

News and Views -18
from a g rao

Mud gem 1 4

Design at strategic level when executed becomes Innovation

My thoughts

Dear friend,

Last year, I was invited to give a 'talk' to students and faculty of Architecture at BMS college, a well-known Institute at Bengaluru on Design Innovation. With little hesitation I accepted the Invitation.

But as I reflected for a day I realized that it would be an opportunity to address and motivate youngsters for pursuit of 'creativity and self' in the frame work of 'Design Innovation' and how architecture-education could become a platform. I chose 'Design Innovation, Creativity and you' as my topic.

India with its billion+ population is going through a great crisis in 'Education and Employment'. Middle class parents look at higher Education as a solvation. Demand for a college Education has increased multi-fold. Engineering education is no more as sought out as before! Colleges of Architecture also have been facing lack of demand. Conventional modes of training have become ineffective in providing employment opportunity. Many new 'Design Schools' which have come up are facing problem of getting 'trained faculty'.

In this context 'Innovation' in general and 'Design Innovation' in particular has acquired new importance.

Innovation is a manifestation of 'Creativity' in Pragmatic Action. Creativity is natural trait though not seen in grown-ups. It is an 'Inner order' conditioned by 'Knowledge acquisition'. Cultures in which we grow up, education in schools and colleges, opportunities to exercise one's talents, all play a role in shaping 'creativity as an Inner order'.

I plan to dwell on the topic with a series of articles, starting with 'Design Innovation 1: Creativity of the Unschooled'.

You can also see this article in

www.agrao.in

under articles and papers



Design Innovation 1

Local Innovations: Creativity of the Un-schooled

a g rao

In India you come across many design Innovations on the streets, in services, in eating places, etc., Often they have been termed as 'jugaad': '*somehow solving a problem with the available means*' for which Indians are well known. Most of the time, these happen as temporary solutions. Some get into continued practices over generations as we see with many services. In some we can observe successful, business entrepreneurships even as the family moves into another social class which happens to be a general aspiration in the 'Society'. We also come across surprisingly beautiful, eco-friendly solutions which will probably last as long as the socio economic structures support them. Perhaps such creativity has been in operation in many other countries like China as well.

'Jugaad- Innovations' have no back up training or coaching systems. Innovators are unschooled for Innovation as such! Generally, they are self-made. Some have never been through any school education. Those, who got some school education, seem to have made use of the little knowledge and exposure they got. There is a creative adaptation of gadgets, machines or mechanisms available locally. *The aesthetic outcome varies depending on the contexts. In the 'Innovation' carried out over a time, competition, consumer expectation, the 'inner order' of the Innovator... all seem to have shaped the aesthetic outcome!*

Let us look at few examples to understand the nature of these design Innovations!

1.0 Restaurant on a Bicycle

Or

Mobile 'Dosa' service

Dosa, an Indian snack. is well known. It is usually made in a kitchen on a hot 'Tawa' or a flat plate by spreading the pre-prepared, fermented 'Dosa' batter, sometimes mixed with other ingredients. What we see below is an ingenious Dosa vendor on the road in seventies ! He had cleverly attached a gas cylinder and a stove with the hot plate on a bicycle. His other requirements like storage for batter and water to clean the spoons, plates, etc., for making and serving dosas were carried in different containers on the bicycle! He rided the bicycle from place to place, stopped it at convenient spots and converted it into a temporary kitchen by just putting on the sturdy stand! He used to light up his pressure stove and start making 'Dosas'.





serving 'dosa'



storage box in the back



Cleaning the plates ►

This was documented by Vinod Gupta in seventies while working on DST sponsored project: 'Bicycle for Rural Use'. (see News Letter14 on my website- www.agrao.in).

2.0 'Tailor on Wheels' in Jharkhand

Yet another example documented in 2010 in Jharkhand, is an interesting Design Innovation, as can be seen in the video (<https://youtu.be/CUjerJPVebg>). We came across this in a village of Jharkhand, while we were studying local bamboo craft. A project had been initiated by Neilson Marketing, whose executive Mr. Ranjesh Prasad had accompanied us.

A standard sewing machine was fixed on the back side carrier of a bicycle. Foot pedal for sewing machine was replaced with an adopted pedal which can be operated from a standing position. The new attachment could be folded once the work in a location got finished. One can ride the bicycle as the sewing machine had no operational connection



with bicycle mechanism.
machine and prof.Sandesh

Innovator with sewing



Detail of pedal for Sewing machine

I and my colleague, prof.Sandesh were fascinated and took many pictures and found about how he operates. The person has been going from village to village around. He stations himself in one place for that day. Many people bring their stitching requirements, repairs for a torn dress, minor modification of size, etc., He is offered tea or food by the villagers sometimes. Often, it becomes more than a business transaction, a *human relationship* leading to a foundation for local Culture!



3. Knife sharpening Service as Cultural Practice

In 50s and 60s, it was a familiar sight in India to see many trades which evolved into 'Travelling Services' offered to well to do and middle class households! Behind them were 'Design Innovations' of unknown origins, passed on from one generation to another as a family business. Certain refinement and technological skill could be observed in these enterprises building a base of new secular culture! Knife sharpening has been one such practice!



Picture from unknown source

Knife sharpening machines were built locally and physically carried by the person on his back! This 'service' has become a family trade over a period. One can see certain optimizations in the physical structure of the gadget. Since it is a 'livelihood Companion' for the person who owns it, 'ergonomics' for carrying and operating without strain dictated the 'form' of the gadget.

Several such services like the knife sharpening flourished in India across the Country. Tin coating of brass cooking vessels with 'tin' called 'Kalayi', 'Redoing mattresses by beating the compressed cotton after long use' and stitching a winter blanket with old clothes cut into small pieces were some of them. The gadgets required were innovated by the people who offered the 'Service'.

4. Potter and a "Chula' Innovator in Sindhudurg, Maharashtra

Few years back Myself and Prof. Vinayak Nabar bumped in to a potter and a 'Chula' Innovator in a village named 'Ajra' in Kolhapur District on our way to Chowkul, a place in Sindhudurg District where the Nayee Talim workshop, organised by Sachin Desai and team, was taking place.

As we were going in a vehicle, interesting mud chula's displayed in front of a house caught my attention. I pointed it out to Vinayak who also got excited and stopped the vehicle and parked it near buy! We visited the house and got acquainted with the owner, producer and innovator Pandurang Kumbhar!

A long conversation revealed interesting research data!



Mud chula(stoves) in front of the house

Pandurang had innovated many 'designs of Chulas (or mud stoves) used for cooking with coal or fire wood! A design Innovation seen below had combination of two burners one for cooking and the other for keeping food warm with low heat. The third hole was meant to connect to a long chimney pipe which will take out the smoke!



I was amazed and humbled. I had worked with my friend prof. Jagadish on designing a new coal stove for a design competition.(see Design Projects in my website www.agrao.in). The results, as it happens most of the time in IITs, never got implemented at ground level. Here is an Innovator, far from the Institutional supports and engagement, coming out with a pragmatic Innovation which has reached people.

We further came to know that Pandurang has been a successful entrepreneur. The mud chulas (stoves) which he had developed with new features were sought after by people, who came from distant places to buy them. But the numbers sold were limited.



Pandurang Kumbhar

Pandurang narrated the intricacies of his business.

He has regular, large demand for conventional pots and plates in earthen ware(terra-cotta). So he produces them in greater number using his innovative 'turning wheel'. These, once dried well, were taken to a nearby kiln for firing. The 'Place' next to his house becomes his factory where he digs out the earth for his pots and dries them.





Back Yard of Pandurang's house

He then showed us his ingenious machine which he has innovated and made. He sits on the potter's wheel. His wife sitting at the other end in conventional squatting posture, rotates a cycle wheel. This moves his potter's wheel at higher speed.



Prof. Vinayak Nabar looking at Padurang's innovation

It is a 'jugaad' solution with less of refinement. But his products which go to the users had acquired the aesthetic refinement as it is governed by user expectation and a Tradition!

Pandurang then proudly told us how he was able to support his son's engineering education due to his successful entrepreneurship. His son, now a graduate engineer, is in a secure government job (probably doing routine work!).

We can observe a 'significant social spectacle' around this design Innovation! The social aspiration of the potter to move into the middle class makes him proud of educating his son into an engineer, which gives social respect with a secure Government job and does not demand a risky creative entrepreneurship. Effect of 'Education' that is delinked with native Production and Living practices becomes visible here.

What more, there is a hidden 'socio-economic crisis'. Traditionally, our craft communities, transfer skills and knowledge of entrepreneurship with in their families. Technical knowledge was guarded for business survival in the absence of any notion of 'intellectual copyrights'. In effect the 'successful business knowledge' of Pandurang Kumbhar will get lost with him due to lack of any alternative mechanism for such a transfer. There is no system of apprenticeship where a needy person looking for livelihood from another family can come and learn from this successful designer-entrepreneur!

5. Ingenious Banana Leaf Package

Taking South Indian food on fresh 'Banana Leaf', is an amazing feat, if one considers the skill required for it. Yet it is so common in South India and in selected pockets of other states in the Country! The practice is hygienic and eco-friendly! It was a further surprise when I came across a video on Manorama-News Channel

https://www.youtube.com/watch?v=Z_-ltWo0G90

which showed an ingenious 'Design Innovation' of packing liquid dishes like Sambar and Payasam(a sweet liquid dish) by a local person. It had all the aesthetic qualities of a good design unlike a 'jugaad' act, and the innovators are neither schooled nor trained as designers.

One cannot help but notice the 'inner order' in the act of Innovation rooted in a Culture. The Person probably grows up seeing the 'banana leaf and its use' from childhood and comes up with an innovation for a new demand of packed food using the very material. Even the string is made of banana leaf, utilising its fibrous property! Here we can see the power of mind tuned to a tradition.



6.0 Carpets by shredding old clothes- a Chinese innovation

In 1999-2000, I was in China attending a craft workshop and seminar on the invitation of INBAR (International Network for Bamboo and Rattan). During the workshop, I got a rare opportunity to see a very interesting Innovation of local sustainability. Our workshop was taking place near a housing colony. One morning a small team of people arrived in a truck. Soon a machine was downloaded. It looked like a 'shredding machine'. The team permitted me to take pictures as they started setting things up. Language was a limitation for any conversation. The machine had a 'cylindrical shredding tool' with metal spikes as can be seen in pictures below. It was power driven. A motor was installed next to the machine and coupled to it. Power connection was taken from a nearby house. Nearby, a rectangular frame was set up which looked like a 'loom for weaving'. 6inch high vertical sticks with gaps were fixed all around the frame.

I was curiously following whenever I could get out of the workshop.

- Soon people from the colony started bringing old clothes from their houses for shredding in the machine.
- The operators also prepared a grid with strings on the nearby frame. Soon shredding of clothes started after sorting, removing buttons, etc. Shreddings were of 5 to 6 cm length strands. These were collected and placed in the threaded grid to convert them in to rough sheet. Output was a carpet/blanket with waste clothes. End product was impressive. Machine was looking crude, but effective. It was reminding me of local machines made in Punjab. Interestingly this technology has not reached to India. As mentioned earlier there is a tradition of converting old mattresses by beating cotton inside to make new mattresses in India.

A thought comes to the mind : Mao Tse-tung's Cultural revolution sent college professors to villages. Could this Design(engineering) innovation be off shoot of such a movement?



Installing the shredding machine



Ready for operation



Shredding tool



Preparing the frame for carpet weaving



*'Creativity and Innovation of the unschooled' brings many challenges to the fore!
It looks like a 'Natural trait', but not seen in everybody! We need to study and research on
factors which lead to such Innovations.*

Developing Imagination in any field is 'Necessary'.

*Obviously 'knowledge in the related area' is also essential as it carries the collective insights
and expertise. How is it to be learnt or imparted is the main issue. Current schools and
colleges have not been able to cope up with the issue! In this context, 'Education' for 'Design
Innovation' needs to be addressed at school and college levels. A section on my website
'Aaduko Maduko' (<http://www.aqrao.in/aaduko-maduko-children-in-focus>)
which means 'Play and Make' reports some of our experiments in Learning in designerly
ways. I plan to write more on the theme which will be put up in the website!*
