

# **Design for All**



*"Year of Woman Designer"*

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## **Content February 2020 Vol-15 No-2**

- 1. Guest Editorial: Designing for Women:.....3**
- 2. Break it and Make it. Empowering Rural Indian Women through Do-It-Yourself:.....22**
- 3. Analyzing the changing expectations of Indian working women from online matrimonial services:.....40**
- 4. Safer Spaces – A campaign design for safeguarding women in public spaces through social nudge:.....57**
- 5. Starting points for breaking the gender design norm:.....72**
- 6. Design of an ICT based Healthcare Data Management Platform for Auxiliary Nurse Midwife (ANMs):.....87**

**Other regular features**



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***I am an industrial designer with an experience in working in collaborative innovation and sustainable product design. Currently I am working as Assistant Professor at Department of Design, Indian Institute of Technology Guwahati. My area of PhD research is Design for Sustainability in the arena of agricultural equipment design. I did my bachelor in Industrial Design from IIT Guwahati and a master in Integrated Product Design from Technical University of Delft, Netherlands.***

***I have co-founded the Sustainability and Social Innovation Lab at Department of Design, IIT Guwahati. The lab focusses on creating systems for sustainable human consumption and production through a complete revamp of the consumption structure with our design interventions. We are part of the global network on sustainability, the Learning and Education Network in Sustainability (LeNS) consisting of 150+ global universities. Currently a large part of our sustainable product-service development projects are in the domain of agriculture.***

***At IIT Guwahati I teach courses like System Design for Sustainability, Usability Engineering, User Research Techniques, Product Detailing, Interaction Design, Product Design, Design Management, Plastics and composites and Design Semantics. I have also developed a MooC course on System Design for Sustainability which had more than 600 subscribers in the academic year 2018 - 19. In the past few years, I have worked in India, Bangladesh and Netherlands with companies like Philips, Infosys, MIDCO, VU Medical University Amsterdam, Conpax Verpakking, Beat Belly, Botanische Tuin Delft, ACC Ltd, educational institutes like IIT Guwahati, MIT Institute of Design Pune, IDC, IIT Bombay and L'Ecole de Design (Indian Operations), Nantes-Atlantique, France and NGOs like International Development Enterprise Bangladesh.***

## **Guest Editorial:**

### **Designing for Women**

*Sharmistha Banerjee, Assistant Professor, Department of Design, IIT Guwahati*

**Empathy is the key to Design Thinking. Empathy is our ability to see, feel, and experience through other people's senses, experiences, and world view. Designers train themselves to empathize with their prospective target groups by studying their behavior, needs, wants, desires, aspirations, pains, and gains and, after that, convert them into appropriate design interventions. Empathic research helps in gaining not only an understanding of people's emotional and physical needs, desires, and aspirations but also helps in understanding or at best, say, predicting the impact of a design intervention on people's lives and habits and those living in their surroundings. This month's issue of the journal on Design for All focusses on designing for women. We, thus, bring forth a few empathetic approaches to look at design for women in this issue. We have constantly tried to switch between highlighting the needs of women for both the informal sector and the formal sector in our discussions.**

#### **1. The Unmet/ The Un-aspired**

##### **1.1 Case 1**

**Let's begin our discussion on design for women approaches with an example of a very successful case - design of the microfinance system in Bangladesh with a focus on women, the Grameen Bank.**

The idea of microfinance for women is now successfully replicated all over the world. [1] The idea of the microfinance was born in 1976 when Dr. Muhammad Yunus realized that the poor stay in a vicious cycle of poverty because they can't take a loan of even small amounts from the mainstream banking sector as they are considered to be not creditworthy. The Grameen bank was established in 1983 and was designed to work for the poorest without the need for any collateral. The bank loans out to groups of borrowers where the group together takes the responsibility of on-time payments from all members as in case of failure, the entire groups' creditworthiness are degraded. Also, the bank does not expect the borrowers to come to the bank but rather goes to the borrowers. The bank's majority (95%) customers are women, and the repayment rate hovers around 96-100%, way better than that of commercial banks. Also, the bank is majorly owned by its borrowers. Research conducted on the bank's borrowers shows that it has empowered the women by enhancing her economic security and status in the family, positively impacted the education and nutrition levels of her children. This was attributed directly to the fact that lending to women had a better impact on her spending on her family rather than lending to men. Also, the bank ensured that each woman who joined its borrower list must take sixteen resolutions related to health and hygiene and social dictums like refusing dowry and managing family size. Although the resolutions are not enforced, they are supposed to recite them during their weekly social meetings to implement them into their psychology. It has also been observed that within two years, a majority of the women enrolled in the lending program achieved enough credit history and financial skills to qualify for loans from mainstream banks. [2] In 2006, Dr. Yunus, along with

**Grameen Bank, won the Nobel Peace Prize for their unique efforts in poverty alleviation through socioeconomic development.**

## **1.2 Case 2**

**Let's look at an example from the formal sector. [3] TVS Motors, an Indian scooter manufacturer, introduced the TVS Scooty in the Indian market in 1994 as a unisex product. When the sales figures indicated that more women were purchasing the Scooty than men, it was repositioned in the market to target women. Then, it was a risky marketing strategy as the Indian two-wheeler market of the time was dominantly male. To tap the nascent market, two-wheeler market for Indian women, TVS Scooty initiated a project providing training to women in riding a two-wheeler across small and large towns of the country. It was called as the TVS Scooty Institute. The campaign became popular amongst women and won several accolades too. Its popularity is evident to this day with the fact that people in India still use the generic term scooty to refer to women's scooters and lightweight scooters irrespective of the brand from which it comes.**

## **1.3 Case 3**

**[4] SEWA is a "movement" of self-employed women in rural and urban India. It is the largest trade union of India and was established in 1972 for the empowerment of self-employed women and women employed in the informal economy enterprises like small, unregistered enterprises and informal economy jobs like jobs without secure contracts, worker benefits, and social protection. It provides a voice to these women, along with income, food, and social security, so that they can achieve self-reliance. It promotes**

women's leadership at micro, messo, and macro levels. Of the many women-led and oriented initiatives successfully launched and executed by SEWA, we would like to highlight the case of the waste pickers of the city of Ahmedabad. Recycling in India mostly involves the informal sector, of which 95% are women. [5], [6] The waste pickers of a city are amongst its most impoverished and marginalized. They mine through heaps of garbage dumped in landfills and bins for recyclable wastes like plastics and metal. Being part of the informal sector, they have no job security or insurance and work in highly hazardous conditions. In 2004, SEWA organized 42,809 women waste pickers of Ahmedabad into a co-operative. This organizational strength helped them get into the mainstream market and be able to bag contracts for collecting waste from commercial and residential complexes. They were additionally trained in interpersonal relationship management and using protective gear. Financial institutions were formed for them, and lobbying and advocacy were done for their fundamental rights like social security and so on. Thus, the earlier informal sector waste pickers became part of the city's solid waste management system. As a result, their income jumped from about INR 1000-1200 pm to INR 2500-3000 pm. Their working hours reduced from 11 hours a day to 4 hours a day, and the distance that they had to walk reduced from 6-8 km per day to 1 km per day. They also now had the provision for hand carts and cycles.

#### **1.4 Analysis Case 1-3**

In both cases 1 and 2, there was an unexplored and unmet area in the market for considering design for women. The women were regarded traditionally as non-consumers for the offerings, to begin

with. In case 1, being a non-consumer was leading to great drudgery for women as well as their family, while in case 2, it resulted in a lack of independence and mobility for women (in terms of personal mobility). The designers in both cases, not only empathized with the needs of the women and designed a product but created an entire product-service ecosystem to enable the women to become consumers. Case 1 and 3 are wonderful examples of empowerment-based design where an unmet and, in fact, not aspired for need is identified and empathic design has brought in organizational innovation along with the creation of an entire sustainable product-service ecosystem to enable the women to become leaders of their destiny.

## **2. Breaking the stereotypes**

### **2.1 Case 4**

[7] In an experiment aired on BBC, Dr. Javid Abdelmoneim brought together both gender toddlers, exchanged their clothes to make a girl appear as a boy, and vice versa. He next invited some adults to play with the toddlers with a room full of both male and female gender-stereotyped toys. It was observed that although the adult volunteers, who played with the toddlers, thought they were very gender-neutral in their thought process, they sub-consciously decided to give the toddlers dressed as females, female-stereotyped toys and vice versa. When the lacuna was pointed out to them, the adults were surprised at their sub-conscious stereotyping behavior. They decided to be more conscious in the future while playing with children.

## **2.2 Case 5**

**[8] According to Chris Weller's report in the Business Insider dated October 2015, some preschools and kindergartens in Stockholm, Sweden doesn't use a traditional gendered language consisting of pronouns and nouns like he, she, boy, girl and so on. They are called by their names or the gender-neutral pronoun hen, which was introduced in Sweden formally in 2014. The aim behind the initiative is to treat gender as a characteristic which has got nothing to do with a student's actual character and hence does not need highlighting. Similar efforts were taken up a year earlier in Vancouver, Canada, by the introduction of gender-neutral pronouns like xe, xem, and xyr. This can eventually change the way we perceive kids as kids only and not characterized by their gender and, finally, as adults not characterized by their gender. [9] According to a follow-up study published in the Journal of Experimental Child Psychology comparing the gender-neutral preschools versus other preschools in Sweden, researchers found that children at the gender-neutral school scored lower on gender stereotyping measures, were more willing to play with unfamiliar other-gender children, were not less likely to notice another person's gender and that there was a correlation between pedagogy differences and how children think and feel about people based on their gender. The research was done with a limited number of subjects after a very small period of intervention but showed promising directions. Several other researchers don't agree with the Swedish model and have their experimental justifications for the same too [10][11].**

## **2.3 Case 6**

**[12] According to Eleanor Cummins's article in The Verge on 23rd December 2019, although the share of women in the \$100 billion running shoe industry is growing up fast, the industry still is far behind in terms of shoe fit. According to the article, Geoffrey Gray of Heeluxe, a shoe research laboratory, says that women's shoes are up to 18% tighter around the toes, 70% tighter around the big toe joint, and 68.4% looser in the heel than men's shoes. All varieties of women's shoes, including fashion footwear and athletic footwear, are making women suffer, according to Gray. Several brands, researchers, and individuals attribute the suffering to the fact that shoe design has long been seen through the lens of unisex design, where women are considered as smaller men with the need to have more colorful trims. According to a 2009 study comparing male and female feet shape and size at the New York University School of Medicine, makes it evident that the difference is significant [13].**

## **2.4 Analysis Case 4-6**

**Another empathic approach to design for women can be where we question the very premise for designing on the basis of gender. Case 4 is a good example of how society has pre-conditioned us to think in a certain gender-stereotyped manner, and the pre-conditioning, at times, acts on our actions subconsciously. Thus, case 5 is an interesting design attempt at how to neutralize the pre-conditioning right from the preschool days. We have a long way to go before we know how successful will this approach to education be for the kids in their future and in general to society. Case 6, on the other hand, shows that although we need to look at gender-neutral or unisex**

**design approaches, one has to still be careful regarding some of the differences, like, in this case, the physiological needs of the gender, while designing. Hence, a woman's feet is not a smaller version of a man's feet. It is structurally very different and hence needs separate research and design attention.**

### **3. Women in Design**

#### **3.1 Case 7**

**[14] Professor Anil Gupta, a globally renowned scholar of building institutional support systems to identify, nurture and commercialize grassroots innovations, said in his interview to the Times of India in 2017, "Coping with the risk and crisis is a unique ability that women have and if we provide them with cultural and financial support they can become the biggest source of innovative ideas." [15] In his decades of studying and institutionalizing grassroots innovations, he observed that women are culturally not equipped with tools to fabricate their ideas. This has stifled their capability to materialize their ideas into innovative products. [16] During the Shodhyatras organized by Prof. Anil Gupta's team, they observed women coming with interesting solutions for day-to-day problems. For example, they found women building multi-level shelves above their cooking stove to cure wood, dry fuelwood, vegetables, meat, and fumigate seeds. They also found a woman who kept paddy panicles on these shelves so that they get constant low heat. That treatment would make the husk and the seed expand at a differential rate, making the process of de-husking less laborious. In their paper, the authors recommend that we need to create platforms for women where they can share their knowledge, get feedback, and rewards. SRISTI has a**

publication called *Shatayu*, a book based on the life of centenarian women, documenting their knowledge.

### **3.2 Case 8**

Coming to the formal design sector, researchers and authors highlight a similar need for highlighting and celebrating the role of women in design. [17] In a recently published book, *Women in Design*, the authors argue that the role of women in design has not been well-represented in museum collections, exhibitions, and literature. The book highlights the work of women like Margarete Schütte-Lihotzky who is credited to be the inventor of the modern kitchen designed through her time-and-motion efficiency studies and Susan Kare, the designer behind the computer icons of Apple, who helped establish a visual language for digital interfaces rather than complicated textually coded commands. [18] Another interesting read from way back in 1986, titled, "Made in Patriarchy: Toward a Feminist Analysis of Women and Design," author Cheryl Buckley discusses similar concerns, a lack of literature of design history, theory, and practice highlighting the contributions and participation of women in design.

### **3.3 Analysis Case 7 & 8**

The third empathic approach we would like to highlight here is the need for equipping women designers with institutional and infrastructural platforms. This is needed for women designers belonging to both the informal and the formal sector. Thus, designing institutional and infrastructural platforms can be yet another approach that we can look into.

#### **4. In this Issue**

**In this issue of the Design for All journal, we present five articles. In article 1, Break it and Make it. Empowering Rural Indian Women through Do-It-Yourself, Prarthana Majumdar talks about her ongoing doctoral research work. In her research, she seeks to investigate how designers can design DIY products that are easily adopted by people in emerging countries and which can diffuse in their networks. In this paper, she focusses on the DIY practices involving women and discusses how designers can intervene to make these practices women empowering. In article 2, Analyzing the changing expectations of Indian working women from online matrimonial services, Anjali Kaushik talks about her research into what Indian women professionals are looking for in a partner while getting married and how online matchmaking platforms are helping in achieving those requirements. She talks about the women's aspirations as well as fears in conjunction with that of her parents. In article 3, Safer Spaces – A campaign design for safeguarding women in public spaces through a social nudge, Upasana Sehji highlights an important design strategy. In our society, it's usually the onus on the women to protect themselves from eve-teasing by dressing appropriately or avoiding "unsafe" hours or places for venturing out. Her study shows that women don't want to carry self-defence products like pepper spray or other wearables because they are not comfortable with the idea of hurting or hitting someone on the one hand and on the other, carrying this stuff makes them feel inferior (because they need protection). They instead suggested an intervention to raise awareness amongst the perpetrators of the crime to create a safe environment perception for all women when they go out of their homes. Therefore, she designed various**

*14 February 2020 Vol-15 No-2 Design For All Institute of India*

campaign concepts to influence the prospective offender's behavior by using the idea of social nudge where a gentle nudge is given to men in general in public spaces so that they can introspect themselves. In article 4, Starting points for breaking the gender design norm, Lena Müller-Kress explores the implications of gender design starting points. She argues that designers have the onus of breaking gender stereotypes and inequality in society through design and highlights five design approaches with their individual pros and cons. The approaches discussed are critical design, human-centered design, de-inscripting and non-intended-user, unisex design, and undoing and confusing gender. In article 5, Design of an ICT based Healthcare Data Management Platform for Auxiliary Nurse Midwife (ANMs), Pranjali Sutradhar and Purnanga Borah propose the design of a healthcare data management system to be used by the Auxiliary Nurse Midwives and Accredited Social Health Activist (again women). Here the targeted user group who do the data collection are women while the other users can belong to either gender. Hence they don't adopt a gender design norm. They rather use a Distributed Design approach. A Distributed Design system is an open design project where small-scale design units (e.g., one person/computer), whether individuals, small businesses, and/or a local community, are connected with others contributing to the overall design or to local adaptations.

## **5. Our work at Sustainability and Social Innovation Lab, Department of Design, IIT Guwahati**

We have established a lab called the Sustainability and Social Innovation (SSI) Lab. The vision of the lab is to promote and contextualize sustainability through R&D along the three pillars of

**sustainability: social, economic, and environmental. The objective of the lab are:**

- ***To provide infrastructure and guidance to student projects related to Design for Sustainability (DfS).***
- ***Conduct training sessions for interested local institutions and bodies in the application of DfS.***
- ***Research into DfS, Sustainable Frugal Design & developing case studies in DfS through***
- ***execution of projects.***
- ***Development of course material related to DfS.***
- ***Developing tools & methodologies for the implementation of DfS in the emerging, marginalized & industrialized contexts.***

**In order to achieve our aims, we have also collaborated with an international group called The Learning Network on Sustainability - LeNSin. It is an EU-supported (ERASMUS+) project involving 36 universities from Europe, Asia, Africa, South America, and Central America, aiming at the promotion of a new generation of designers (and design educators) capable to effectively contribute to the transition towards a sustainable society for all. Currently, the group consists of more than 150 universities across the globe.**

**One of our key focus areas for design intervention is the design of agricultural machinery and product-service ecosystems. Around 50% of the Indian population depends on agriculture as its primary source of income. Considering the population dynamics of India, Central Institute of Agricultural Engineering, Bhopal, India predicts**

**in its Vision 2050 document that by 2050, 45% of the 230 million agricultural workers will be women [19]. Agricultural mechanization can reduce drudgery for both men and women. But unfortunately, agricultural machinery design is still not been undertaken considering the needs of women. Most machines and tools are developed for male workers. This leads to lower efficiency when women use them and also can lead to various occupational hazards [20]–[23]. The report by the 12th Five Year Plan Working Group lays a particular emphasis and need for the development and modification of tools to fit the needs of women farmers of the country [20]. Training programs for the operation and use of these machines and tools for women are not well placed [24]. Socio-cultural barriers to acceptance of women as an operator is a barrier as well and need further investigation [25], [26]. It has been observed by various researchers worldwide that mechanization in agriculture removes women from this occupation leading to degradation in their socioeconomic position [27]–[29]. Thus, not only the design of machinery with a focus on women becoming the more significant force in agriculture is required, but also for them to take the roles of manager and entrepreneur, appropriate training, knowledge up-gradation, and infrastructural support is needed [21], [23]. Hence at SSI Lab, we take into consideration these needs while designing our agricultural product-service systems.**

**You can visit us at <http://www.sustainability-and-social-innovation.com>.**

## **6. Acknowledgement**

**We would like to heartily thank Dr. Sunil Bhatia and his team at Design for All to suggest us to write on a topic of immense social importance and for providing us the platform for expressing our thoughts and work.**

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***Prarthana Majumdar ,Co-founder and CEO, Vibeka Co-founder, Dzukou, Part-time PhD Candidate (Indian Institute of Technology Guwahati and Delft University of Technology)***

***Prarthana Majumdar is a joint PhD candidate between Indian Institute of Technology Guwahati and Delft University of Technology, The Netherlands. Her research focuses on how a Do-It-Yourself (DIY) culture can be stimulated in the rural and semi-urban contexts of Emerging countries. She views the problem as a two stage problem: a) Facilitating adoption of DIY at the individual level through an understanding of the motivations for DIY b) Diffusion of DIY practice in the social network in such communities. Her areas of research interest are Design for Base of the Pyramid, Experiential Design and Social Network Analysis.***

***Prarthana is also the cofounder and CEO of an Indo-Dutch design and manufacturing startup, namely: Vibeka. Vibeka is housed in North East India and aims to take the traditional oriental sense of wellbeing to the West through good design using eco-materials and craft techniques from the region. Prarthana also co-founded a Dutch startup, namely: Dzukou. This company designs and manufactures workspace products using wood and bamboo chiefly in an effort to reduce plastic consumption in office spaces.***

***Prarthana is deeply interested in material exploration with eco-materials and how they can be used in experiential design. In her sense of design, she tries to find a pivot between minimalism, emotionally durable design and a system view, believing that designing consumer goods for a sustainable future lies at this junction. Apart from research and work on her startups, Prarthana takes interest in creative writing and is an avid lover of nature and outdoor activities.***

# **Break it and Make it. Empowering Rural Indian Women through Do-It-Yourself.**

*Prarthana Majumdar, Ph.D. Scholar, IIT Guwahati*

***Keywords: Do-It-Yourself (DIY) Movement, making, empowering rural Indian women***

## **Abstract**

The Maker Movement or the Do-It-Yourself (DIY) Movement that originated in the early twenty-first century has heralded a new wave in the production-consumption patterns around the world. The backhand of technology in the DIY milieu is so strong that if a modern-day woman wishes to learn knitting, she is more likely to open a knitting channel on Youtube than approach her grandmother. But it is the same aspect that raises questions whether the Maker Movement can be sparked in emerging countries with the same technological infrastructure and web platforms where DIY as a culture has different origins and meanings than in the West. It is also of interest for designers in emerging countries to probe into the potency of the Maker Movement to empower people in the fringes to self-produce for their material needs from locally available materials. This article is an excerpt from my ongoing doctoral research, which seeks to investigate how designers can design DIY products that are easily adopted by people in emerging countries and which can diffuse in their networks. In this piece, I present results from my preliminary fieldwork and keeping in line with the theme of this edition, I focus on the DIY practices involving women

and discuss how designers can intervene to make these practice women empowering.

## 1. Introduction



*Fig 1. The advertisement of Maker Faire that was organized in Shenzhen [2]*

The Maker Movement or the Do-It-Yourself (DIY) Movement that originated in the early twenty-first century has heralded a new wave in the production-consumption patterns around the world. Circling the ethos of making with available materials and personalization of material artifacts, it signals a gradual break away from the standardized factory-made goods that speak little of the identity of the user or the maker. One of the unexpected precursors of this movement was interesting, the expiration of patents held by the original pioneers of the 3D printing industry towards the turn of the century and the coming of new players such as Makerbot and Formlabs which focused on making 3D printing accessible for the masses [1]. The other important precursor was the publishing of the Make magazine by Dale Dougherty and the subsequent organization of Maker Faires in cities around the world (fig.1, [2]).

26 February 2020 Vol-15 No-2 Design For All Institute of India

magazine has an undertone of self-actualization that one can achieve through making with hands. Meanwhile, Maker Faires have been instrumental in fulfilling the social needs of makers by bringing them together to share ideas and knowhow. Today FabLabs opened by MIT, even in remote places of the world, serve to provide the infrastructure that small DIYers need to materialize their ideas [3]. Websites such as Etsy and Pinterest offer them a platform to sell their products [4].

If we analyze the trajectory of the Maker Movement in the West, it has a strong underpinning of technological innovations. It is demarcated by events that facilitated access to either fabrication tools or knowhow and techniques. The backhand of technology in the DIY milieu is so strong that if a modern-day woman wishes to learn knitting, she is more likely to open a knitting channel on Youtube than approach her grandmother. But it is the same aspect that raises questions whether the Maker Movement can be sparked in emerging countries with the same technological infrastructure and web platforms where DIY as a culture has different origins and meanings than in the West. It is also of interest for designers in emerging countries to probe into the potency of the Maker Movement to empower people in the fringes to self-produce for their material needs from locally available materials. This article is an excerpt from my ongoing doctoral research, which seeks to investigate how designers can design DIY products that are easily adopted by people in emerging countries and which can diffuse in their networks. In this piece, I present results from my preliminary fieldwork and keeping in line with the theme of this edition, I focus on the DIY practices involving women and discuss how designers can intervene to make these practice women empowering.

## 2. Methodology



**Fig 2. Research Sites in India**

**We conducted this study in five rural BoP communities, namely: Joypur, Gopalpur, Paator Kusi, Sarthebari, and Naumati in rural Assam in India (fig.2). People from each community had a different ethnic background except for Sarthebari and Naumati. The researcher visited nineteen low-income households in total. All the households sustained on agriculture. The women worked in the fields as seasonal labor. At times they grew other crops such as beetle nut, rubber, bananas in their backyards, and reared livestock. There were 31 respondents in this group (17 male and 14 female) from the age of 25 years to 70 years. We also interviewed fifteen young respondents (8 male and 7 female) from the age of 12-20 years. All of them attended either school or a community college [5], [6].**

**We conducted a contextual enquiry in the communities mentioned above. We used fieldwork techniques such as touchstone tours in homes, field notes, pictures, and shadowing rural DIY'ers along with semi-structured interviews. We spent five days on an average in**

each village, from morning till evening in the fall season. Our foci during these field studies were the DIY practices that were being conducted in such communities, the materials and tools used, the motivations to do DIY, and the social dynamics that promote DIY. While studying social influences, to cross-validate self-reports (especially in the case of norms), a focus group interview was also held in each village with 4-5 participants.

### **3. Observations**

The touchstone tours around the houses revealed that rural people engaged in some form of making practice to be self-sufficient either in the form of weaving their clothes, constructional DIY for building homes, sheds, and granaries, or making quotidian products for transporting goods, storage of food or for catching fish. Figures 3, 4 and 5 show a woman building a granary, a woven basket to carry fish, and a weaver working at her manual loom. A rich DIY tradition, nurturing a range of prosumption practices, was observed among the rural communities. They extensively used local materials such as cane, bamboo, various palms, coconut leaves, and coir, woods (teak, sal, gambare), water hyacinth, husk, hay, sand, cow dung and silk cocoons (Eri and muga) and basic tools such as knives, sickles, hammers, shovels, to more complex manually operated machines like looms (fig. 5).

Most of the DIY practices have evolved as a heritage for such communities, a means of fulfilling their material needs using local resources. The patterns of weaving, the designs of the products, and the techniques of making houses and granaries using mud, cow-dung, straws, and bamboo were passed on from generation to generation. The respondents who engaged in DIY reported picking

up such skills during the early years of their life. Fifteen out of the nineteen households also reported helping each other in heavy DIY activities such as construction or setting up looms. Being part of a collectivist culture, the members valued co-operation and coordination for supporting each other in their survival needs. The women demonstrated a high sense of collectivism in their practice of weaving, wherein they shared ideas and designs continuously. Being primarily a survival strategy, DIY in BoP communities is at times strongly driven by extrinsic motivations such as economic profit, lack of product availability, and need for customization of products. Recognition of work by peers and others in the community was also a strong motivator for DIY. The interviews, however, manifested several other intangible needs. They sought higher competence through creative expression and refinement of craftsmanship, higher autonomy by self-production of goods, and higher relatedness through the sharing of ideas. The subjects also felt a sense of purpose in doing DIY. For some, it meant preserving traditions; for others, it was a way of bringing welfare to the community.



***Fig 3. A woman making  
A granary***



***Fig 4. A woven basket to  
transport fish.***



***Fig 5. A woman weaving on a  
Manual loom***

The village communities also demonstrated a high degree of social influence from members when DIY was involved. The rural communities had a close-knit structure. Members frequently engaged in community activities in their need to belong, to connect, and to sustain relationships with others. Such a behavioral pattern-seeking affiliation was also observed in DIY practices that had socially shared meaning (significance or reasons for engagement) in the community. Women conformed with social norms and learned weaving from an early stage in their life (accountability). It is a usual practice in Indian villages for women to weave their clothes stemming from the Gandhian philosophy of self-sufficiency in living (fig.5) [7]. People in such communities also shared the normative expectation that they should help each other in essential DIY for their collective survival. They frequently helped each other in the construction of granaries and houses (fig.6). But besides being triggered by existing norms, people in such communities also demonstrated a strong proclivity to act similar to someone they like (liking). Women often visited their friends and shared their weaving designs with their friends who, in turn, would share their designs and ideas (fig.7). Others influenced children in their network, whom they either bonded with or looked up to (fig.8). Finally, the researcher also observed a sense of reciprocity in their interactions. Children often helped others who helped them in doing projects. Similarly, gifting or hospitality expressed with hand-made or home-made products to others also entailed a similar gift or hospitality in return (fig.9 and10).



**Fig 6. A young man helping an old**



**Fig 7. A woman spinning thread with**



**Fig 8. "My sisters make dolls with clay. I love playing with clay with them."- A young girl.**



**Fig 9. "We serve only home-brewed alcohol when guests come. It is customary."- A house**



**Fig 10. Reciprocity: "We have a tradition of gifting other women hand-woven clothes." - A weaver.**

**During our field study, we also observed that the social integration events over DIY practices propelled by social motives often provided the young subjects with the opportunity to experience making. The**

**process of playing, tinkering, and transforming creative imagination to materiality, made the subjects experience a self-transformation into someone more resourceful. Through self-reports, they expressed enthusiasm to revisit such practices on their own. For adults, it frequently found its way into community entrepreneurship.**



***Fig 11. A woman rearing Muga silk worms. She works with five other women in the community for selling the silk yarn.***

**Fig. 11 shows a woman rearing Muga silkworms, who, along with five other women in the community, spin Muga yarn and jointly sell the silk yarn to suppliers.**

#### **4. Discussion - Rural Woman and Do-It-Yourself**

**The Do-It-Yourself culture shows a significantly different trajectory in Emerging countries than in the West. In the developed world, DIY is an antithetic response to the monotonous world flooded with standardized factory-made goods where people have been reduced to passive consumers. It hinges on creativity and exploration to reflect personal identity in one's consumption goods. But in the context of emerging countries, DIY has been a continued practice for ages, especially in rural and semi-urban areas where low income and lack of availability of goods often motivate people to self-produce for their own needs. Alvin Toffler, in his famous book, "The Third Wave," refers to this practice of production for one's consumption as "Prosumption" [8]. However, in the emerging country context, to relegate prosumption completely to a survival strategy would be a narrow understanding of the continued practice. DIY or prosumption has several higher functions than the fulfilment of material needs. The girl in her early teens learning how to weave from her mother is experiencing an increase in competence preparing her for a future where she will weave her clothes, putting her aesthetic sense to material form. That will be passed on as heritage when she teaches her daughter in the future how to weave. A woman spending her idle afternoons weaving on the loom is enjoying immersion in the calming activity of decoding the make of a pattern and putting it on threads. Likewise, the neighbor who shares patterns with the weaver nearby experiences growth in relatedness needs by feeling socially connected with her peers. DIY can also confer a sense of autonomy and purpose to women. With autonomy, we refer to the feeling of being in control of one's surroundings. Imagine a rural woman who rears silkworms as a secondary earning avenue, tends**

to them during respites from household chores, and sells the cocoons together with other women in the village. This woman has undertaken a micro-entrepreneurial project to have more control over her household income. She is working under the shared purpose that women in the locality need to help each other for community upliftment.

What on the surface looks like a practice borne out of necessity, starts to show several shades of meaning when we delve deeper. These often-overlooked shades of DIY in emerging countries can have profound implications on the products and product-service systems that are designed for this consumer base. With lower purchasing power, traditionally, they have been considered in design and business as buyers of smaller portions of which shampoo sachets and biscuit mini packs are classic examples. Of late, however, this consumer base has evolved from a small scale buyer to a more active participatory role. Businesses have started considering the creative potential of this segment in solving their problems in indigenous ways and involving them as co-partners in the business proposition. The Dutch solar company, Rural Spark, employs central members in rural communities to house solar charging units where villagers can charge their solar devices with a small fee. Cooperatives and sometimes, corporates in India look at the low-income population as a productive human resource base. The companies, Lijjat Papad, and Edible Cutlery, exclusively employ women in their production units. While Lijjat Papad is a cooperative run by women, Edible Cutlery looks at the exclusive employment of women as corporate social responsibility. But can women be more actively involved in the product than just be stakeholders in the business proposition? Can DIY be that link that connects women

from being business stakeholders to being active users shaping the product? Is there a possibility to leverage on their making skills and give them products that need self-completion rather than to sell products in small quantities (sachets)?



**Fig 12. A home-made shampoo DIY kit. [8]**

The success of IKEA with self-assembly furniture and the popularity of DIY kits around activities such as decoupage, jewelry making, and baking demonstrates how far users can go with the making of a product. Ironically, when Betty Crocker started making cake mixes, they made the process of baking so easy that the user just had to add water to the mix and put it in the oven to bake a cake. However, sales did not take off. The target consumer of this product, the young American housewife, did not find enough activity to count as

work. The company made an intelligent move and removed the egg and milk powder from the mix and left it to the user to add eggs and milk. After that, Betty Crocker has sustained itself as a go-to baking brand. Instead of making smaller portions of products (sachets) for the emerging markets, which increases packaging costs significantly and does not increase the real consumption of this segment, companies can use this strategy to cut costs: making self-completion products. The classic example of the sachet economy: shampoo, for instance, can be designed as an activity rather than a finished product. Lush, which sells DIY toiletries hinges on this business model: giving users the freedom to tailor their bath bombs and makes them feel a higher sense of autonomy with their evening warm baths. This strategy also provides the opportunity to use local materials in DIY products as the products do not leave the factory in a finished form. But the hidden benefits of such a product is the hackability that it offers. In the context of emerging countries, make-do practices dominate the DIY culture. With repurposing, reusing and modifying, products are often stretched beyond their intended functionalities to serve other functions for which either there is no product in the market or the ones in the market are unaffordable. Consider the packaging used for paints. The buckets are frequently in use after that for bathing. The ability to hack products indirectly affords the user the ability to satisfy some other unmet need, and it offers the designer the opportunity to cast such a practice in a sustainable mold. The concern with make-do DIY practices in emerging countries is that they are often very unsustainable environmentally. For instance, solar lamps designed for remote areas with no access to the grid are used for lighting homes in the evening. The lamp can be designed as a DIY kit, such

**as the lampshade is to be fabricated with materials from the surrounding and can be wall-mounted or carried in hand. That reduces the cost of making by outsourcing the fabrication of the lampshade to the consumer itself, allows stimulating their creativity by employing local eco-materials, and creates multiple affordances by designing the product for use it in different contexts. Adding an element of creativity to the lamp also makes it emotionally durable. We discard printed posters, but when do we abandon our art?**

**Making products around DIY has socio-cultural implications as well. In Emerging countries, social living is a norm for survival. In such a system, DIY offers a ground for collaborative work. In India, rural women are frequently organized into Self Help Groups (SHG). These SHG's consisting of 8-9 members who collaborate for trade and finances, constitute a support system for these rural women. SHG's have been an immense success in many parts of India. With DIY offering a collaborative exploration space, it has the potential to foster community entrepreneurship. Products centered around DIY are likely to fit in their prosumption culture and generate word of mouth in their networks by being a collaborative project.**

**When designed carefully, DIY products have the potential to confer increased competence, autonomy, and social relatedness to women in emerging countries. When we focus on lower-income groups, the origins of their DIY practices and the motivations behind them are often different than in the West. Understanding their DIY behaviorism can aid designers in designing products that take women in rural and semi-urban areas in emerging countries from consumers to empowered self-producing consumers.**

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***She is a UX designer at Jeevansathi.com. Jeevansathi.com is an Indian matrimonial portal owned by Info Edge (India) Ltd. It uses the customer to customer (C2C) business model. I believe UX design is about Simplicity, It's about making the process simple, creating understandable flows that the user can understand. I have heard UX designers saying that they love problem-solving and highlight problem solving as a skill-set for themselves. But in my opinion, these UX problems were never existing until we created them. I have a good understanding of user experience fundamentals. I am capable of quickly grasping and understanding user requirements and can communicate and explain my ideas/concepts through concise presentations. I am capable of gauging the technical feasibility of the prototype. I can create information architecture, wireframes, prototypes, animation, code and 3D environment design in Unity.***

# **Analyzing the changing expectations of Indian working women from online matrimonial services**

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(Jeevansathi.com)***

***Keywords: Indian online matrimony, Arranged Marriages, Expectations, Preference, Trust, Understanding***

## **Abstract**

**India has a huge arranged marriage setup but the options are quite limited in people's social circles. With an increasing volume of the Indian population accessing the internet, market shares of many e-commerce industry segments have also increased rapidly in the last decade. A vast section of the Indian population is considering and also utilising online matrimonial services. This study is in regards to what Indian women professionals are looking for in a partner while getting married and how online matchmaking platforms are helping in achieving those requirements.**

**For this study, interviews of marriageable age working women from the IT sector in Delhi(NCR), India have been conducted in a semi-formal setting and qualitative data is gathered. It was observed that there is a positive shift in the perspective and expectations of Indian working women towards/from online matrimony platforms and the**

**matrimony platforms are providing a safe and secure environment for users.**

## **1. Introduction**

### **1.1 Working women in India**

**The current population of India is 1.37 bn as of 2019 based on Worldometers elaboration of the latest United Nations data. Among this, 48.04% is the female population [1]. Out of which, 47.95% belong to the age group of 25-54. The position of women in Indian society has seen a dramatic shift, be it as a part of the working force, as administrators or decision-makers in each industrial sector or as equally worthy family members. An increasing percentage of women are educated and employed today, unlike the previous generation which has led to them being more independent in terms of finances, personal decisions, and other life choices. This has led women to play an active role in making choices about marriage, love or arranged.**

### **1.2 Match-Making System In India**

**The introduction of the government's Digital India initiative hand in hand with the increasing internet penetration over the recent years, resulted in the country's digital population amounting to approximately 560 million active users as of January 2019. The traffic in the world's second-largest internet market at this stage was largely dominated by mobile internet users. [2] Around 75 per cent of Indians, including 82 per cent women and 68 per cent men, are conservative and prefer arranged marriages, according to The**

**Taj Wedding Barometer, a survey conducted by the Taj Group of Hotels, Mumbai (2013).[3]**

**As Indian society has progressed with time, the Indian arranged marriage structure has also seen a shift in the past few decades.**

**The earlier process of matchmaking used to rely on a matchmaker or someone who played the role of alliance consultant, relatives or social connections. The matchmaker would serve as a database providing basic information about the prospective bride and groom. The information would normally consist of name, age, education, profession and family background. In this scenario, the mode of passing information would be "Word of mouth".**

**As time progressed, we reached a stage where the role of alliance consultant shifted from a human being to an organisation like newspapers, magazines and marriage bureaus. The information shared was similar to the earlier process. This information was "Broadcast" through the organisation to everyone and families could choose to connect according to their requirements.**

**Now, with the arrival of the age of the internet, a new matchmaker has been introduced in the Indian society which is online matchmaking sites/apps, where anyone can search for a life partner with endless possibilities. The information shared here can be much more detailed apart from the basic information. This information is shared according to user applied filters, providing privacy and broadcasting at the same time. All the above three processes co-exist and overlap in Indian arranged marriage structure.**

**Market shares of numerous e-commerce industry segments have expanded swiftly with the increment in the internet savvy Indian**  
*44 February 2020 Vol-15 No-2 Design For All Institute of India*

population. A large proportion of the Indian population is acknowledging and further employing online matrimonial services.

Out of the total female population existing in India, the population of females aged between 20 - 34 is 25.41% [4]. And this is the segment of the female population that is increasingly beginning to utilise online matrimonial services, which makes it imperative to study their needs and expectations from these platforms to be able to serve them better by presenting appropriate design enhancements.

### **1.3 Indian Matrimony structure**

India has several online matrimonial services like Bharat matrimony, jeevansathi, Shaadi, Simplymarry etc. Most of the above-mentioned services follow a similar process for finding a match. The first step requires the user to fill a usually detailed registration form that includes a photograph, personal details etc. Then, the user gets access to the various services provided by the portal which includes (but might not be limited to), obtaining various listings of matches, customised search functions, filtering profiles based on different criteria, setting desired partner preferences and expectations etc.

The information required from a user is as follows [5]-[7]:

**Personal details:** *Name, Gender, Date of Birth, Height, City, State, Country.*

**Career Details:** *Education, Occupation, Income.*

**Social Details:** *Marital Status, Mother Tongue, Religion, Caste, Horoscope.*

**Login Details:** *Email ID, Phone number*

**About Me section:** *Details regarding the person for whom the profile is created.*

Other than these, there are more details filled by the user regarding family and personal preferences regarding life partner.

A huge database of profiles containing all the above information is available for the users to choose from. Each user expects a particular combination of these details in their prospective partner, among which a specific combination of a smaller subset of details can serve as a major deciding factor. For example, parents looking for a prospective partner for their daughter might fix "location" as strict criteria and only select profiles with the same location as their current city, some other user might set "age" and "height" combined as a deciding factor, and while another user sets a combination of "occupation" and "income" as the final criteria.

## **1.4 Objective**

This study is in regards to what Indian women professionals are looking for in a partner while getting married and how online matchmaking platforms are helping in achieving those requirements.

## **2. Methodology**

As primary research, I checked the existing online matrimony registration structure and information used by online matrimony

platforms, to analyse the fields required to create a profile. Also, for this research, I used semi-structured interviews as the principle methodology. I interviewed 14 female candidates aged between 23-32, working in the IT sector in Delhi(NCR). The interviews were conducted in October of 2019 in a semi-informal setting so the interviewees could express themselves comfortably and openly. The average duration of each interview was between 25-30min and followed the audio format. Another major part of the process was gathering knowledge on safety measures employed currently by online matrimony platforms. For this, I interviewed Jeevansathi Senior Vice President (Product Development Head) Mr Vijay Bhaskar to understand Jeevansathi's approach for handling women's security and safety to ensure Jeevansathi is secure and spam-free.

## **2.1 Interview process**

For this study, I was looking to interview Indian working females exploring their marriage prospects. I started with 32 candidates out of which 14 fit the criteria. So, I proceeded with interviewing 14 female candidates aged between 23-32 and working in the IT sector in Delhi(NCR). Out of these, 6 were software professionals, 4 were data scientists, 3 were data-analysts and 1 was an HR professional. The interviews were conducted in October of 2019 in a semi-informal setting (in a corporate office) so the interviewees could express themselves comfortably and openly. Following questions were asked to the interviewees:

***Question 1: Are you looking for marriage in recent time/years?***

***Question 2: How are you going about with the process of searching for your life partner? (Mode of selection)***

***Question 3: Are you willing to consider using online matrimony platforms? (Explore)***

***Question 4: What are your expectations for your future life partner? (Expectations and preferences)***

***Question 5: What are your thoughts if a profile is managed by parents? (decision)***

***Question 6: What are your expectations regarding your future partner's occupation? (Financial security)***

***Question 7: Do you feel matrimony platforms are safe? (safety)***

***Question 8: Are you aware of the feature "blocking a profile" present on most of the social media platforms? (Awareness)***

The nature of the questions was such as to be able to understand the interviewees' views on marriage and use of online match-making platforms for the same, and expectations from their prospective partners.

### **3. Results**

#### **3.1 Women's take on matrimonial websites**

On the question regarding willingness to use online platforms for finding a life-partner, I found 12 out of 14 females were open to the idea. 2 females mentioned their families' inhibition in finding matches online and their preference for looking for matches via relatives. 4 females gave insight that a sibling or relative of theirs

got married via an online matrimony platform. On the question of whether they would prefer their prospects' profiles to be self-managed, I got mixed feedback, with fifty per cent favouring self-managed profile over profiles managed by siblings or friends or parents as it confirms the interest of the prospective partner and leads to ease in direct communication with them before moving further. The other fifty per cent felt that a profile managed by parents or elders established trust and depicted seriousness from the prospect's side. On being asked about the determinants while choosing a life partner, commonly, the answers included "compatibility" and personality traits like "understanding" with regards to their career choices and otherwise, and "caring". After probing more regarding education and occupation, I found out that 8 girls wanted a partner from similar occupation as theirs for better understanding concerning their career choice. Whereas a similar occupation wasn't a necessity for the other 6 girls although their parents' approval for the same was important. When asked about safety concerns on online matrimony platforms, 2 members who were using jeevansathi.com mentioned about the promptness in detecting fake profiles personally based on information provided by the prospects, information which is extremely high end, like occupation as surgeon in the USA, both parents deceased, or if someone is not open towards involving other family members after the initial two or three meetings.

All 14 females interviewed were aware of the concept of blocking and reporting someone on an online platform.

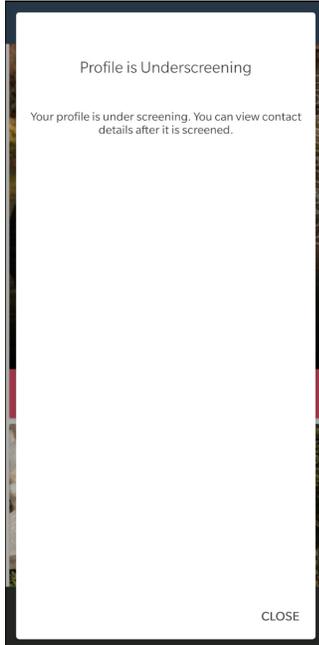
## **3.2 Safety features on Jeevansathi.com**

**Jeevansathi.com is an Indian matrimonial portal owned by Info Edge (India) Ltd.. Jeevansathi.com uses the customer to customer (C2C) business model. The website has a free list, search, and express interest and accepts other expressions of interest. Users have to pay to get access to contact details of prospects. Jeevasnathi has around 357k active monthly users among which 40% are registered female profiles.[5]**

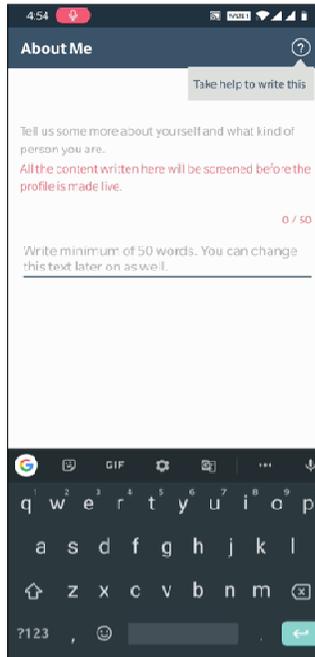
**I interviewed Jeevansathi Senior Vice President (Product Development Head) Mr Vijay Bhaskar in which he shared the details of approaches Jeevansathi is taking to make the platform safe and secure for women. The major insight that he provided was that online matrimony platforms struggle with building trust for those people who prefer offline mode, either through relatives or an offline organisation, for finding a partner. Many small design and service measures are taken by Jeevansathi to ensure women's safety and security on the platform. Some of these measures are presented as follows:**

### **3.2.1 Profile Screening:**

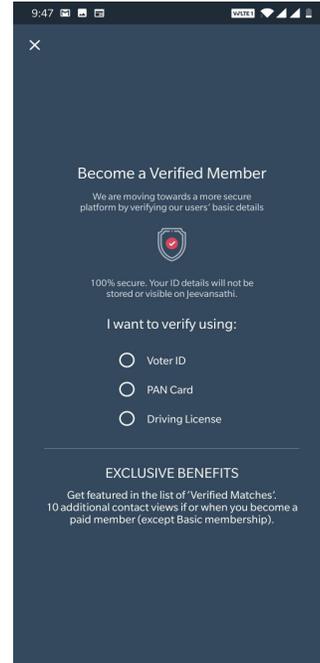
**100% profile screening is done on Jeevansathi. Each profile created on Jeevansathi platform is manually checked by the Jeevansathi screening team. Specifically, the "About me" section is checked for random text segments. If such a profile is found, it is rendered invisible to other Jeevansathi users. (Figure 1, Figure 2)**



**Figure 1**



**Figure 2**



**Figure 3**

### **3.2.2 Photo check:**

**Photos added in each profile also go through a screening process, in which all the blurred and indecent photos are found and removed before making any profile live. A logo mark of Jeevansathi is also provided on all the photos so that the images can't be used anywhere else.**

### **3.2.3 Government ID cross-check:**

**Jeevansathi prompts users to provide their govt. ID details like PAN, DL or Voter ID to verify name and age. Jeevansathi doesn't save any of these details on the platform, just cross-check with the government database.(Figure 3)**

### 3.2.4 Prompting In-App communication:

Jeevansathi prompts in-app communication by providing "quick messages" option to paid members so that before conversation on call, prospects can get along a little over text chat. It notably helps females to make an initial decision on whether to communicate further or not.( Figure 4)

### 3.2.5 Profile Hide option:

Users can hide their profile completely or conditionally if they don't want to share their details with anyone/everyone, while still being able to explore matches on the platform. (Figure 5, Figure 6)

### 3.2.6 Photo visibility option:

Users can choose to make their photos visible only on request or when they are mutually interested in their prospects (Figure 7,Figure 8)



Figure 4

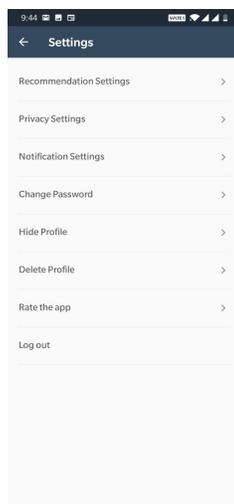


Figure 5

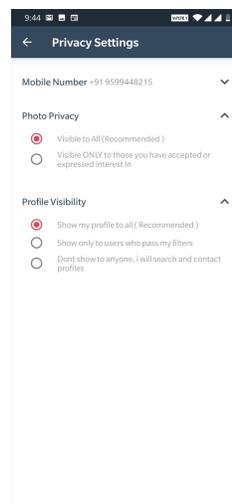
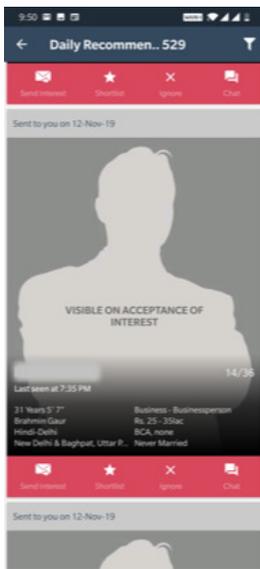
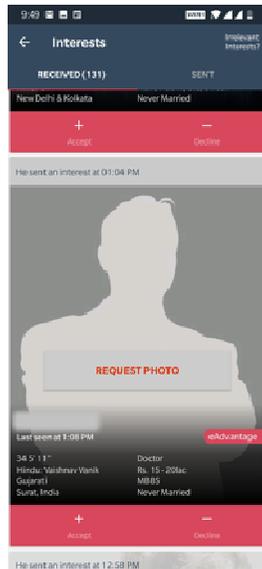


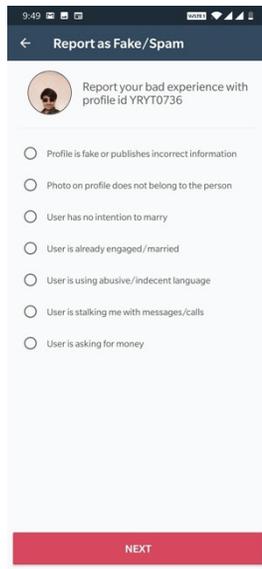
Figure 6



**Figure 7**



**Figure 8**



**Figure 9**

### **3.2.7 Block or report a user:**

**User can easily block or report a prospect profile if they suspect it to be fake or indecent. Jeevansathi provides the following options while reporting a profile: (Figure 9)**

**"Profile is fake or publishes incorrect information"**

**"Photo on the profile does not belong to the person"**

**"User has no intention to marry"**

**"User is already engaged/married"**

**"User is using abusive/indecent language"**

**"User is stalking me with messages/calls"**

**"User is asking for money"**

## **4. Observations and Results**

**After comparing the registration structure of online matrimony websites and the findings from the interviews of the female professionals, I noticed that there is a gap between user needs (females) and services provided by the online matrimony platforms, which requires to be bridged by the online matrimony platforms. And that gap is in the information presented to a user about behavioural aspects of a person. Bridging this gap might provide a window of communication to a user, based on the knowledge of behavioural traits of their prospect. This can lead to a better understanding, among the two prospects. This is based on the insight I gathered from the individual female interviews that, females expect to know about more practical behavioural dimensions and mannerisms of their prospects to make better decisions.**

**As per the current state of online matrimony platforms, I found that these platforms are quite successful in building an initial trust among users and the growing number of female users on these platforms validates this notion. Furthermore, a design and technological intervention can be performed to assess a user's actions and practices and deduce behavioural manners, that bridges the gap mentioned.**

## **5. Conclusion**

**In my study, I found that many steps are being taken by Indian matrimony sites to facilitate a smooth journey for finding a life partner for their users, especially women. A strong system is**

**designed by Jeevansathi to establish trust among users. This is done by applying manual screenings, selective visibility of profiles and profile data, mechanisms for taking user feedback and complaints etc.**

**Specifically, female users trust the online matrimony platform and are proactive in marking any fake profiles they suspect. In terms of females' expectations from matrimony platforms, they hope for more behavioural aspects or personality traits to be presented in their prospect's profile.**

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***Upasna Sehji, Mdes Student, Department of Design, IIT Guwahati***

***She is an Architect with 2.5 years of experience in architecture and interiors, Currently pursuing a Master's degree in design from IIT Guwahati.***

***Working as an Architect helped me take end to end ownership of the project and oversee various aspects right from conceptualization to execution. I also got to dabble in management throughout. Later, in my academic internship at IIT Bombay, I focused on creativity and concept development in the project.***

***As a designer, what excites me is teamwork and discussing new ideas. I believe teamwork is the necessary ingredient to exchange multiple perspectives and grow further as an individual. The versatility in design approach intrigues me, how sometimes the philosophy in design does magic, other times the focus needs to be on functional aspects, and all the while adding value to human life. For me, the design is a story to be told without any border of domains.***

***I enjoy user research as I like to unravel user stories using various methodologies. My strengths include conceptualisation, visualization through sketching, storyboarding, 3D visualization, and prototyping.***

***My favorite pastimes are making art, reading and writing in my thought journal.***

# ***Safer Spaces – A campaign design for safeguarding women in public spaces through social nudge***

***Upasna Sehji, Mdes Student, Department of Design, IIT Guwahati***

**Keywords:** *Eve teasing, campaign, social nudge, public spaces.*

## **Abstract**

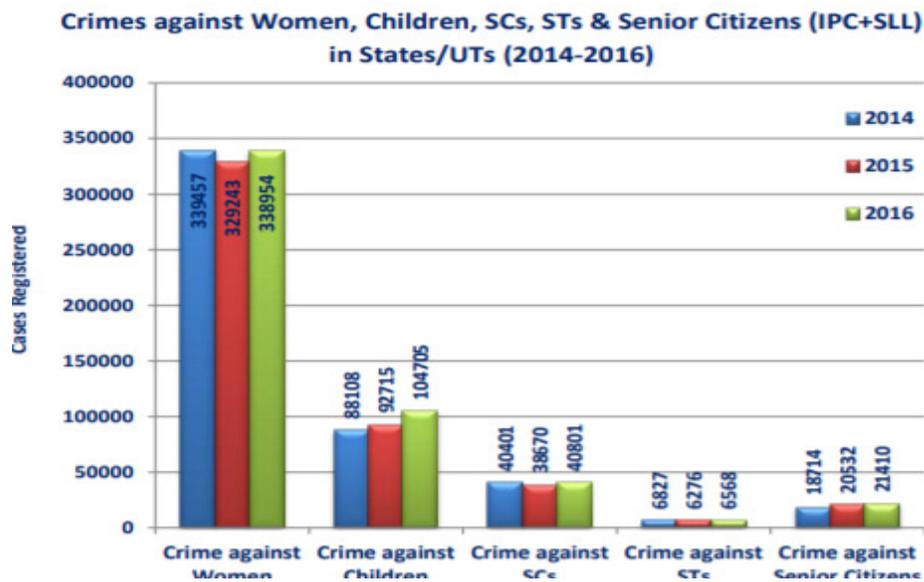
Violent crimes and eve-teasing against females in India are increasing. The existing self-defense solutions are not catering to reduce harassment in public spaces. Moreover, most women don't tend to carry any of these self-defense solutions available in the market. The research presented in this paper reveals that rather than bringing self-defense solutions, women stressed the need for interventions, which makes them feel safe in public spaces. We researched in two phases to understand women's psychology by conducting focused group studies, telephonic interviews, and offender's psychology by conducting a literature review and an online survey. The research concluded that women are not comfortable reacting back to offenders using self-defense solutions. They instead suggested an intervention to raise awareness amongst the perpetrators of the crime. Thus, it creates a safe environment perception for all women when they go out of their homes. Therefore, we designed various campaign concepts to influence the prospective offender's behavior by using the idea of social nudge. Thus, we created concepts that gave a gentle nudge to men in general in public spaces so that they can introspect themselves.

## **1. Introduction**

**[1], [2] According to the National Crime Records Bureau report 2013 and 2016, the number of crimes against women is very high in the country (figure 1), approximately 100 rapes each day. Thus, as a society, we need to look into avenues for designing for women's safety immediately. To achieve the same, we set out to research on the following aspects:**

- *What are the current self-defense solutions available for women in the market?***
- *What is the awareness, acceptance, and usage level of these self-defense solutions amongst young women?***
- *How do women react during eve-teasing in public places?***
- *What is the psychology of typical offenders?***
- *What are the existing campaigns targeted towards the male members of the society to raise awareness regarding eve-teasing?***

**Next, we designed possible campaign ideas to deter men from engaging in eve-teasing in public places. We used Nudge Theory as proposed by Richard Thaler [3] and the concept of Universal Drive proposed by Steve Reiss [4] to design the campaign concepts. We created the campaigns to positively influence the offender's behavior in public spaces so that they can introspect themselves and deter from offensive behavior towards women.**



**Fig 1. Crimes against Women, Children, SCs, STs & Senior Citizens (IPC+SLL) in States/UTs (2014-2016) (Source: <http://ncrb.gov.in/StatPublications/CII/CII2016/pdfs/NEWPDFs/Crime%20in%20India%20-%202016%20Complete%20PDF%20291117.pdf>, pp xxx)**

## 1.1 Nudge Theory

[3] Nudging techniques by Richard Thaler aim to use judgmental heuristics to advantage. In other words, a nudge alters the environment so that when heuristic, or System 1, decision-making is used, the resulting choice will be the most positive or desired outcome. A social proof heuristic refers to the tendency for individuals to look at the behavior of other people to help guide their behavior. When we can draw an individual's attention towards a particular option, that option will become more salient to the individual. Thus, he or she will be more likely to choose that option.

## **1.2 Universal Drive**

[4] According to Steve Reiss, while we are each filled with individual differences, nuances, and uniqueness, there is evidence that we all gravitate toward 16 universal human desires. Goal-oriented behaviors originate from these deeply held, even hidden from ourselves, desires. The 16 human desires are as follows:

- Acceptance** - *the desire to avoid failure and criticism*
- Beauty experiences** - *the desire of aesthetically appealing experiences*
- Curiosity** - *The desire to learn and understand*
- Eating** - *the desire for food*
- Family with a sibling** - *the desire to raise children and spend time with a sibling*
- Honor** - *the desire for upright character*
- Idealism** - *the desire to improve society*
- Independence** - *the desire for self-reliance*
- Order** - *the desire for structure*
- Physical activity** - *the desire for muscle exercise*
- Power** - *the desire for influence or leadership*
- Saving** - *the desire to collect*
- Tranquility** - *the desire to be free of anxiety and pain*
- Vengeance** - *the desire to confront those who offend*

## **2. Methodology**

We conducted the study in two phases, first to understand the victims, i.e., the women and second, to understand the offenders.

## **2.1 Research on victims**

**The study aimed to understand**

- *the problems faced by women in public spaces;*
- *the current self-defense solutions available for women in the market;*
- *the awareness, acceptance, and usage level of these self-defense solutions amongst young women;*
- *and how women react during eve-teasing in public places.*

**The research involved a market study to identify the existing self-defense solutions followed by interviews, and after that, two focus group studies with women in the age group between 18-25. The objective of the interviews and the focus group study was to understand the young women's perspective regarding:**

- *The feeling of safety*
- *Places where they feel most unsafe*
- *Outlook towards the existing self-defense solutions*
- *Outlook towards the offenders*
- *Psychology during and after the incident*

**Both the focus groups consisted of six women in each group, and the discussion lasted for about two hours. The sessions were conducted in a lab setting and were video recorded with the consent of the participants. We held the one-to-one interviews to dwell deeper into each individual's perspectives, which they might not be comfortable talking about in a focus group discussion.**

## **2.2 Research on offenders' psychology**

**The objective of the study on offenders psychology was to learn about the psychology of typical offenders and to identify existing**

campaigns targeted towards the male members of the society to raise awareness regarding eve-teasing. A literature review provided the knowledge of the offender's psychology. Psychologist Noam Shpancer, Ph.D. article "When Men Attack: Why (and Which) Men Sexually Assault Women," was referred to learn about various cognitive processes in men, which leads to the offender's behavior [5]. The current campaigns were studied to understand the existing messages (message type and mode of delivery). We discussed those messages with male peers (age group 20-30 years) to know how they perceive the messages. Some of the campaigns studied for the research are MARD; ShareTheLoad campaign; The best Men can be; #UnitedByHalf and "Man Up" [6].

### **3. Results & Discussions**

#### **3.1 For victims**

Victim reported that at the time of an eve-teasing incident, they get into a mode of shock, and are not able to think immediately. They are not usually not prepared mentally when an event occurs, and thus, have less reaction time. While some women can raise their voices against offenders, but many said that they are scared to raise their voices so that they don't hurt the fragile male ego and get in more trouble. We also found that many women were not aware of many of the self-defense products existing in the market. We also observed that most females are not comfortable to use any devices or raise voices in most cases, as they are scared that they might hurt a fragile male ego. Also, as they are in a state of shock and find it challenging to react immediately, being able to use a self-defense device does not occur to them at the spur of the moment. They also reported feeling inferior if they carried instruments with alarm siren

or wristbands to protect themselves. Instead of self-defense devices, most women preferred pre-planning to be in a safe environment and have a desire for men to be more sensitive.

***Proposed design directions - Public spaces need to be made safer by intervening in the domain of behavioral change in offenders.***

### **3.2 For offenders**

[5] Researchers argue that psychological and biological processes are an inherent feature of the male mating system. But whether, when, and how they act on them is often shaped by social context and social identity. Hence, the offender's behavior can be changed by controlling social influences. The opinion of the men of the society on campaigns was assumed to be similar to the offenders. From the literature, we found that the biological behavior of the male gender remains the same. Still, the difference in social influence defines their behavior. From the discussion on campaigns with the male members of the city, we found that the messages in the existing campaigns were preachy, and most of the men don't like to be preached and instructed. In contrast, some men considered the campaigns to be an act of feminist and had a hatred towards the campaigns. Hence, men viewed the messages of the current campaigns as predictive, and it no longer left any substantial impact. We learned from the literature study that we can't change a person's thought process in a fortnight. Still, an influencer at the crime location can have an immediate effect on the psychology of the offender, which can help in reducing the crime rate against women.

***Proposed design directions – We can nudge the psychology of the offenders for a short period.***

#### **4. Conclusion & Design Interventions**

**From the research, we concluded the following design direction statement:**

**"A campaign design for public places targeted at offenders who eve-tease women, indirectly nudging them towards behavioral change at that time. We will install the campaign in public places in the city of Delhi where women feel most unsafe, like bus stops, lifts, parking spaces, etc."**

**To conceptualize the design interventions, we can use the following universal drives concept to nudge for a behavioral change in offenders. We used the following drives in the design process:**

- 1. Acceptance - the desire to avoid failure and criticism**
- 2. Family - the desire to raise children and spend time with a sibling**
- 3. Honor - the desire for upright character**
- 4. Idealism - the desire to improve society**
- 5. Saving - the desire to collect**
- 6. Tranquility - the desire to be free of anxiety and pain**

## 4.1 Concept 1 - In his Shoes

### ***Universal drive used – Family (2) and Tranquility (6)***

In this concept (figure 2), we create an immersive experience to show a person's family member experiencing an act in public spaces. That will help to share the feeling that a male member of the victim's family might experience.





***Fig 4. Watch out who you become!***

## **4.2 Concept 2 – What’s your story?**

### **Universal drive used – Family (2) and Tranquility (6)**

**In this concept (figure 3), we create a positive feeling for women by nudging the men into recalling positive feelings for women in their lives (like a mother, sister, etc.). We achieve the same by depicting the most cherished shared childhood memories of the average Indian population. In this case, we use the image of eating mangoes during summer.**

## **4.3 Concept 3 – Watch out who you become!**

### ***Universal drive used – Acceptance (1) and Honor (3)***

**In this concept (figure 4), we aim at making men introspect their behavior by narrating a comparison through graphics on the wall and making them look at their reflection.**

## **5. Further work**

**The concepts presented in this paper are the result of our phase one of the design processes. We did not test these ideas in real life. Also, we need to develop concepts considering local languages as well. Shortly, we aim to work together with NGOs working on similar projects and improve upon the message delivery mechanism.**

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**Lena Müller-Kress**

**Open Innovation Researcher, Master of Arts**

***Hi! I am an researcher and consultant in an international Open Innovation consulting firm. My interest for innovation is based in a strong human centered design approach, focusing on the real user needs underlying most successful innovation. Before, I did my bachelor's degree in industrial design, starting my journey to explore user needs and researching how to satisfy needs and create feelings by design. I continued my studies with a master in design and product management – learning more about the environments in which design acts and the human interaction and demands with products, brands and companies. Only through a holistic and open approach unseen connections can be discovered: Valuable insights through which designers and innovators have the ability to address the real needs of people and society.***

# **Starting points for breaking the gender design norm**

*Lena Müller-Kress, Salzburg University of Applied Science*

## **Abstract**

**Gender design implies differences in design based on assumptions about the intended users' gender. It often perpetuates outdated gender norms and hence strengthens prejudices and inequality based on gender. To fight this inequality and break stereotypic norms, designers have to accept their responsibility of society and their power over it. The paper presents possible design approaches that a designer can use to mitigate or destroy these social norms. None of the approaches presented are ideal or the perfect response. As society and gender are very complex constructs that get mirrored in a design, such an imperative is not possible at all. But they can be starting points to further reflect on the way we see products and how we see the way we design those products or services.**

## **1. Introduction**

**In this article, the topic is gender design, which is delimited to design based on biological sex. Gender design implies differences in design based on assumptions about the intended users' gender. It often perpetuates old gender norms and hence strengthens prejudices and inequality based on gender.**

**To fight this inequality and break stereotypic norms, designers have to accept their responsibility of society and their power over it. Of course, it appears more natural to perpetuate norms and stereotypes; often, this happens under the disguise of giving the customer what he or she wants. But designers have a massive influence on culture and hence responsibility [1]. As Langdon Winner wrote:**

***"If our moral and political language for evaluating technology includes only categories having to do with tools and uses, if it does not include attention to the meaning of the designs and arrangements of our artifacts, then we will be blinded to much that is intellectually and practically crucial."* [2]**

**It is thus clear that designers have a significant impact on culture and, therefore, an excellent opportunity for achieving change. Designers should not keep their eyes off the fact that they share and reinforce existing prejudices, but at the same time have the chance to change society. The following are some possible design approaches that a designer can use to mitigate or destroy these social norms. They should be seen as food for thought and not as strict guidelines on how to act. None of the following approaches is ideal or the perfect response. As society and gender are very complex constructs that get mirrored in design, such an imperative is not possible at all. But they can be starting points to further reflect on the way we see products and how we see the way we design those products or services.**

## **2. Design approaches to act as the starting point for breaking the gender design norm**

### **2.1 Critical Design**

**One of the approaches to social change through design is Critical Design. It's two most famous representatives are the design professors Anthony Dunne and Fiona Raby [3]. Initially, the concept can be traced back to the Frankfurt School of Critical Theory, according to which mass products and consumer culture were considered politically backward. Part of the reasoning was supplemented by the philosopher Adorno, in that the products of society are seen as natural and irrefutable. This circumstance means an easement for the dominant class, as the rest of society continues to buy products of a system that harms them. Design represents and reinforces desirable cultural norms and behaviors that can be revealed through criticism. As a result, these mechanisms of the ruling class can be questioned and recognized by society as such. In the end, this can lead to a rejection of ideologies and a change in society [4, pp. 2 f.].**

**Even if the two most famous representatives of Critical Design have distanced themselves from the link to the Frankfurt School, some parallels can be recognized. For them, designers are complicit in the problem of the social dominance of one class over another. They clearly distinguish between affirmative and critical design. The affirmative design supports the status quo by conforming to the social and cultural norms of society. Critical design, however, denies the currently prevailing situation and criticizes it. It seeks to undermine and violate social conformity to evoke social emancipation. It is trying to achieve a more critical attitude in**

*74 February 2020 Vol-15 No-2 Design For All Institute of India*

society and to establish more critical thinking among designers [4, p. 2]. Dunne and Raby themselves describe critical design more as an attitude than a method. They describe the purpose of Critical Design as follows:

*"Mainly to make us think. But also raising awareness, exposing assumptions, provoking action, sparking debate, even entertaining intellectually, like literature or film."* [3]

For them, it is necessary for design to co-evolve with the significant changes expected in the 21st century and not to stay current. Critics complain that Dunne and Raby do not specify exact methods on how to achieve this. They describe satire as the goal of Critical Design. The result should not have any obvious irony, but plunge the user into a dilemma wondering how serious and real the product is. Critical Design is only successful when the user has to form his or her own opinion, has to exert his or her own intellect and constructively leads the consumer to use his or her imagination. They write: "Deadpan and black humor work best" [3]. This dark humor and satire expand the current understanding of design, in which everything is often lovely and beautiful [3]. This attitude is explained by the origins of Critical Design, which are in the design Noir. Analogous to Film Noir, this shows the dark and pessimistic side of the product world [5, p. 291 ff]. But even so, there is a risk that Critical Design is just more humorous and / or becomes a kind of art. Two risks that Dunne and Raby are very aware of. They explicitly declare that Critical Design is intended for the mass market and should also include aesthetic aspects because only the closeness of a product in everyday life to people can make it shocking and use its power to change. It must show that the normal could be different

and that things can change [3]. According to the script theory, the user becomes a protagonist in the story written by the designer, in which the user experiences a deliberate dilemma through the product. Critical Design products are not socially acceptable and make the illusion of choice evident in consumer culture, forcing users to adopt an attitude towards it [5, 82 f.]. Designers should, therefore, challenge the user and deconstruct his or her prejudices. That can happen through unexpected and unusual inscriptions of values into the product, the so-called defamiliarization. As a result, the objects are decontextualized and surprise the user. Critical design is also often seen as problematic because of such defamiliarizations and the generally desired shock of the user, the designer of the user imposes her world view and the discussion does not start by itself, but is initiated by the designer. Dunne and Raby argue that they are primarily for ambivalence in the products and that they are defined by the interpretive scope of the user. Their approach can be interpreted not as a pure imposition of an opinion, but as an interaction of designer and user [5, p. 291 ff.]. Critical design can, therefore, lead to a rethinking of society, without the consumers being patronized, but there are no clear instructions to implement Critical Design. It is important to note not to develop a humorous art object that is too obvious to provoke an opinion, but a product that integrates into people's everyday life, but forces them to think critically about the society and make them suspicious.

## **2.2 Human-Centered Design**

Another design approach that bypasses prejudice is Human-Centered Design. This approach describes more than usability or user-friendliness but also includes the broader implications of a product on humans and society. The impetus for development should

emanate from the human being. First, of all, it should be analyzed precisely to what extent the product will influence and change the human being. It also takes the role of the user throughout the system into account and thus demands a development that is adapted to the people and their wishes. In the process, the problem of the human being is analyzed, not only in terms of functionality but also in the context and the current situation of the person with this problem. Furthermore, the activity of the potential user is analyzed, so how does the user interact with the product and what are the underlying goals and tasks of the user. So the context of usage and the user is also considered carefully. Many technologies and products provide generalized solutions to specific problems that may not fit into any context. Therefore, it is crucial to analyze this context carefully to develop a product that ideally supports the user [6, pp. 9 ff.].

In Human-Centered Design, it is imperative to put people and their environment at the center of the design process, including the relationships and changes that arise through groups, organizations, or in their sole use. Goals are thus:

- *To design for the whole diversity of what people can do.*
- *To put a man on the leading edge of development.*
- *To maintain a human scale in the complexity of development*

*[6, pp. 12-13].*

Possibilities to implement this can be the development of personas, scenarios, or use cases. These approaches allow a comprehensive human analysis of the product that does not ignore its environment,

desires, and tasks [7]. Thus, human-centered design is a counterbalance to technology-driven developmental thinking, because it is developed primarily for humans, not just for the sake of technological progress [6, p.5].

Although this approach is well received and undoubtedly positive, as it considers the user within the system and also the impact of a product on the human and system, this advantage is also one of its weaknesses. Creating personas, scenarios, etc. can cause problems if they generalize too much, or just pick up prejudices, which then revert to the product. Problems can also arise from the analysis of the current use of a product by a human being. Most products are already seen and used by humans in specific ways and contexts, interpreting them as wishes may result in blindness for new innovative approaches. As a result, the Human-Centered Design approach, in part, loses the chance of truly innovative thinking and eliminating prejudice, as it adheres strongly to the current person, with all her or his prejudices. Another criticism is the generalization, which often happens during the analyzes, which again potentially serve to spread prejudices. But this generalization sometimes also makes the approach's strength, as it is mass producible. In the mass consumption culture, it is often challenging to develop products that are adapted to the individual, and products are more in demand that appeals to the broadest possible group of people [5, p. 257 f.]. Altogether the Human-Centered Design approach is an essential and noteworthy one because it recognizes massively that users are not only interested in function and technology, but are also involved in the broader context of social values and norms. Even if it has its weaknesses, it can form a sound basis for breaking gender design, as long as one also recognizes further potential in the solutions and

does not strictly adhere to the supposed wishes of the users, but critically questions them.

### **2.3 De-Inscripting and non-intended-user**

The next notable design approach to eliminate prejudices in products is de-inscripting or de-scripting. This approach bases on the Script theory, which has its roots in the actor-network theory. As mentioned before, according to Script theory, prejudices manifest themselves in products, and products have power over humans. This explains how the ideas about the user are reflected by the designers in the product and how this in turn affects the lives of the users. Designers develop a specific image of the future user of a product, with specific preferences, abilities, political views, and wishes, and this image is reflected in the product itself [8, p. 195 f.]. As a result, the designers develop an accurate picture of the user and a clear story of what should happen to the product, similar to a film script, which defines exactly who, when and in which way they should interact with each other [9, p. 208]. For example, in an automated door, the script describes it automatically opens as soon as someone wants to step through, and the users read this script and act accordingly, hence not try to open the door themselves. First, the inscription process takes place, which describes the process, that the designers and developers anchor the ideal image of use in the product, thus privileging a specific usage by the design. This process refers to the translation of models and action imperatives, the so-called prescriptions, into matter [10, p. 202].

Prejudices are introduced by the designer through scripts in the product, but it always raises the question of whether and to what extent the user will read and accept them properly. In most cases,

**the user understands the script correctly and takes it as a subscription. Still, if he or she changes the product, modifies the usage, or completely rejects the product, this is the so-called de-inscripting [11, p. 64]. If a completely new user group uses the product, the term de-inscripting is used. If the intended user rejects the product, including its scripts, but another user group accepts the product, the term "non-user" and "new and non-intended user" is used [5, p. 263].**

**An example of this was the development of the microwave [5, p. 77 ff.]. Initially, the microwave was intended for young, single men and accordingly designed as a technically sophisticated device. The idea that men have to be tech-savvy was thus inscribed in the product. However, the men did not accept the product; they became non-users. But the developers found out that women could be possible users, the users who were considered as non-intended users during development. By redesigning the microwave as a female cooking instrument, women became the intended non-intended users [5, p. 107]. However, this was accompanied by the fact that the microwave continued to spread prejudices, for example, by replacing the previously very technical and function-describing buttons with simple pictograms, since women are considered technically uninterested and untalented [1, pp. 476 f.). But of course, non-intended users are not always the result of manufacturers' actions, but also simply because new user groups use products for which they were initially not intended. A prominent example of this may have been the first women who wore trousers. A product that was originally reserved for men who have appropriated women as non-intended users, and which today has been mostly de-enrolled in the men's script.**

**The situation is different if the intended users accept the product but do not use it in the manner or environment envisaged the so-called non-intended use or non-intentional design. Here, the users create their interpretation of the script and thereby change it. By adapting and manipulating objects, users can actively participate in the shaping of their lives and adapt the objects to their wishes, uses, systems, and abilities, a process also called domestication. Similar to the domestication of wild animals, the user "tames" the product and thus adapts it to itself, but not without being partially influenced by the product. Domestication is, therefore, always a reciprocal phenomenon [11, p. 67 f.].**

**The result of such non-intended users or even of non-intended use may be that designers again pick up on these ideas and new user groups and turn them into new products. Thus, de-inscripting can create a new script, re-enrollment [11, p. 69].**

**Precisely in this re-inscription the power on the society of de-inscription can also be seen. Because for individuals, de-inscription may be very helpful and useful to make their individual lives better, but often it does not have much of a large-scale social impact. Through the Internet, such unintended users or non-intended use become better known. Still, only when the economy revisits this and translates it back into mass-market products, it can make a difference. Just because some women appropriate a pair of pants, not much is changed. However, when the industry picks this up and offers a large offer of trousers for women, a rethinking of minds takes place, and scripts can be de-enrolled.**

## **2.4 Unisex Design**

**One of the most commonly used ways to avoid gender design is unisex design. In the dictionary unisex is described as "equally suitable for women and men; not gender-specific " [12]. The result would be an ideal non-gendered product that gives equal access to all gender without using a specific design language. Often products emphasize alleged differences between the gender, but unisex products avoid this. They do not use any of the colors, shapes, or symbols connoted with a particular gender to be associated with any gender and thus address both genders equally. But it is precisely the avoiding of typically gendered features that also offers criticism for unisex design in relation to the breaking up of gender norms. On the one hand, unisex design is often very characterless and not very appealing, as it can only use a very limited design language and thus does not offer an alternative. On the other hand, by keeping out of gender design, there can be no change within the gendered product language. By not using attributes, it cannot blur any boundaries [13, p. 86]. So unisex design is a way to deal with gender design, but not a particularly innovative approach, which can cause long-term changes. Nevertheless, it gives food for thought through the possibility of a product that is equally accessible to all genders and shows that such products can be quite successful, even though they also convey a political message to the outside world.**

## **2.5 Undoing and Confusing Gender**

**One of the difficulties in breaking up the social norm of gender is the concept of "Doing Gender," which means that people stage their**

gender every day according to their expectations and thereby maintain the norm. To change or break these norms, an "undoing gender" is necessary. That refers to the deliberate deviation from gender norms and the intentional violation of social rules. So, when women repeatedly sit down very broad-legged, or men speak with a higher voice, they do not conform to their gender, they transgress a norm and thus break it up over time [14, p. 7]. This confusing and, further on, the undoing of the genders is, therefore, a very individual way of tackling gender norms. It can be divided into three categories:

- *The "non-thematization" or "non-addressing" of the gender. Here, the gender difference is not updated and considered unimportant. That can happen, for example, with female clerks, whose clothes neutralize the gender differences, and therefore gender is not perceived as noteworthy.*
- *The relevance of other distinctions: This describes that other distinguishing features are brought to the forefront instead of gender. For example, in old age, or in certain contexts where abilities or hobbies come to the fore more than belonging to a gender. That happens especially when these properties are more important in the background and therefore come first as topics.*
- *The active transition of gender scripts or active rejects of such: This happens in a deliberate break with the construction of gender. For example, the non-continuation of a topic of conversation in which the gender of the other person would be made the subject. That denies that gender scripts occupy space in society and "doing gender" happens*

[5, p. 60 ff.].

**These possibilities can be implemented to a certain extent in products. Still, the difficulty is that our society is highly gendered and therefore reaching a gender-neutral state is very difficult. An "un-doing" gender is consequently tricky because there is no possible underlying concept that could be worked out by peeling off the gender category [5, p. 246 f.].**

**Even supposedly gender-neutral unisex design does not create a genuine alternative. However, the confusing gender can be understood as a design approach and has the potential to change the standards. A deliberate violation of the norms and destruction of the symbols can lead to a confusing gender in the user and subsequently in a product in which it is uncertain whether it is female or male [5, p. 245 f.].**

### **3. Conclusion**

**These five approaches can be used as inspirations when designing and have potential starting points for opening up the discussion concerning gender in design. As gender is a tough topic to grasp and often seen as "natural," it is rather difficult to achieve changes in society. So using design as a vehicle to make users think about their prejudices can be an excellent method to create a difference in the long run. All of the mentioned approaches have positive but also negative sides. It is up to the reader and the designer, executive, but of course, also up to the user on how to deal with gender in design in their individual life and work.**

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***Currently, I am working as a Senior Product Designer for the Ola Cabs consumer application. I am equipped in digging & solving problems through the desired design process, creating production-grade interfaces and prototyping micro-interactions & usability prototypes. I believe design is about the human mind and understanding how the mind behaves in various environments. In all daily human-computer interactions, we run through numerous journeys and contexts that are designed to make our life simpler. We behave, connect and think in very complex and unpredictable ways. And that is why I believe that psychology can help us understand & predict the human mind to design better environments & products.***



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***Flipkart is the leading e-commerce company in India, having a customer base of over 160 million. Within Flipkart, I work in a team which exclusively looks at designing for the next wave of online shopping users in India. These next 100 million users are from tier 2 and 3 towns of India and their online shopping behaviours are very different from what Flipkart was encountering till date.***

***Previously, I worked at Kommunicate.io, which is a B2B Saas startup. I was responsible for designing the product from scratch and drove the company from 0 to 10,000+ companies using it worldwide.***

# **Design of an ICT based Healthcare Data Management Platform for Auxiliary Nurse Midwife (ANMs)**

*Pranjal Sutradhar, Purnanga Borah, B.Des. Thesis Project, Department of Design, IIT Guwahati*

***Keywords:* National Health Scheme, Health Management Information System, Public Health Care Center, Auxiliary Nurse Midwife (ANM), Accredited Social Health Activist (ASHA), Distributed Design**

## **Abstract**

Data is the backbone of all significant decisions in today's world. So is the case for the healthcare system. In India, as a part of the National Health Scheme, the Health Management Information System (HMIS) was first introduced in 2005. For efficient functioning, health workers are required to keep track of the health status of people, the requirement of medical equipment and other necessities, the patterns of health-related problems, and issues, among others. This information, to be of any use, has to be correct and available on time, which is not the case presently in India. The health workers at the primary level in India (SCs) collect a lot of raw data every month, compile it and forward it to their respective Public Health Care Center (PHC), where it is again compiled and sent to the District HQs. All the data is being generated at the root level, and the flow of this data is only towards one way – upwards. This paper

**investigates: How to enable the stakeholders in the system to collect, transfer, and manage data so that the data can be effectively used for proper decision making, epidemic prevention, and research purposes? Thereafter, we designed a system to improve the healthcare data collection, transfer, and storage in India by implementing the concepts of Distributed Design.**

## **1. Introduction**

**Data is the backbone of all significant decisions in today's world. In the healthcare industry, big data functions much like a spinal cord. Data helps health systems derive the level of insight and trends that help them make essential policies and evidence-based practices to improve the quality of healthcare. It is also used to monitor the performance and quality of services being provided to the people.**

**In India, as a part of the National Health Scheme, the Health Management Information System (HMIS) was first introduced in 2005. A health management information system (HMIS) is a process whereby health data (input) are recorded, stored, retrieved, and processed for decision-making (output). Decision making broadly includes managerial aspects such as planning, organizing, and control of health care facilities at the national, state, and institution levels [1]. An HMIS includes the following sub-systems in general, as presented in Table 1 below.**

**Table 1: Contextual reference model, Evaluation of Health Management Information system in India, Bodavala R.**

<b>Epidemiological surveillance</b>	<b>Identification/ notification of diseases and risk factors, investigation, follow-up, control measures</b>
<b>Routine service reporting</b>	<b>Hospital/ health center based indicators on performance of the various services</b>
<b>Specific program reporting</b>	<b>Reproductive child health, AIDS, malaria, TB, Leprosy, Integrated child health and others</b>
<b>Administrative systems</b>	<b>Accounts &amp; financial systems Drugs management (procurement, storage &amp; delivery) Personnel management Asset management Maintenance system</b>
<b>Vital registration</b>	<b>Births, deaths, migration etc.</b>

**For efficient functioning, health workers are required to keep track of the health status of people, the requirement of medical equipment and other necessities, the patterns of health-related problems, and issues, among others. This information, to be of any use, has to be correct and available on time, which is not the case presently in India. The health workers at the primary level in India (SCs) collect a lot of raw data every month, compile it and forward it to their respective Public Health Care Center (PHC), where it is again compiled and sent to the District HQs. All the data is being**

generated at the root level, and the flow of this data is only towards one way – upwards [2]. In addition to that, a lot of the data which is being collected remains unused and not utilized to its full potential. If the entire flow of data is divided broadly into three aspects viz Data collection, Data Management, and Data Utilization, the Management and Utilization in this system is complicated. It requires replication of the same work and eats up a humongous amount of time of people at multiple levels.

All the previous research has suggested that a different system thinking approach to the entire healthcare data flow system of India is needed to identify crucial areas for intervention. In this study, we are looking at ways by which we can improve the entire healthcare infrastructure by bringing in ICT intervention such that a proper software aid is designed to fulfill the needs.

## **1.1 Problem Statement**

How to enable the stakeholders in the system to collect, transfer, and manage data so that the data can be effectively used for proper decision making, epidemic prevention, and research purposes?

## **1.2 Aim of the Project**

Design a system to improve the healthcare data collection, transfer, and storage in India by implementing the concepts of Distributed Design.

## **2. Methodology**

The project was planned out over five stages: Literature review, User research, Analysis, Ideation, and Design. The first phase involved extensive study of existing literature, firstly on Distributed Design and how it can be incorporated in a system and secondly on the healthcare structure of India with specific attention to the healthcare data flow. The second phase of the study included identification of stakeholders from the field study, semi-structured interviews with the stakeholders, review of materials used by the stakeholders for related data purposes. We interviewed Auxiliary Nurse Midwife (ANM) and Accredited Social Health Activist (ASHA) from 2 nearby Sub-centres and also stakeholders from 1 PHC. The third phase involved the analysis of the primary and secondary research findings. After careful observation, we also identified the stage of the data flow, where we would like to intervene in this phase and gave a definite direction to the study. During ideation, we considered various use cases and refined our ideas according to the needs of the use cases.

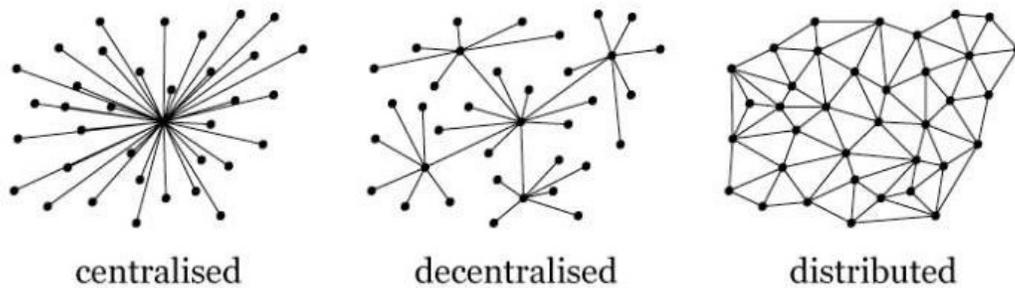
## **3. Results and Observations**

### **3.1 Literature review – Distributed Design**

"A Distributed Design (DD) system is an open design project where small-scale design units (e.g., one person/computer), whether individuals, small businesses, and/or a local community, are connected with others contributing to the overall design or to local adaptations."

[Source:

[https://en.wikipedia.org/wiki/Distributed\\_economy](https://en.wikipedia.org/wiki/Distributed_economy)]



**Figure 1. Distributed vs. decentralized vs. centralized economy [Source: <https://en.wikipedia.org/wiki/File:Centralised-decentralised-distributed.png>]**

**To better understand Distributed Design, influencing factors, and critical factors and how it affects the system, we made reference models of two other existing real-life systems[3][4], which followed the distributed design model. From the study, we got hold of the different factors in a system that contributes towards the success of Distribution Economies (fig. 1). The studied systems are the ones that tend to practice sustainability for achieving a distributed system. The increase in the extent of consumers being producers in a system will increase the involvement and information sharing among the locals of the system, which will further generate more wealth for the locals. More wealth earned through local businesses by the local people will motivate them to invest more in their companies, which will lead to the economic stability of the complete system. Also, more wealth lowers the power barriers and caste problems of the system leading to more social interactions among locals along with social upliftment of the locals in the system. With locals running most part of the system, they will be highly involved in decision making and taking various responsibilities. This will motivate locals to work hard and also increase the sense of ownership in projects, which will, in turn, increase good ethics**

among the people involved in the system. Since the system is an outcome of connected traditional small scale businesses, so traditional non-polluting methods and knowledge will be used for productions that will contribute towards maintaining the biodiversity of the area. Also, the presence of middlemen in the system will decrease, leading to transparency and easy transferability of the sub-systems.

### **3.2 Literature review – Healthcare structure and data flow system of India**

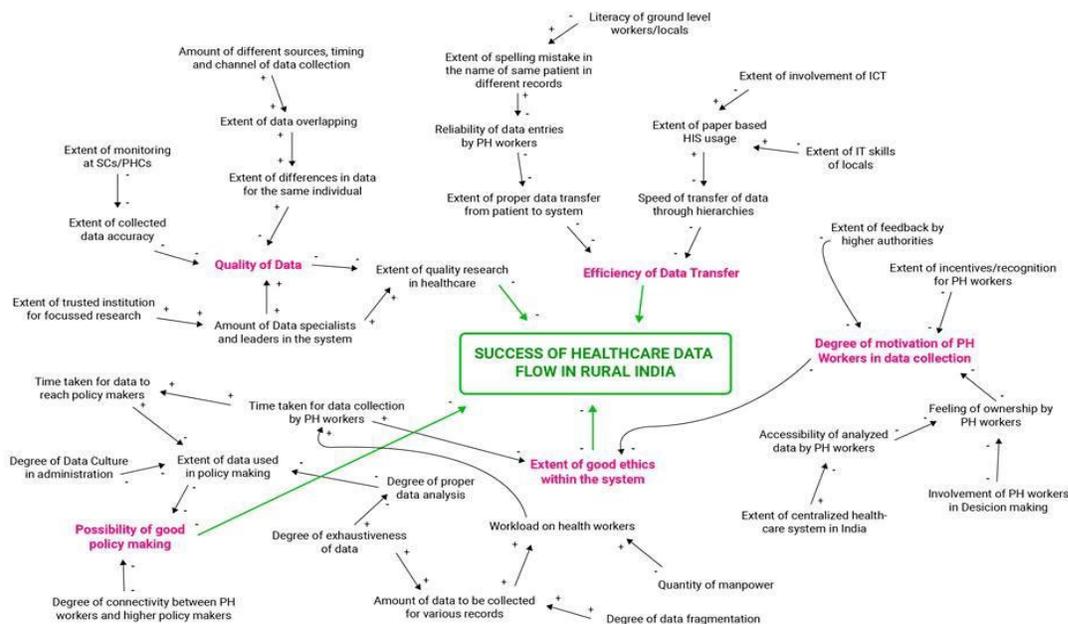
The structure of healthcare centers in rural India is made as a 3-level system [5]:

- ***Subcentres (SCs): "Most peripheral contact point between Primary Health Care System & Community manned with two Auxiliary Nurse Midwife (ANMs) & one Male Health Worker."***
- ***Public Health Centres (PHCs): "A Referral Unit for six sub-centers 4-6 bedded manned with a Medical Officer Incharge and 14 subordinate paramedical staff "***
- ***Community Health Centers (CHCs): "A 30 bedded Hospital/Referral Unit for 4 PHCs with specialized services."***

The healthcare data flow system in India has its roots at the Sub-Centres, where raw data collection is done ASHA and ANMs. The data are then sent to the PHC, where it is uploaded into the computerized data management system of India, the 'Healthcare Information Management System' (HMIS). Data then flows linearly upward to the central government through district levels and state levels. All

healthcare policies and decisions made by the central, state, or district level are based on this healthcare data.

A Contextual Reference Model (fig. 2) was made after analyzing the models of other distributed systems and mapping with our HMIS system to identify major key factors affecting the system. The primary key factors in the system are Quality of Data, Efficiency of Transfer, Degree of motivation in data collection, Extent of good ethics within the system, and Possibility of sound policymaking. These key factors are supported by influencing factors which are again interconnected among each other. For example, the lack of 'Extent of data monitoring at SCs' influences the 'extent of collected data accuracy,' which results in low accuracy of the data that directly decreases the 'Quality of Data.' Thus, the decrease in quality may affect different parts of the system.



**Figure 2: Contextual reference model**

## **Explanation of the Contextual Reference Model:**

- ***Quality of data:*** *The quality of data that is being generated at the ground level is probably the most crucial thing in this system as it is based on the data that the country's health policies will depend on. The most basic way to improve the accuracy of this data is by improving the monitoring of data at the SCs and PHCs. Also, the presence of data specialists and leaders in the system who knows the importance of data will make sure that proper steps are taken to improve the quality of data. Some factors like data overlapping, which means different contradicting data sets being stored for the same person creeps into the system due to the fact that multiple sources and channels are used to collect the data, which again affects the quality of data.*
- ***The efficiency of Transfer of Data:*** *The efficiency of data transfer to the higher-ups is a major step in the system. At any stage of the system, slight mismanagement could adversely affect the transfer of data. Factors like the reliability of data entries by primary health workers could result in extra time being spent at some stages for data cross-verification. Also, due to the fact that a majorly paper-based system is used at the ground level, the efficiency is affected.*
- ***Degree of motivation in data collection:*** *Since the ones collecting the data are not the ones to be using it to*

*full potential, there is a factor of motivation for the ground level primary health workers if they are not aware of the use of their seemingly repetitive work. To make the primary workers feel ownership of the system, it is important to help them to access the analyzed findings to show them how their work is affecting the policies which are being made at the center by the government. Also, incentives/recognition may be effective in taking care of the motivation of the related stakeholders.*

- *The extent of good ethics within the system: Lack of motivation by anybody in the system automatically translates to bad ethics and usage of shortcuts by the people. Also, lack of required manpower, which results in an increase in workload, sometimes leaves no option for the health workers but to fudge data. The amount of data that has to be collected in the present system is large; it is exhaustive, which also affects the workload of the health workers.*
- *Possibility of good policymaking: Just collecting data without making use of it to drive proper decisions is like doing all the hard work and not submitting the report! While this is not usually the case in other circumstances due to respect towards own hard work, when the situation is such that most of the fieldwork is done by others and the analyzing+policy making is done by others as in this case, there is a chance that proper analysis of the data is not done. Also, probably due to the generation of people involved in making decisions, the degree of data culture is still not prevalent in the administration. Data is seen more*

*as a problem than an opportunity to drive innovations. The exhaustiveness of data that is being collected also makes this job tougher by increasing the workload of the analysts.*

### **3.3 Semi-structured interviews with ANMs**

**We interviewed a total of 4 ANMs in groups of 2 in Sub-centres in the first phase. The ANMs deal with the cases related to Pre-natal, Natal, Post-natal, and Infants. Apart from providing primary healthcare services, these ANMs are also responsible for gathering primary health data of the people, which in turn play a pivotal role in policymaking at the central level. We learned that the ANMs conduct a survey at the start of every financial year in their area of operation and make a list of eligible – couples, pregnant women, infants, and new mothers. Based on this list, they are given targets by a higher authority, which they have to achieve during the year. The entry of the names of eligible-couples marks the start of the journey, which ends when the last immunization of the child of that couple is completed. Although, there are also provisions to enter the names of beneficiaries at later stages if their names were not entered into the system at the "eligible-couple identification" stage.**

**The ANMs also have to give monthly updates about all the beneficiaries in the system of her area to the PHC, based on which medicines and other healthcare materials are given to her for distribution. They then have to update the data in their registers after giving the necessities to the beneficiaries. At the end of the**

next month, all these data are again transferred to the respective PHCs by the ANMs in predefined formats (fig. 3 & 4).

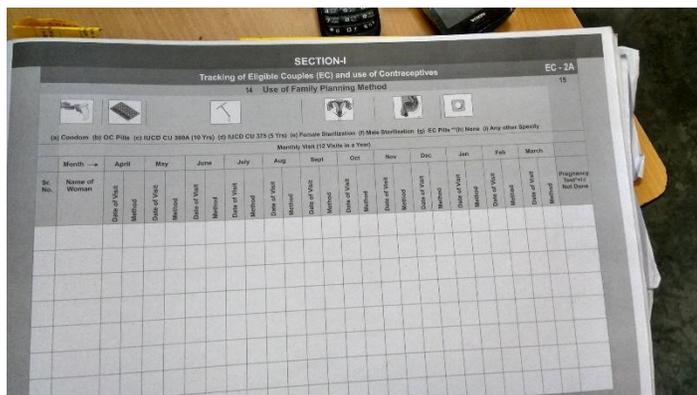
Monitoring is done both by local officers and also by central officers frequently. The ANMs are answerable to phone calls from officials at any moment to cross-verify records for which the ANMs are also provided with free mobile phones by the government. Also, these officials come to the field once in a while with the records that they receive at the top level and cross-verify the data from the beneficiaries.

Filling up data took a large chunk of the ANM's time every month, which was seen by us first hand as we had to return back empty-handed without any information from the SC on three occasions because of the ANMs being busy with the data to be forwarded to the PHCs. This work seemed pretty mundane for them to our observation. We learned that in some areas, the PHCs give out timely awards and incentives to ANMs performing well to motivate them.

The ANMs have to maintain all these data in a register, which is quite big in size. They said sometimes it is quite infeasible to carry around this register. There is one such register for each village under the ANM. On being asked what they think of the data which has to be entered in the registers, one of them seemed a little frustrated about the quantity of data to enter, which, according to her, are not feasible/required in some scenarios. However, the other ANM was quick to mention that data columns are there only probably because the higher officials feel there is really a need for them.



**Figure 3: Register of ANMs for data collection**



**Figure 4: Inside view of the register**

### 3.3.1 Findings from the research

- **Accounting for people/children who leave the village:** When people/children of a place whose data has been collected previously suddenly leaves the village, the data at the top level gets corrupt, and the performance of the ANM goes down for no fault of her.
- **Data monitoring system on the ANMs:** Higher officials sometimes call the ANMs as part of their monitoring process. They may ask about the details of some beneficiaries of the area or about any recorded data. Since ANMs go for field visits frequently, it may happen that she does not have the data asked for through the calls, and she answers from her memory. This creates a constant mental fear on her about the call.
- **The notion about large data collection:** The data collected by the ANMs are large and have multiple entries for every entity. Most ANMs felt that there is no use of collecting large data and minute data about every person.

For example, for every childbirth at a hospital, the names of doctors and nurses taking care are also noted. Also, every time the status of beneficiary changes, the health worker has to collect that beneficiary's data in a separate register all over again. While 3 ANMs thought in this way, but 1 of them believed that all recorded data are important for higher purposes

- ***Registers for data collection:*** ANMs need to regularly go for field visits where she has to carry her data collecting registers. The bulky size of the registers are not feasible for carrying and collecting data on regular field visits
- ***The motivation for the ANMs:*** ANMs are not aware of how their data collecting work is being used. The collected data are the backbone of all healthcare decisions, but there are no incentives or recognition program for the data collection. This leads to a lack of motivation in ANMs on collecting these large data. Also, there are no ways to see how she is performing in comparison to other ANMs.
- ***Data transfer within the Sub-centre:*** There is quite a lot of data transfer among the health workers of the Sub-centre. ASHA workers work hand in hand with ANMs and Male Health Workers (MHWs), and some data like delivery cases are recorded by ASHA mostly, which are then communicated to the ANMs. Data of fever cases are also collected by all health workers who are communicated to the MHW, who compiles all the data for the final deliverable format. Also, the handling of data related to

things like VHNDs, which requires the coordination of all ANMs in an SC, is not properly done.

- ***Format changing at different levels:*** The ANMs at the SCs collect data in registers, then compile them at the end of the month in a different format that they submit to their respective PHCs. The PHCs again re-compile the data in a different format, and so on. The more the same data is being played with, the more is the probability of making mistakes, also the workload increases due to the repetition of work.

#### **4. Design**

For improving the data infrastructure of India, health workers at the Sub-centres have a huge role to play, especially the ANMs. Considering the minimum educational requirement for ANMs, a simple mobile-based platform to manage all the health data would be easy to use for them after some basic training. Such a mobile-based platform, if done right, would solve a lot of problems regarding these national health data. A lot of advancements have been made in the sector of high-speed internet in India in the last couple of years, so much so that 4G internet connectivity is no longer restricted to the cities and towns alone. That is the reason why we decided to go ahead with designing a solution that requires at least a basic level speed of internet connectivity.

## **4.1 Defining Content and Features**

**We took a use-case approach to gather the system requirements and then the corresponding features. Use-cases were first organized according to their importance to the user, and then the offline behaviors of the user to achieve the goal in the respective use-cases were analyzed. Based on inputs from the findings of the study and these use cases, features for the product were given shape.**

***Use Case 1:* The ANM wants to search for a beneficiary in the register, see the records, and update the records.**

***Offline User flow:* Check the name of the beneficiary -> Identify the register which will contain the beneficiary's name -> Cross check the RCH ID with the registration information to be sure about the identity -> See the required health records -> Conduct the required tests -> Update the records.**

***Use Case 2:* The ANM wants to make a completely new beneficiary entry to one of the registers.**

***Offline User flow:* Identify which category the beneficiary will belong to (Eligible couple/Pregnant woman/ Child) -> Open that particular register -> Fill up the required details -> Make the first entry (most of the times).**

***Use Case 3:* The ANM wants to transfer the beneficiary to the register of another category. *Offline User flow:* Update final result in the first register -> Open the next required to**

register -> Copy the same information from the first register on to the second register -> Collect the additional information from the beneficiary and fill it up in the second register.

***Use Case 4:*** The ANM wants to check the detailed profiles and requirements for the next VHND (Village Health Nutrition Day). Also, later check which beneficiaries didn't come on the VHND for further process.

***Offline User flow:*** Create a list of beneficiaries from all the registers who are due (i.e., these beneficiaries require health services) on the next VHND date for a particular village -> Calculate the logistics required based on the list created -> Attend to the beneficiaries on the VHND and update the records simultaneously -> Check which ones did not turn up for further process.

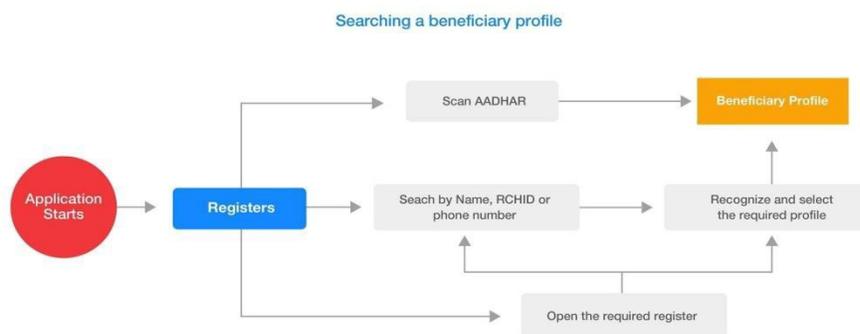
***Use Case 5:*** The ANM feels like knowing how she is performing based on the KPIs set by the government.

***Offline User flow:*** Learn about the KPIs -> Calculate the statistics from all the registers combined -> See where she stands by asking for KPIs to other ANMs whom she knows.

Based on the above cases, firstly, we saw the need for a way to find a beneficiary quickly and easily in our mobile application. We needed an ID for the beneficiaries corresponding to which the data would be stored in the servers. It was not tough for us to choose AADHAAR Cards [6] as a way to identify and search for beneficiaries keeping

in mind the fact that 99% of Indians above the age of 18 has an AADHAAR card at the time of this research [7], and the government is planning to make AADHAAR mandatory for all citizens. Also, as a scope for further research, having AADHAAR based identification for more such public services opens the doors for more cross-department inter-linked research opportunities in India.

For Case 1, in the new flow, the ANM does not have to identify the register which will contain the beneficiary's name, the platform will tell the ANM about it. Also, scanning the QR code in the AADHAAR card will straightaway take the ANM to the beneficiary's profile, thus reducing two steps in the journey and making it much easier. There will also be different registers present, and the ANM can take that approach too to reach a particular profile or see all beneficiaries for a category.



**Figure 5. Case 1 task flow part 1**

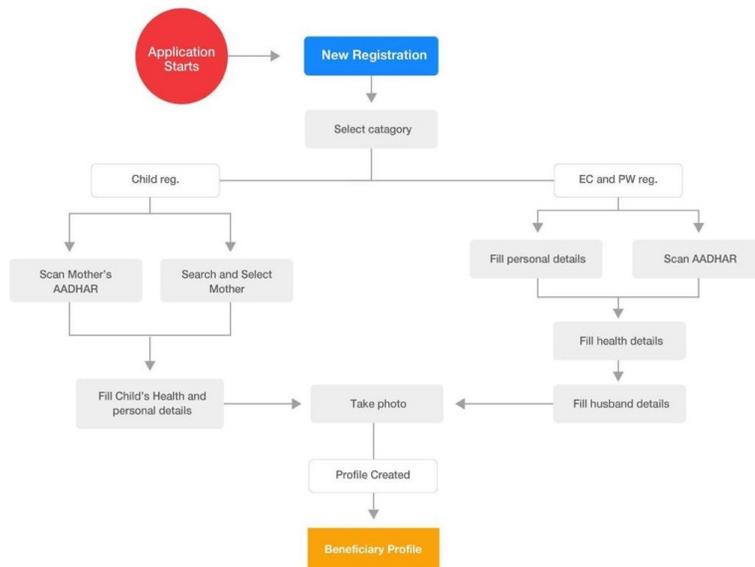
Moving on, once the ANM reaches the beneficiary's profile, updating the information is easy and can be accessible from the profile of the beneficiary simultaneously as the tests are being done.

Updating a profile record



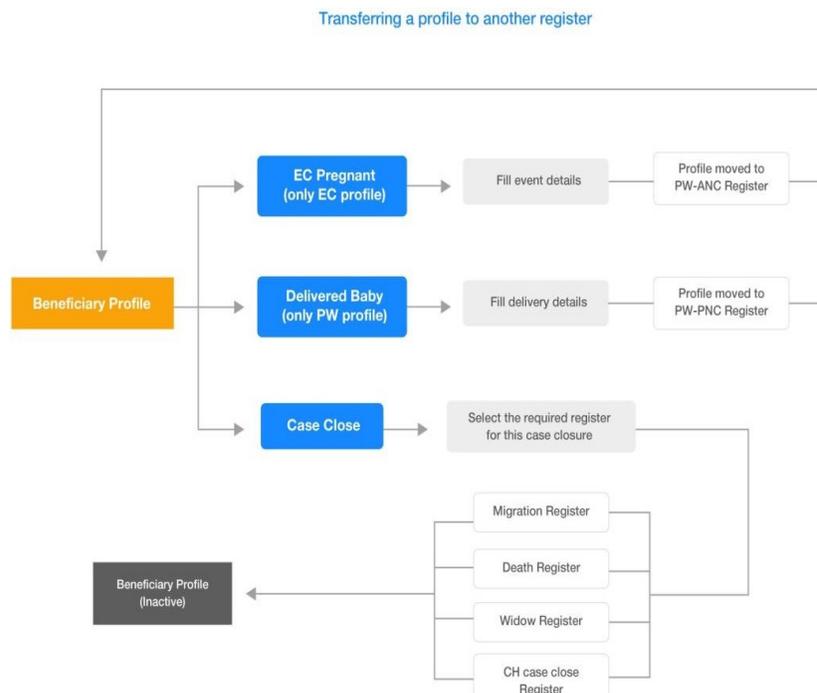
**For Case 2, the ANM has to first determine the category of the beneficiary (Eligible couple/pregnant woman/child). Then, she can go ahead with filling up the required information. When registrations are done by AADHAAR cards, some information will be auto-populated. For a child's registration, the mother's profile will be connected with her child's profile for easy access later on. After creating the profile, the ANM can then update visit information (if required) as in the flow shown above in case 1.**

New Registration for Eligible Couple (EC), Pregnant woman (PW) and Child (CH)



**Figure 7. Case 2 task flow**

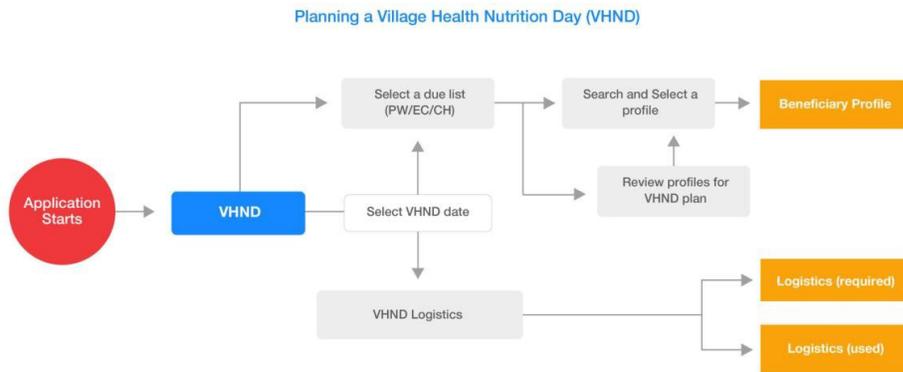
**For Case 3, the ANM does not have to manually make a new register entry of the beneficiary when the category of the beneficiary changes in the new flow. Once the ANM updates the final information in an existing profile, automatically, the ensuing profile of the beneficiary is created with the already existing information as pre-filled. The ANM will then be asked to enter only the additional information.**



**Figure 8. Case 3 task flow**

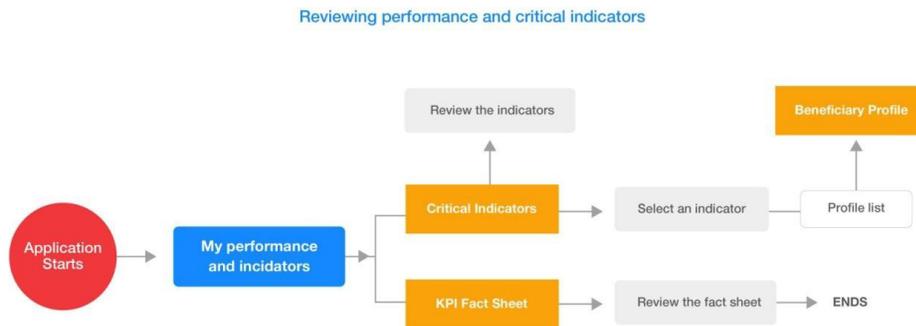
**For Case 4, in the new flow, the ANM does not have to prepare the VHND duelist manually. On entering the VHND location and date, the platform will automatically prepare a list of beneficiaries according to their categories and also prepare a list of required logistics for the VHND. Later on, the ANM can also check if any of the beneficiaries in the duelist did not come on the VHND as she would be updating**

**the data of the beneficiaries simultaneously as they come, and the ones not updated will be shown.**



**Figure 9. Case 4 task flow**

**For Case 5, the ANM can simply go and have a look at the KPI section. This section will also include a set of critical indicators that will indicate all the critical cases and the respective beneficiary profiles.**



**Figure 10. Case 5 task flow**

**Apart from the use cases, we also had to consider some other factors, as mentioned in the Contextual Reference Diagram previously in this paper. In order to motivate the ANMs, we decided to show facts about ANMs nearby who are having some good KPIs.**

**The user can then check her own corresponding statistic for that KPI for comparison to see where she stands. Also, the amount of data to be collected has reduced in the platform, and the same data will not have to be collected/written multiple times, which will reduce the workload on the health workers, thus reducing the probability of bad ethics within the system. The introduction of AADHAAR based registration will make sure that there is no overlapping or contradictory data for the same beneficiary in different registers, thus improving the quality of data. Digitization of the data at the ground level itself will also reduce the time taken for the data to reach higher officials, which increases the probability of better policymaking. The availability of important analyzed data in the platform will also give the ANM some ownership over the data.**

**We have also tried to tap into the emotional aspect of the ANM's job by taking the profile-based approach to the data. In the present system, the beneficiary's name has to be transferred from one register to another when and if necessary. New profiles for the beneficiary are made every time the register changes (i.e., when the category changes). The beneficiary accounts are more or less treated like a batch of records, which needs to be maintained in different registers. But in the proposed flow, the profile remains constant right from the start; it does not go anywhere, only the status changes from time to time. The ANMs will now think of them more as profiles, as real people whose status needs to be updated rather than just records whose register needs to be changed. The flow to search for a particular beneficiary in the platform will be the same irrespective of what health category the beneficiary belongs to.**

## 4.2 Information Architecture

A number of things were considered while making the IA for the platform: the target audience, the technology which is being used, and the data that will be presented to the user. Considering the fact that the platform would be used in a job environment, with the possibility of a high rush, it was very important to get the hierarchy of the information which is being presented absolutely spot on. We decided to give maximum importance to the first two use cases discussed above and design it for ANMs on the go. The features corresponding to the rest of the use cases are given lower hierarchy as they are most likely to be used when the ANM is not busy with the beneficiaries.

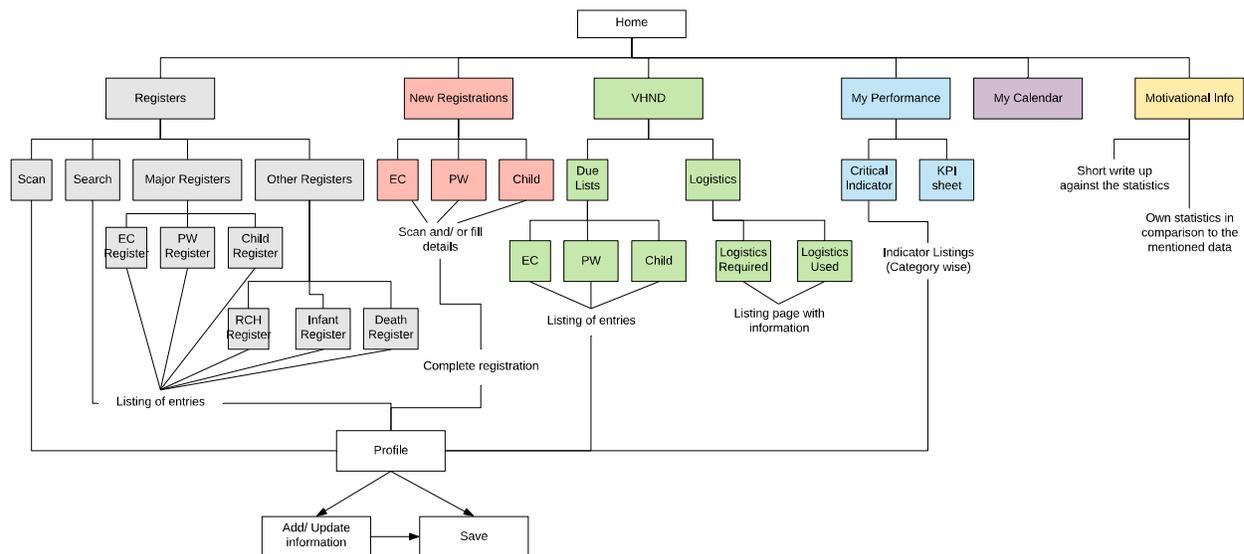


Figure 11. Information architecture

## 5. Conclusion and Limitations

The study focuses on evaluating the ground scenario of healthcare data collection by health workers in rural India,

identifying the possible areas for intervention, and then providing a solution to solve the issues in that area. We went ahead with designing a mobile-based application for the ANMs to collect and manage data properly. Digitizing the data at such a root level will ensure that the entire system functions smoothly. We were successful in reducing the workload of these health workers by automating the process such that the same data does not have to be collected repeatedly. We were also successful in finding a solution to the overlapping of contradictory data of the same individual by introducing registrations through AADHAAR cards. A lot of attention was given to eliminate possible error prone situations by the ANMs while updating the data in the application. This study was conducted on the basis of responses from health workers from a total of 3 facilities only. A larger sample size might have resulted in more insights that could have affected the final solution.

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## **Letter from the Chairman's Desk**

**By Sunil Bhatia PhD**

**Humans are born with need for basic food and nature has provided with gestation period with unique bonding of mother and child and allow to switch for meeting the requirement by own from the nature. It is surprising that in other species either have mechanism of separation from parents cells and by the time mature enough for survival on its own or lactation period provided for essential ingredients of food as witness in humans and in some animals with hatching of eggs. Another interesting part is as long mother breast feeds there is little chance for getting another pregnancy. It means a proper discipline is taken care by unknown force for infants. Where cells are separating no need for supporting system for struggle for survival but where lactation system as we witness in humans need designed product for supporting for better survival. Human child learned the art of sucking of thumb in the mother's womb that helps in breastfeeding and it might be true for other animals also. Breastfeeding needs soft handling so nature takes care that new born child should not have teeth otherwise bite will naturally surfaced as at any point nipple will slip out of the mouth and teeth will come for rescue for tight holding and byproduct will be pain for mother. I call it nature discipline. Nature has cosmos that follows strict discipline for each planet for performing. Mother also faces changes in her anatomy during and after pregnancy and her nipple**

has pin like structure that blocked the flow of milk of the breast unless and until another woman presses hard with her fingers to take it out of the nipple for free but control motion of breast milk. Lactation is directly associated with emotion of mother and how fast she develops the bonding that intensity helps in breast feeding. In some situation mother is psychologically disturb and refused for feeding that makes her experiences consequences as such a huge pain in her breast for this indiscipline. Remedy of relieving from breast pain either by taking out the milk by manual pump or allow the child for feeding. Designers have designed various products by imitating the nature for smooth function of breastfeeding without realization of artificial to the child. Difficulty in conceiving for female is have IVF to surrogacy and delivery by normal or who are suffering with cephalopelvic disproportion (CPD) problem for coming out head and only left with option of surgery. Once the delicate child is out and cutting of chord to cleaning is required designed of various products. Neonatal intensive care for infant suffering with some ailment and may face difficulty in surviving with the environment struggle. Post birth care products are designed for mother as well for newborn.

Next level of discipline is manmade for tuning the body by feeding regularly in particular time of the day for allowing secretion of hormones in that special duration and as grows learned the art of controlling the urine and for that mother trained by whistling for focusing attention of child on urination on particular time of the day. Similarly with excretion that is involuntarily in infant but learned the discipline for holding for discharging in appropriate time or place. Some people loses control in old age because of loss of strength of muscles that allow for losing their control in spite of led decent

**discipline life or some other medical problems and to avoid social embarrassment as well disturbance to others for that adult diapers are designed.**

**Mother makes the child to learn the identification of words out of noise by continuously speaking in specific styles and child learns the same by imitating the same by following the resonance and that discipline of the child helps in speaking. Later on learned the art of writing by holding the writing instrument and paper and tried to imitate or copy what mother has written. Initially mother holds the hand of holding writing instrument of the child and allows writing by guiding. At the beginning movement of hands are not discipline and synchronized with brain so a shaky and wavy figure irrupts .Initially writes in shaky pattern but gradually write in discipline manner. Big letter and gaudy color initiate of attraction for learning so designers designed learning instruments for children in same character.**

**It is our ancient practice when people were not have formative minds as we enjoy presently but aware about for progress should not disturb or harm anyone that was the beginning of discipline. 'Discipline is progress without disturbing others' .Realization of individual limitations it forces for practice discipline within the crowd by allowing enough gaps for proper walking for an individual. An individual was capable of hunting small animals for food but there was high probability of failure and to lower it wishes for killing of large animal for food but overpowering was scaring within the available resources and initially formed the group out of safety and hunting for large wild animals it demands specific discipline in group and maintained the certain gaps for other individual to act on its own for proper action for maneuvering himself as well kill the**

hunting animals but should remain part of the group. This thought helped in birth of new type of discipline because it was suiting the mind of an individual as well group members in collective form. Once out of the group that person turned out to be weakest link and there was high chance he might have killed by wild animals and scared others members of group by watching live that killing. They always followed safe distance while moving for progress in crowd without pushing or jostling for allowing falling or hurting others. As technology of strength of killing tools designed that distance of an individual was adjusted accordingly. Knife was places hang side of hip bone where bow and arrow on hanging on shoulder and sword or dagger were placed within cover not to hurt the group member and walking in crowd demands safe distance not to hurt fellow person. That practice is still in use in modern time and safe distance on road for vehicle is disciplined by speed as well braking mechanism. There is new technology of mobile phone for communication among group and common people are learning changed behavior while speaking in public places and technology is helping in this direction by introducing the ear phone. It will take little time and adopt the discipline for using the phone without disturbing the privacy of others.

Another factor that has contributed major for designing discipline is thought of not to waste because of scarcity of items or knowledge of value of certain items for survival or essential for progress of life. Water was factor that has contributed a lot for human discipline and allowed for progress of various civilizations. How long and how many can stay close to river or water reservoir was one kind of discipline with amount of water otherwise it was bound to break for looking for better life or certain time such situation surfaced where

water was scarcity and leading of life was impossible so left with only option of breaking the group otherwise indiscipline will allow for killing each other in need of share of water. Another sensible thought of peaceful solution of storing the water and designed manmade pond by observing rain water pattern. Stored water should be used optimum designed different terracotta pots for individual storage for enjoying liberty of use without losing the character of group discipline. In modern times we have water overhead tanks that have replaced our ancient manmade pond and water pipes channels and taps have designed for controlling not to waste and allowed individual to use the water in its own way. This ancient act of discipline is still in practice.

A new form of discipline surfaced with discovery of fire. Fire is dangerous combination of properties of light as well heating. The management of fire use as for light demanded discipline that was pole apart from use of fire for heating. Holding of one end of log of another burning end was indication that man mind was formed of not to harm with fire but achieved objective of light. Other hand designed the fire kiln for safe heating and not interested in light factor of fire. Design of matchstick has created a new discipline in the society that was not earlier witnessed. Use of fire with proper handling in highly inflammable places designed discipline but for destroying the enemies allowed for altogether different discipline that is confined with specialized people and masses are unaware. Time to time advisory by fire department for matching with new technologies helps in learning new discipline.

I do not know at what point the idea of super power surfaced and how that come in the mind but it helped in the designing the values

of discipline life of group as well an individual. They created such invisible figure and put lots of infinite values whatever they can imagine in passage of time on that figure and requested everyone for achieving and that demands a most rigorous discipline. As a specific person of the group tries to change the discipline values for vested interest that allowed to surfaced new social evils. Widow marriage or burning the widow was practice in the name of super natural power by certain vested interest of not to part the owned property and it should remain within the family. Ownership concept introduced new discipline but invited certain bad intension because of individual greed.

Sometime in the society discipline considered most significant and forgo certain natural power. Woman has very good natural power of distinction of color what man lacks. It helps in selecting the best genes for mating for producing better offspring for survival but that right has snatched from woman and allowed to live lifelong with one person to whom senior member of family finds suitable. Idea might be quick progress of the society can be delay and discipline her by revolving her social structure around virginity but discipline should not harm social fabric for fast progress. It is still visible in modern times. Society prefers moderate people because stability character is high but intelligent or duffers have high instability factor and rejects by society not to disturb the discipline. Nature never promotes intelligence rather pushes for mediocre because less threat from them and discipline is not at the stack.

Design of metro rail services helps in promoting discipline among passengers. Earlier in public transport there was not any design mark of individual seating or seat is designed in such a way that

**creates discomfort for an individual passenger who tries to occupy the seat area of co passenger and that helps in not to surface triggering point for dispute. In personal automobile that seating design is not clearly marked because family member has tendency of adjusting and can bear slight space discomfort. I have observed in class room where mind is yet to form and to minimize the dispute for not to surface negative thought makes permanent place in the mind designed the chair and desk for maintaining the decorum of the class. Smooth functioning of family or states demands minimum discipline. Barbed wire , railing divider in road and entrance door of the house helps in discipline not to breach the privacy of others .Movement of traffic in discipline manner follows technique of left and right hand as well zebra crossing and traffic lights instructions. Those who will be indiscipline will be face the financial or social embarrassment by seizing their vehicle by authority or imprison. An expert driver is who drives the vehicle under discipline and anticipate others actions of indiscipline in advance and place himself in save situations. Similarly handling products demands basic minimum discipline and we call it common sense and any degree of indiscipline in functioning call mishandling and face consequences. That indiscipline may strike with age that does not allow a common person to hold properly or function it properly because of mental deteriorating state of mind or weakening of other body parts that time concept of use of universal design comes as rescue. Disgrace and dishonoring action embarrass socially who is indiscipline by blackening the face or donkey ride in street public humiliation or publically punish. Some time by warnings or notices like 'No thoroughfare' or 'smoking is prohibited' or 'No parking zone' etc disciplined is reminded.**

**Our ancient people understood in early stage that longevity of life demands discipline and subconscious mind was working on this direction. They learned maintaining the discipline of hygiene of the body by bathing or cleaning the surrounding of living place and those were indiscipline chances might lived short life. Smell of perfume gives better signal to brain but a few people are allergic and those were following the basic level of following discipline and there was natural for shift to next level was wish to present in better way and designed flower extracts and later it turned to perfume. Those were temporarily indiscipline and failing in cleaning their body the concept of perfume was masking temporary indiscipline of not bathing. They also designed the discipline in listening, speaking and writing in specific structure for leading better safe long life. Indiscipline in area of communication will be treated as meaningless or what a normal basic behavior is expected for discipline and does not perform will be treated a insane person.**

**The concept of universal design/ design for all is nothing but promoting aged old philosophy of living in group but enjoys the individual freedom and act its own way without depending on others. A child has not enough strength and similar condition is faced by old people and for making such product everyone can use with ease is real freedom living in group. Elevator has simple operation and provides accessibility to all without taxing any individual and helps in maintaining the minimum requirement for the smooth functioning of the society. If a person struggles in presenting himself in manner what society is expecting and failed to wear shoes because unable to bend so design shoe guider with long handle instead of small one holding in hand. Nail cutter has long arm for pressing it will help all section of the people. A new concept is**

**emerging for eliminating any possible indiscipline by introducing the human intervention minimum in functioning of the products and we call it atomization or enhance roll of artificial intelligence.**

**Nature lives under discipline and never allows being indiscipline. Our unit cell moves with discipline under some guidance for mating with opposite sex cell and divide with rigorous discipline for forming our structure. Indiscipline is treated as cancer or cells refresh by replacing the old by new and quietly take the charge of old and failing this may call cancer.**

**What we call survival instinct in fact is nothing but cumulative effects of discipline in our various systems in our body. Sense of emergency triggers the reflex actions and rest of the other systems in body comes to action in best manner in such a way to take out from that critical situation. Once we take the food, our digestive system recognizes any harm part in food and to throw out of the body action begin. Once it is slip out of the mouth and reaches to stomach that discipline of digestive system does for what it has purpose and it goes beyond our control.**

**Our body parts helps in maintain discipline for others by facial expression or use of harsh voice or use of blowing horn if someone forgets discipline of driving the vehicle on road or by pain inflicting by slapping or use of whip or financial loss as fine or keeping in solidarity confinement or finally by eliminating by killing or pronouncing capital punishment. Nature of punishment is based on degree of indiscipline and impact of loss on others .In sports infringement is treated differently at specific situation.**

**Biggest achievement of formative mind of human is design of 'forgiveness' for any degree of indiscipline committed by an individual or collective. It shows their understanding that natural instinct of hate, anger and other violent actions are part of human development and can surface any moment inspite of living under rigorous discipline and it can surface any moment and why does behave in such a way that is not suppose to behave is still failing in suppressing instinct that harms others. It is a chance given for leading life in discipline way rather not to behave inhuman by putting in jail or by capital punishment.**

**I am thankful to Sharmistha Banerjee , *Assistant Professor, Department of Design, IIT Guwahati* for accepting our invitation of Guest Editor and submitted publishing material of special issue as per her commitment in time.**

***With Regards***

***Dr. Sunil Bhatia***

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## Forthcoming Issues

### WOMEN DESIGNER YEAR 2020

#### March 2019 Vol-15 No-3

**Archana Bade Shrestha** completed her Bachelor in Architecture in 2008 from Khwopa Engineering College, Bhaktapur, Nepal. I have completed my MSc. in Urban Planning in 2013 from Institute of Engineering, Pulchowk Campus, Lalitpur, Nepal. After completion of B. Arch I worked in a private consultancy named Tekton Consultancy, Lalitpur, Nepal for 5 years. Currently I am a full time faculty working as senior Lecturer in Khwopa Engineering College. I take design studios (housing + residential design), Vernacular Architecture, Building Construction-II, A- cad, Interior Design as the course subjects. My field of research is in analyzing the socio-economic status of Apartments in Urban areas of Nepal.



## **April 2020 Vol-15 No-4**

**A Doctorate qualification in the fields of: interior architecture, architecture and urban design Dr Dolly Daou has 18 years experience in: teaching, research, quality assurance, and leadership, specialised in multi-disciplinary design projects. Currently the Director of Design Lab: New Eating**



**Habits at L'École de design Nantes Atlantique, France. Previously, the Director of the Association of Interior Designers in the MENA region, an external reviewer to many international educational quality assurance agencies and the Program Director of Interior Architecture and Master of Interior Design at Swinburne University of Technology, (Australia and Hong Kong). Also, was the Treasurer of the Board to the Interior Design Educator Association (IDEA) for Australia and New Zealand. Author of co-edited book Unbounded on the Interior and Interiority.**

## **May 2020 Vol-15 No-5**

**Having been a wheelchair model from an early age, Samanta has always felt frustrated by the lack of luxurious clothing available for disabled people. Working as an advocate for inclusion within the fashion industry, Samanta has decided to join forces with some of the**



**most innovative emerging designers to develop her brand, 'SB' – a unique line of clothing based on the principle that "its not about**

**being disabled, but about feeling beautiful and comfortable whilst in the sitting position”.**

**Born in Brazil, Samanta moved to London 10 years ago and has since dedicated her life to improving the lives of people living with disabilities. She hopes that her collection will open people’s minds and hearts. Samanta is a former Brazilian no. 1 wheelchair tennis player winning a doubles silver medal at the ParaPanAm Games in Rio de Janeiro in 2007 & representing Brazil in three World Team Cups.**

**“We must be seen to exist” – Samanta Bullock**

## **June 2020 Vol-15 No-6**

**Debra Ruh is a Global Disability Inclusion Strategist, Market Influencer, internationally recognized keynote speaker, published author, branding expert, successful entrepreneur, and an exceptional mother. Debra is host of popular program: Human Potential at Work (Audience in 84 countries).**



**Debra Ruh received her call to action when she was told by so-called “experts” that her daughter, Sara, who was born with Down Syndrome (Trisomy 21), would never walk or talk. She refused to accept the prognosis and perception of this condition. Driven by her unshakeable faith in the power of human potential and the love for her daughter, Debra was determined to dedicate her life to create a path to empowerment and the success for all those with disabilities.**

**Debra had built a multi-million-dollar firm focused on ICT accessibility. Debra was convinced that "the real disability is being unable to see human potential" formed Ruh Global Communications. This new firm focuses on Global Disability Inclusion Strategies, Digital Marketing, and Branding among many other services.**

**Debra consults with Multi-National and National Corporations and the United Nations. Debra is now internationally renowned global keynote speakers and travel the world inspiring and advocating for governments and corporations to include people with disabilities.**

**Debra Ruh is an active public figure she was invited to address the United Nations General Assembly at the Conference of State Parties 9<sup>th</sup> session (COSP9) by the President's office of the UN on May 13, 2016. More recently Debra was selected as the North American representative for the United Nations (UN), International Labor Organization's (ILO), Global Business and Disability Network (GBDN). Additionally, in 2018 the U.S. State Department selected Debra Ruh as a global speaker and ambassador for the United States when visiting foreign nations and speaking on inclusion and disability. Selected as a Global Goodwill Ambassador in 2018.**

**Debra is a recognized global influencer, frequently interviewed by various media outlets and she has gathered a significant presence on many social media platforms, with over 300,000+ followers across all mediums. Co-founder of the award winning #AXSChat the second biggest tweet chat in the world with a reach in the billions. Debra was also named in the "Top 5% of Social Media Influencers" and "Top 0.1% of people talking about Disability Inclusion and Accessibility" by KLOUT. Named #15 in Digital Scouts Top #100 Global Digital Influencers in Sept 2018.**

## **July 2020 Vol-15 No-7**

**Jani Nayar** , Executive director of the SATH (Society for Accessible Travel & Hospitality), a tireless advocate and effective educator on travel & disability.



## **August 2020 Vol-15 No-8**

**Maria Luisa Rossi**, Chair and Professor, MFA Integrated Design Maria Luisa's work at the College for Creative Studies Graduate Studies brings her entrepreneurial, globally-focused, and empathetic cultural approaches to the next generation of designers. She focuses on the seamless capacity to deal with the tangible and intangible aspects of people's experiences. At CCS she is preparing & quot; facilitators & quot; capable of addressing global-local grand challenges, focusing on social innovation. Her projects are concentrated on research, co-creation and people-centered processes.



Maria Luisa's professional career has been independent and international. She attended the premiere master's program in industrial design at the Domus Academy in Milano, thanks to a European Scholarship she won from designing the first wearable computer. The project was featured in the prestigious Domus magazine and gave her a lot of visibility around Europe and the design world. The wearable computer project "The Walking Office"

**can be found in the Henry Ford Museum Permanent Design Collection.**

**Following her studies, she founded the design consultancy Iavicoli & Rossi, working on various models varying from interior architecture to tableware.**

**Maria Luisa's interdisciplinary attitude, design strategy knowledge, and business acumen brought her to be hired in the team that launched the new Graduate Program at CCS in Detroit, where she set standards of excellence for MFA Integrated Design.**

**Her effort to provide meaningful teaching experiences is validated by a successful alumni job placement in corporations and design consultancies. Throughout her career, Maria Luisa has conducted workshops and lectures in Singapore, Los Angeles, Mexico City,**

**Istanbul, Ankara, São Paulo, Shanghai, Gratz, Brasilia, and Taiwan. Her specialties are Design Strategy, Experience Design, Scenario Design, Service Design, Interdisciplinary approach, with an in-depth knowledge of American, Asian and European culture and markets.**

# New Books



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Sunil Bhatia

## Design for All

Drivers of Design

Expression of gratitude to unknown, unsung, unacknowledged, unsung and selfless millions of heroes who have contributed immensely in making our society worth living, their design of comb, kite, fireworks, glass, mirror even thread concept have revolutionized the thought process of human minds and prepared blueprint of future. Modern people may take for granted but its beyond imagination the hardships and how these innovative ideas could strike their minds. Discovery of fire was possible because of its presence in nature but management of fire through manmade designs was a significant attempt of thinking beyond survival and no

doubt this contributed in establishing our supremacy over other living beings. Somewhere in journey of progress we lost the legacy of ancestors in shaping minds of future generations and completely ignored their philosophy and established a society that was beyond their imagination. I picked up such drivers that have contributed in our progress and continue guiding but we failed to recognize its role and functions. Even tears, confusion in designing products was marvelous attempt and design of ladder and many more helped in sustainable, inclusive growth.

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**130 February 2020 Vol-15 No-2 Design For All Institute of India**

# The Ultimate Resource for Aging in Place With Dignity and Grace!

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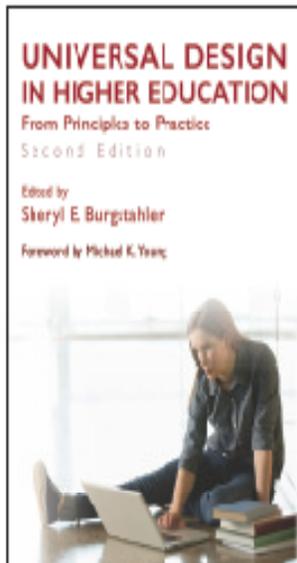
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## UNIVERSAL DESIGN IN HIGHER EDUCATION

**From Principles to Practice, Second Edition**

EDITED BY SHERYL E. BURGSTAHLER • FOREWORD BY MICHAEL K. YOUNG

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**SHERYL E. BURGSTAHLER** is an affiliate professor in the College of Education at the University of Washington in Seattle, and founder and director of the university's Disabilities, Opportunities, Internetworking, and Technology (DO-IT) and Access Technology Centers.

**“Sheryl Burgstahler has assembled a great set of chapters and authors on universal design in higher education. It’s a must-have book for all universities, as it covers universal design of instruction, physical spaces, student services, technology, and provides examples of best practices.”**

—JONATHAN A. ZAR, PROFESSOR OF COMPUTER AND INFORMATION SCIENCES, TOWSON UNIVERSITY, AND CO-AUTHOR OF *ENSURING DIGITAL ACCESSIBILITY THROUGH PROCESSES AND POLICY*

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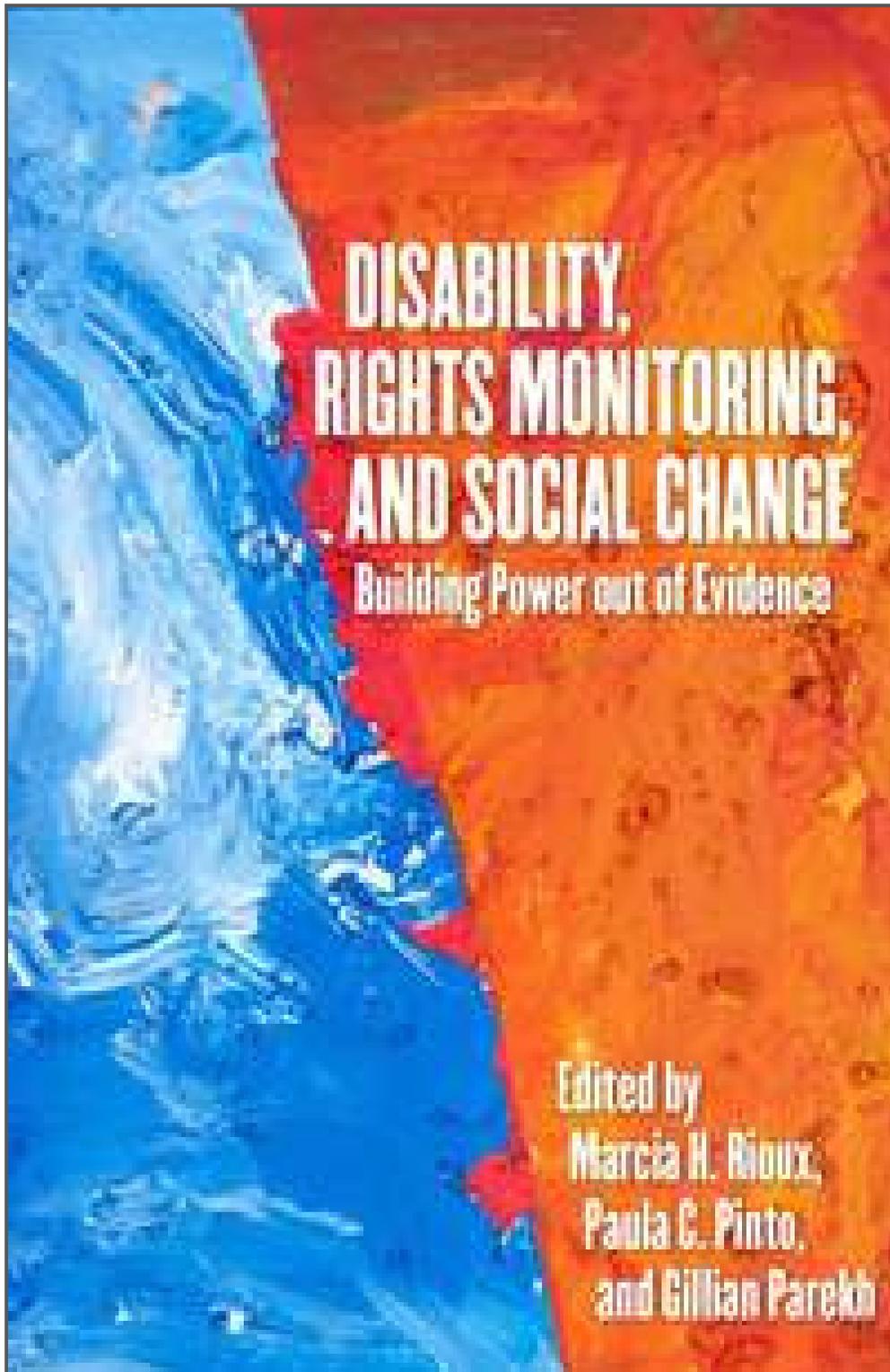
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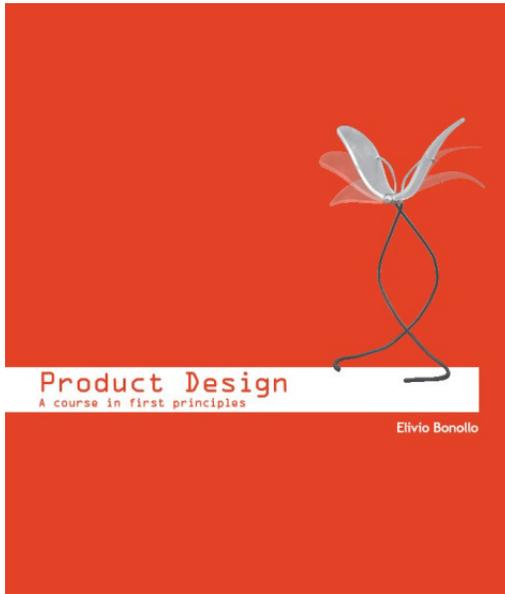
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**Disability, Rights Monitoring and Social Change:**



## New Update: ELIVIO BONOLLO (2015/16) PRODUCT DESIGN: A COURSE IN FIRST PRINCIPLES



Available as a paperback (320 pages), in black and white and full colour versions (book reviewed in *Design and Technology Education: An International Journal* 17.3, and on amazon.com).

The 2018, eBook edition is available in mobi (Kindle) and ePub (iBook) file versions on the amazon and other worldwide networks; including on the following websites:

ePub version: [www.booktopia.com.au](http://www.booktopia.com.au)

<https://www.booktopia.com.au/ebooks/product-design-elvio-bonollo/prod9781784562946.html>

mobi (Kindle versions): [www.amazon.in](http://www.amazon.in)

[https://www.amazon.in/Product-Design-Course-First-Principles-ebook/dp/B07FNV2F4L/ref=sr\\_1\\_1?ie=UTF8&qid=1532999395&sr=8-1&keywords=Product+Design%3A+A+course+in+first+principles](https://www.amazon.in/Product-Design-Course-First-Principles-ebook/dp/B07FNV2F4L/ref=sr_1_1?ie=UTF8&qid=1532999395&sr=8-1&keywords=Product+Design%3A+A+course+in+first+principles)

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[https://www.amazon.com.au/Product-Design-Course-First-Principles-ebook/dp/B07FNV2F4L/ref=sr\\_1\\_fkmr0\\_1?ie=UTF8&qid=1532497383&sr=8-1-fkmr0&keywords=Product+Design+a+course+in+first+principles](https://www.amazon.com.au/Product-Design-Course-First-Principles-ebook/dp/B07FNV2F4L/ref=sr_1_fkmr0_1?ie=UTF8&qid=1532497383&sr=8-1-fkmr0&keywords=Product+Design+a+course+in+first+principles)

**READING HINTS:** ePub files can be read with the iBook app on Apple MacBook/iPad devices; ePub files can also be read on Desktops PCs, Laptops and Surface devices using readers such as the Microsoft *freed* ePub reader. The Kindle (mobi file) reader is flexible and suitable for reading the eBook on PCs; Kobo readers can also be used to read ePub files on MacBook and iPad. All formats are very interactive with very good navigation.

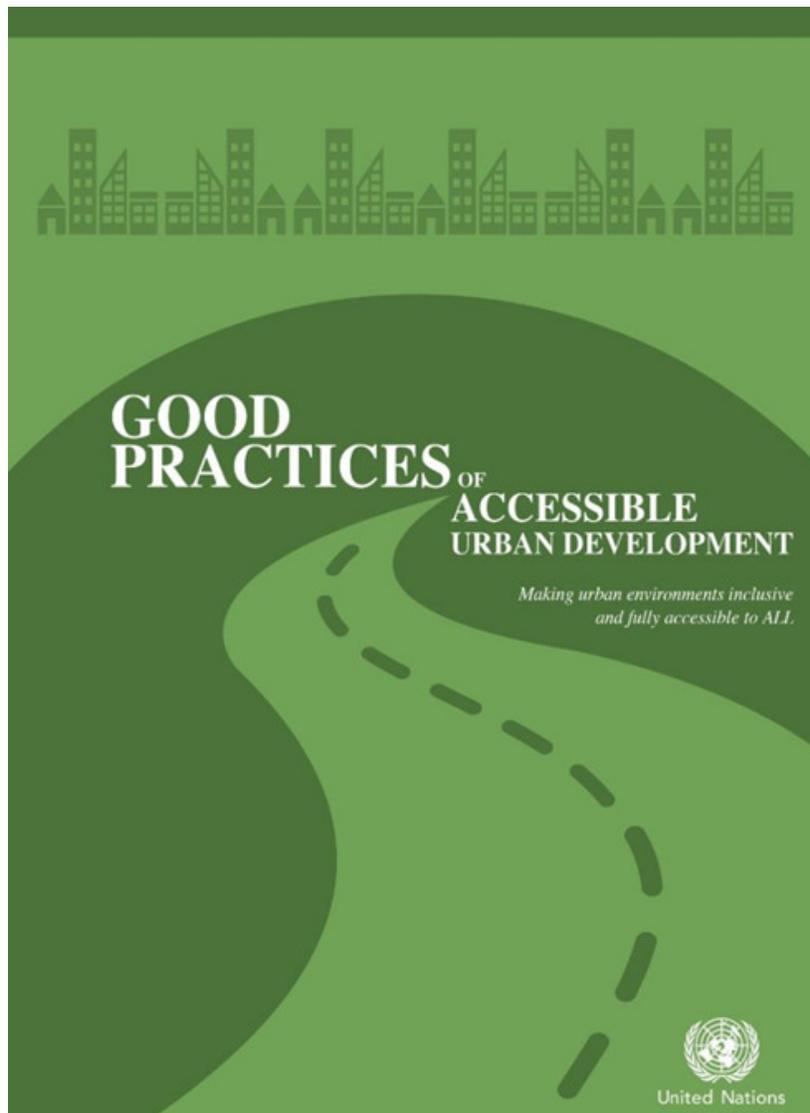
DEBRA RUH

INCLUSION



BRANDING

Revealing Secrets to  
Maximize ROI



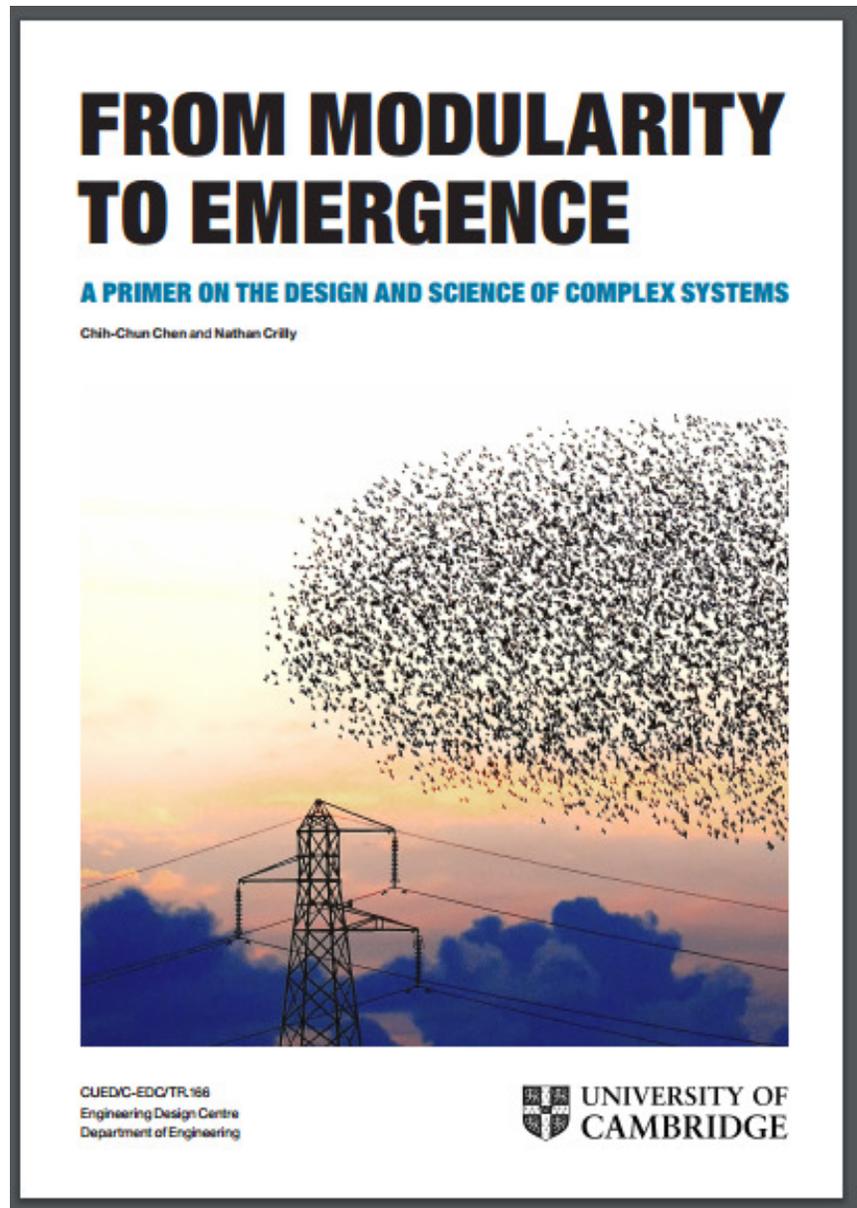
**In light of the forthcoming United Nations Conference on Housing and Sustainable Urban Development (HABITAT III) and the imminent launch of the New Urban Agenda, DESA in collaboration with the Essl Foundation (Zero Project) and others have prepared a new publication entitled: "Good practices of accessible urban development".**

**The publication provides case studies of innovative practices and policies in housing and built environments, as well as transportation, public spaces and public services, including information and communication technology (ICT) based services.**

**The publication concludes with strategies and innovations for promoting accessible urban development.**

**136 February 2020 Vol-15 No-2 Design For All Institute of India**

The advance unedited text is available  
at:[http://www.un.org/disabilities/documents/desa/good\\_practices\\_urban\\_dev.pdf](http://www.un.org/disabilities/documents/desa/good_practices_urban_dev.pdf)



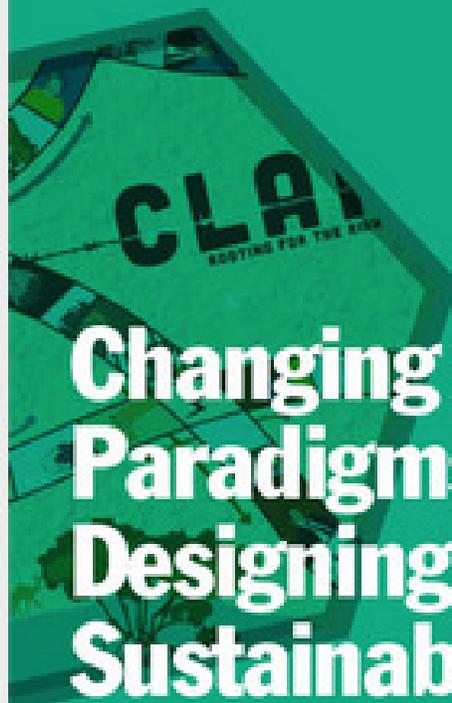
Dr Chih-Chun Chen and Dr Nathan Crilly of the Cambridge University Engineering Design Centre Design Practice Group have released a free, downloadable book, *‘A Primer on the Design and Science of Complex Systems’*. This project is funded by the UK Engineering and Physical Sciences Research Council (EP/K008196/1). The book is available at URL: <http://complexityprimer.eng.cam.ac.uk>

# Changing Paradigms: Designing for a Sustainable Future

Editors:  
Peter Stebbing  
Ursula Techner

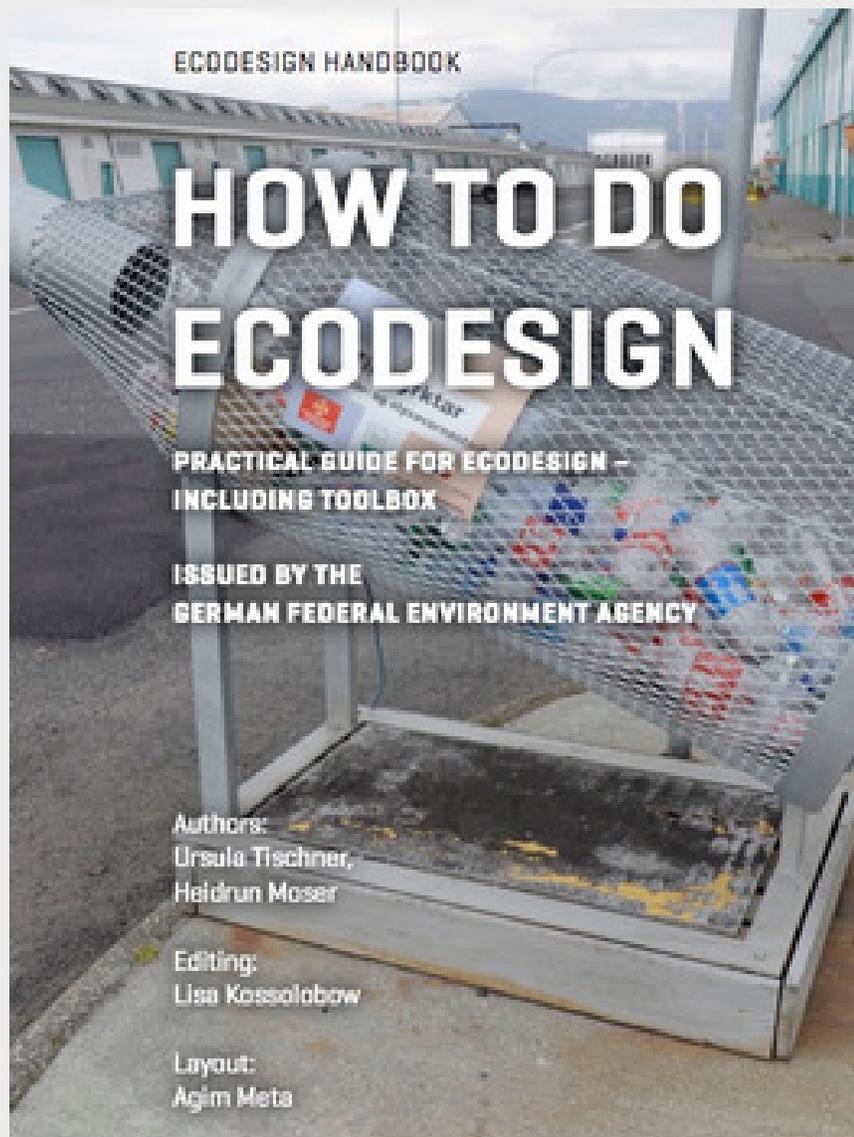
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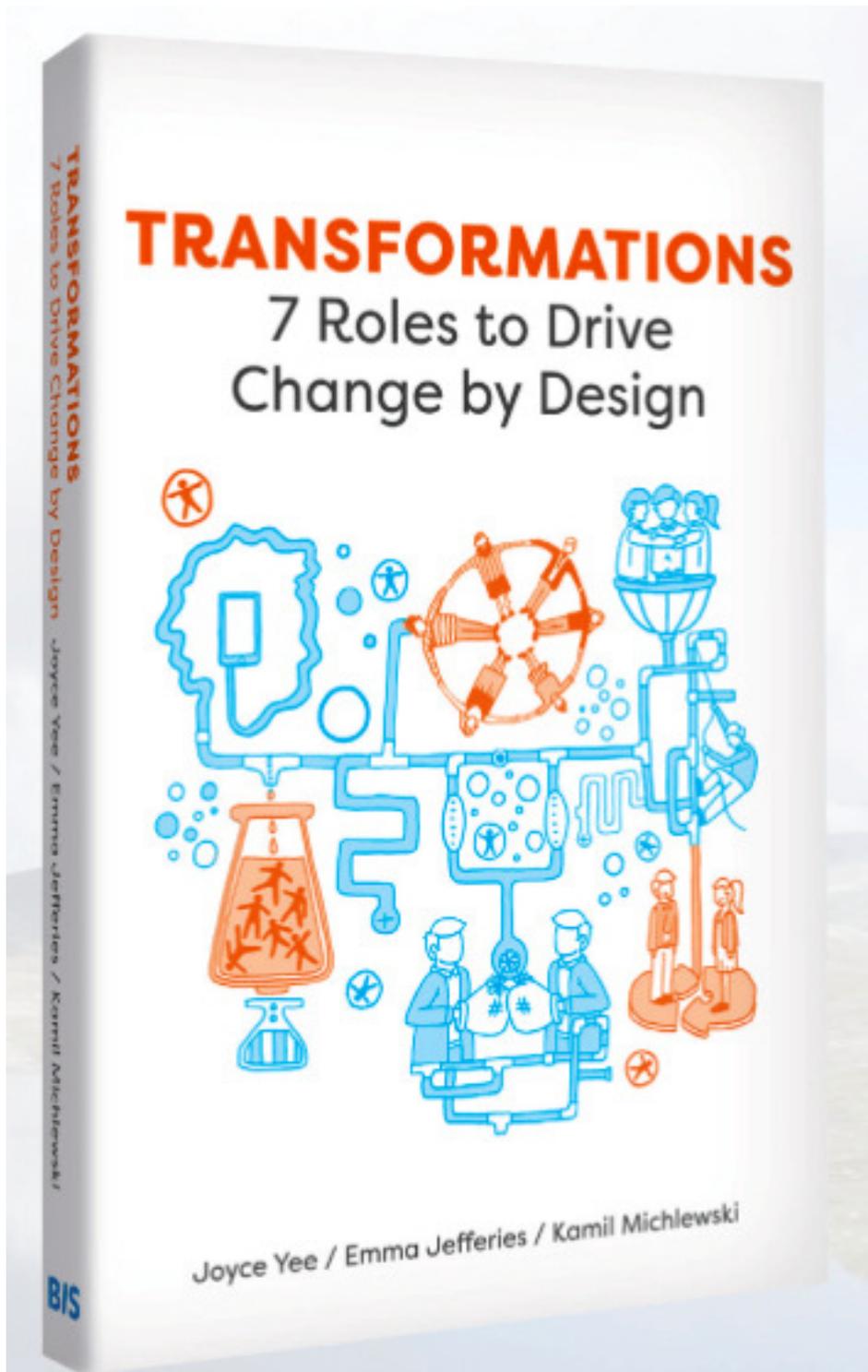


# Changing Paradigms: Designing for a Sustainable Future

# **New iBook / ebook: HOW TO DO ECODESIGN**



Practical Guide for Ecodesign – Including a  
Toolbox  
Author: Ursula Tischner



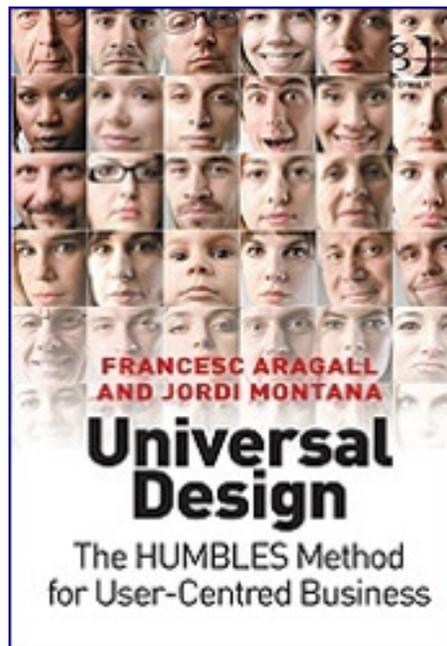
Amar Arnason and Sigurjón Baldur Hafsteinsson

# DEATH AND GOVERNMENTALITY

Neo-liberalism, grief and the nation form



## Universal Design: The HUMBLE Method for User-Centred Business



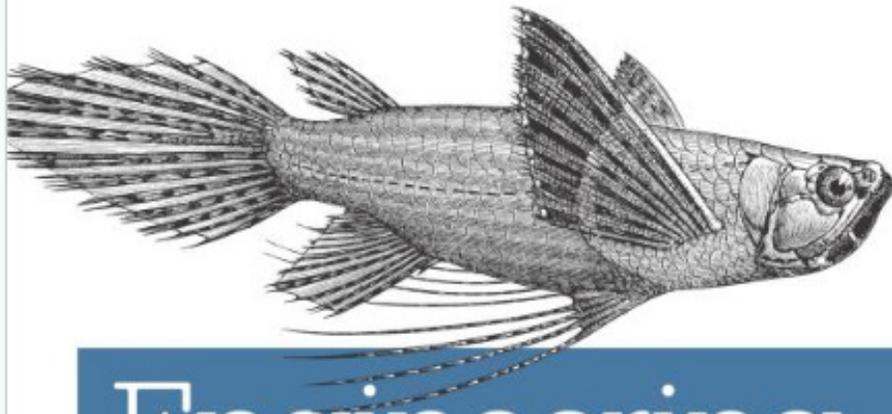
“Universal Design: The HUMBLE Method for User-Centred Business”, written by Francesc Aragall and Jordi Montaña and published by Gower, provides an innovative method to support businesses wishing to increase the number of satisfied users and clients and enhance their reputation by adapting their products and services to the diversity of their actual and potential customers, taking into account their needs, wishes and expectations.

The HUMBLE method (© Aragall) consists of a progressive, seven-phase approach for implementing Design for All within a business. By incorporating the user's point of view, it enables companies to evaluate their business strategies in order to improve provide an improved, more customer-oriented experience, and thereby gain a competitive advantage in the marketplace. As well as a comprehensive guide to the method, the book provides case studies of multinational business which have successfully incorporated Design for All into their working practices.

According to Sandro Rossell, President of FC Barcelona, who in company with other leading business professionals endorsed the publication, it is “required reading for those who wish to understand how universal design is the only way to connect a brand to the widest possible public, increasing client loyalty and enhancing company prestige”. To purchase the book, visit either the **Design for All Foundation website**

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# Engineering for Industrial Designers & Inventors

FUNDAMENTALS FOR DESIGNERS OF WONDERFUL THINGS

I have a new book that presents fundamental engineering concepts to industrial designers that might be of interest to you. This is the link:

**[https://www.amazon.com/Engineering-Industrial-Designers-Inventors-Fundamentals/dp/1491932619/ref=sr\\_1\\_1?ie=UTF8&qid=1506958137&sr=8-1&keywords=engineering+for+industrial+designers+and+inventors](https://www.amazon.com/Engineering-Industrial-Designers-Inventors-Fundamentals/dp/1491932619/ref=sr_1_1?ie=UTF8&qid=1506958137&sr=8-1&keywords=engineering+for+industrial+designers+and+inventors)**



# News

1.

**Design competition prizes for lighting design and building-technology**

**lighting design and building-technology**



**The winners of the international design Plus competition powered by Light + Building have now been decided. The competition's jury of top experts is presenting awards to innovative products which meet the highest standards of design, ease of use, sustainability and**

**technical quality. The prize-giving will take place on 8 March as part of Light + Building, the international trade fair for the industry, in Frankfurt am Main.**

**Four outstanding pendant lights and a high-quality smoke detector are receiving the coveted "Best of" award from Design Plus. The jury highlights original ideas, clear formal language and the ability of the products to create a particular atmosphere in a room. The newcomers' competition has been won by three innovative, versatile lighting products. Particular mention also went to a switch series of concrete, which not only makes exciting contrasts possible, but also creates a tactile experience which satisfies the criteria of universal design.**

**Design Plus powered by Light + Building In all, 34 innovative products have received a Design Plus Award as part of the competition. They include new types of luminaires, self-illuminating glass, a wall box for charging electric cars, and invisible electric plugs. All the prize-winning products will be shown during Light + Building from 8 to 13 March 2020 in Frankfurt am Main in the Design Plus special**

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**(Courtesy: ELE Times)**

2.

## **Words matter when it comes to apparel for people living with disabilities**

**People living with disabilities contribute \$21 billion of disposable income to the marketplace. Despite the size and the potential spending power, they are often overlooked by the apparel industry.**



**Credit: University of Missouri**

**Retailers and brands such as Kohl's, Nike, Target, Tommy Hilfiger and Zappos have recently launched adaptive apparel lines, and economists have predicted that the U.S. adaptive clothing market could grow to \$54.8 billion by 2023. However, brands should consider the language they use when marketing products to this**

**group of consumers, according to a new study from the University of Missouri. Researchers say that "adaptive" makes the apparel seem separate from the market.**

**"Terms such as 'adaptive apparel' are popular with companies," said Kerri McBee Black, instructor of textile and apparel management. "However, calling an item of clothing adaptive can alienate and exclude people living with disabilities. Like all consumers, this population wants to feel embraced by a brand, not excluded as someone different."**

**McBee-Black and co-author Jung Ha Brookshire surveyed how four terms—adaptive apparel, functional apparel, universal design and inclusive design—were used in apparel research and in the marketplace. They found that, for consumers with disabilities, the term adaptive could be interpreted as apparel that focused on their disability and not on their apparel needs and wants. They also found that while adaptive apparel was the term most commonly used in the marketplace, universal design and inclusive design were rarely used, although these are terms seen as less stigmatizing to people living with disability.**

**"Adaptive is the popular terminology but very non-inclusive of the disabled community," McBee Black said. "Perhaps the adaptiveness of the products should be communicated using a more inclusive tone. This would allow consumers to see adaptive apparel as useful for anyone and not just apparel designed for wheelchair users. Using inclusive descriptors within marketing and communications strategies benefits all consumers, including those with disabilities."**

**McBee-Black hopes her research on apparel and people living with disabilities will bring about change for consumers, brands, educators and even policymakers.**

**"Currently, the Americans with Disabilities Act focuses primarily on the built-environment," McBee Black said. "Including language about inclusive or universally designed products used in everyday life, like apparel, could help remove the barriers to social participation, including workforce participation that many people living with disabilities face. It also might drive apparel brands to consider a more inclusive approach in their designs."**

**The researchers suggest that apparel brands need to invest their time into understanding how the words used to describe the apparel they are marketing to consumers with disabilities.**

**(Courtesy: University of Missouri)**



## Programme and Events



International conference on 'Designing for children' with focus on 'Play and Learn'



Monday, March 2, 2020, 5 p.m. PDT - Mentoring request deadline

Friday, July 24, 2020 - Acceptance decisions for:



FIFTH INTERNATIONAL CONFERENCE ON UNIVERSAL  
DESIGN

June 15 - 17 2020 at Dipoli, Aalto University, Espoo

**un**iversal  
**design**  
CONFERENCE 12 - 13 May 2020  
Victoria Pavilion  
Melbourne Showgrounds



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The Royal Agricultural Society of Victoria (RASV)

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**ROMA 2020**  

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**JUNE 16.17.18.19**  
**CUMULUS CONFERENCE**

16.06 - 19.06.2020

Rome, Italy

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## XXVII Compasso d'Oro: the visual project

The selection for the

ADI graphic project invites to present a graphic project proposal for the cycle of publications related to the XXIII Compasso d'Oro ADI: ADI Design Index 2020,

3rd ICDPCA

**thanima 3**  
a quest for authenticity

International Conference on Design  
Pedagogy and Contextual Aesthetics

**Word to World**  
exploring experiential knowledge

6, 7 & 8 \ MARCH 2020

Department of Architecture and Planning  
National Institute of Technology Calicut

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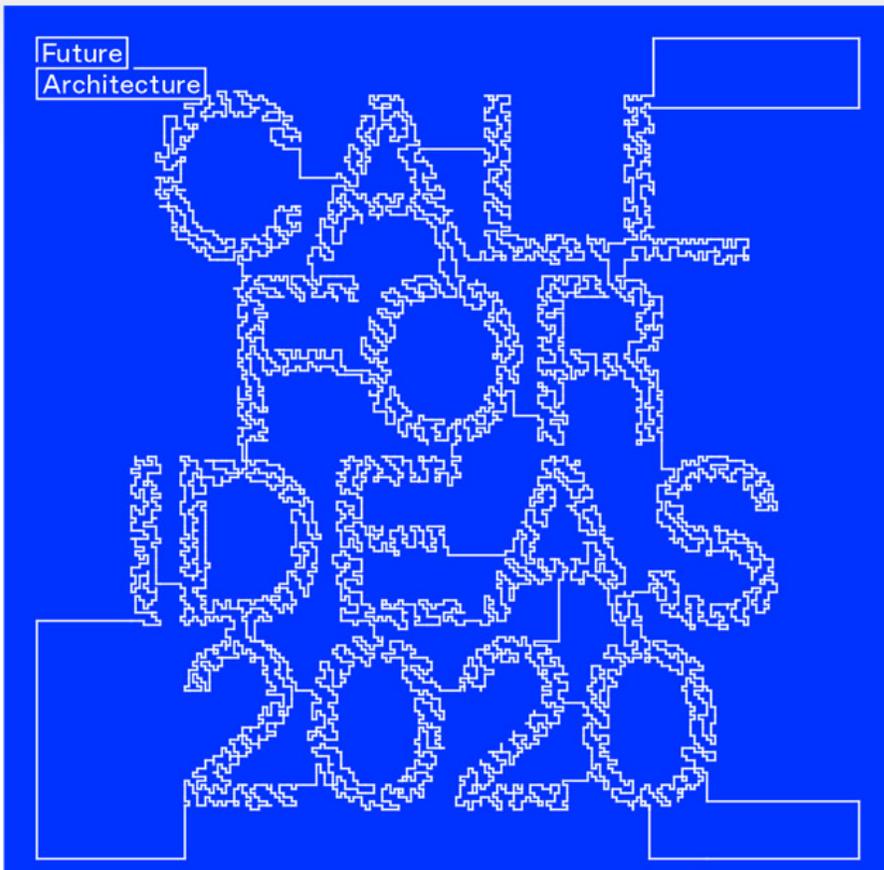


## #UDSTEPFREE CHALLENGE

#UDstepfree

Find Your Free  
Lifemark®  
Homescore

Future  
Architecture





# THE 2020 GLOBAL SEARCH FOR EXCELLENCE IN DESIGN AND INNOVATION

ENTRIES CLOSE 27 MARCH



## 2020 GOOD DESIGN AWARDS OPEN FOR ENTRY

Good Design Australia is calling for Australian and international entries to the 2020 Good Design Awards. Through the annual Good Design Awards program, we recognise and celebrate excellence in cutting edge design and breakthrough innovation.

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# Job Openings

## 1.Job Opening



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**Forthcoming Events and Programs:**

**Editor@designforall.in**

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