



## Grassroots Innovation: Minds On The Margin Are Not Marginal Minds

Author : Anil K Gupta

### This handcrafted summary will help you learn

- What is grassroots innovation?
- How innovation can happen without expensive R&D?
- Why single girls in India are more innovative than married women?
- How innovation knowledge in India is being carefully curated via organisations like Honey Bee Network & National Innovation Foundation?

### What is grassroots innovation?

The essence of grassroots innovation lies not only in the discovery of innovations but also in learning from those ordinary people who have been able to provide simple solutions to the problems in their lives. Innovation at grassroots is about learning from observing 'oddities' that indicate a unique solution to problems. Grassroots innovators typically do not know that they have an invention on their hands, or that they have stumbled upon a creative solution to a problem. **Seemingly, innovation does not have a relationship, or at least a direct one, with one's status in the society.**

In 2008, I travelled to parts of Maharashtra for a study sponsored by the Department of Science and Technology (Government of India), to understand the reasons for the increased rate of suicides in the state. While speaking to the families, I was surprised to note the absence of non-chemical or non-monetary solutions for pest infestation problems of the farmers' crop. Most cases of farmer suicides had a direct relationship with the inability to repay loans taken to buy pesticides that kill or eliminate pest infestation.

During our research, we understood that not only were the pesticides expensive but also ineffective. **Traditional methods in our databases could have tackled the pest problem effectively. The pest infestation and its linkage with unfortunate suicides could have been prevented had the knowledge possessed by farmers in other parts of the country been shared.** A moral dilemma that I faced was that I was benefitting monetarily from this knowledge, but the same was not true for the people sharing this knowledge with me. **This dilemma pushed me to search for a suitable solution.**

### Learning from honey bees

**Honeybees collect nectar from flowers, and while doing so, they cross-pollinate as well. Here, the flowers do not feel cheated. When knowledge is gathered, people feel cheated when due credit is not given.** Therefore, it is important that interpretations and analysis reach back to the contributors as well.



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While on one hand giving credit satisfies an ethical responsibility, on the other, people become privy to the reasons for data collection and are more forthcoming with new information. Armed with this insight, I decided to undertake **research trips or shodhyatra** to build knowledge and innovation bank.

The purpose of a **shodhyatra** is to undertake walking learning trips through villages or remote areas to observe, learn, and share innovations. This began many years ago when farmers expressed their eagerness to join us on searches we were conducting for learning opportunities at the grassroots level.

In 1980, I was researching in the areas of Mahendragarh. It was here that I witnessed a democratic arrangement where both the farmers and the scientists engaged in a two-way movement of both communication and power. **This formed the basis of the Honey Bee Network.**

Shodhyatras are mainly walking tours. The experience that I have gained from these yatras is that recognition from outside the country increases its importance within the local community. Apart from the two yatras conducted in a year, there is a formal course at the Indian Institute of Management, Ahmedabad where the students go to the Himalayas for valuable lessons in leadership for social change.

### Building a structure for grassroots innovation data

SRISTI (Society for Research and Initiatives for Technologies and Institutions), was born in 1993 as a voluntary organisation to provide support to the Honey Bee Network. SRISTI focuses on Education, Technology, Institutions, and Culture. GIAN (Grassroots Innovation Augmentation Network), formed in 1997 was primarily going to link innovation, investment, and enterprise.

The formation of National Innovation Fund (NIF) was announced in the Budget of 1999, with a proposed initial corpus of 20 crores. **The NIF's primary purpose was to build a registry of innovations and convert viable innovations into business opportunities while spreading the information across the country.** With the introduction of annual exhibitions, awards for innovations, and the involvement of various presidents like Dr A P J Kalam, Ms Pratibha Patil, and more recently Dr Pranab Mukherjee, grassroots innovations have gained the much-needed recognition.

Every year since 2013, Shri Pranab Mukherjee invites a group of grassroots innovators for a scholar-in-residence programme with a view that creating a temporary community of such innovators will help them expand their horizons.



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### Mallesham & Pochampally sarees

Volunteers of the Honey Bee Network contribute not only through their expertise but also by bringing in their social contributions and connections. It is important to note that without the involvement of volunteers, the network would not have been able to make valuable contributions. **One such unique story is that of Mallesham, whose innovation solved problems faced by an entire industry.**

Pochampally sarees require a complicated weaving procedure which is traditionally done by the women of the family. Mallesham's mother would wind the thread 9000 times around various pegs and then later tie-dye it. This caused his mother immense pain in the hands and shoulder. Determined to reduce the laborious work, Mallesham decided to automate the process.

He left the village to work in Hyderabad to support his family. During this time, he spent time every evening looking for various devices that might help create an automated machine. **After 7 years of relentlessly working at it**, he finally created the **Asu machine**, which could accomplish the job in one-and-a-half hours when compared to his mother who took five hours for the same. Mallesham continued with his work and was able to advance his innovation by adding features, which would help grow the pochampally sarees sector. **For this, Mallesham received the National Biennial Grassroots Innovation award from the then President of India.**

### Learning styles & Maslow's Theory

**There are two learning styles involved in innovation. Learning from within** is knowing when you are right and persisting ahead with it. The best example here is of Mansukhbai Patel who developed a machine to strip dry land cotton to separate the seed from the cotton. He failed numerous times before he was finally successful.

**Learning from peers** implies that we are limited to the best amongst our peers. One must challenge oneself by trying to be the best globally. Potters of a particular village in West Bengal display their best terracotta horses in a common area. This encourages the younger generation to work harder and create better.

The realisation that anyone can create an outstanding piece of work or discover a solution to a niggling problem is the idea that lies at the heart of the Honey Bee Network. **I do not agree with Abraham Maslow's hierarchical model of human needs theory that proposes that in order to achieve self-actualisation, one's basic requirements first need to be met.** I have shared stories of many innovators, who without even knowing where their next meal would come from have persisted and created stunning artwork or provided a solution to the problems of a community.



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### Overcoming the inertia of 'chalta hai' to innovate

In competitions held for innovative ideas, we have seen that quite a few young girls are recognised for their contributions while the number of awards for women in this area is much lower. One of the reasons for this could be that while in school, girls do not have as many responsibilities, but as soon as they are married off, they get caught in the daily grind of chores. This needs to change, and the onus to bring this change should be on us.

**There is widespread inertia about many things in our society and a sense that one person cannot cause a significant change.** However, there are always people who are able to focus, take the initiative, and create a solution. For example, while we consume tea twice a day, there are very few who consider the pain of tea leaf plucking workers as their own. On presenting the problem to the Centre for Environment Planning and Technology University, the students came up with some unique and innovative solutions.

**The grassroots innovators deal with such inertia during design, failure at various stages, or delivery every day.** They succeed in overcoming it by persisting, pushing through different problems, and coming up with a solution.

### Change the context to change the content

**A change in context brings about a change in content. The difference between an ordinary person and an innovator is that the latter is able to invert the frame of reference and think differently.** For example, while travelling through a village in the Bastar region of Chhattisgarh, we saw quite a few graves but nothing to indicate Christian or Muslim homes. Upon inquiry, we found that cremation was for those who died of sickness and burial was for those who passed on naturally. This, they explained, was because they did not want to give back an unhealthy body to Mother Earth.

In the process where an unmet social need becomes an urge to create change, it is important that we humanize ourselves. Only with context does the content in our conscious express itself. The competition organised by SRISTI gave a context to **Chhaya**, who contributed the idea of an inclined water pipe with taps at varying heights. It is important therefore, to convert our knowledge into action.

**Innovators, in general, feel strongly about certain things, translating it into an urgency to take action.** Women in the village of Gadhada in Gujarat complained of pain while carrying pots of water on their head. Khemjibai invented the panihari, which transferred the load from the head to the shoulders with a simple mechanism fitted into shoulder rests. **In this case, Khemjibai felt the pain of those around him, that is, Samvedana translated as equal pain.**



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### Knowledge transfer: so near, yet so far

**Our educational system has been devoid of contextual discussions or for that matter a simple exchange of more relevant knowledge. Many a time, knowledge is transferred over a million miles but does not seem to cross over to the students sitting in a classroom.** The current system does not encourage children with different mindsets or those with a higher social consciousness.

Initiating idea competitions at school or institutional levels will encourage kids to think outside the box. For instance, one of the entries to the National Innovation Foundation was that of **Mayank Walia** who for want of a similar invention combined a scanner with a text-to-speech software to help blind people read. **Children definitely possess the quality of pushing us out of a state of inertia.**

### Three steps to being an innovator

**The idea of Techpedia came to me in 2001,** but it did not take off until 2009 when Hiranmay Mahanta moved ahead with it. I learnt some things from this project. **One,** there is nothing more criminal than to underestimate one's own or another's potential. **Two,** the execution of an idea is more critical than the idea itself. **Three,** institutional approval is not significant.

I firmly believe that a connection between material knowledge and immaterial knowledge can prompt empathetic innovations. This speaks of a strong connection between voluntarily taking the physical strains and learning how to use the mind and body in practical ways while contemplating on the process or the passion.

**Many innovators focus on sharing their innovation or knowledge rather than making it a means to earn money. Dharambir Kamboj,** though never encouraged by family, spent months on end in the tribal regions of Rajasthan, teaching the tribals methods to collect essential oils, using the machine he invented to make jams & jellies. I have consistently maintained that while there may be many reasons to not to do something, the only reason we should bow to is the **urge to cause a change.** Change happens in a democratic society where the cause is right. This is possible where due credit is given, and a transparent procedure is in place.

### Can passion fuel innovation at grassroots?

**Passion alone cannot lead to innovation- a firm intention, certain doggedness to get it done, and a medium to make the actual transition, are required as well.** The Honey Bee Network has been functioning as that medium connecting innovators with previous achievers, which further helps them understand various aspects of the process.





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**Humility is a valuable trait to possess for any innovator.** This helps them conquer small difficulties and cover the distance needed to reach the goal. Waiting for the perfect moment or a perfect solution to a problem will never ensure success, but **the impatience to help** will surely help catalyse the process of change. **This is what differentiates an ordinary person from an innovator.**

Once, on a walk through Mahendragarh district in Haryana, we came across wheel-based weeders. While the idea itself was standard, the solutions seemed to be unique to the local problem. However, sometimes a local innovation alone is not sufficient to solve a problem completely. In such cases, a blending of formal and informal knowledge of innovation can help.

### The strength of traditional knowledge

The importance of passing on values and traditional knowledge from the older generation to the present cannot be undermined. During one of the walking trips through Araku Valley in Andhra Pradesh, we organized a biodiversity competition asking children to bring us samples of various plants and their usage. One girl, **Jyoti**, clearly differentiated herself from the others by bringing the maximum number and a wider variety of plants. We realised later that she was being raised by her grandparents. She seemed to have a lot more sensitivity towards the area compared to the other children. She absorbed and viewed the environment in an entirely different light.

### Frugality in grassroots innovation

A pioneering culture is triggered by simplicity, which is an underlying value in such cultures. Typically, there is a tendency to gain more from scarce resources. Traditional technologies such as **growing ladies' fingers (okra) around a cotton crop** to prevent pests from attacking the cotton crop are proof of frugal innovations emerging at the grassroots levels due to scarce resources.

I frequently wonder if the urge to hoard material possessions consistently reduces our need to reflect on our traditional values that point to simple living. For example, non-stick pans have replaced the age-old practice of cooking dishes in iron vessels. **A simple solution of reintroducing this practice can reduce the number of iron deficiency cases.**

While we use Mahatma Gandhi's quotes on many occasions, his values have not permeated our thoughts and actions. **Enforcing frugality is impossible; but it can definitely be cultivated with the right framework.** To deal with a severe shortage of food grains in the mid-1960s, our then **prime minister Lal Bahadur Shastri** addressed the nation, asking Indians to forgo grains for one day of the week. This creative solution to a massive problem shows that policy makers can actually use frugality as a potent instrument.



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Another concept that gains relevance in frugality is repurposing of materials. **More than 90% of the products in grassroots innovations use second-hand components.** While safety is not compromised, they are sustainable in the end. An aircraft crash in Rajasthan led to the usage of the aircraft's old tyres in camel carts. What could have been a potential environmental issue became a viable economic opportunity solving a genuine problem faced by the poor people in that area.

### Frugal innovation also need to be sustainable

**There is a misunderstanding of the term frugality,** particularly when corporate leaders are concerned. Often, with a focus on price, they lose focus on the scope (design and need potential) and sustainability. For instance, **sachets are far more affordable than containers. What is not taken into consideration here is the cost of collecting and disposing of the used plastic sachets.** Irresponsible policy makers make certain materials cheap but do not realise the repercussions on the environment.

We should create platforms that promote green and frugal innovations. Instructables can be available along with materials, designs, and components, which will encourage people to create on their own, do-it-yourself kind of projects. Lateral learning and thinking should be promoted across various disciplines.

### Ethical & social capital

The Honey Bee Network has shared the largest pool of knowledge collected from people's creativity today. To appreciate the success, one has to understand the interplay of social, natural, ethical, and intellectual capital.

Ethical capital refers to the internal rules or sanctions that an individual follows in any given situation. **The two important aspects of ethical capital are trust and reciprocity.** The need for external regulation is lower where the ethical capital in a society is high. There is no need for enforcement of rules or norms when the individuals within that society self-regulate. An example of enhancing ethical capital is farmers choosing not to use electrical fences to avoid harm to the wildlife.

Communities that have contributed to social or ethical capital have gone through many contradictions to arrive at norms that work for their group. Many of them have been unfair to a particular sector or group of people. For instance, due to the prohibition of the involvement of women or Dalits in certain roles or areas, their contribution in such areas was minimal or held no relevance. Successful contributions to social capital are possible only when the group or community strongly associates with an innovation that helps them solve a common problem.

Peaceful co-existence has never been the norm, and there has always been constant innovation in the area



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of warfare, with the sole intent of establishing a group's dominance. Therefore, history is proof that sharing of resources can lead to the making of communities, a transformation that is not necessarily peaceful. These communities have always tried to accumulate social capital by making decisions that will be collectively good. For instance, many indigenous breeds of animals are protected because of a collective effort by communities to prevent inbreeding among these animals. **Thus, the groups think beyond individual gains in order to create sustainability that benefits everyone.**

### Collective knowledge of society

**The concept of intellectual property is definitely not new. We know that it is the collective knowledge of society.** While it is natural that in most instances we see that such property is protected extensively, it is also true that unless such property is shared with peers or other communities, there will be no growth.

The Honey Bee Network promotes open innovations and sharing of knowledge through a shared database. While people can share ideas and innovations freely, the involvement of the firms requires mediation through licensing. The Network aims at sustainability where there are longer time frames and a wider variety of choices. **Such a view makes us impatient to involve ourselves to create a change and at the same time be patient with the results.**

### What I learnt in my journey

- 1.Meeting unmet needs is what creates an opportunity for innovators.
- 2.Ideas at the grassroots level need to be encouraged irrespective of their relevance. What is more important than the actual result is an **attitude that promotes one to break out** of a state of inertia and attempt to solve a problem
- 3.Many grassroots innovators share their knowledge without expecting anything in return. Similarly, scientists, firms, and volunteers put in time and effort to support these innovators without a fee. **This proves that ethics influences efficiency in society.**
- 4.**A simple but effective solution to any major problem is widely not considered as an accomplishment.** Does a solution necessarily need to be complex in order to gain credibility amongst firms and users?
- 5.It is a fact that real innovative ideas can come from the most unexpected places. **For this, we need to bridge the gap between formal and informal schools of learning.** The focus should be on corroborative learning and not on competition alone.





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6. To register innovations that seem to be widely accepted, we should have less complicated processes. At the same time, it is important to set the bar high so that there is a true challenge and learning in the process, to make the sense of achievement real.
7. Overcoming inertia is critical, and that can only happen when we choose not to stay put with the problems that prevail in our society. The younger generation should be nurtured and motivated to create and innovate.
8. **We should not admire the mentality to solve a problem temporarily (jugaad).** It is important to get to the crux of the problem that will actually erase the problem. We should promote innovations which do not produce any waste or provide for multiple life cycles for products or materials used.
9. We should give back to those from whom we learn by sharing what the formal sectors do with those innovations. An inclusive ecosystem that advances creativity, collaboration and empathy are the need of the hour.

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