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Promoting sustainable bathing practices through design

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Abstract:

This paper shows a comparison of various bathing practices and investigates if and how sustainable bathing practices (with less water consumption) could be promoted through design. Instead of taking the conventional route of technological innovation in renewable materials or water saving devices, water recycling devices etc., a different approach has been taken. Focus has been on bathing practices that are inherently sustainable and promoting these into the culture of our societies by design intervention.

The author had designed a product set inspired by the bucket bath for the European households in The Netherlands (2009) for the company Sealskin BV in cooperation with Living Labs, Europe. This paper is in continuation of the same theme to review the bucket bath in the Indian context and redesign the ritual/ product set around it.

Of the various bathing practices followed in Indian households, the most common are showers and bucket bath. Luxurious practices such as rain dance, tub bath, Jacuzzi etc., are not considered mainstream practices in this discussion. Several studies have been performed on water consumption during bathing and the data collected clearly shows that showers consume much more water in comparison with a bucket bath. For example, a 8 minute shower with flow rate of 12litres/min takes 96 litres of water in comparison with a bucket bath (20 litres, with bucket capacity of 15 litres) or sponge bath (around 8 litres). Eco-friendly technological innovations such as low flow shower-heads, integrated flow-meters in showers to indicate water consumption etc., have failed in the market place. Experiments with users and resulting studies showed that comfort level takes higher priority than environmental responsibilities in the consumer behaviour. Studies have also showed that using water is very critical in 'feeling' clean and cannot be eliminated completely from the practice. Therefore, relatively dry baths such as sponge bath have a very low acceptance among people. This leaves the bucket bath as a promising take-off point in developing and/or enhancing a sustainable bathing practice.

In the Indian sub-continent, historically the most commonly followed bathing practice has been the bucket bath. However, trends show that the showering practice is increasingly becoming a part of the urban bathroom. What has caused this shift in people's behaviour? What motivates people to take showers? What are the benefits or comforts that showers provide which bucket bath cannot? How can this behaviour be changed through creative design intervention in the bathing rituals? Can the bathing ritual of the bucket bath be made more attractive and promoted through a redesign of the surrounding products? To answer some of these and other questions, the author carried out studies and results are presented in this paper with possible design alternatives.

At the heart of all practices in a society is the 'culture'. In the Indian context, the culture tends to borrow elements of the western culture, an example of which is the shower. So with the new bathing culture, showers are symbolic of a good quality lifestyle. The studies and design work described in this paper attempt to dig deep into the cultural value model in terms of semantics, behavioural practices etc., and rework strategically on developing a product set to make the bucket bath (and hence a more sustainable bathing practice) meaningful and therefore more acceptable within the Indian urban bathrooms.

Key words: sustainability, water consumption, bathing practice, bucket bath, shower, practice-oriented design, culture, rituals, values, semantics, living lab

1. Introduction

The primary focus of this discussion will be water consumption in bathing practices and possible alternatives to reduce/ optimize the same. In 2009, the author had worked on this theme for a Dutch bathroom company Sealskin BV in cooperation with LIVING LAB, Europe. First part of this paper highlights some of the key observations and action points from that project (European context). It was observed that although there are several technological innovations to reduce water consumption in showers, studies show that they're not adopted mainstream (Roy et al. 2007). So early in this project, it was decided to focus on the bathing practice itself (such as shower, bucket bath etc..) instead of any technological product innovation.

Continuing on the same theme, the author performed qualitative studies on bathing practices in India (2015) and the resulting observations are presented here. After both these projects of differing cultural and geographical contexts, design interventions were made by the author to enhance/ introduce a sustainable bathing practice.

2. Project in the European Context

2.1 Methodology and Approach

Preliminary studies were conducted by looking at literature, conducting interviews with various stakeholders and field research of bathroom stores etc.,. The main topics for analysis were

- The bathroom space
- Sustainable Innovations (within the bathroom space)
- Study of bathing practices in various countries and cultures
- Ergonomics & Safety in bathrooms
- Values associated with bathing practices (in Europe)

2.2 Key Findings of Analysis

- Showers accounted for maximum water consumption in Dutch households - 49.8 litres per day per person - (Foekema, et al, Rapportage Watergebruik Thuis 2007)
- It was clearly identified that technological innovations such as low flow showerheads, flow measurement/ alarm systems, recycle showers etc., were not successful in the European market. In the Netherlands, almost half of the households (46%) had a water saving showerhead in 2007. Between 1995 and 2007, however, water consumption per person per day for showering had increased spectacularly from 38.3 to 49.8 liters, an increase of 30 percent (Roy et al. 2007). A possible cause of this could be the rebound effect as described by Roy and Herring (Roy et al. 2007).
- A study of alternative bathing practices showed that there are other practices with much less water consumption as compared to the shower. A comparison of these practices is shown in Table 1.
- Combination and/fit within existing bathroom context is necessary for user acceptance. This is mainly because changing the bathroom is not easy w. r. t. to investment and infrastructure complexity.
- Value system in Europe for sustainability, peace and nature is high, so also comfort. Users don't compromise on comfort (source: Eurobarometer - survey on cultural values within Europe 2007). So the alternative (sustainable) practices have to be high in comfort for them to be adopted in a daily routine instead of the shower.

Practice	Practice Description	Average water consumption
Shower	Water is used to clean the body by standing under a shower head/ hand held shower	96 litres (8min shower with flow rate of 12 litres per min)
Bucket bath	Water used from a bucket/ pail by pouring manually with a mug/ tumbler	20 -25 litres (bucket capacity 20 litres)
Sponge bath	Water soaked in soap water is used to quickly dry rinse the body using a sponge/ towel.	5 litres (water in a bowl/ sink)

Table 1. Comparison of alternative sustainable bathing practices with shower



Shower



Bucket Bath



Sponge Bath

Figure 1. Visual depicting bathing practices

2.3 Design conceptualisation & final proposals (for Sealskin BV and LIVING LAB Project)

A group of Europeans were given product sets for testing out sponge bath and bucket bath. Their feedback helped to design and develop the new product sets. The bucket bath was completely new to European culture. Several design options were developed, but only the selected final ones are presented here. The practices of sponge and bucket bath were renamed in their new avatars as 'Scrub' and 'Splash' rituals respectively.

Figure. 2 shows the product set developed for the sponge bath. Highlight of this design was the *soap spray*, which makes the practice easier instead of the soapy water. This product set could be carried as a travel kit and served as a quick wash option.



Figure.2 Product Set for 'Scrub' ritual inspired by sponge bath (© 2009 Hari Kara)

A rendition of the product concept developed around the bucket bath is shown in Figure 3. The usage of materials such as teak and ceramic give a feeling of Turkish Hamams/ Saunas which the Europeans are habituated to. A pull-out hand shower tap (which replaces the regular tap) still gives the users flexibility to wash their body quickly in the 'shower mode'. The sink drain has to be plugged when water needs to be collected for the bath. Storage is provided below to keep accessories such as soap, shampoo, scrubber etc.,



Figure.3 Product Set for 'Splash' ritual inspired by the bucket bath (© 2009 Hari Kara)

2.4 Inferences and Conclusion (European context)

The 'Scrub' concept is handy while travelling or to have a quick wash when water is not available in plenty. In the 'Splash' concept, staying warm while taking the bath can be a difficulty. This practice can be performed on weekends or occasions when there is enough time to pre-heat bathrooms (European climate). In this practice, the people could relax and cleanse thoroughly (similar to Turkish Hamams). Using water was psychologically/ historically/ semantically found to be necessary to 'feel' clean. Hence a complete dry wash (like the Scrub ritual) would not be acceptable as a daily practice. This design work has already served as reference case study for practice-oriented design (Kuijer et al. 2011).

3. Project in the Indian Context

3.1 Methodology and Approach

The previous project (stated above) became the starting point for researching in the Indian context. In India, bucket bath is already a widely accepted norm and therefore there were only two practices brought in focus - shower and bucket bath. A qualitative study (sample size 10 people) was performed by interviewing Indians (male & female) in age ranges 20-30 years, 30-40 years, 40-50 years, 50-60 years. The targeted people were all from upper middle class and lived in tier-2 or metro cities.

3.2 Key Findings of Research

- The type of bathing practice followed by people was not dependent on the age/ income. In a sample size of 16 people, there were slightly more people preferring shower over bucket bath. Few people who were brought up culturally with the bucket bath had switched to showers, with the changing bathrooms.
- All the participants had a choice of bucket versus shower in their bathrooms. Their practice was clearly a matter of preference.
- For those who showered regularly, the main factors that made bucket bath not an attractive option were *a) efforts to bend and scoop out water* and *b) the time needed to fill/ refill the bucket*. The other determining factors were non-hands-free operation, take-up of bathroom space, cleaning of buckets from calcium/ magnesium deposits etc.,
- People appreciated the hands-free nature of shower (similar to observations made in studies for Europe). However temperature control in showers was not very convenient. So also clogging of showerheads posed a problem to many people.

- In the sample group chosen, most Indian women preferred bucket bath. One reason pointed out by a woman was the ease it offers to clean/ scrub feet.
- For Indians, it is apparent that taking a bath in the morning is very necessary. It is a *daily ritual* without which they feel unclean or incomplete. Various reasons such as cleanliness, hygiene, feeling fresh, waking up, grooming were cited by people.

3.3 Design conceptualisation and proposal (for the Indian context)

After research/ analysis in the Indian scenario, in order to make the bucket bath desirable, the main design criteria were

- Reducing the efforts in bending and scooping out water
- Reducing the time to fill the bucket

An important observation was made during the analysis. Presently, people fill a 20 litre bucket at the start of bathing practice. *Whereas, it is not necessary to have so much water (20 litres) in one go.* So if the water receptacle was made smaller, the filling time would be less.

The next step was to conduct trials by using a tub, half the capacity of a bucket (around 10 litres). It proved to be a useful experiment with new insights. Sequence of activities in the trial run are described in Table 2.

Nr.	Activity	Parallel Activity	Water (litres)	Time (min)
01.	Fill up the tub (10 litres capacity)	In the meantime, clothes can be taken off and other arrangements made to get comfortable	10	1 min
02.	Watering the body with few scoops of water (tub becomes half empty)			1 min
03.	Soaping the body	Partially refill bowl	05	1/2 min
04.	Rinsing and washing soap off			2 min
05.	Refill more if needed for final wash	Partially refill bowl	05	1/2 min
06.	Wash off completely with water			1/2 min
TOTAL QUANTITIES			20	5(1/2)

Table 2. Sequence of trial run - bathing with water tub of capacity 10 litres

After success with these experiments, *the author (designer) decided to have in the new proposal a smaller collecting receptacle (10 litres).* This would reduce the filling time. Such a receptacle would need to be at good height to reduce the bending efforts. Options to mount such a receptacle were *wall mount* and *floor mount*. Wall mount would mean infrastructure changes to the existing bathrooms and hence that option was skipped.

Several concepts were developed in floor mount, but only the final selected concept is shown in Figure 4. Highlights of the proposed design are as under.

- The proposal is practice-centred (not technology oriented)
- It is an attempt to make the bucket bath (relatively more sustainable practice) desirable/ experiential
- Improvements are made over the present day bucket bath such as reduced time to fill and reduced bending efforts
- The new product set has improved ergonomic features - elevated water tub, better handle in the laddle (instead of mug) to scoop/ pour water and lastly a recess-handle in the water-tub to pour over last water remnants
- It is a retrofit within existing Indian bathroom space (no infrastructural changes)
- After use, the products can be put into each other to save space and form a kit
- A clean form language (to have minimum dirt clogging in crevices etc.,). The form also maintains the semantics intact (familiarity with objects in Indian bathrooms)



Figure.4 Proposed Design for the new bathing ritual in Indian Context (© 2015 Hari Kara)

4. Conclusions

In this paper, an attempt has been made to achieve sustainability objectives (reduce water consumption) by looking at the practice itself and not by means of technology optimisation/ inventions. Some practices are inherently sustainable than others. For e.g. in this case, bucket bath being less resource intensive than shower. The author (designer) has tried to make the bucket bath practice more attractive/ desirable/ experiential than it currently is, thereby increasing the chances of acceptance by people and achieving sustainability objectives. This approach can be extended for several other resource intensive activities by means of design intervention at the practice level - what is called practice-oriented design.

An important aspect of product acceptance is that of semantics and familiarity. In Europe, the bucket bath is a relatively new/ alien practice. Hence the product set was styled to look familiar to something the Europeans could relate to, namely Turkish Hamams/ Saunas. In India, the plastic buckets are more common in households and Indians are familiar doing the bucket bath in their bathrooms. Hence the product set was styled keeping that semantics in mind. Developments were made to improve ergonomics and aesthetics, overcoming some shortcomings cited by Indians during analysis study phase. The result was a re-design of the bucket bath practice and product set around it. Incidentally the bucket bath product set has not changed since the beginning of its inception (bucket, tumbler, seat etc.,). Therefore, a practice-oriented design approach can also give opportunity for innovation in age-old practices by tweaking/ redefining them in newer contexts.

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