my professional journey by joining TVS Motor Company Pvt Ltd. I worked in R&D Engines for TVS Motor Company for almost 8 years in engine transmission design and development for the three-wheeler vehicle segment. My extensive work in this domain resulted in 2 patents to my name as well.

After gaining a significant and in-depth understanding of the engineering and technical aspects of product design and development, I proceeded to do an MBA from IIM Lucknow to understand the business aspects of products and how business

requirements are tied into the entire process. After completing my MBA, I worked in the corporate strategy department of Shapoorji Pallonji Group. I was primarily involved in business strategy and business plan development for various group-level projects and new product development and business planning for various subsidiaries of the Shapoorji Pallonji Group.

After this corporate stint, I returned to academics and became a PhD student in the Department of Design, where I could bring my extensive industry experience related to product development and business planning to the field of design and marry it with my long-time passion for digital games and contribute to the field of research in game design and player experience.

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What Women Gamers Want

Saptarshi Samanta, PhD Student (4th Year)
Ph.D Student in Department of Design

Introduction

Entertainment digital games, also known as video games, have been around for quite some time. Social media is flooded with posts by various players and their latest conquests or game studios posting about their latest upcoming games. We see people from various age groups traveling in different types of public transport, engaged in combat games like PUBG or Fortnite on their mobiles, or lazily swiping their fingers on games like CandyCrush. PokemonGo was quite a rage not long ago when we saw young kids running across the neighborhood with mobile phones to capture a Pokemon that might have spawned in their locality. There are so many more examples of such games and the impact that they have had on the minds of the populace. The common thing observed is that many find entertainment digital games great for relaxing, having fun, finding friends, and making memories. The number of video games released each year has been steadily rising, and for the people engaged in playing video games, this couldn't have been a better era to live in. So where do women fit into this world of entertainment digital games? In this article, we shall try to shed some light on the aspect of women gamers and what they need from game designers.

1.24. Size of the video game market

The video game industry was valued at USD 282.3 billion in 2024 and is estimated to be worth USD 312 billion by 2025 (Howarth, 2024; Statista, 2024). From the size of the video game industry in

terms of revenue, it is easy to estimate the number of people playing video games every day. In 2024, data from various sources highlight that approximately 3 billion people are actively engaged in playing video games globally. The global population in 2024 stood at 8.2 billion people. The above data shows that at least 36.5% of the worldwide population is engaged in video games. This is quite a sizeable portion of the population indeed and indicates that entertainment digital games are not restricted to particular niches of the global population. Let's look at the distribution of the population engaged in playing entertainment digital games by region. We observe that Asia alone has 1.48 billion players, whereas Europe, Latin America, and North America combined have 1.42 billion players. This makes Asia the largest market for entertainment digital games. A fact that has not gone unobserved by various game studios and the Asian market has become a focal point for driving future growth of the game industry.

1.25. What is the proportion of women in the video game player population?

We have already established that more than a third of the global population plays entertainment digital games. However, we have not touched upon the gender distribution of the global gaming population. We are particularly interested in the women game players of the world, what kind of games they like to play, what challenges they face, and how game designers can make games that have equal appeal for women and men. If one looks at various tabloids, articles, and posts on social media, one might believe that playing entertainment digital games is predominantly a pastime of the male gender. However, the gender-based data of the global gaming population has another story contrary to popular belief. Globally, there are approximately 1.7 billion men gamers and 1.39 billion women gamers (Howarth, 2024). It is almost a 50-50 divide

between the two genders. The ESA has conducted an in-depth analysis of the gender divide in gaming in the US video game market. As per their records of 2024, 53% of the players in the US were male, and 46% were female (ESA, 2024). In Figure 1, we have captured the data related to the percentage of women gamers in different regions for 2024.

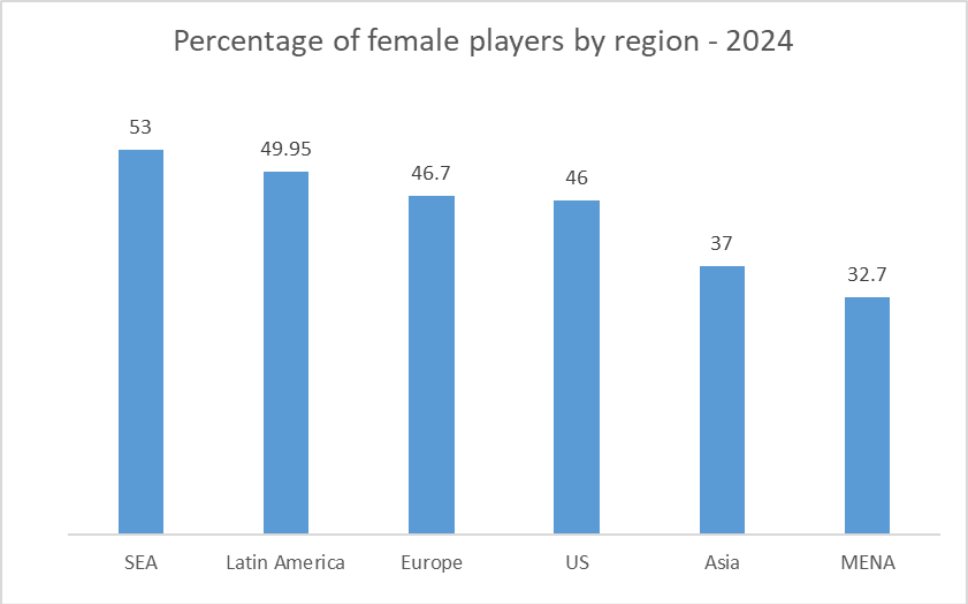

Figure 1: percentage of female players by region-2024

The SEA region mentioned here comprises Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam. Latin America has data from only Brazil and Mexico, while the data from other countries in the region is dated or unavailable. Asia comprises China, Chinese Taipei, India, Japan, and Korea. MENA comprises Egypt, Saudi Arabia, and the UAE. Figure 1shows that the percentage of women gamers in each geographical region is between 30 – 50%. This is quite a sizable market indeed and not a figure to be scoffed at. So, the popular notion that entertainment digital games are meant for men and that these games are "boy toys" does fall flat on its face. The data shows that women are as interested in entertainment digital games (video games) as men. In the case of India, the story is the same for women gamers.

Almost 41% of the gaming population in India is female (Times of India, 2024).

1.26. Do women gamers have the same game genre preferences as men?

Though women gamers occupy almost the same space as their male counterparts, from various surveys of gamers across the globe, we can see that women's preferences differ from those of men. A good amount of data is available on the game genre preferences of men. However, data related to game genre-based preferences for women, though present, is not detailed enough. From reviewing various literature related to the game preferences of women, we observe that women's preferences vary along the lines of preferred elements of the game, as well as the platform of choice for playing those games. Playing games on mobile phones was the preferred platform of choice for most women gamers, followed by consoles and PCs. Women who prefer to play on mobile phones generally tend to identify themselves as casual gamers, and women who prefer consoles or PCs self-identify as core gamers (Eliza Crichton-Stuart, 2024; Rival Tech Company, 2021).

Though the genre preferences of women gamers are not well known, recent research into understanding women gamers has shed some insights into this section of the gaming populace. Thakur et al. (2023) state that women gamers prefer games that require a shorter duration to play and that let the players get involved with the narrative and visual aesthetics of the game. Women gamers have identified completion, fantasy, design focus, community, and story as the top motivators for playing any game. So, if any of the games have these elements in apt quantity, it will attract women gamers. In contrast, male gamers preferred games with more destruction and competition elements (Rival Tech Company, 2021). This stark difference in preferences for game elements between

female and male gamers shows that there is a need to relook at how games are made today.

1.27. Challenges faced by women gamers

Even though the number of women gamers is almost equal to the number of men gamers globally, there is a disparity in designing games. Kuss et al. (2022) have pointed out that, at present, entertainment digital games tend to be designed by men for men. Women gamers' preferences and needs are not adequately addressed or considered. This results in several challenges for the player experience of women gamers. Even in academic research related to the study of gamers, the focus is predominantly on men gamers (Kuss et al., 2022; Thakur et al., 2023). Only in recent years we are seeing an increased interest in understanding women gamers. The challenges women gamers face can be broadly broken down into two categories. The first category deals with how playable female characters are represented in entertainment digital games and the overall game narrative and game design. The second category deals with how the gaming community interacts with women gamers.

The representation of female characters, playable as well as non-playable, is quite a vexing one. As male designers dominate game design, the representation of the female characters is dominated by how these male designers view women. This has resulted in the sexualization or objectification of the female characters with a focus on sex appeal cues like large breasts, narrow waist, wide hips, exposed skin, and minimal clothing. This has resulted in shifting the focus away from understanding and liking the female character as a person and appreciating her qualities and skills. Instead, the female character is relegated to an object. While men gamers might find this kind of female character representation attractive, women gamers are not drawn to this type of depiction

at all (Lynch et al., 2024). This kind of depiction of female characters also affects the perceptions of body image and confidence of women gamers, resulting in women gamers avoiding digital games further. The other challenge arises from applying gender-based stereotypes to female characters. The female characters are often depicted as damsels in distress or incapable of completing tasks without help or making correct decisions, or appear manipulative. This makes female characters, playable and non-playable, undesirable to women players. However, due to a paucity of suitable female characters that meet the preferences of female gamers, the female gaming population does have limited choices.

This brings us to the second challenge: how the gaming community interacts with women gamers. This challenge is inherently linked to the first challenge. The representation of female characters within the game also influences how men gamers perceive female characters. Women gamers are often viewed as incompetent and lacking in skills required for playing digital games. Furthermore, due to the sexualized representation of female characters, women gamers are often at the receiving end of harassment, online and probably in real life. The issues of women gamers are often unaddressed by game developers or half-hearted measures that are cosmetic at best (Batista et al., 2024; Lynch et al., 2024; Thakur et al., 2023; Uchidiuno et al., 2023). This further alienates the female gaming population from engaging with the broader gaming community. Women gamers often refuse to identify as gamers and avoid online gaming and social gaming interactions to minimize the chances of hostile interactions (Kuss et al., 2022).

1.28. How can game designers make entertainment digital games more attractive to women?

There are considerable challenges faced by women gamers. The

question then would arise: what can be done to alleviate the challenges faced by women gamers? Women in Games, a not-for-profit organization, has highlighted that women are grossly underrepresented in leadership positions in the gaming industry. Addressing this disparity by involving more women in the decision-making process of game design might aid in the creation of more women-friendly or universally acceptable games for all genders. The realization that women gamers have not been adequately studied and that game designers have not considered designing games that cater to women's preferences is a step in the right direction. Reduced stereotypical portrayal of female characters with more focus on the characters' abilities and skills might prove attractive to women gamers. Some measures can include attaching strength cues to female characters and allowing them to use heavy equipment like their male counterparts in the game. Similarly, skills and qualities normally attributed to male characters in games can also be associated with female characters and increase women players' interest in games. There is a need to understand what exactly makes a female player character feminine and acceptable to women gamers. This can be achieved by conducting extensive studies about the requirements of women gamers about female characters and involving women game designers in the game design process.

Creating games exclusively targeted at women gamers or making games more inclusive for all genders is an underexplored segment. It presents an exciting opportunity for game development in the gaming industry as well as for those interested in research related to digital games.

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Shivram Kumar

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I am a research scholar, product designer, strategic designer, and social innovator committed to empowering craftspeople and their sustainable development. Currently pursuing a Ph.D. at IIT Guwahati on "Pedagogic pathways to sustainable development of crafts and craftspersons," I actively collaborate with governmental and non-governmental organizations to advance the craft sector through research and innovation.

With a strong educational foundation and expertise in crafts like bamboo, ceramics, textiles, and wood, I serve as a training mentor for the Design and Entrepreneurship Training Program, at the Northeast Cane and Bamboo Development Council (NECBDC), North East Handicrafts and Handloom Development Corporation (NEHHDC)C where I guide and inspire aspiring designers, entrepreneurs, and craftspeople.

Having diverse professional experience, I mentor students and lead design training programs. I have also, served as a Teaching Assistant for NPTEL's "System Design for Sustainability" (2022, 2023, 2024).

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Weaving Sustainably: Feminine Design Principles in Action

Shivram Kumar, Research Scholar

1.30. Introduction

Antaran Artisan Connect, a pilot project initiated by Tata Trust, aims to revolutionize crafts development. The program focuses on reviving the handloom sector and empowering artisans. This initiative is being implemented across four Indian states: Assam, Nagaland, Odisha, and Telangana. Each state is divided into six clusters, with two clusters in Assam (Kamrup and Nalbari), two clusters in Odisha (Maniabandha and Gopalpur), one cluster in Nagaland (Dimapur), and one cluster in Andhra Pradesh (Venkatagiri).

Antaran's Kamrup and Nalbari cluster in Assam adopts a meticulously crafted approach to artisan development, embodying feminine design principles of care, collaboration, and holistic well-being. Unlike their clusters in Odisha and Andhra Pradesh, all beneficiaries of the Assam clusters are women. The aspirations, needs, and perception of the craft and its relationship to their life are very different as compared to what Antaran Odisha and Andhra Pradesh see. Thus, Antaran designed a locally customized comprehensive training program that not only covers the technical aspects of handloom weaving and delves into the cultural and artistic elements that define this craft but also envelops into packages suited to the needs of the women who balance their profession with their family. This case study illuminated how

nurturing the skills and creativity of artisans with care and collaboration significantly contributes to the sustainability and growth of the handloom industry while ensuring its performers a quality of life and well-being.

1.31. The Commons

Antaran begins with the selection of 500 artisans from each cluster, ensuring that they are involved in the weaving process. These artisans receive technical training in small batches, covering loom operation, technicalities of the loom, and minor repairs. This training equips them to independently maintain their tools and enhance the functionality of their work. After technical training, the organization further selects certain artisans for specialized training in design and management based on their managerial and entrepreneurial skills. These artisans are designated as artisan entrepreneurs (AEs), while the others are referred to as artisan associates (AAs), each with unique learning requirements. This differentiation enables the organization to provide targeted training programs that cater to the diverse learning needs of each group, fostering their development and output.

Figure 5 : Handloom with motif booklet of Assam

1.32. Women-Dominated Clusters vs. Male-Dominated Clusters

Antaran's clusters offer an insightful lens through which to understand the contrasting dynamics of women-dominated clusters and male-dominated clusters. Drawing from interviews with administrative officers of Antaran clusters, stark differences emerge in their performance, aspirations, and underlying motivations—differences deeply rooted in the philosophies and values these clusters embody.

Women-dominated clusters, while excelling in sustainable practices and community-oriented approaches, often struggle to meet the financial targets set by national heads. In contrast, male-dominated clusters not only meet but frequently surpass these targets. As articulated by cluster heads, this difference reflects distinct operational models, priorities, and value systems.

Figure 6 : interviewing business trainer and artisans

1.32.1. Sustainable Practices

In women-dominated clusters, sustainability takes on a multidimensional character, moving beyond environmental considerations to focus on social sustainability and holistic well-

being. These clusters foster work-life harmony, emphasizing care, collaboration, and respect for each other's' cultural and familial commitments. Flexible work arrangements allow artisans to balance their professional responsibilities with personal lives, creating a culture where well-being and craft coexist harmoniously. The sustainable practices of craft sector are complemented by strong social practices in women-dominated clusters. Cruelty-free and chemical-free methods, combined with a community-oriented approach to production, reflect a deep commitment to preserving cultural heritage and promoting equitable growth. By contrast, male-dominated clusters prioritize production efficiency and scalability, often at the expense of these broader sustainability goals.

Figure 7: Artisan involved in making their products

1.32.2. Aspirations and Motivation

The aspirations of women artisans tend to focus on maintaining a balance between personal well-being and professional growth. Their motivation is often rooted in cultural preservation, social

cohesion, and family responsibilities. This contrasts with male artisans, who are more likely to be motivated by financial gain and career advancement. Consequently, male-dominated clusters tend to prioritize profitability and efficiency over the intangible value of their craft.

1.32.3. Value Behind Product Creation

For women artisans, creating a product transcends economic transactions—it is an act of care, cultural expression, and self-identity. Their creations embody personal stories, emotions, and aspirations while preserving and reinterpreting traditional techniques. This infusion of self-expression into their craft results in products that are deeply meaningful and resonate with a sense of authenticity and individuality.

Conversely, male-dominated clusters approach production with a more transactional lens. Products are primarily viewed as commodities, emphasizing output and income generation. While this focus can lead to higher financial gains, it often overlooks the cultural and emotional dimensions central to women-led clusters.

1.32.4. Challenges and Trade-offs

The care-oriented approach in women-dominated clusters often leads to challenges in scaling operations. Women artisans prioritize quality, well-being, and ethical practices, which can limit their ability to meet high-volume orders or strict financial targets. In contrast, male-dominated clusters are more likely to adopt a business-first mindset, enabling them to scale rapidly and meet financial goals, albeit sometimes at the expense of sustainability or artisan welfare.

Figure 8: Data collection with AES

1.32.5. Cluster Head's Observations

Cluster heads have noticed some interesting differences between male-dominated and female-dominated clusters and want to highlight that both types have their unique strengths and challenges. Male-dominated clusters often excel at reaching financial goals, but they might miss out on the depth of sustainability and cultural value found in women-dominated clusters. In contrast, women-led clusters create a more inclusive and eco-friendly environment, but they sometimes struggle to achieve high profits within traditional frameworks.

This comparison really shows us the importance of looking at performance in a more well-rounded way. We need metrics that go beyond just financial success to truly understand the positive impact that artisan clusters have. By celebrating the unique strengths of women-dominated clusters—like their commitment to

sustainability, cultural preservation, and social equity—we can change the narrative of what success means in our distributed economy. Instead of simply measuring them against traditional financial benchmarks, we should also consider their contributions to well-being, ethical practices, and community development. This approach will truly capture the amazing value they bring to sustainability!

Figure 9: Discussion with Antaran's officials and trainers

1.33. Weavers' Distributed Economic Model

Our research conducted in these clusters and several other women-oriented clusters in Assam consistently demonstrated that a thriving distributed economy relies on a structure supported by NGOs or governmental organizations that prioritize care, collaboration, and well-being. Women artisans in these clusters effectively balance their craft, such as weaving, tailoring, or embroidery, with their family responsibilities, necessitating adaptable and flexible work systems. These women can dedicate only a limited number of hours each day, with varying availability daily. Recognizing this, these clusters are structured into

cooperatives or groups that facilitate collective order completion. Bulk orders are deliberately avoided, as the women cannot commit to such volumes without compromising their personal well-being. This profound respect for human labor forms the cornerstone of the design philosophy of these distributed economies, fostering a strong sense of care and equity within their operations.

1.34. Teaching-Learning Challenges to be Addressed

Some of the major teaching-learning challenges that we observed were related to financial management and basic business acumen, lack of daily time commitments for training, and commitment to other time-consuming activities like household chores and religious, social, and farm activities. Festivities like Bihu can take up to a month of off time for them. The instructors tried to work around the availability of the learners and design short learning sessions. Many times, these sessions would be conducted for a small number of artisans at a time. A lot of the time of the instructor goes into counseling the artisans and encouraging them to build their self-esteem and morale. Many weavers face challenges in managing their finances, as they do not keep track of their earnings or savings. This uncertainty can make it difficult for them to decide whether they can invest in their businesses. Additionally, the lack of knowledge about using the Internet and social media leaves them without opportunities to reach a wider audience.

It's understandable that they might not be familiar with the process of taking out a loan and the potential benefits it offers. Unfortunately, this lack of awareness extends to available financial aid from government programs and other institutions, which could greatly support their endeavors.

Many weavers struggle to price their products effectively, often unaware of the competitive market rates. They typically rely on local orders and may not know how to connect with premium

customers who value their unique craftsmanship. By building these customer relationships, they could also enhance their communication skills and grow their businesses. It's clear they possess immense talent, and with the right support and resources, they could thrive even more.

1.35. Transitioning Economic Models: From Gender-Specific to Community-Wide Sustainability

While the analysis of women-dominated clusters provides valuable insights into sustainable practices and care-oriented approaches, it's crucial to examine how these principles manifest in mixed-gender weaving communities. The Sualkuchi silk weaving cluster presents an interesting comparative case study that bridges our understanding between gender-specific and community-wide approaches to sustainable craft production.

Unlike the women-dominated clusters of Antaran, where sustainability is intrinsically linked to feminine design principles and work-life integration, Sualkuchi represents a more demographically diverse model where sustainability challenges emerge from structural economic shifts rather than gender-specific practices. This transition in focus from gender-based analysis to community-wide economic structures allows us to examine how principles of distributed economics and sustainability manifest across different organizational models.

The Sualkuchi case study particularly illuminates how traditional distributed economic models, regardless of gender composition, face similar challenges in maintaining sustainability when confronted with modernization and scale pressures. This parallel draws important connections between:

1. ***The collaborative, care-oriented approaches observed in women-dominated clusters***

2. ***The traditional distributed economic models that historically characterized Sualkuchi's operations***
3. ***The contemporary challenges faced by both models in maintaining sustainable practices amid economic pressures***

This comparative perspective enhances our understanding of how different organizational models within the handloom sector navigate sustainability challenges while highlighting the importance of preserving distributed economic systems that support both individual well-being and community resilience.

1.36. Not Just Women-dominated Clusters: The Case of Sualkuchi Silk Weaving Cluster

Let's now look at the Sualkuchi silk weaving cluster of Assam. It is called the Manchester of Assam, and every household is a weaving household. Weaving is not a caste or gender dependent profession here. Anyone who wants and loves to weave can weave and others can engage in allied activities. The Sualkuchi silk weaving ecosystem illustrates the tensions between traditional distributed economic models and the pressures of large-scale operations. Historically, small loom ownership (typically 1-4 looms per household) fostered economic power distribution, skill development, and direct market relationships, enabling local artisans to thrive. However, the rise of large loom owners is disrupting this balance by consolidating loom ownership, centralizing control over raw materials, and shifting the workforce from owner-weavers to wage laborers. This transition diminishes the bargaining power of individual weavers and erodes traditional skills and community networks, leading to economic, social, and environmental sustainability concerns. The case highlights the importance of developing policy frameworks that protect small-scale producers, support traditional knowledge systems, and

facilitate market access. Future research should focus on assessing the economic impacts on stakeholders, devising sustainable business models for small producers, and exploring successful resistance strategies to centralization. Overall, targeted interventions are essential to preserve the cultural and economic benefits of distributed production models.

Figure 10: Artisan of Sualkuchi

1.37. The Key Takeaway from the Assamese Way of Weaving Sustainability

The analysis of Assamese handloom clusters reveals critical insights into sustainable craft development, demonstrating how feminine design principles of care, collaboration, and holistic well-being can be effectively integrated into distributed economic frameworks. The research illuminates several key success factors: institutional support through organizations like Tata Trust, adaptive training models accommodating cultural commitments, balanced integration of traditional knowledge with market demands, and community-centric approaches prioritizing collective

growth. The Assamese model presents a viable framework balancing multiple sustainability dimensions through flexible production systems, cooperative economic structures, cultural preservation mechanisms, and eco-friendly practices. This holistic approach suggests important implications for policy development, including the need for gender-sensitive programming, alternative success metrics beyond financial parameters, preservation of distributed economic models, and sustained institutional support. The findings contribute significantly to the discourse on sustainable development in traditional craft sectors, suggesting that successful craft preservation lies in crafting innovative approaches that honor both tradition and modernity while prioritizing community well-being, ultimately offering valuable lessons for craft development initiatives worldwide, particularly in contexts where traditional knowledge systems intersect with contemporary market demands.

***Aimoni Tumung** has been a strong pillar at Parijat Academy since 2011, playing a key role in its success and expansion. In addition to her work at the Academy, she founded the Joonbai Handloom Foundation in 2019 with a mission to uplift Assam's artisans and preserve the region's rich textile heritage. Aimoni's dedication extends beyond education and craftsmanship—she is the driving force behind Project Janani, a grassroots initiative aimed at promoting menstrual hygiene and women's health. By advocating for the use of sanitary cloth pads, she has been working to break taboos and bring positive change to local communities.*

Uttam Teron, ***Pamohi village, Kamrup district, Assam, has been a beacon of hope and change since 2003. Driven by his belief that every child deserves a strong educational foundation, Teron founded Parijat Academy, starting humbly with just four children in a cowshed. Today, the school has grown to educate over 500 students from nine tribal villages, offering classes up to the 10th standard. What began as a small learning initiative has evolved into a state board-affiliated school, driven by Teron's passion to instill a love for learning in children. His goal was simple: to make education engaging and accessible to children in his community, many of whom were dropouts.***

The Academy offers free education and relies solely on donations, with students only needing to manage their uniforms. Parijat Academy's success has transformed local perceptions of education, making it a valued institution in Pamohi and surrounding villages. With a focus on holistic development, the school provides basic computer knowledge, a library, health check-ups, and food assistance programs. Through collaborations, programs like Lordsai.com's Milk Programme ensure that young students receive daily nourishment. Despite the challenges of running a non-profit school, Teron remains committed to empowering children to pursue further education, instilling values of kindness and responsibility. His work, built on deeds rather than words, has turned the dreams of poor parents into reality, ensuring a brighter future for the next generation.

Dilip Bharatee ***is a software Industry veteran from Bangalore. He joined software Industry after completing his Masters from Indian Institute of Management Mumbai in 1986. He was first employee of Sonata software limited and handled Business development for European Market. Mr. Bharatee was one of the Key stake holders, when Sonata software went public in 1998. He along with his wife Ms Archana Bharatee started their IT consulting services company EcomScience Consulting Private Ltd. in the year 2000. He works with several start-up software companies to provide the Sales and Marketing direction and advisory.***

He has keen interest in social sector and have been volunteering for Parijat academy for the last 12 years. Parijat Academy is a school for underprivileged children in Guwahati, Assam. He also volunteers with another school, 'Vidya the living school' at Dhemaji, Assam. He along with few entrepreneurs in Assam established a social enterprise, 'Joonbai Handloom Foundation'. Through this Section 8 company they have been promoting a reusable, washable sanitary pad named 'Janani'. He has also established multiple centres for producing Janani pads in Assam and now expanding their activities to northeast states starting with Mizoram and Tripura. He is also instrumental in establishing Banana fibre extraction unit in 'Vidya the living school'. This Banana fibre provides an excellent training in entrepreneurship for the youth.

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Archana Bharatee ***has more than three decades of experience in engineering technology products and building technology teams. An industry veteran, Archana has built and deployed industry leading technologies for a range of enterprise in various sectors and domains. Her expertise in AI and ML and her understanding of complex business scenarios enables us to deliver unique and robust solutions at lightning speed irrespective of the problem area.***

Archana is passionate about rural education and is spearheading STEM education at grassroots through her initiatives. She is an industrial engineering and management graduate from IIM Mumbai.

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The Business of Menstruation: A Period-Distributed Economy

Compiled by Dr. Sharmistha Banerjee from a series of stories she heard from the pad woman of Assam, Ms. Aimoni Tumung, her collaborator and husband Uttam Teron, and two visionary leaders supporting the Janani Pads initiative, Mr. Dilip Bharatee and Ms. Archana Bharatee.

1.38. Introduction

It was the second beautiful day of this year when we all sat together, our little ones adding playfulness to our discussions. Aimoni Tumung, cherished here as the pad woman of Assam, started talking about how the lack of awareness amongst rural girls and women about menstrual hygiene and the lack of discussion around this taboo topic moved her. We have a celebration in Assam when a girl reaches womanhood and then post that menstruation becomes taboo, and the same women and men live in utter period ignorance. Such an irony!

Figure 11: A memory from our first meeting

Initially, Aimoni and Uttam started giving free disposable pads and

raising awareness among both men and women regarding menstruation and menstrual hygiene. However, they soon realized the unsustainability of the disposable solutions. So, they ventured into what we now know as Janani Pads here locally. Janani Pads is a project started by the Parijat Academy, a non-profit organization that they initiated a decade back to provide holistic education to children from disadvantaged tribal communities of Assam. Their goal is to empower girls living in rural areas of Majuli District through the Janani Pads. Janani, meaning mother, does this in two ways. First, provide safe and hygienic menstrual hygiene through product and awareness, and second, provide employment opportunities where girls can make up to INR 18,000 per month while being in their villages.

1.39. The Janani Pads Model: A Community-Based Distributed Economy

The Janani Initiative is a grassroots project that integrates environmental sustainability, economic empowerment, and social innovation. It operates within the framework of a distributed economy, focusing on localized production and resource utilization. The initiative is structured around several key components:

1. **Empowering Women through Training and Skill Development - Women in Majuli are trained in sewing techniques, fabric selection, and quality control to produce reusable cloth pads. This skill development fosters personal growth and creates opportunities for entrepreneurship. Women and girls in the village who stitch the pads can earn up to ₹18,000 per month, given that they can comfortably make 30 pads per day. This provides both financial independence and a sustainable production model. They can live in their communities**

and not need to migrate to cities to live an alien and uncomfortable life in congested situations.

2. **Decentralized Production Units - Local production units are established in community centers, fostering collaboration, ownership, and cooperation. These decentralized hubs serve as focal points for training, production, and community engagement. The approach ensures resilience by reducing dependency on centralized systems. Janani Pads sources the raw materials centrally to reduce the price and ensure quality.**
3. **Sustainable Sourcing and Quality Assurance - Materials are sourced from local suppliers to ensure ecological compatibility, while quality control measures like centralized procurement by Janani and then distributing it amongst the girls maintain product credibility.**
4. **Environmental Sustainability - By transitioning to reusable pads, women have significantly reduced plastic waste. This transformation is a step toward achieving circular economy principles, where resources are reused and environmental impact is minimized. The pads are designed to have a life of 3 years. The pads are available both with plastic and metal buttons, each having a different lifecycle and suitable for different kinds of environmental conditions. Unlike the conventional reusable pads available on e-commerce websites, the Janani pads are composed of two parts. This makes it easier to dry in the sun, making it more hygienic than its competitors.**
5. **Market Access, Distribution, and Affordability - The initiative taps into local markets to distribute reusable cloth pads, engaging community leaders, NGOs, and schools. This strengthens local economies and builds a support network for the initiative's goals. Reusable pads are priced affordably at ₹80-**

₹110 per unit, ensuring accessibility for low-income families. While some pads are sold, free samples are distributed to underprivileged women in neighboring areas like Garbhanga village. Collaborations with organizations amplify distribution efforts and help sustain the initiative financially.

6. **Breaking Taboos through Education and Awareness - Menstrual hygiene remains a sensitive topic in rural areas like Pamohi, where Aimoni started. However, public gatherings spearheaded by leaders like her have normalized discussions around menstruation. Men now actively participate in these conversations, fostering a cultural shift. Educational workshops break taboos surrounding menstruation, promoting sustainable menstrual hygiene practices. This cultural shift is crucial for long-term behavioral change and acceptance.**

Janani Pads is breaking the Period Capitalism in a small but strong way in Assam. To appreciate the impact of the approach, let's have a closer look at what Period Capitalism has done to us.

Figure 12: The colourful Janani Pads in different sizes. These pads are made of

two parts to make it easy to clean and dry and carry the soiled pads

1.40. The Business of Menstruation: Period Capitalism

Menstruation, a natural biological process experienced by half the global population, intersects with environmental sustainability, economic disparity, and health risks, revealing an urgent need for systemic change. Let's look at it only in terms of India and then you can imagine what happens when we add the entire globe's women to this equation. India's sanitary napkin market was valued at $499.8 million in 2019 and is dominated by disposable products. There is little to no mainstream advertising for sustainable alternatives such as reusable cloth pads or menstrual cups, even though they are more affordable and eco-friendly. Currently, these are sold through e-commerce channels only. In India and in many other nations across the globe, products like menstrual cups and tampons are still taboo.

Did you know that, according to WaterAid India, someone who uses disposable sanitary pads goes through about 6,120 pads over her lifetime? On the other hand, if you choose reusable cloth pads, you would only need around 136 pads during that time! And for those who opt for menstrual cups, it's even less—just about 7 cups for a lifetime. It makes you think about different options, doesn't it?

Menstrual hygiene management in low and middle-income countries faces significant challenges, including limited access to sanitary products, lack of education, and inadequate disposal infrastructure (Ahmad et al., 2020; Kaur et al., 2018). The widespread promotion of disposable pads, as well as free distribution schemes, has led to environmental concerns due to their non-biodegradable nature. Sustainable alternatives are being explored to address both hygiene and environmental issues (Ghosh et al., 2020; Hand et al., 2023), but cultural taboos and lack of awareness hinder the adoption of these alternatives (van Eijk et al.,

2016). Improved education on menstruation, access to diverse product options, and proper disposal methods are crucial for enhancing menstrual hygiene practices (Harrison & Tyson, 2022). Additionally, policy changes and community engagement are necessary to promote sustainable menstrual hygiene solutions and reduce the environmental impact of menstrual waste (Elledge et al., 2018; Supriya Garikipati et al., 2019).

1.40.1. The Environmental Challenge

Conventional disposable sanitary pads, composed largely of plastic, pose significant environmental challenges due to their non-biodegradability and long decomposition time (Mogale et al., 2024). These products contribute to substantial waste generation, with an estimated 113,000 tonnes of menstrual waste produced annually in India, as per an estimate by the Central Pollution Control Board of India in 2017 (PATH, 2017). The environmental impact extends beyond waste, as the production and disposal of these products result in greenhouse gas emissions and water pollution (Shah et al., 2008; Stefanini et al., 2024). Moreover, sanitary pads contain higher levels of phthalates compared to common plastic products, raising potential health concerns (Park et al., 2019). To address these issues, researchers are exploring eco-friendly alternatives such as super absorbent polymers made from polysaccharides and reusable sanitary products (Mahajan, 2019; Mogale et al., 2024). Shifting towards sustainable menstrual products could significantly reduce waste and environmental impact while promoting better menstrual hygiene management. India eliminated its "luxury tax" on menstrual products in 2018. This was surely a step forward, but subsidies for sustainable products remain absent. So is awareness of the environmental challenges, proper disposal, and sustainable alternatives. For example, in my village, people still throw their disposable sanitary waste in the village ponds as there is no waste

collection, and people are scared that if someone finds their pads, they will be used for black magic. Just imagine the state of the pond, which also provides water for washing and cleaning to the villagers.

1.40.2. Period Poverty

Recent studies indicate that the use of disposable sanitary products among women in India has increased, but significant disparities persist. Nationwide, approximately 37-77% of young women use disposable absorbents exclusively (Karjee et al., 2023; Ram et al., 2020), with estimates varying on the basis of the region where the study is conducted, the socioeconomic factors, with lower rates among scheduled castes, rural residents, and those with less education and wealth (Garikipati & Boudot, 2017; Ram et al., 2020). Urban areas, particularly slums, show higher adoption rates of 56-64% (Garikipati & Boudot, 2017). Government initiatives have improved access, especially for school-going girls, but utilization remains lower among out-of-school girls (Garg et al., 2022). Notably, there's growing interest in sustainable alternatives like reusable cloth pads and menstrual cups (Babbar & Garikipati, 2023; Mehta et al., 2022). Factors influencing product choice include awareness, cultural norms, media exposure, and interaction with health workers (Chakrabarty, Singh, Let, et al., 2023; Chakrabarty, Singh, Singh, et al., 2023; Ram et al., 2020).

Period poverty, defined as inadequate access to menstrual products, education, and sanitation facilities, is a significant public health issue affecting millions of women globally (Jaafar et al., 2023). In India, socioeconomic inequalities contribute to disparities in menstrual hygiene management, with wealth, education, and rural-urban divides being major factors (Rossouw & Ross, 2021). The COVID-19 pandemic has further exacerbated these challenges, negatively impacting menstruators' mental

health in India (Rohatgi & Dash, 2023). As per a study in the United States, period poverty is associated with an increased risk of depression among college-aged women (Cardoso et al., 2021). Several studies across the globe show that period poverty leads to school absenteeism and dropout (Michel et al., 2022). While disposable pads are commonly promoted, sustainable alternatives like menstrual cups are gaining attention, with awareness and cultural factors influencing their adoption (Babbar & Garikipati, 2023). Addressing period poverty requires improved access to affordable products, education, and sanitation facilities (van Eijk et al., 2016), as well as increased provider awareness and public health initiatives (Miller et al., 2024).

Another rising global concern these days is regarding women's economic subordination due to the current business of menstruation management solutions (James, 2022). A period tax is an example of this. It is a tax on menstrual products. In 2018, India removed its 12% tax on sanitary products, which was known as the "tampon tax". The tax was eliminated after a year of lobbying by celebrities and advocacy groups who argued that these products are not a luxury but a basic need. However, just removing this tax or making it freely available is not going to solve the entire problem, as has been shown in research by several researchers (James, 2022). It rather requires a multifaceted approach, including education, improved infrastructure, and policy changes to ensure access to affordable and sustainable menstrual products (Bridget & C, 2017; Pednekar et al., 2022). For example, in the place where Aimoni started her work first, half of the women did not even own panties, and we are talking about making menstrual hygiene products available to them.

1.40.3. The Health Challenge

My aunt, who used pads made of old sarees, was told by my

grandmother to hide and dry them. If her husband happens to see them, then he will become blind as these clothes are cursed. The naïve 18-year-old woman created a small nook behind the grain storage area that we had under the staircase. Rats were a constant visitor, and the sun and the breeze couldn't make their way in there. This is not a unique story. Research in Orissa by Das et al. (2015) shows it's not just what the menstrual absorbent product is made of but also how it is cleaned, dried, and stored, where it is changed, and women's awareness of intimate hygiene determines the chances of urinary tract infections and bacterial vaginosis. A 2020 survey of disposable feminine hygiene products in the US market revealed that they had volatile organic compounds (VOCs) like benzene and 1,4-dioxane, posing a risk of cancer (Lin et al., 2020). These findings have sparked social movements advocating for women's health rights and safer menstrual products (Kim, 2023). So, on the one hand, it is the chemicals from disposable pads, and on the other hand, there is a need to have good hygiene practices with reusable pads. Hence, the need for talking and awareness is the key. Women need to be made aware that they need to wash and dry the reusable pads well. Men and women also need to be culturally sensitized to make it ok for them to see these pieces of laundry drying beside regular pieces of laundry.

Figure 13: The Janani pad(left) as compared to other reusable pads is earlier to dry , making them more hygienic

1.41. It's time for A Period-Distributed Economy

So why were we meeting on the very 2nd day of this year? The Janani team wanted to discuss the possibility of increasing the productivity levels of these rural entrepreneurs who were stitching reusable pads. Using the current mechanical sewing machines, generic sewing tools like scissors, and templates for cutting the cloth, the girls can make a maximum of 30 pads per day and make INR 20 per pad. If the girls can make more pads, they can make more money. The Janani team was very clear that they were not looking to replace the girls, as Janani's biggest strength is its capability to generate employment and a sustainable lifestyle. Productivity can be increased by bringing in mechanization, and a handful of girls can produce thousands of pads. They, however, wanted interventions that could help the girls make 60-90 pads per day comfortably and maintain the distributedness of the system. This can bring economic benefits to a large number of girls. As each girl will be producing small numbers, they will not be trying to exploit the market with exorbitant pricing, and Janani's aim will be

met.

Several African countries (Elledge et al., 2018; Supriya Garikipati et al., 2019; S. Garikipati et al., 2019; Ghosh et al., 2020; Hand et al., 2023; Harrison & Tyson, 2022; Kaur et al., 2018; Kim, 2023; Lin et al., 2020; Shaikh, 2020) have achieved a lot in making Periods a Distributed Economy, and let's also walk that path in India and take this movement of Aimoni and Uttam to every corner of the country! A big salute to this power couple!

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Letter from the Chairman's Desk By Sunil Bhatia PhD

Wishing you Merry Christmas and Happy New Year 2025

I am sharing great news that the international monthly publication 'Design for All' (without any revenue model for sustaining the publication) has completed its 19th year without missing any monthly issue since 2006.

This is the inaugural issue of the publication's 20th year. I must thank the scholars, academicians, institutes, and organizations from around the world for supporting us during these years and hope will continue as they did in the past. It is the people who have expressed their confidence in a person with no background in publishing the Journal of Design but some guidance of divine power that allowed me to come to action for the betterment of society in my limited capacity. All Guest Editors and contributors have played a vital role in shaping and establishing this publication. I salute their contributions. My special thanks to a vast base of readers over the years who eagerly wait for its publication and encourage us with their suggestions for constant improvement in layout and content.

When I invited suggestions for the celebration of the 20th year of the first issue, the majority submitted pictures that had some element of shine, such as the candle burning over the cake (as some symbol of light as hope in the dark around us)or some have used shining material for writing 20th year(to create spot for

attraction as do with a spotlight for highlighting) or some fireworks spreading20th year in the sky(as thanking some divine unseen power in guiding us) or some pictures for cover design with shining concept. I thought 'Why do designers use an element of shine at the first possible opportunity in their designed products? It was a loud attempt to attract others to realize its presence among the crowd as we do with underlined or repetitive specific words in writing. Is it reflecting our primitive practice of hunting that is still engraved in our modern minds that not to feel prey of their presence as predator and once prey was killed they celebrated by jumping and shouting?

Why do they accept the challenge of large designed products to make smaller versions- miniaturization? Is it the helplessness of shrinking enjoyed by the designer?

Why does everyone have the inbuilt character of design? It has nothing to do with any formal training. Our primitive people were not trained but still, they succeeded in laying the foundation of modern man. I tried to figure out that the major part of designing is natural.

Every living being's life begins with some element of the mysterious role of darkness. Life's journey without compulsion moves in search of light under some unknown force. This is the reason why we design the element of shine or various shades of light to make us feel it is a great design and feels it is noticeable and helps attract others. We use the reflection of light but rarely do we use refraction for creativity. The phenomenon of bending light does not attract the designer where reflection is made to develop various applications. Man's creativity does not rest for what he can physically see but it is beyond that where he even visualizes out of something. In other

words, he has a natural capacity to see things that in reality not exist but beyond that limit. The best example is sculpture or pottery. A rough stone is selected by the sculptor after imagining chiselling will shape his mental image out of rough stone. A potter sees some shapes in mud and succeeds by using hand' pressure for desired design. Later he developed the potter wheel that limited his vast imagination turning it into reality to a round shape because of the rotation of the wheel by applying hand or finger pressure in designing the pot. Here the concept of rotation overshadowed other possibilities of creativity and directed humans to think with rotations and others possibly designed with other shapes are buried in the dark.

People argue that Americans prefer their designed products with an element of shine over Europeans. They believe the shining product gives the impression of the neighbourhood because it generates a reflection of the owner. It is a cultural reason and most of the time people live alone and feel like having a companion as they see their reflection which helps in lowering the feeling of not having a companion. Even shining properly polished shoes boosts new confidence among users. In Europe, people live with some philosophy where they enjoy social events, public places museums, and art and theatre. The entire town is well-lit and eliminates the traditional moonlight shadow of humans at night and the majority of the time he is living in a confined cabin in isolation for social productivity where misses most of the time of the sunlight so is shadow. The concept of missing shadow is filled with the introduction of reflection by introducing reflection wherever they find the first opportunity. Every possible place has the majority of elements of material that reflect. When someone passes in front of shining elements they stand in front as evaluating themselves or observing others' presence in the frame of shining material his

assessment concept surfaces while looking at the collective reflection, which helps quantify the level of his social status and side by side gets the feeling he has some companion. While someone stands in front of it and is busy in self-praise in the hope of living alone because he is an exception from the rest of the crowd. It gives a feeling of momentary companionship to the user who is living alone.

Some people come under the influence of loneliness and feel like having a companion in the absence of shadows by smoking cigarettes whenever they experience thoughts of loneliness. Another companion is liquor when he feels alone for a longer time and to overcome that feeling prefers slow and small sipping. Smoking is a kind of temporary companion but has an element of addiction and he comes under pressure of depression as does not smoke for a while and to come out he lit a cigarette. The same effects with liquor and compel to drink to come out of depressed feelings. Who can afford to invite guests to arranged social parties to feel among the group, not in isolation, and enjoy loud music or dance followed by dinner? This concept reflects on special occasions, not on regular features. This psychology of an individual is exploited by the commercial world for creating artificial permanent platforms to enjoy the party by paying that assured temporarily surrounded by people.

Man's dislike for large sizes has biological and evolutionary reasons. The mammoth things scare or lower his ego of superiority among all living beings compelling him to make everything that has a large size (that has the inbuilt character of controlling it with difficulty) into smaller for better control. It has come naturally from the moment a man's tiny sperm collides with the woman's big egg even at the cost of vanishing his existence succeeded in

transforming into a new one. He does not care for his tiny power and size but keeps attracted to destruction. He thinks of destroying that larger and mighty like large tree by designing an axe for cutting (his physical strength could not uproot the trees) and the mountain with the blast. He learned the art of destruction either by improving his capabilities with external elements or making others smaller (an act of miniaturization of Bonsai of turning large plants into small It has been around for well over a thousand years. The ultimate goal of growing a Bonsai is to create a miniaturized but realistic representation of nature in the form of a tree. Bonsai are not genetically dwarfed plants. Another is the design of musical instruments for producing nature's vast sound)

Man found two great challenges. One is his limited physical and mental strength to see or hear etc. He overcomes limited eyesight by designing power glasses to telescope and use electromagnetic waves for hearing from a large distance. His art of fire management established him as superior to other living beings. His mind is not designed for repetitive work and while doing it he easily gets bored and the chances of committing an error are higher. To overcome this he designed tools that overcome the limitation of limitation and never get bored in repetitive jobs. These factors contributed to the evolution of modern man from primitive man. He has experienced helplessness in the hands of others and thought to overcome with his mind's capabilities. In this process, a new kind of human keeps replacing the old one.

The helplessness of others is enjoyable in every living being. While killing the prey the predator enjoys helplessness and does not feel guilty but enjoys successes of food. Primitive people celebrate after killing the prey by jumping or shouting by raising both arms in the air. This feeling of helplessness results when a man's sperm penetrates the woman's egg a kind of helplessness may be experienced by the sperm and vanishes as his form starts

transforming with time. When a person experiences cold his body responds by curling by squeezing his legs and hands in such a way his body exposure should be minimal to prevent the loss of body heat is another practice of learning the act of preserving the energy of the body. This may be other factors that contribute to turning everything small to prevent of loss of resources.

Potters had realized from their experiences that unbaked pots were destroyed by either a minor collision or stayed unused for a long time. It may be because of external forces or the presence of tiny microbes on unbaked pots. He baked and in this process killed present microbes that provide strength and durability otherwise it became the victim of a living being in it. Similarly, we destroy the living beings in our food by baking boiling, and frying. Frying is a completely manmade design and who thought that the seed of mustard has oil and we should extract it for heating for frying? I think crushing for destruction is the inbuilt character of humans and that led to being crushed by pressing and experiencing a new kind of liquid -oil. After the discovery of fire management, they designed the concept of frying to enhance products' shelf life by killing the bacteria that were responsible for their decay.

With Regards

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Forthcoming Issues

Year 2025 declared as Women's Designer

Feburary2025 Vol-20 No-2

Dr Natasha Poggia

Natacha Poggio is a design educator, Fulbright Scholar, TEDx speaker, Climate Reality Leader, and passionate advocate of design for social and environmental change. She is an Associate Professor of Design at the University of Houston-Downtown. Prior to that position, she taught at Lamar University and the Hartford Art School, University of Hartford, in the United States, and at the Universidad de Buenos Aires, in Argentina.

March 2025 Vol-20 No-3

Dr Dolly Daou

24 years of global leadership experience initiating and developing industry-research strategies, research centres, and projects for medium-large organisations and for higher education programs in: Australasia, Europe, and the Middle East. I am Citizen of the Year 2024 received at the Kingston Community Awards. Also, I was a finalist for Kingston Women of the Year Award for the category of STEM education. I deliver workshops to organisations and institutes combining industry and academic bespoke design methodology to develop system and mission-driven strategies and transform research into actionable outcomes. I have also been the Chair of Food Think Tank Working Group at Cumulus Association since 20019. Based in Melbourne, I led the Head of Master of Design: Art and Technology at NACAA (the first joint Sino-French School of Design in China) and I have established and led the Interior Architecture Program at Swinburne University of Technology and implemented its transition. My career path led me to France, where I expanded my area of expertise leading the Food Design Lab working with the industry and policymakers on mission-driven strategies that comply with current government, academic and business outcomes. visit my website for further

details: https://dollydaou.org/

April 2025 Vol-20 No-4

Valerie Fletcher ***has been executive director since 1998 of the Institute for Human Centered Design (IHCD). Fletcher writes, lectures, and works internationally. She generates opportunities for IHCD and has broad oversight of all consulting and design services. She created the IHCD User/Expert Lab which has over 400 people engaged in the evaluation of places, products, and services. Her current research focus is generating data to inform inclusive designing for the Black, Indigenous, People of Color (BIPoC) and for people with a spectrum of brain-based conditions. Fletcher's career has been divided between design and public mental health and she is the former deputy commissioner of the Massachusetts Department of Mental Health where she oversaw the largest participatory planning process ever undertaken in a state mental health system. She was Principal of Fletcher Studio Design from 1978-1985.***

She is councilor for the International Association for Universal Design (IAUD) in Japan. She has created an international universal design benchmarking project for the government of Singapore. She serves as Trustee of the Boston Architectural College. Fletcher has a master's degree in ethics and public policy from Harvard University. The Boston Society of Architects awarded her the

Women in Design award in 2005. The Helen Hamlyn Research Centre at the Royal College of Art in London named her Inclusive Design Champion 2022.

May 2025 Vol-20 No-5

Debra Ruh*:*

Advocate for Inclusion and Technology for Good

Debra Ruh is a globally recognized market influencer and advocate for the inclusion of people with disabilities. With over 500,000 followers on social media, she is among the top 2% of voices on LinkedIn, making her a powerful voice in the spheres of technology for all (Tech4All), technology for good (Tech4Good), and AI for good (AI4Good).

Debra has spoken at numerous multinational corporations, the United Nations, and the World Bank, emphasizing the importance of accessible technology and inclusive practices. She has authored three impactful books on disability inclusion and the role of technology in creating a more equitable world. She also a speaker for US State Department.

As the founder of Ruh Global IMPACT, a think tank focused on disability inclusion, Debra has driven forward-thinking initiatives and fostered global dialogues on these critical issues. Additionally, she co-founded Billion Strong, the world's first grassroots identity organization for people with disabilities. Billion Strong aims to unite the global disability community, enhancing their visibility and support network.

Debra's efforts are rooted in her belief that technology can and should be a force for good, creating opportunities and breaking down barriers for all. Her work continues to inspire and lead the way toward a more inclusive and accessible world.

June 2025 Vol-20 No-6

Maria Kaplan

Mara Kaplan is a national expert and trailblazer in the realm of creating inclusive spaces for people of all abilities and ages to truly belong. As the lead consultant for PlayPower on inclusion, Kaplan pioneers initiatives shaping the future of playground equipment and play spaces nationwide. Her journey began as a parent advocating for her son with disabilities, leading her to establish an indoor inclusive play haven and serve as the executive director of the Center for Creative Play for over a decade. Kaplan's impact extends through her consultancy "Let Kids Play," where she conducts dynamic workshops, collaborates with landscape architects, and works with community groups on designing playgrounds while also developing online training on inclusion and child development. Through her unwavering dedication, Kaplan continues to transform communities and champion inclusivity across the country.

July 2024 Vol-20 No-7

Prof Brigett Wolf

Brigitte Wolf is a retired professor of strategic design and design theory focussing on sustainability. Her background is in industrial design and psychology. She held a chair at KISD (Cologne International School of Design), Wuppertal University and the German University Cairo, Egypt. In addition, she was guest lecturer at universities in Cuba, Brazil, Argentina and Iran. Recently she has been conducting seminars at ecosign/Academy in Cologne and supervising PhD students at Wuppertal University and the University of Teheran.

August 2025 Vol-20 No-8

Shannon Iacino is a Professor of Industrial Design and Design for Sustainability at Savannah College of Art and Design. Her work specializes in leveraging technology to advance the principles of the circular economy and design for social good. With a background

in sustainable design and emerging technologies, Shannon integrates innovation and ecological responsibility into her teaching and research. Her work emphasizes creating systems and products that minimize waste, promote resource efficiency, and address societal challenges. Through interdisciplinary design projects, Shannon collaborates with students and communities to develop impactful solutions that balance technological advancement with sustainable practices.

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New Books

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it is available on www.morebooks.de one of the largest online bookstores. Here's the link to it: https://www.morebooks.de/store/gb/book/design-for-all/isbn/978-613-9-83306-1

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HOW WE LIVE: Through the Products that We Use

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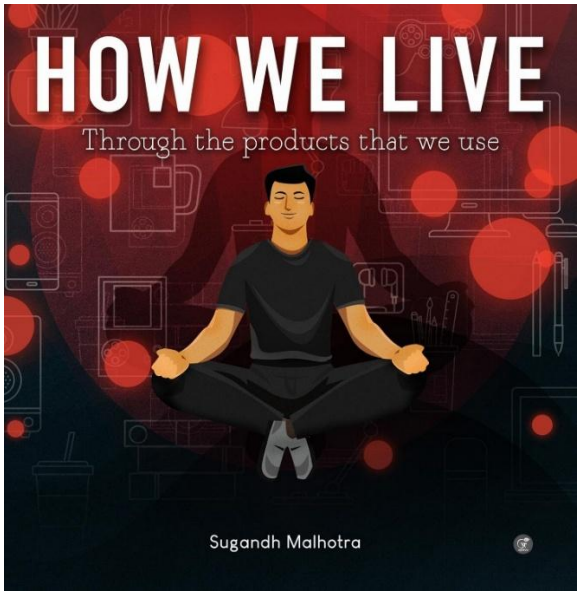

Products tell stories about their users, their likes, tastes and journeys. 'How We Live' book aims to outlay, document and study the used products and create a persona of the users through a brief narrative. This visual documentation book is an excellent resource to observe and acknowledge the subtle differences in choices that are driven by nuances other than personal preferences.

Available at: Amazon.in, Amazon.com, Astitva Prakashan

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MOVE MUMBAI: Kaali Peeli and Beyond

Authored by : Vivek Kant, Sugandh Malhotra, Angshuman Das, Tekhenutso Theriah

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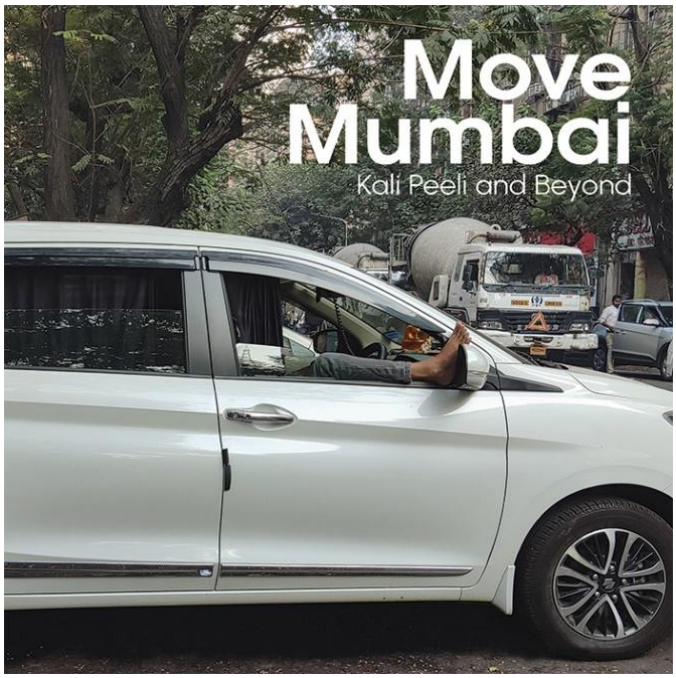

Move Mumbai" is an incredulous yet everyday traffic story from the streets of Mumbai captured through a series of photographs. We closely observe how Mumbaikars use their vehicles, and live with and around them. From cab drivers to bus passengers, from goods carriers to bikers, to children, and pedestrians, Mumbaikars encounter hundreds of vehicles daily while commuting between any two places whether they may or may not be in one themselves. While a two-wheeler motorbike is designed to carry two people. Mumbaikars still manage to fit multiple, especially younger children, in ways that a designer would typically not envision. This reflects in certain ways the economic constraints faced by many Indian families, the cultural value placed on integrated family living, and their resourcefulness. This is one of the many ways in which the city dwellers have appropriated vehicles. We hope that the readers relook at these everyday images with a new pair of eyes to understand the seemingly mundane yet incredulous images of the mobility of Mumbaikars.

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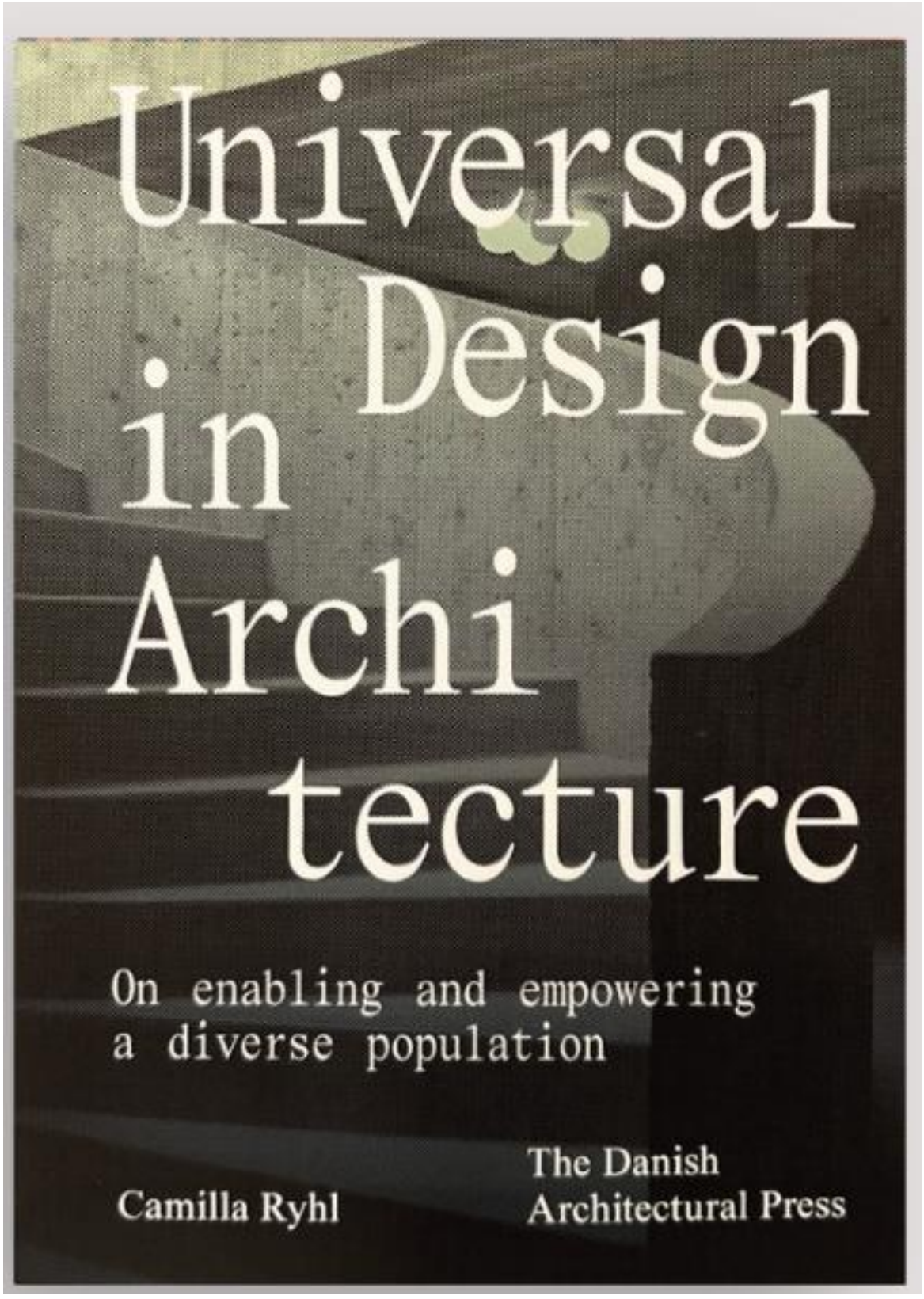

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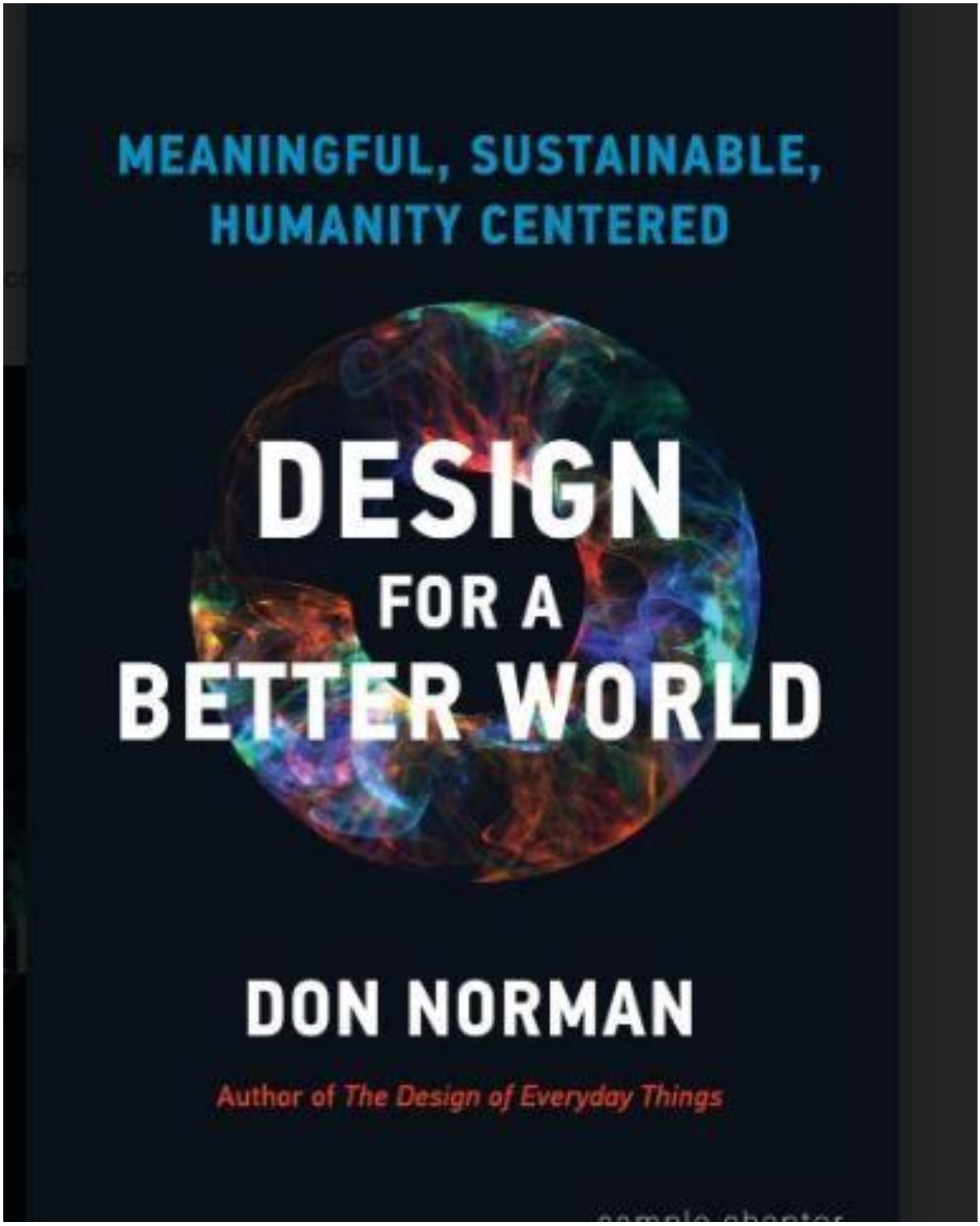

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News

1. Long Beach School Board outlines district plans, but parents voice their concerns

At Tuesday's board meeting at Lindell School, parents urged trustees not to close East School. HERALD FILE PHOTO

The Long Beach Board of Education met on Tuesday to discuss the district's financial strategy and proposed new capital projects while addressing community concerns.

Michael DeVito, the district's assistant superintendent for finance and operations, presented a detailed plan for facilities upgrades that would be funded by a bond initiative, with no additional tax burden on residents.

"It actually allows things to remain stable, the tax revenue, without having any debts or major increases," DeVito said. "And what we're

proposing here is that we can do this and have no increase at all, and maybe actually have a decrease of payout later."

DeVito explained that the district stands to benefit from the expiration of roughly $8 million in annual debt service payments. As they are phased out in the coming years, the district can borrow money for capital projects while keeping the tax levy unchanged. This approach is designed to maintain fiscal responsibility while addressing the district's infrastructure needs.

Among the key proposals is the establishment of a wellness center at Long Beach High School to offer students a supportive environment where they can focus on their mental health. School psychologists and social workers could meet with students there, host wellness programs and offer resources for managing stress and anxiety.

The district also plans to dedicate more space at the high school to programs in carpentry, robotics, business and marine science, and offer hands-on, career-focused learning. Other proposed renovations include updating the family consumer science lab, transforming the cafeteria with a new entrance and layout, and upgrading the air circulation and air conditioning systems.

Plans for the high school also call for the construction of a new wrestling gym, which could serve multiple purposes when not in use by the wrestling team, as well as replacing the aging artificial-turf football field and upgrading the bleachers. Finally, the district would address basic maintenance needs, such as repairs to walls, doors and windows.

At the elementary schools, the focus would be on enhancing safety and air quality by improving ventilation systems, and designing inclusive playgrounds to ensure that they are accessible to those of all abilities.

"It goes beyond the accessibility standards, where all people of all abilities can interact based on universal design principles that guide the placement of all the different play structures — the pathways, the seating, the equipment," DeVito said. "And it's a place where children, families and caretakers can (play) together regardless of their abilities."

The bond amount has not yet been finalized, but district officials say they are committed to keeping it within the current debt service limit to avoid any tax increases.

Concerns about the potential closure of East School were a prominent topic in Tuesday night's discussion, with parents asking whether the proposed facility upgrades and new programs, while valuable, were being prioritized over addressing urgent issues like overcrowding and focusing on core educational needs.

"What we just saw was a lot of things coming, while my community is facing the closure of a school and my children being shifted into spaces through three elementary schools," one parent, Joanne Kapp, said. "A lot of these things that you showed are not foundational to education — a wellness center, a coffee café, fish tanks. I think those are all nice to have, but it's almost a slap in the face to the community.

"I appreciate that we're trying to build the infrastructure, but I have stood here month over month, year over year, asking to fix the HVAC at our school," Kapp continued. "To see what looks like an apartment or the Sands Beach Club at the high school, I hope you can understand how upsetting that is from a community standpoint. We're trying to argue for class sizes for our elementary schools, for programs in our elementary schools. So I hope this is the first version that continues to iterate, but I hope you can understand where I'm coming from."

The need to address the challenges at East School was a recurring theme during the discussion, as parents sought assurance that their concerns would be addressed alongside the district's ambitious plans for new projects and programs.

The board encouraged community members to remain engaged throughout the process as the district prepares to present a more detailed proposal in the weeks and months ahead.
(courtesy:Li.Hereld.com)

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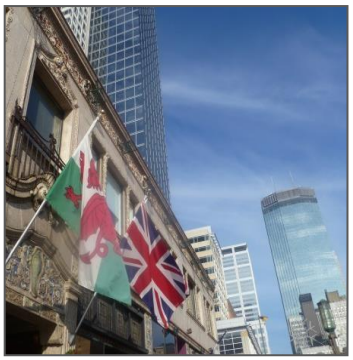

Programme and Events

The submission deadline for the 2025 edition is September 30, 2024, with a late deadline of February 28, 2025. The judging period will take place from April 1st to April 15th, 2025, with the winners announced on May 1st, 2025.

TypoDay 2025
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The deadline for submitting abstracts is 8 March 2025. Find out more about how to submit your abstract at the conference website: https://lnkd.in/eE7FCd_J

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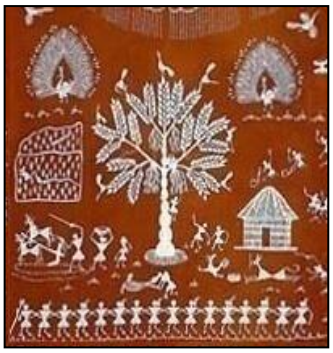

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I am Gadha Jeevan, a passionate artist and an explorative learner keen on pushing my boundaries in design. I hold an undergraduate degree in Fashion Communication Design with a specialization in Visual Communication from NIFT Bengaluru and am currently pursuing a master's degree in design at IIT Guwahati, where I experiment and try my skills in various fields of design such as Interaction, communication, and visual design. My creative pursuits span visual storytelling, user experience design, branding, editorial design, and motion graphics, where I aim to craft dynamic and meaningful narratives. I believe in the power of design to inspire, connect, and evoke emotion, and my work reflects a balance of creativity, curiosity, and a commitment to human-centered, innovative design solutions

Declaration

During the writing process, Grammarly generated responses to the following AI prompts:

Prompts created by Grammarly

- "Improve it"
- "Make it friendly"

Prompts I wrote

- "Write as a paragraph"