THINKING DESIGN

Prof. S. Balaram

About the Author

Singanapalli Balaram is an industrial designer; senior faculty and former Chairman of Education at the National Institute of Design in India.

He is recipient of the honorary fellowship of the Society of Industrial Designers of India and an invited member of the advisory board of 'Design Issues", U.SA Four inventions of Balaram have been patented by NID.The Institute also won the first ICSID - Philips award (International Council of Socieiteis of Industrial Design) for its outstanding achievement in Industrial Design. One of the seven projects which won this award was Balaram's. Life-saving medical equipment which he and a colleague jointly designed for Sri Chitra Tirunal Institute of Medical Sciences and Technology was awarded India's prestigious National Meritorious Invention Award.

Born into a farmer's family in Gunnathota Valasa, a tiny Agraharam (a village gifted to a scholar by the king) in Andhra Pradesh, South India, Balaram did his post-graduation in product design from the National Institute of Design, Ahmedabad and a research course at the Royal College of Art, London. He holds a diploma in Mechanical Engineering. He started his professional career as a sign board painter and later became a mechanical engineer finally settling down to Design practice and .teaching, His varied pursuits include short story writing; package design and film criticism.

He has held senior positions as Chairman of Extension programmes, Co-ordinator, Foundation Programme, Associate Chairman, Industrial Design etc. at the National Institute of Design. He is presently Governing Council Member of The Centre for Environmental Planning and Technology; Vice President of The Society of Industrial Designers of India and Co-ordinator, Design Foundation Studies, NID.

His published writings form part of books such as *The idea of Design*: *Arthaya; Design* and *envelopment in* South and South-East As/a; and *Quality through Industrial Design.* His article on bullock cart design was prescribed as core course for secondary schools throughout India by the National Council of Educational Research and Training.

Balaram is married to Textile Designer, Padmini Tolat and has two children.

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My kids Saurabh and Pranav and wife Padmini not only put up with my late but took interest in reading the drafts as well.

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Although not in its entirety and in the same form, *Modern Indian Design* originally appeared in *Marg* (1985) "The wonder that is..,." originally appeared in *Quality through Industrial Design* (1992), "The power of representation" first appeared in Design *Issues* (1989),"Politics is not a four- letter word" originally appeared in Design and *Development in South and South-East Asia* (1990)," By the people, for the people" first appeared in Design *Folio* (1981) and "Leave well enough alone " first appeared in *The Eye (*1993).

"Design and Rule" was first presented at a seminar on Gandhi at the National Institute of Design, "Tools for Change" was an invited paper prepared for the Citizens Report I I (1987),""The Barefoot Designer" was presented in Asian Design forum, Nagoya (1986):" Fitting the Man to the Task" was presented in Design Education Seminar NID(1988); QWER was written as an invited paper for a collection for "Design Writings" (1991); "The Invisible Design" was partly discussed at a dialogue session at the Japan Foundation, Tokyo (1995).

I am indeed very grateful to these sources and to the opportunities provided to me, I remember always those friends who each time initiated me into writing.

S Balaram

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Modern Indian Design: The Roots

In the West, design emerged as a reaction to mass production but in India the story is quite different. The Indian tradition always held art and craft as one unified whole. In the classical Indian language Sanskrit, there is only one word "Kala" covering both. India's first and real industrial revolution occurred only after the country's independence, in the late forties and early fifties, The manufacturing units that started with foreign collaboration borrowed technology as well as design, modifying certain goods to suit Indian needs. As the Indian industries started their own research and design units, original and inventive work by Indian designers and architects began to surface and take precedence over collaborative products,

The Power of Representation: Semiotics for Mass Movement

This article grew out of realising the amazing presence of Indian mythology in nearly all contemporary popular-cultural expressions. It is part of a larger effort at exploring the mythology-based symbolism for use in industrial design. The concern here is, with demonstrating what might now be called product semantics used by Gandhi in effecting major socio-political changes in India, and its connection with Indian mythology

Fitting the Man to the Task: The Design Training Paradox

I have been a design trainee. I have also been a design trainer for a long Lime imparting training to two categories of learners. The first category is the student designers some of whom impart design training to others in design schools or technical schools. The second category is, the other professionals like craftsmen, managers, engineers, voluntary workers, small entrepreneurs and bureaucrats who impart non-design training or supervision, in their own field of work

This article is an exploration of the qualitative aspects of such training, rather than its quantitative aspects.

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The aim of this article is to emphasise the crucial aspect of human rights -the domination of one power or one group over the other with respect to design.

Politics is not a Four-Letter Word: The Impact of State Policies and Politics on Design

In planned economies, policy level decisions by the government hold the key to successful and gainful operation of design. Policies may not be everything, but they are

the main facilitators. Enough has been said about design policies. But not enough has been said about the policies which do not have direct design content but nevertheless have a greater impact on design. This paper is an attempt to emphasise such policy implications.

Tools for Change: Learning from the Artisans

Most artisans are poor as well as illiterate. Nevertheless, they are highly skilled and well "educated" in terms of their long and rich experience. There are often many unrecognised strengths amongst such people. This would constitute a wealth of learning available for others in the society especially for the designers. This learning would comprise firstly what the artisans do and secondly, the way they do it.

For the People, By the People: Design without Designers

Answers to real needs spring up from the people themselves. An innovative man from all walks of life-the poorest street vendor; the social worker; the engineer, the craftsmen, and the teacher are designers without being called so. One sees many such unknown designers whose ingenious creations are available on pavements and in weekly open-air markets where poor people buy household goods.

The Barefoot Designer: Design as Service to Rural People

The type of technological development as well as the socio-ethical arid economic changes caused by it, are not the same everywhere in the world. In a country like India where eighty per cent of the population lives in villages, how can design play any role in people's lives when it does not cater to the village population? Therefore, my call is for a design movement, a "majority world" design movement. Taking a cue from the "Barefoot" doctor concept; the idea was to take design to the heart of the villages and make it useful to the people there. We fail if we force the urban designer to go and practice design in the villages.

SECTION THREE: Design: New Dimensions and the Future

QWER: Freedom in Design.

Design methodology, one of the most important among the tools available to designers, needs looking from a different perspective altogether A tool is a facilitator: A tool can also be a menace- a tyranny especially for creative endeavors. When does design methodology turn from being a tool to becoming a prison, controlling the designer? The article explores.

Leave Well Enough Alone: The Need for Restraint in Designing

If enough caution with an integrated view and a long term perspective is not exercised in the design and development plans, the efforts for improvement may turn negative and harm people instead of helping them. The designer's intervention might turn to be harmful interference rather than fruitful assistance. This article cautions against over enthusiasm of the designer; and reminds him when inaction is the right action.

Invisible Design: The Alternative Approaches

Whether it is market led design or socially responsible design, what has been the focus so far is a kind of design that created a tangible end product. But there is another kind of design which is prevalent largely in the Third World. This is the design which is service or process-oriented in contrast to product-oriented design. Such design is developmental in nature and is non-tangible or invisible to people who are used to looking for an end product In this article some tentative thoughts on this aspect of design are shared.

Section Across: Design Realisations

Foreword

There is something strange about the word “design”. It is used in association with a wide variety of other words to form countless compounds like, for instance, Design Activity, Design Career; Design Community, Design Concepts, Design Critique, Design Drawing, Design Education, Design Gallery, Design Institution, Design Method, Design Movement, Design Practice. Design Profession, Design Scene, Design Semiotics, Design Situation, Design Students, Design Teaching, Design Tools, Design Training... Can it be that design is known solely to the initiated? Is there a Design Mystique?

In fad design simply means pattern or structure. But would anyone talk of pattern training, pattern career; pattern community? Or of structure education, structure activity

Strikingly, the French as they are, use the English word, design, they did not find it necessary or- possible to create a word of their own to convey designs meaning

All this suggests that “design’’ is something special. First of all, design is somewhat mysterious because its occurrence is so unlikely. For instant c. could anyone anticipate

the DNA pattern of an unborn child? Yet, nature creates in millions those unlikely, unique patterns. Like you and I, unlikely as we are,

At the same time, design is charming, It appeals to both - emotions and intelligence. For instance, a child was once amazed at the design of the word "September", *e* *e* *e* , remarkable both visually and aurally (a fact mentioned by W. W. Sawyer; Prelude lo Mathematics, Penguin Books, 1969). Similarly, the young poet in Satyajit Ray's film, Charulata, enjoyed the melodious sound of the word "Mediterranean", reminding him of the sound of the Indian musical instrument, the tanpura.

Filmmakers call the design of these films timing, the modulation of movements. For design is not always static. It often evolves in time

Design is so significant that according to Carl Jung it often is the symbol of the self in dreams. The design of a crystal, for instance.

''In many *dreams the* nuclear *centre,* the Self *appears as* a crystal. *The* mathematically *precise arrangements* of a crystal *evokes* in IK the. intuitive feeling that even in *so* called 'deed' matter, *(here* is a spiritual *order/no* principle at *work Thus the* crystal often symbolically stands for *the union of extreme of matter* and spirit." *(Carl Jung, Man and His Symbols, p.2.21).*

Design is at once so unlikely and so charming that some people use an argument from design, holding that God's existence is provable by the evidence of design in the universe.

However, the wonder of wonders is that humans can create design. Animals too create designs, but they can only repeat the designs inscribed into their nature. Man alone can create designs freely designs that transcend the limitations of their creator In fact, in order to be fully human, men, women, youths and even children must design. And in achieving their full humanity they reveal their divine potential.

Design is no ordinary thing, indeed.

And S Balaram is fully aware of that, "The human need, he writes, which is the origin of design, is not only physical but also psychological, socio-cultural, ecological and spiritual." Balaram's *Thinking Design* explores in a fascinating way the intricate and multifarious relationship of design activity and product, with the India of Gandhi and of the following era.

Befittingly, given its subject, *Thinking Design is no ordinary book, indeed*

Take the title of the book. We arc spared the cliché Understanding. Instead, we have *Thinking.* Like in McLuhan's Understanding Media, however; here too you have a pun. It is a question of thinking about design, or re thinking design. It's a question also of discovering that design is a form of thinking. There is in it *"a spiritual* ordering *principle* or work", like in the crystal Jung spoke about.

S Balaram has summed up his design thinking - and his thinking design – at the end of one of his essays:

What is now required is not a skilled designer (by skill I mean knowledge and aesthetics sense included) but a broad based socially well integrated, humane designer with a broad global vision.

No one knows better- than S Balaram how difficult for designers it is to fulfil these requirements. His entire book is about that difficulty. And, it seems to me, the difficulty deeply and painfully experienced by Balaram himself is the existential contradiction between the need for change and the loss caused by change. I believe that Balaram's problem is best expounded in his essays, "The Power of Representations: Semiotics for Mass Movements" (in my view, one of the best essays), on the one hand, and on the other, "The Barefoot Designer: Design as Service to Rural People." And the closest, he comes to solutions of the type I would agree with is in the essay, "Leave Well Enough Alone: The Need for Restraint in Designing."

My purpose here, is not to write a "review" of the book, a task for which I would find myself incompetent, but to give a personal reaction to the book, thereby showing its relevance

There always is a loss in change. It's a law of life. The question is, who measures, and with what yardstick the profit and loss? Allow me to give a personal example; I had the privilege to learn an Indian language, Bengali. But the time and effort I invested in learning Bengali has resulted in a significant loss of my earlier mastery of my mother tongue, French, I lost and I gained. Only I can establish the balance of profit and loss I can only say here that, I have no regret.

Many changes are now being forced onto India. That must be taken in one's strides as one accepts the weather; that is, something over which one has no power Rut the rest? Are there not areas where one has the power to choose? Cannot "a humane designer with abroad global vision" make ethical and aesthetic choices that are more conducive to long term survival than other choices? Balaram answers that question positively and profusely. He urges

"The designers *(should) turn to* service *design. They should design* strategies,... offer creative *solutions to problems on a variety of Issues* rather than create more and more varieties of objects. Design *would then* become a mission instead *of what it is today - a commission."*

Thinking Design is a serious book. But it is full of stories and case studies (stones of another type) which makes reading delightful and always related to real issues. Which reminds me of a story…Well, another day.

Gaston Roberge

Executive Secretary for Social Communications, Society of Jesus, Rome

Introduction

Design so far has been considered as a visual activity; and most books and magazines on design have been at best colourful catalogues or case studies with plenty of pictures. The exceptions have been the books which dealt with the inputs required in practising or teaching the design profession. They focused on subjects such as design methods, colour; form, drawing methods and other tools to help develop skills and attitudes. Let me call the first category as *Design Gallery or Applied Design* books and the second category as *Design Tools* books. A third category is often wanting.

Like artists, designers always feel that they are skilled or even talented, creative professionals who put their body, mind and soul into the work they create. They leave the interpretation of their creation to someone else. They simply hide behind their work and say with the usual aplomb, “my work is my statement.”

In an age-old profession such as “Art” perhaps this works well because there exists a whole community of art critics. This is not so with the design profession. Until recently, there were hardly any design critics. As a consequence there was a severe dearth of serious writing in design that critically examined contemporary issues; social concerns; historical developments; economic political and environmental contexts; larger global connections; philosophical understanding and future visions. Designers created “things” (this includes communications) but their “thinking” remained unarticulated and unshared by the society at large. This situation has started changing only of late. *Thinking Design* is a small attempt in that direction.

This is a collection of a dozen articles chosen from my earlier writings. They cover a time span of some seventeen odd years. A few learned colleagues of mine who read some of them found them relevant even in the present context and that is the major reason for their selection in the form of a book

In a collection that is so paced in time, the style and mode of expression are bound to be somewhat uneven. I have made no effort to change this as each article represents a certain period in the world design scene and my thinking process in relation to that period. The statistics mentioned in each article refer to those periods and contexts as and when the article was written. One good example is the figure of the Indian population which changes drastically every day.

Each article was also written on different occasions addressing different audiences. Therefore there may be a repetition of some ideas in a few articles. At other times, there is discontinuity of a norm which I set for myself to follow. For instance, in one of the articles I have criticised the use of the words “third world,” and “developing country,” since both these expressions sound rather derogatory showing the lives of the majority of humanity in a poor light, thus creating a negative bias. In their place, I have used the word “majority world” based on the number of people living there in contrast to the popular words which are based on material wealth or degree of industrialisation a country has. But the use of “majority world” appears only in one article of mine, whose main theme is indirect psycho-political oppression and hence such a stance was important

A point regarding the language has to be made here. Notes and glossary are not given separately at the end of the book as these are very few. On deserving occasions notes and explanations of Indian words are provided on the same page inside the margin for convenient reference.

As mentioned earlier; a majority of the articles have been prepared as papers to be presented at national or international conferences. Because of the haste to meet the dead lines and also to add certain cuts and thrusts to an argument many a time I had to resort to a’ ‘here and now” journalistic polemic. Wherever obvious, this has been toned down to give the writing a more enduring format. Yet some traces of it could be detected by the critical reader:

The articles chosen are varied in their themes and each represents a different dimension of Design Thinking. Although these are based on the Indian and Asian Design situation, their arguments are universal. The themes deal with subjects such as the Indian design context; people's own design solutions; Design education; comparison between Western and Indian design concepts; and semiotics. One article explores the connection between politics and design, while other moots the concept of "barefoot designer" A couple of articles argue for the reappraisal of crafts to bring methods and attitudes of a craftsman into the main stream design thinking. As a whole they revolve around aspects such as values, identity relevance and human empathy.

The book is conceived as "Graphic" in the structuring of its contents. On a three axis grid the contents would constitute horizontals, verticals and diagonals. The conventional theoretical reflective argument is considered horizontal while the upright practical design project is vertical. The diagonal of course is eccentric and refreshingly mad. The main text in the form of "article" is juxtaposed with verticals and diagonals which are there to act as punctuation and provide relief to the main text. The verticals are thirteen case studies of projects done mostly at NID. They are not connected directly to the articles. But they are indirect applications of some ideas appearing in the articles. The reader is prompted to make his / her own connections. The diagonals are miniscule amusing stories of Mulla Nasrudin, the mad genius, used in the manner of a quote - they take the reader to a different deeper plane of thinking, both amusing and enlightening at the same time. Their presence in the book is meant to be a teasing distraction.

The book is not linear The reader is prodded in every article to refer to the case studies appearing in the last section for an illustration of an idea in its realisation. The contents are arranged not chronologically but in a suitable order for a more meaningful reading.

Some of the arguments are deliberately stretched a little too far to give an edge to the point being made. I hope this writer's "excesses'' may be pardoned *by* the critical readership and not mistaken for sweeping statements.

At a time in history when a new individualism is leading humanity to a decline in social responsibility and towards a rise in the "rights" culture, this book attempts to bring to light some issues which are important to designers, Even if it succeeds in raising a lively debate whether contradictory or supportive, I consider its aim as being fulfilled.

S. Balaram

15 August, 1998

SECTION ONE: DESIGN, NATURE & POWER

EATING HIS MONEY

Mulla Nasrudin, as everyone knows, comes from a country where fruit is fruit, and meat is meat, and curry is never eaten. One day he was plodding along a dusty Indian road, having newly descended from the high mountains of Kafiristan, when a great thirst overtook him. 'Soon', he said to himself 'I must come across somewhere that good fruit is to be had!

No sooner were the words formed in his brain than he rounded a corner and saw sitting in the shade of a tree a benevolent-looking man, with a basket in front of him.

Piled high in the basket were huge, shiny red fruits.

'This is what I need,' said Nasrudin. Taking two tiny coppers from the knot at the end of his turban, he handed them to the fruit-seller.

Without a word the man handed him the whole basket, for this kind of fruit is cheap in India, and people usually buy it in smaller amounts.

Nasrudin sat down in the place vacated by the fruiterer, and started to munch the fruits. Within a few seconds, his mouth was burning.

Tears streamed down his cheeks, fire was in his throat.

The Mulla went on eating.

An hour or two passed, and then an Afghan hill man came past, Nasrudin hailed him. 'Brother, these infidel fruits must come from the very mouth of Sheitan/'

'Fool!' said the hillman. 'Hast thou never heard of the chillis of Hindustan?

Stop eating them at once or death will surely claim a victim before the sun is down!

'I cannot move from here', gasped the Mulla,' until I have finished the whole basketful!

'Madman! Those fruits belong in curry! Throw them away at once! I am not eating fruit any more,' croaked Nasrudin, 'I am eating my money!

The Wonder that is... The Context for Designing

Artists and designers are well aware of the figure and ground phenomena in perception. A figure cannot be perceived without perceiving its background and the quality of figure-perception depends on the appropriate perception of the ground on which it stands. Likewise the design activity of any country cannot be well understood without knowledge of the context in which it operates.

What is this context? The context for Indian design is India's economic, social, cultural and political realities. In these realities lie the context and meaning of Indian design. In these realities lie the answers to man/ crucial questions about Indian design.

Some of these questions are:

Should India have its own design?

Why not import, copy or imitate?

What is the role of design in a developing country like India?

In India's development, what are the factors that provide ground to Indian design?

What can an Indian designer learn from the world around?

What are India's special problems which require special design solutions?

Who are India's people and what are their physical and psychological needs?

In what ways are the needs of the Indian people different from those of people elsewhere?

If the people of India are different, is it not natural that they need different solutions and different ways of applying them? After all, Designing is for people.

Designing for people: vast and diverse

When we think of India, we cannot but think of its people. With an ever increasing population-approximately 950 million today India holds one-sixth of the whole human race now on earth. The scale is breathtaking. Even in this sense alone, India is like so many Italy's put together: The magnitude itself is enough to multiply the complexity of problems and demand different design solutions.

India is a land of paradoxes. There is unity in diversity In this geographically and culturally unified collection of people, there are vast diversities of language (15 major official languages and 700 mother-tongues, including dialects), of social habits and of religious practices. The linguistic and other social patterns are so deep-rooted in time that it is almost impossible now to standardise them.

The diversity of human measurements follows the diversity of terrain and climate. They range from snow-capped mountains and valleys of the North with its tall, fair Kashmiris, to the coastal South with its short, dark Tamilians. The sober; neutral colour palette of the people of lush green South India is significantly different from the gay vibrant pinks, yellows and blues of the people of the grey deserts of West India. There are no standard anthropometric or other data available. While designing for India, one therefore requires to first clearly identify the regional group to be served and collect the necessary data oneself. If this vast diversity is the Indian people's physical reality, their mental reality is something quite different.

Mental reality: power of the myths

The most remarkable thing about India is its grit. In spite of many natural calamities, its huge international debt and enormous population growth, the Indian economy has grown in recent years at an unusually rapid rate. And, most importantly, its democracy is intact. Today, India is the largest democracy in the world. In the words of Professor Hofferbert, who made a comparative study of developing countries?" No other country on the face of the earth with a per capita income less than 500 US dollars has had a history of competitive political parties and democratic elections (as India has)."

Religion and mythology are dominant in the Indian psyche. The Indian mind is mythology-filled. I was witness to the fact that in Gujarat, during a severe drought and in the face of communal riots, in the face of hunger and terror; the people celebrated Diwali (a Hindu festival of lights) and burnt a lot of borrowed money on fireworks. (For a detailed analysis of the mythology connection refer Article 3 "The Power of Representation")

India's secular polity embraces Hinduism, Islam, Christianity, Jainism, Sikhism, and many other faiths. The Hindus, who form the majority, worship a child (Krishna) as a God and celebrate childhood. There are festivals for children. Yet many Indian children are deprived of their childhood and education. They are forced by economic necessity to labour either in the house or outside to supplement the family income. The natural consequence is exploitation, but the experience prepares them early to face the hardship they will encounter for the rest of their lives.

In Hinduism, woman too is traditionally worshipped. She is the all-powerful Durga, slaying demons, or Amba, the mother goddess. Even today, in states such as Kerala, matriarchy prevails. Indian women hold prominent positions nationally as well as internationally - not to mention the woman Prime Minister, Indira Gandhi, who ruled India for the second longest term and Vijayalaxmi Pandit who represented India at the UN. Notwithstanding these achievements by women, the average Indian woman is systematically denied fundamental rights. She gets an unfair deal from society and the girl child is often considered a burden in the light of the still-prevailing dowry system.

These mental complexities pose a challenge to the Indian designer and they also explain why some extremely sophisticated designs have failed in the Indian market.

There is misguided criticism of the caste system in India which arises from a confusion of the caste system with the class system, No country is without some kind of class system, either economic, racial or of some other kind. It is true that in India the traditional caste system - the Brahmin, Kshatriya, Vaisya, Sudra division is still practised, particularly in villages where the system has deeper roots. But it is equally true that the old system is fast disintegrating and is being replaced by new caste divisions based on trade or profession-a natural phenomenon. Doctors, Engineers and Designers, irrespective of the caste they are born into are marrying within their own professions, thus creating new kinds of castes.

These changes co exist in India with the unchanged past and its mythology. Such co existence is outwardly reflected in built environments.

Built environments: rural roots and urban influences

India lives in its villages. Approximately eighty per cent of India's population is rural; spread over half a million (to be precise, five hundred and sixty thousand) villages. Rural houses, in contrast to urban houses, are built on lines evolved over thousands of years of aesthetic traditions, indigenous techniques and judicious use of local materials such as mud, grass, bamboo and cane. Palm or coconut leaves predominate in the rural habitat in the lush green South India, while stone and sand create or adorn houses in vast desert areas of Northwest Kutch. Their design makes great ecological sense because of the use of renewable materials, and great aesthetic sense because of its being in harmony with the natural surroundings.

The houses and the spaces in and around are arranged to suit the local climate. The Kutch desert houses, for example, arc built with thick walls and small openings, and narrow passages between the houses to overcome the gale of strong winds, the dust and the heat.

Nowhere is the saying, "Necessity is the mother of invention," more true than in India, Many objects of daily use are designed and used indigenously for multiple functions. A cot is used not only for sleeping, but also for sitting, drying vessels, drying papad, and as a screen when women need privacy for bathing and so on. What is more, a cot can be hung on the wall to save precious floor space,

Interior spaces too are used very impressively for multifarious activities. A single room is used for meeting people, eating, sleeping as well as working. Art always has been a part of life in India, Every household shows its art and craft skills by decorating its walls, floor, and front yard, ceremonial dresses or hands. Art doesn't exist in galleries but

on the walls of one's own room. In Gujarati households, the mundane eating/cooking vessels are washed sparkling clean and displayed prominently as decorations in the living-room.

Even the streets are utilised as multifunctional spaces. These are used to dry textiles, to spread yarn, to make kite-threads and so on. Marriages are celebrated there. Group dances like the Garba take place in the street, Children play there. At night the same street space becomes the village court, the village theatre or the place for social gatherings.

Modern Indian architecture is a very urban phenomenon. Its aesthetic character is predominantly Western. It is more monumental in nature. It is self-conscious and it stands out. At times, it is too beautiful. It shows off. In the words of an eminent Gandhian architect, Laurie Baker; it is "bad manners" because it competes with, shows off among, or is defiant towards the surrounding buildings. Many new "designed" buildings are capital intensive, raw material wasting, and more often compound, rather than solve the problems of heat, dust and lashing rains. They are either West-influenced beautiful monuments or over-organised mechanical reproductions of buildings mostly irrelevant to India. Local materials and skills are not properly explored by the urban-trained architect. The reason for this situation is the architects' non-experience of true Indian culture.

The culture of agriculture: Tradition and Modernity

India is an agrarian society where traditional and modern practices co-exist. Even in this electronic age, some age-old practices still prevail. Women work the whole day bending in knee-deep water for paddy planting. They are paid half the wages of men for their labour. Alongside the motorised pump, an ancient system of water lifting (for irrigation) finds its widest application. The ancient system will probably survive even into the future because it is labour-intensive and renewable-energy based. It is made of local materials and skills and is almost maintenance free. Cultivation is done with the use of bullocks and buffaloes.

Women carry fodder and other farm products on their heads, often carrying more than 50 kg per trip. They use no luggage carriers. But interestingly enough, many of them wear electronic watches!

Milking is done manually in the traditional fashion while squatting. But the milk distribution is done through head loads as well as through the most modern high-tech refrigerated tanks. The White Revolution of India is due to the collective effort and the application of "state-of-the-art" technology at the Amul Milk Dairy in Anand.

The Green Revolution in some states of India was made possible by using modern technology like tractors and scientific methods of farming, hand in hand with traditional ones. The bullock cart is still a major transporter of goods in the country, ranking next only to the railways.

In introducing modern technology in such a tradition-rich country, people's psychology plays a very important role, and should be a key consideration for Indian design. A major manufacturing company of South

India designed and manufactured an aluminium bullock cart which was light enough to be lifted by three people. When the new cart was demonstrated, the village crowd disappeared from the scene in the firm belief that a cart as light as that would be equally

weak and unfit for their heavy work. The company had to withdraw the product, change the strategy and start a communication campaign before introducing the new product. (Refer Case Study 2," Bullock Cart" in Section Across)

The three-wheeled auto-rickshaw is the common man's taxi in India. It is cheap and affordable. It has a scooter engine, but all its facilities and decorations are adapted to suit individual tastes and local needs. Another similar adaptation is the bicycle, which is used for milk distribution by tying milk cans to the rear seat and the cross bar

However, not all the adaptations are appreciated, particularly in a wider design context. Petrol shortages force drivers of auto-rickshaws to mix kerosene with petrol, thus causing even more pollution. But pollution is too far from people's consciousness especially when they are faced with the question of survival. The survival problem is most apparent on Delhi Transport buses, where people apparently hang on to the bus, but in fact hang on to life. The pressure on inadequate resources is such that it often makes the Indian designer feel helpless. People need to be educated about the dangers of environmental degradation, which may not be apparent today. India's major development problem has been the lack of education in most areas of crucial importance.

Education: the colonial legacy

Some of the world's best scholars, scientists and professionals are Indian. As Ved Mehta wrote in his book, *A Family Affair: India* under Three Prime *Ministers* (Oxford University Press, 1982), "India ranks next only to the United States and the Soviet Union in its number of highly trained Nuclear Scientists." According to the World Bank Report, I 982," No country with even twice India's per capita income comes anywhere close to its higher education ratio." But even with such well developed scientific know-how, and a higher education ratio, perhaps eight times that of China, nearly two-thirds of Indian citizens (36 per cent) simply cannot read or write, (Amartya Sen," How is India Doing?" Express Magazine, 17 June 1990).

The traditional system of guru or the preceptor and disciple, with its individual attention, has disappeared. This system is now limited to the teaching of classical Indian music and dance, again only for an elite few.

On the other hand, the mass education introduced by the British during the colonial rule prevails and has been adopted all oven. Unfortunately, this education is hardly relevant to the needs of the people of today's independent India.

Higher education has resulted in a constant brain-drain. It is a double-channelled drain. The external drain is that highly educated and talented Indians go and settle abroad for "better opportunities and life-styles." The other and not much talked about drain is the internal one. The few highly educated talented villagers go and settle in big Indian cities, for better opportunities, and improved life-styles and, mostly, for better utilisation of their learning. One prime reason for this, is that the present content of Indian education lamentably lacks in rural focus and, hence, relevance to the village. As regards primary education, though it is free, many Indian parents can't afford to send their children to schools as the children have to earn or help share family burdens. Added to this is resource inadequacy. Schools are grossly inadequate in number and even existing schools lack funds and facilities for good education.

The colonial system of basic education is standardised mass-production meant for preparing people for clerical jobs. Those who have had this education naturally want desk jobs because that is all they have been trained for Consequently, most of them face unemployment arid the incapacity to earn a livelihood.

Livelihood: not enough jobs, but more than enough work

In India, the population is enormous, but so arc their needs. This means that there is more than enough work for everybody, even though there are not enough jobs for everybody. The key to the solution of the problem of unemployment lies here.

Many young people realised this fact and started working on their own. This situation created a multitude of self-employed business people. Their businesses varied from selling provisions in a small shop to exporting goods. The space and facilities for such businesses are a bare minimum.

Making and selling can be done at home, in the living room. The veranda of someone's house could be used as a shop or a service area. Near the Ahmedabad Civil Court, for instance, a large number of typists sit cross-legged on the pavement and type legal documents on the spot. Many two-wheeler garages also operate on the pavement, under the open sky. Much selling is also done by mobile street vendors, supplying goods door-to-door. This increasing, vast, unorganised/informal sector needs designers not to promote its merchandise or services but to improve its work environment and working conditions.

Unorganised selling and making of goods are not confined to traditional goods. Modern products for modern needs are also handled by this sector. One obvious example is plastic products. Again, survival comes first. Even tribal women in remote forests today wear synthetic cloth. The reason synthetics are preferred, is because they are affordable and can be easily washed. Plastic *torans* which don't wither; plastic flowers and plants which need no watering, plastic buckets which don't rust plastic is everywhere. No matter what the culture-vultures and environmentalists say, plastic is here to stay. New materials such as these and new needs offer many new opportunities for creative people. A host of working women and women entrepreneurs have started mostly production-cum-sale type businesses and are doing pretty well. Even many young designers have started establishing design-cum-production units. Thus they have become part of the Indian Industry which exists at several levels.

Industry: multi-level production

Industrial production, otherwise known as mass production in India is both "for the masses" as well as "by the masses." India was known in the past for its textiles and a vast number of Indian people still make a living from handloom weaving and hand-printing of textiles. They produce exquisitely beautiful cloth. Handloom production has become our most' significant export success and domestic success too. It has afforded dignity both to the weaver and to the wearer. The handicraft industry, also home-based, has not been so fortunate. (Refer Case Study 12, "The Appliqué Textiles" in Section Across)

Craftsmen still produce breathtakingly beautiful artefacts but their art is dying due to severe economic pressure. There is only a limited local market for crafts and the craftsman is unable to understand foreign buyers' needs. He also lacks the capital necessary for investment. Raw materials like ivory and rose-wood are fast disappearing

and many a time the use of some items is banned by the govt. for preservation / conservation. All this results in the craftsman losing confidence and ultimately, this affects the quality of his work, and consequently, sales. Thus, a vicious circle is formed,

One among such dying crafts is stone carving, Except for temples, where can one use stone carving today? Transport of stone is expensive and it is no longer used in building houses. The craftsmen now look for other manual occupations or desk jobs.

The individual entrepreneurship which I mentioned earlier gave rise to millions of small-scale industries. Perhaps the largest number of small-scale industrial units in Asia is in India. Large-scale industry has also developed substantially India is the seventh biggest industrial nation. Indian industry has made big strides in making and exporting products such as cycles, fans, cars, computers, telecommunication equipment and devices for the electronics age.

An interesting linkage is emerging among these varied sectors of products. Small industries make components/ancillaries for large industries. Large industries sometimes lend their brand names even to products totally made by small industries. Craft products are thus marketed by large industries which have a wide sales network. Large industry's goods, say two-wheelers, are serviced by the unorganised pavement-garages which thereby play a key factor in a product's life.

Cottage industry, craft industry, small-scale industry medium-scale industry and large-scale industry - all these levels of industry co-exist here. Co-existence is the hallmark of India. Henri Cartier Bresson, the famous French photographer once shot a picture of an Indian space-rocket being carried to the launching site on a bicycle a telling comment on Indian co-existence. The past exists with the present The rich exist with the poor. Tradition exists with modernity. Cottage or home production exists with high-tech mass production,

These co-existences, these paradoxes, these vast and diverse people and their needs-that is the Indian reality posing a challenge to the Indian designer.

Indian designer: a search for relevance

The real challenge to the Indian designer is in making his design relevant to the development needs of India. A decade ago, in 1979, eminent designers from the world over met at the National Institute of Design, Ahmedabad and discussed "Design for Development" at a global conference [UNIDO-ICSID, 1979]. At this meeting the late Romesh Thapar, an eminent journalist and thinker; in his keynote address said:

"To raise so many (people) to recognised levels of healthy and creative living poses problems which have no parallels in lands which have already developed and advanced." The design needs of "development" and affluence are different The Indian designer cannot afford to be fanciful, sensational, "expressive" or indulge in art for art's sake. He cannot, through his design, overspend scarce materials and money. Unlike many industrialised countries, the investment in India should be considered in terms of the unskilled many and not money.

To be relevant, the Indian designer's approach should be capital-saving and employment-generative. He should draw on our rich traditions as well as apply the latest scientific and technological knowledge equipment, such as the state-of-the-art computer, for solving basic-level problems such as developing a better sickle or a better hand pump.

His approach to his creations must be that of a dynamic innovator rather than that of an artist. He should design for maximum advantage, with local materials such as mud, grass, cane, bamboo, coir; jute, and with local skills in mind such as manual dexterity and adaptability

To be relevant, his design must suit Indian conditions like excessive heat, dust, lashing rains, poor roads and rough handling/mishandling by illiterate users. This is the reason why many imported products / vehicles do not work in India. Thin plastics invariably break in Indian hands. The easy-to-fix components in stainless steel or brass disappear The long cars fail to enter an average narrow street.

The India of today cannot be a "few-decades-ago" Italy Today's global concerns of environment, energy crisis, pollution, the desired life of a product, side effects during its life and effects after its life, should be equally important considerations for the Indian designer as they are for his counterpart in any industrialised country.

A culture like ours with an unbroken history of 3000 years is as much a benefit as it is a burden to the designer. In the modernity-tradition co-existence, the challenge to the designer is to creatively explore the rich past, to bring it to the benefit of its people, rather than be its victim. Cultural victimisation, in my experience, results when the aesthetic ideas of one culture are transplanted to another with a total disregard for its own. Due to the recent liberal industrial policies of the Government (concerning exports and imports) and the ensuing competition, the seller's market is presently turning into a buyer's market. Products like fans and refrigerators, conservatively painted in white, are now appearing in different colours. Industry and the public are realising the importance of ergonomics and appearance. Sometimes the appearance aspect has been misrepresented and has led to trivialisation of design. This situation is mostly due to the very few Design training resources present in the country inadequate quantity

India recognised the need for professional training in design in the earl sixties and established the country's first design school - The National Institute of Design at Ahmedabad, based on the recommendations of the eminent designers. Charles and Ray Eames. A decade later this was followed b the setting up of an Industrial Design Centre, at the Indian Institute of Technology, Bombay. Two decades later, The National Institute of Fashion Technology came up in New Delhi. Many other major educations institutions are in the process of introducing design departments or centre: In the seventies, the professional body. The Society of Industrial Designer of India (SIDI) was founded and now the government is considering a proposal for setting up a National Design Council. Considering the country's enormous scale, population and complexity, the number of design graduate; trained by the few Indian design schools, is pathetically low. The quality o training offered however; is of global standard.

I mention below some randomly chosen "design' projects of the student of the National Institute of Design. They provide-a-quick-glimpse of the kind of work being done at Indian Design Schools.

1. A public phone for Indian Telephone Industries Ltd. The technology not only permits play with form but has in-built facilities for a night lamp, a writing pad, and a luggage hook which would be useful for commuters.

2. A pedal pump for small workshops. The new design brings machine aesthetics into a conventionally dirty workshop.

3. A helmed for a small-scale industry in Delhi, which, besides taking care of I he tropical heat and sweat, provides satisfaction to users by its modern appearance.

4. A symbol for Indian government's television called "Doordarshan." The symbol incorporates throe components of aesthetics according to traditional Indian scriptures- *Satyam, Shivam, Sundaram* (Truth, God and Beauty).

Thus, it is important for the Indian product designer to attend to the real needs of the Indian society by making a product better or by increasing the choice for people through his design. Rather than either starting in "ism" or blindly copying another's ways and values, the Indian designer ought to understand and base his designs in his own context while constantly looking at and taking inspiration from design developments all over the world.

Good News

In the East, people who bring good news are always rewarded, and this is considered a very important custom, never broken.

One day Mulla Nasrudin, delighted at the birth of a son, arrived in the marketplace and started shouting:

'Gather around! Good news!'

Nasrudin waited until everyone was present then cried:

'O people! Make a collection for the bringer of good news, news for every single one of you!

This is the news! Your Mulla has been blessed with a son!'

Modern Indian Design: The Roots

Design as an act of fashioning things to suit human needs has been there ever since the existence of man on earth. But it is only recently, that design has come into being as a specialised profession. In the West, design emerged as a reaction to mass production but in India the story is quite different.

The Indian tradition always held art and craft as one unified whole. In the classical Indian language Sanskrit, there is only one word "Kala" covering both. Thro ugh out the recorded history of India, from the Maurya dynasty (320 B.C.) to the Mughal Empire (A.D. I 700) it can be noticed that the artist-crafts man was part of a caste based community and passed on his profession from generation to generation within the family. This is in accordance with the Indian "Varnasrama Dharma" or the principle of caste-based profession which continues even in the 20th century in the rural parts of modern India where most people live.

Modern Indian industrial and graphic design may be traced back to the concept of industrial art which originated and prevailed in the countries of Western Europe during

the post-Industrial Revolution period. New and rapidly developing industries deeply felt the need to apply artistic concepts to mass production and therefore, sought to effect a transition from individually-crafted, traditional objects to the new machine-made products. The term industrial art later on became "Design" so as to encompass a wider field.

The arts and crafts movement which began in Europe laid the foundation of modern "Design." Ornamentation was the major aspect at that time. The ornamentation debate began before 1850 and propagating either in favour of or against ornamentation was the preoccupation among the European and American designers. Even the arts and crafts movement members were not unanimous. Lewis Day an associate of William Morris, the movement's leader said "Whether we like it or not machines will have something to say about the ornaments of the future." Eminent Architects Louis Sullivan and Henri Labrouste made similar observations but based on very different conclusions.

A very clear and surprisingly rational role of ornamentation is articulated in Indian "kala" and in many other cultural traditions of Asia and Africa.

India is a country where craft is intimately linked to tradition and religion. Tolerance being its hallmark, Indian society is open to new ideas and influences. With the advent of improved communications systems, European trends began to affect the customs and lifestyles of urban residents in India. The desire to imitate foreign tastes and attitudes was further aggravated by pressures exerted by the British to conform to certain set patterns. By the mid-eighteenth century, as the British consolidated their political power over major portions of the Indian subcontinent, their cultural influence on Indian traditions increased substantially.

Awareness of industrial art spread through India in the second half of the nineteenth century when the formal teaching of arts and crafts, based on methods practised in European schools was introduced. The major commercial centres of Calcutta, Bombay and Madras, established art schools. These institutions failed to co-ordinate their teaching objectives with Indian conditions and thus achieved no constructive purpose. The philosophy of the art schools and their working methods were directly influenced by Victorian attitudes. Besides Victorian attitudes the teachers in these schools who initially were all British, suffered from the contemporary confusion vis-à-vis:

- Technology as a means of social production
- The machine as a giver of a new style, and aesthetics
- Artificial dichotomy between "fine art," "applied arts" and "machine art."

They failed to take note of the tradition of "Kala" and passed this confusion to their Indian students some of whom later became teachers in the same schools. Santiniketan and Ananda Coomoraswamy in their own way did try to shed light but the initial damage done remained irreparable. For instance, even in Santiniketan one had *Charukala* and *Karukala* to distinguish applied art and machine art respectively. These alien attitudes generated a lack of clarity in the objectives and this lack of clarity was further aggravated by the great Crystal Palace Exhibition held in London (185 I) which confused styles. The exhibits and the building that housed them were in total contrast with each other- heavy surface ornamentation as added value on one side and the large-scale use of new technology and new materials such as steel and glass on the other side.

In the catalogue of the great Crystal Palace Exhibition of 1851, R. N. Wornum commented upon certain characteristics peculiar to the Industrial period.

"There is a class of ornament which has much increased of late years in England. The theory appears to be that, as nature is beautiful, ornamental details derived immediately from beautiful natural objects must insure a beautiful design. This, however; can only be true where the original uses of the details chosen have not been obviously violated and one peculiar feature of this School is that it often substitutes the ornament itself" for the thing to be ornamented."

At the social level, attempts by Indians at duplicating European dress, environments, artefacts and manners were, by and large, little more than inferior imitations of the original versions. Nevertheless, these adaptations gradually became an integral part of Indian life. The approach to architecture changed as it grappled with the issues raised by the English attitude towards privacy which called for a new perspective with respect to space. "The earlier habits of working and eating at floor level gradually faded as chairs, dining tables and kitchen platforms began to appear in Indian homes. New devices for cooking and serving were incorporated. In some sectors of society, Indians fully or partially adopted Western dress, On the cultural front these changes undermined old values, while on the social front they only made class distinctions more glaringly evident,

On the other hand, the Indian environmental conditions also had their effect on the life-styles of those foreigners residing in India, and a number of totally new products and graphic forms evolved, In architecture, forms such as the veranda and Dak Bungalow came into being as did railway coupes and retiring room interiors. In furniture the garden chair and camp cot were developed. Products such as the pull *punkah,* the mosquito net and the grass curtain *(khas tatti)* along with household items such as the tiffin box came into common usage in most affluent bungalows. Apparel such as the *sola topi* and the *khaki* uniform bore testimony to the interaction between the two cultures,

There is another side to this issue. The influence was not merely one-sided. Historians often ignore the fact of mutual influence. The exquisite Indian craft articles exported to England had such an impact that the Indian visual motifs began appearing in the works of many well-known British designers such as Owen Jones (refer Silk Tissue, 1870-80).

The turn of the century witnessed a strong reaction among Indian intellectuals against excessive imitation of the British and the drastic changes in tradition that were taking place in India. This controversy brought an aesthetic reaffirmation in its wake. The profound thought and forceful action of the reaffirmation movement not only created awareness, but more importantly a reaffirmation of certain important aspects and values of a culture still very much alive. Noteworthy among the revivalists were well-known art scholar Ananda Coornaraswamy, Nobel laureate Rabindranath Tagore and political and social reformer Mahatma Gandhi.

In his book Art and Swadeshi, Ananda Coornaraswamy criticised "the ill fitting hinges of inlaid glove boxes; the elaborate carving of the tops of the tables making them useless as tables; exquisite embroidery for blouses applied to cheap materials which do not last; or worked in colours which do not last. This state of affairs results from the fact that the craftsman does not use glove boxes, tables and blouses and there can be no serious change in the position of the industrial arts of India until the present Indian boycott of the

Indian craftsman is replaced by something more like that intelligent boycott of worthless importations from Europe and their imitations made in India,"

Coornaraswamy was acquainted with William Morris and C. R. Ashbee who pioneered the Arts and Crafts Movement in England. He relentlessly insisted that "the Indian artist would have to be once again saturated with the traditional culture of the East" in order to regain the right perspective. Coornaraswamy held the conviction that the machine could work in favour of the artist rather than against him. With his prolific writing he was able to create a stir among the artists and thinkers of that time.

Poet Rabindranath Tagore made important educational contributions to the Indian reaffirmation movement by establishing an experimental Visvabharati University in Shantiniketan in Bengal. The university sought to gear the ancient traditions of learning to the needs and aspirations of the present generation. Although he was receptive to external influences, Tagore urged his countrymen to exercise caution and discrimination.

In its instruction of visual aesthetics, Visvabharati borrowed from the neighbouring cultures of China and Japan whose aesthetic traditions had remained unbroken and compatible with the Indian way of life. It had wide-ranging influence on literature, poetry, performing arts, painting and crafts. But the cultural upheaval initiated by intellectuals such as Tagore and Coomaraswamy primarily affected the aristocratic upper classes known as the *Bhadralok,* but had little effect upon the masses in India.

The real impetus surfaced from a different quarter. That was India's struggle for independence. As part of this struggle, the *Swadeshi* ("that which belongs to our own country) movement propagated by Mahatma Gandhi, attracted such active participants as Nandalal Bose, the great Indian artist of that period. It soon became the driving force of the national struggle for freedom. It is interesting in a cross cultural sense to note that much of Gandhi's inspiration initially came from "*Unto this Last"* a literary work by John Ruskin, the man who lent philosophical base to the "Arts and Crafts" movement of Morris and Ashby. (Ref. *My Experiments with Truth* an autobiography by M.K. Gandhi.)

The Swadeshi movement was of momentous importance because it paved the way for radical, political, economic, cultural and social changes in India. It not only spearheaded the struggle for political independence but set in motion the search for freedom of expression at all levels. With his revolutionary concept of self-reliance and self-sufficiency, Gandhi awakened the multitudes to several home truths and indirectly initiated a process of "redesign" that extended from *pandals* the open tent-like structures that seated a million listeners, to chappals a simple pair of sandals that adorned a million feet.

Gandhian thought sparked a fresh visual idiom that based itself on economic as well as human values. It transformed the Indian environment with products and graphic forms such as the pandal as well as the homespun, hand-woven cloth known as khadi and the low level seating - bethak. The simple *khaddar* dress of *kurta,* pyjamas, cap and *chappals* became the standard uniform for freedom fighters. For us designers, the *"Yeravada Charkha"* or Portable Charkha was one of those unique happenings. It was consciously "redesigned" at the behest of Gandhiji by one of the residents of the Sabarmati Ashram - his name was Lakshmidas Asbar.

If the Swadeshi movement was an instrument of socio-political reform, it was also simultaneously a quest for cultural identity. Soon the Indian spinning wheel *Charkha* became a symbol of national identity signifying self-sufficiency through hand-made products.

The insistence on self-reliance encouraged the development of small units of production such as the handicraft and cottage industries. The intention was to bring economic control back to the basic social group-the family.

Although the *Swadeshi* process hindered the working of many large industries, it eventually led to the Handloom Revolution, the first real success in design on a large scale.

The struggle for freedom also stimulated mass communication. The need to proliferate ideology and policy engendered an abundance of national newspapers, posters, periodicals and underground literature. Gandhi's own paper called *Harijan* played a key role in communicating his ideas throughout the subcontinent. Gandhi established Ashrams at many places to demonstrate the practicalities of his ideas. These Ashrams in their wake created totally fresh visual idioms and designed environments.

In India, the concept of mechanisation was introduced as far back as the early nineteenth century Since India served as the largest source of raw material for British industry, the two earliest machines introduced by the British on the Indian landscape were the ginning mill and the steam locomotive (railway).This was done for two very obvious reasons. Efficient gathering of the raw material cotton from the hinterland, and processing it at ports of embarkation such as Bombay, Madras and Calcutta before sending them over to the hungry mills of Manchester and Liverpool. The finished textiles of these mills were to be resold to the Indian people. The urban population eagerly accepted the new machine-made materials and the technical advancements. The machine however remained a novelty to rural life and local workshops were largely restricted to repairs and maintenance of imported machines. Thus the import of machine tools and capital goods continued for nearly a century.

India's first and real Industrial Revolution occurred only after the country's independence, in the late forties and early fifties. Many technological transfers and design inputs took place during the fifties. Within a decade, India established design institutions, making professional training possible.

These events were in sharp contrast to those in the industrially progressive West, In Britain, for example, design was not accepted as a profession until the thirties, a century after their Industrial Revolution, and the formal education of professional designers commenced only after World War II.

Indian architecture now underwent even more significant changes wit the introduction of new building materials and methods of building. New public constructions such as bridges, railways, roads and government bungalows were of a style distinct from that of the earlier Hindu and Mughal styles. Official buildings such as those designed by Sir Edwin Lutyen for the capital of New Delhi in the thirties became the models for the rest of northern India. The publication of "Sixty Designs for Your Home in 1946, promoting the use of Reinforced Cement Concrete (RCC appealed to urban households so

enormously that it became a veritable grammar of architectural form. Its influence is visible even today.

India's culture has been oral. The Hindu tradition accorded higher status to the spoken word rather than the written word. It is the coming o Islam to India that introduced the alien book traditions there. Books were hand-written and hand-bound until the eighteenth century.

Nevertheless, machine printing arrived in India long before the locomotive engine or the textile mill. Towards the end of the eighteenth century William Cary started the first printing press in Calcutta. The first two decades of the nineteenth century saw the publication of several English and vernacular newspapers. Starting with the Bengali script, typefaces began to be designed and produced for Indian languages. The printing press sprung open several avenues of communication. It spread literacy through books, promoted social communication through posters, litho prints, calendars and labels and it also played a significant role during the struggle for freedom.

The art of lithography widely popularised Indian mythology. Painters such as Raja Ravi Verma of Kerala laid the foundation for the onset of calendar art during the thirties which continues till date. This was further developed by Dhurandhar and others. Calendars are poor man's paintings. They are extremely popular and quite inexpensive. Based on the late nineteenth century European chromolithograph, the calendar-artists in India evolved their own interpretations of gods, mythological scenes and in the later period, films and film stars. Calendar-art is a synthesis of Western and Eastern styles and techniques.

Indian independence in 1947 and Gandhi's death a few months later brought an end to the nationalist fervour and to the social and economic reforms that were part of it. Free India's new Prime Minister; Nehru, sought industrialisation on a massive scale to "put India on the world map." Building of the country's largest steel mills, major dams, atomic energy plants and space programmes commenced.

A number of changes took place in mass communication during the post-Independence era. For the first time the government was able to use the media to communicate directly with the people. Information and broadcasting divisions continually kept producing radio programmes, documentary films and a myriad of publications. An outburst of magazines launched an unprecedented upsurge in the field of printing and publishing. The technical advances made in printing, widened the market for colourful pictorial magazines. Advertising and packaging rapidly assumed a major role in industrial promotion. All these developments involved special idioms and new designs (Refer Case Study 11,"The Letter Weigher" in Section Across).

The forms of industrial and graphic designs have progressively evolved since their introduction.

As different from many Western countries, the large industrial units did not replace the earlier craft production much in the same way as the locomotive did not replace the age old bullock-cart. Both types of production co-existed. Furthermore, it gave rise to an important auxiliary industry called small-scale industry which eventually developed into one of the strongest in Asia.

It was at this period of hectic development in the late fifties, that design was thought to be an important catalyst for industrialisation, Well-known American designer team Charles and Ray Eames were invited by the Indian government to study the Indian situation and recommend a programme of training in design that would serve as an aid to the small industries and one "that would resist the present rapid deterioration in design and quality of consumer goods within the country." The Eameses' in their *India* Report recommended thus:

"In the light of the dramatic acceleration with which change is taking place in India and the seriousness of the basic problems involved, we recommend that without delay there be a sober investigation into those values and those qualities that Indians hold important to a good life, that there be a close scrutiny of those elements that go to make up a 'Standard of Living'. We recommend that those who make this investigation be prepared to follow it with a restudy of the problems of environment and shelter, to look upon the detailed problems of services and objects as though they were being attacked for the first time; to restate solutions to these problems in theory and in actual prototype; to explore the evolving symbols of India."

"One suspects, that much benefit would be gained from starting this search at the small village level."

"In order to insure the validity of such investigation and such a restatement, it will be necessary to bring together and bring to bear on the question - all the disciplines that have developed in our time sociology, engineering, philosophy, architecture, economics, communications, physics, psychology, history painting, anthropology...anything to restate the questions of familiar problems in afresh clear way. The task of translating the values inherent in these disciplines to appropriate concrete details will be difficult, painful and pricelessly rewarding. It cannot start too soon. The growing speed of production and training cries out for some sober unit of informed concern sufficiently insulated to act as a steering device in terms of direction, quality and ultimate values."

"We recommend an institute of design, research and service which would also be an advanced training medium. It would be connected with the Ministry of Commerce and Industry but it should retain enough autonomy to protect its prime objective from bureaucratic disintegration."

As a result the National Institute of Design was established in 1961 in Ahmedabad and till date remains the only institute in the country to offer advanced professional design training in ten different disciplines of design under one roof, each interacting mutually with the other: Very few national level design institutions were established subsequently.

Initially there was a dearth of qualified Indian design teachers, As an experiment, bright graduates from related fields of Fine Arts and Engineering were selected and given design training under the best design teacher; brought from abroad. Simultaneously, the world's eminent designers such as Cartier Bresson, (photography); Frei Otto (tensile structures); Bob Gill (short film); Arnam Hoffman (graphic design) worked on projects in India and influenced pioneer Indian design teachers and designers. Renowned architect Louis Kahn designed the imposing exposed brick-buildings and campus of the Indian Institute of Management in Ahmedabad. Le Corbusier designed the whole city of Chandigarh including the exposed concrete assembly buildings for the State Assembly.

Indian designers have synthesised all these influences and made it their own in an inimitable way. Modern Indian product designs and communication designs are testimony to this. (Refer Case Study 3, "Devanagiri Script" in Section Across)

While India was busy with industrialisation, a few thinkers like Kamala Devi Chattopadhyay and Pupul Jayakar were sensitive to the dangers of market competition between mill-made and hand-made productions. Weavers' Service Centres to assist weavers were instituted all over India. The handloom revolution was brought about successfully. But handicrafts were not so fortunate. Although the government established regional design centres to help craftsmen and instituted master craftsman awards at the national level to encourage the craft, these measures had no significant effect.

In the early eighties, an experimental project called "The Golden bye" was initiated by the Indian government. Ettorie Sottsass, Mario Bellini and other such celebrity designers were brought to India to work on a chosen traditional Indian craft with an expert Indian master craftsman to create the most exclusive craft objects. Unfortunately, the project was not of much help to the craftsmen nor to the craft situation in the country. The Indian craftsperson is still struggling.

At present in India the design professional is able to earn well. I would hasten to add that it is a mistake to conclude that the Indian design profession is therefore thriving and effective. For the country's size and population and its enormous problems the number of designers or their contribution to society is a drop in the ocean.

Considering the vast discrepancies in India's social economic structure, designer skills are necessary to meet the rising demands of sectors ranging from small artisan crafts to large-scale industries and city planning. It is in this context that design in India needs to explore the evolution of India's dynamic craft production system and graphic idioms.

That is not enough. The human need which is the origin of design is not only physical but also psychological, socio-cultural, ecological and spiritual as well. Design requires people who practice as well as people who seek it. Hence the much awaited Indian Design Revolution will happen only when there is concerted effort to produce an adequate number of design professionals and simultaneously, perhaps more importantly when there is also concerted and sustained effort for design indoctrination to non-designers at all levels of Indian society.

Prudence

"The *Mulla was invited to a wedding feast. The last time he had been to that house, someone had carried off his sandals. Now, instead of leaving them at the door, he stuffed them into the inner pocket of his coat.*

'What book is that in your pocket?' his host asked him.

'He *may be after my shoes,' thought Nasrudin; 'besides - have a reputation as a learned man to keep up,'*

Aloud he said:

'The subject of the bulge which you see is

"Prudence"!

'How interesting! Which bookshop did you get it from?'

'As a matter of fact, I got it from a shoemaker.'

The Power of Representation: Semiotics for Mass Movement Beyond Reason

To say that rhetoric in India is not only important but also a way of life is no exaggeration. Over centuries of the traditional past until now, mythology and symbolism have always played important roles in Indian life. Many Indians see their own culture as basically non-materialistic, and reliant more on spiritual than on physical values. Indians also like to distinguish their own approach to life from the Western approach which is materialistic and centred around physical values. The Indian approach gives preference to feelings, emotions, and inexplicable inner convictions, while the Western approach is predominantly analytical, intellectual, and logical. The Indian approach often expresses itself as seeing a symbol in everything. Symbols and meanings are so important that realism sometimes seems to be deliberately discarded. For outsiders, this emphasis on symbolism in Indian culture is frequently misread as "suspension of reason."

Most Indians do not question the outer form of a god with a thousand arms, four heads, an elephant head, or both male and female features. In the Indian context, the inner meaning behind an outer form is most important. This apparent neglect of realism in India has ancient roots and permeates much of contemporary culture.

It can be recognised in virtually all art forms from the traditional performing arts to modern popular films.

For example, as part of a performance, Indian classical dance always has accompanying musicians positioned right next to the action. Moreover; the classical Sanskrit drama has a *sutradhar* who from time to time intervenes with the presentation, talking directly to the audience by either interpreting or commenting on the action. Further nearly all folk performances contain ritualistic elements, and performers often wear exaggerated costumes, jewellery, and colours far removed from what one encounters in the reality of Indian everyday life. Such classical devices of alienation are quite common in the other arts of modern India as well.

Probably the most widely accessible cultural form in modern India is its films. The immense success of song, dance, and melodrama presented in this genre is indebted to their deep roots in Indian mythology and popular culture. Indian audiences are not only familiar with their myths but can easily transcend the surface reality presented to them into a different realm. As K. G. Subramanian an eminent Indian artist and writer says, "The mythology-filled Indian mind reduces everything to symbols of enormous tolerance and elasticity which persist through successive changes in religious ideas, magically transforming themselves, becoming large in content and expansive."

Popular Indian films continue to use traditional mythological images for virtually all of its heroes. Whether it is N.T. Rama Rao and M. G. Ramachandran of the South or Amitabh Bachchan of the North, their roles essentially copy archetypal mythological heroes from which they differ only in emphasis. While one may be identified with a poor youth and the other with a god, the movie roles are all derived from almost word-by-word

translations of myths whose heroes perform the impossible with magical powers, destroy evil, and always win in the end. The immense popularity of Indian film heroes is an evidence of the continuous power of Indian mythology in modern media expressions.

It is my contention that it is the mythology of a culture that generates artistic expressions and political discourse, including industrial forms which in turn reinterpret and materially support the psychological reality in which these mythological forms exist; and that an understanding of these symbolic relationships can in fundamental ways aid design for contemporary needs. Unfortunately modern artist's arid critics are often attracted to the surface appearance of these mythological forms, to their grammar and medium, as opposed to their social roots. This superficiality is perpetuated by simplistic and historical semiotics that analyses whole forms into separate signs and symbols to the neglect of references to the larger mythologies that underlie the stories of everyday life in India. A notable exception to this general neglect is the ingenious understanding and application of mythological symbolism by the late Mohandas Karamchand Gandhi, who led India's independence movement.

I his article grew out of realising the amazing presence of Indian mythology in nearly all contemporary popular expressions. It is part of a larger effort at exploring the mythology-based symbolism for use in industrial design. The concern here is with demonstrating what might now be called the product semantics used by Gandhi in effecting major socio-political changes in India, and its connection with Indian mythology, Gandhi's symbolic use of artefacts was, of course, only part of his complex political strategy.

Indian mythology and Gandhi Krishna as symbols

Gandhi lived his life as a well-publicised experiment. Not only did he use everything around him for its symbolic significance, but he ultimately became a symbol himself, a demi-god, invested with more mythological meaning than he may have wanted to bear.

The enormous popular symbolic importance of Gandhi is demonstrated by the fact that in many Indian homes the pictures of Lord Krishna and Gandhi are hanging side by side. To gain a deeper understanding of how the process of symbol creation works, it is useful to compare the life of Gandhi, a contemporary and real person who became a mythological figure, and that of Lord Krishna who is the most popular mythological figure of the Indian epics.

With this comparison, one can shed light on the differences in the communication strategies these two figures actually and allegedly used, the meanings attributed to them, and kinds of objects or symbols they created to sustain their symbolic roles. The similarities lie in their appeal to the Indian population with all its diversity. In the case of Gandhi, the task is of communicating with hundreds of millions of illiterate people during a rather short period of time and persuading them to engage in political action or accept restraint.

According to the great epic *The Mahabharata,* Krishna spread the doctrine of love while eventually affecting the Great War between the Kauravas and Pandavas. Similarly, Gandhi adopted the doctrine of non- violence (Ahimsa) while actually leading the historical Indian fights for independence from Britain. The deceptively simple rhetorical, devices used by Gandhi not only conveyed certain values but raised political awareness

and successfully persuaded the Indian masses to adopt attitudes towards the economy and form a social movement, the magnitude of which is probably historically unprecedented. In terms of utility or economic viability these devices may not stand the test of time, but they very much resemble the persuasive strategies attributed to the mythological Krishna.

A political leader sitting down and working with a spinning wheel *(Charkha)* when civil war was blazing all over the country was similar to Krishna singing the *Bhagavadgita* in the midst of the great *Kurukshetra* battle. The apparent paradox disappears, however when one looks at these two behaviours in their non-physical sense. Krishna used the battlefield as the context to put forth the essence of Hindu philosophy, the doctrine of Karma (unattached duty). Likewise, Gandhi used the freedom fight as a context to put forth the doctrine of *Ahimsa* (non-violence) and economic self-reliance. Working with a spinning wheel suggested the importance of home based cottage industry and independence from imports from Britain which brought Gandhi closer to the ordinary people. Thus Gandhi's spinning wheel, a purely mechanical device, became a symbol through which he could communicate with large masses of people- both the actions that needed to be taken as well as his personal philosophy.

Contrary to the prevailing belief in the West, Gandhi was not a charismatic leader; a superhuman hero. He was made into one, only after his death. All his life, Gandhi was constantly in touch with the common people and always tried to identify with them through all means - personal appearance, manner of speech, behaviour; and the objects he associated himself with. His style of communication was not "top-down" - people at the top telling people at the bottom what, to do; but it was "bottom-side ways"-people at the bottom telling each other what to do. He even succeeded to some extent in an extraordinary "bottom-up" communication- people at the bottom telling people at the top what to do. Unquestionably, Gandhi's popularity with the masses is attributable largely to his use of symbols and rhetorical devices that have their origin in Indian mythology and popular culture.

Mythology is probably the most important cultural treasure of a people. It occupies the people's collective dreams, aspirations, and visions. It is stored in the form of rituals, symbols, and innumerable artefacts which serve as constant reminders of cultural unity. The symbols that can be interpreted in terms of powerful mythologies can overcome the limits of conventional communications. Gandhi drew immense strength from myths, probably unconsciously in persuading millions of illiterate people with whom conventional methods of communication would not have normally worked.

A deeper understanding of the successful uses of symbolism in mass movements would surely bring new insights into the area of communication (broadly defined) and help designers to "liberate" people through creative designing rather than alienate them from the environment.

Ill-fitting shoes hurt the feet, ill-fitting chairs constrain the body, ill-fitting messages retard the mind; while well-fitting shoes protect the feet, well fitting chairs comfort the body, and well-fitting messages stimulate the mind "Well-fitting" thus causes liberation. Designed objects can provide physical support and enable people to do what they cannot do otherwise; but it is their symbolic qualities, their largely mythological meanings, that can liberate people from psychological depression, from social oppression, and add a spiritual dimension that is individually invigorating and culturally creative.

Gandhi surrounded himself with objects of deep mythological meanings. His behaviour inspired many people to take a path leading towards their own liberation. Although far from being a professional designer, he often initiated and inspired new designs that would communicate the possibility of liberation and support this direction to this end, he demonstrated extraordinary tools, simple clothes, and community development in an agricultural country that was and still is mostly illiterate. Gandhi's semantic ideas, however; have their origins in ancient Indian mythologies that were and still are at the core of Indian culture.

Man in the image of God: A comparative analysis

The communication devices used by Gandhi and Krishna can be analysed in terms of objective, subjective, and self-identification symbols, Objective symbols concern the conscious application of communication devices toward desired ends. Subjective symbols concern the largely subconscious use of personal artefacts and related objects. Self-identification symbols refer to a communicator's identification with the messages, symbols, or artefacts he or she uses, whether intended or not. Identification lends credibility to intended (objective) messages and may determine their persuasive force. For instance, the author of a book on poverty may not want to show himself as a "fat millionaire" lest his message lacks credibility.

Correspondence between the symbolisms of Gandhi and Krishna

General Aspects

G • Temporal placement: contemporary

K• Temporal placement: ancient

G • Existence: real.

K• Existence: *Puranic.*

G • Made later into a mythological hero

K• Mythological hero.

G • Title: Mahatma-the great soul

K• Title Paramatma – the super soul

G • Non- charismatic; In spite of great achievements, always asserted - What I was able to do anybody can

K• Non-charismatic: Inspite of divine powers. *Bhagavata Parana.* Emphasises his simple village life.

G • Principal leader in freedom struggle but held no high office.

K• Principal leader of Mahabharata war but held no high position.

G • Promoted "non-violence" as a way for peace.

K• Promoted "love" as a way to reach salvation.

G • Died an unnatural death.

Objective symbols

Gandhi: White cap adopted to create unique identity and to signify Gandhian principles and human dignity.

Krishna : Peacock feather adopted to create unique identity and to signify natural beauty.

G • *Khadi:* hand-spun and hand-woven cloth the wearing of which is possible for all levels of people and which signifies self-reliance and a common identity across all classes.

K : Hari Naam: vertical mark in the fore head, the wearing of which is possible for all levels of people and which signifies acceptance of *Vaishnava* principles and identity with other Vaishnavas.

G • Spinning wheel *(Charkha):* signifying the act of self-reliance. Metaphorical identity with *Dharma Chakra. Also* a tool of self-employment that brings self-reliance and self-respect fasts observed often) identifying

K : Discus (Sudnrs/han *Chakra):* signifying the act of dynamic psychic force. Also a tool for destroying evil for establishing Dharma (social justice) Also flute: simple local product standing for self-reliance.

G • Ram Dhun songs and prayers as means to bring people together for common action.

K : Songs and dance as a means to bring people together for common action.

G • Evolved Satyagraha as a unique way of opening the eyes of others, whenever reason failed.

K : Showed "Viswarupa" as a unique way of opening the eyes of others.

G • Dress white linen clothes signifying purity, simplicity and identity with the poor masses.

K : Dress yellow clothes (Pithambara) signifying auspiciousness and prosperity of all.

G • Thin lean body (due to fast observed often) identifying with the hungry millions.

K : Blue body signifying infinity; also metaphorical reminder of rain cloud which is important for agrarian society.

G • Often seen with children and cattle signifying compassion towards the weak and helpless; also the importance of cattle in Indian agricultural communities.

K : Often seen with cattle , cowherds, etc signifying compassion towards the weak; also the importance of cattle in Indian agricultural communities.

G • Called *"Bapuji"* the father *Self-identification symbols*

K : Called "Gopala" the cowherd.

Self- Identification Symbols

G • Identified with the masses though born in the high society.

K• Identified with the masses (mostly cowherds) though born in high society.

- Pronounced: "World is my family."

K• Pronounced " I am the Universe."

- "Emphasised actions, and continuous experimenting, said "My life is my message."

K• Emphasized deeds rather than things and preached philosophy of action *(Karmayoga).* Said "your duty is with action alone, not with the fruits of action"

Roots of Indian product semantics

In the West, product semantics is often referred to as a new discipline of an old and unconscious practice. This characterisation does not apply to India, where the beginnings of product semantics are as ancient as the Vedas. The Indian Vedic texts and the later Puranas contain several references to the use of physical implements for their symbolic significance. This is not to deny that religion in the West makes heavy use of symbolism as well and can hardly be explained without it. The semantics of artefacts probably never was codified in a manner comparable to the Vedas; and because the major religions in the West are comparatively recent, their religious meanings probably never governed the entire spectrum of things in everyday life and never penetrated the whole Western culture down to the fairy tales and popular heroes of ordinary village folk,

Not only are the Hindu gods invested with symbolism, but so is every article associated with them: the objects they carry in their hands *(Ayudhas),* their mounts *(Vahanas),* their dress (Vastras), their special jewellery (Alankaras) and all the other forms. These are all delineated with vital and sometimes complex symbolic meanings. The powerful product semantics in India governs the use of objects not only in religious rituals but also in daily life, not just in the forgotten past but also in the living present.

Take a mundane industrial product like a bangle, which every Indian woman wears. It is a decorative object, insignificant in its function, size, and cost - the cheapest item of jewellery compared to any other jewellery an Indian woman might wear However; it had and continues to have the utmost semantic significance. Its symbolic power is so strong, that in villages a woman dare riot be seen without bangles unless she is widowed. While the form remains the same, differences in material, colour; texture, and finish speak of vastly different meanings. In Gujarat, a red or ivory bangle with gold lining is auspicious and indicates the bridal status of the woman wearing it. A glass bangle of any colour is the sign of a married woman. Plain metal bangles devoid of any colour or elaborate patterns indicate that the wearer is a widow. Even such simple products are governed by a complex semantics whose grammar every Indian readily understands. Such a language speaks clearer and louder and expresses human relations and social status more efficiently than words ever can.

Product semantics of Gandhi: a holistic approach

Gandhi's semantic use of objects was simultaneously multifarious and integrative in nature. Although for the convenience of analysis one can categorise his methods and devices separately, they cannot be fully understood in isolation. They played parts in Gandhi's many-pronged strategy together with numerous symbolic actions such as writing, making speeches, reciting prayers, and engaging in fasts. His personal identification with particular problems was also significant. Most important were the contexts that he carefully chose.

As is the case with the mythological Krishna, Gandhi sought a composite approach to life. He used different levels and various kinds of semantic strategies for purposes that were only superficially different; they were holistically related to his main goal. These strategies complemented ea other and achieved a synergistic effect. In this way, "freeing

India from, British rule" must be seen not as a separate aim but connected to the removal of untouchables, to praying together, to spinning every day, and many other symbolic events.

Power of semantics over function

Arms have always played a decisive role in social-political revolutions and wars. Even non-military artefacts have greatly aided such events, Hitler, for instance, exploited Porsche's development of the Volkswagen (people's car) for political ends. Products such as arms, cars, etc., are always, thought to be used primarily for their functional qualities and are often not conscious of their semantic power Gandhi was one of the very few who used industrial products consciously for their extraordinary symbolic qualities. :

I hasten to add here that Gandhi was not the only one to use products for their symbolic significance, but the emphasis he placed on these qualities and his conscious and consistent application of symbolic notions have been, I dare say rare and exemplary.

The important products employed by Gandhi were;

Charkha: The traditional spinning wheel, many times modified by Gandhi.

Gandhi cap: The white cloth cap worn -traditionally by Gujarati people.

Khadi cloth: Hand-spun and hand-woven cloth; which Gandhi and his followers always used as their apparel.

The half-dhoti: A lower garment worn by lower caste Hindu men which Gandhi made his permanent attire.

The Gandhi chappal: Traditional Indian slippers the design of which were not only simplified by Gandhi but was also stitched by him.

The Mud House: Home to most villagers, Gandhi adopted it for his own needs.

The Staff: A simple ordinary stick Gandhi used for walking.

The Watch: Large, pocket size watch. Since Gandhi had no pockets he hung it above his dhoti.

The glasses: Simple, round glasses without any decorative embellishments.

Gandhi advocated that his followers use the first three items. Using the other products himself, he made sure that others would see how he handled them. By insisting on wearing or using these articles all the time he recognised the importance of the "total ness" of a multi-dimensional message; communication does not happen through isolated strategies, As a public figure, being constantly watched, everything he did contributed semantically to his holistic message. He himself declared, "my life is my message.' Thus he went far beyond Marshal McLuhan's' The Medium is the message." He foretold a simple and basic truth which scholars in semiotics, communication, and cognition became aware of only much later.

Product territories

There are some commonalities in all the artefacts with which Gandhi identified himself. They were all products of everyday use to people at the bottom of Indian society. The people were thoroughly familiar with them and their socio-cultural histories and understood, perhaps unconsciously, their role in mythology. One could say they were all

archetypal manifestations of the belongings of the poor Indians. They were simple, mundane, and humble and created a strong sense of identification and belongingness. For the Indian masses these were "our very own" basic symbols of being. A third-class train compartment in which Gandhi preferred to travel is something which ordinary people at the bottom experience and, therefore, is theirs, Had Gandhi travelled in a first class compartment or by airplane it would have been something most people would never experience and would never have been able to relate to, a luxury they would not have direct experience with. Therefore, it would not be theirs.

All of us could be said to be at home in different territories of products according to our experience or familiarity with them. Those using the same products share a common territory. The territorial imperative of product semantics suggests that people who live in the same product territory more readily accept each others' messages than those belonging to different territories. This imperative implies that people by themselves don't just talk to each other. The symbolic qualities of the material things they associate with, always speak with them.

A major reason why many political leaders who followed Gandhi's ideology but not his symbolic strategies could not reach the Indian people as much as Gandhi did is explainable in these terms. The late Prime Minister Nehru, for example, was loved by the people for his sincere work to advance the country but he was never considered part of them. He always made attempts to socialise, mix, meet, dance and play with ordinary people, and these symbolic gestures won him the people's goodwill and indeed media headlines; but the products he used put him into a territory far above the majority of Indians, The beautiful Shervani and coat with its delicate red rose and the palatial building he lived in- all these sent a strong message: "He is a Nawab with a Gandhi Cap."

Present Indian politicians, including the prime minister now use another method. Whenever they visit a different state (India is so vast that almost every state has its indigenous culture and often houses several languages), they dress like the local farmer (India also is an agricultural country) when addressing the people. It probably helps in making the audience feel somewhat more comfortable and adds colour to the meeting, but because people know that after the event these politicians change into their usually rich dress, get into an expensive can and fly off by a special airplane, their message can hardly be taken as sincere.

Fighting armed with symbols

As mentioned, Gandhi considered artefacts not only as tools but as symbols of action as well. Tools may not be available to all, but symbols can be made out of virtually anything by everyone and motivate their effective use. Guns are neither easily accessible nor affordable by everybody, but such ordinary things as *Khadi* cloth, a Gandhi cap, or a spinning wheel are both accessible and affordable. Guns also require users to be trained, while all Gandhian implements are usable with a few skills. Gandhi chose products and related actions everyone could have access to and could use, no matter how lacking he or she was in skills, education, and economic resources. Each could participate and act according to his or her own level and contribute toward the cause of "social and political freedom." Gandhi did not fight the British on their own terms but managed to pitch symbols against guns and succeeded in "disarming" the colonial power to the amazement of the British and perhaps, the whole world.

Coherence of product symbolism

While preaching non-violence, self-reliance, and certain communal qualities, Gandhi adopted a style that, as is stated earlier is symbolic of simple living. The simple Gandhi chappals, the watch, the pencil, the postcard, a small desk his insistence on walking while others used a car his travelling in third-class compartments, his manner of sitting in public meetings, etc., made his message coherent and consistent with prevailing mythologies. The conscious choice of these products and practices indicate their application as objective symbols to support his basic message.

The importance of the credibility Gandhi achieved through the choice of coherent symbols usually is underestimated; I feel coherence is of essence in any communication, which also includes industrial design. Even after a message has reached its target, communication may not have taken place. If a product is bought by or given to potential users, it may not make a difference in their practice. It is only its coherence, with other objects in the same territory with the life-style of potential users, and with the mythology of everyone-designers, users, beneficiaries that renders it credible, acceptable, and usable.

Continuous transformations

Continued identification leads to immense involvement between communicator and communication, and it is almost inevitable that in this process the communicator and his or her message becomes an indistinguishable unity.

Gandhi has been already quoted as saying, “My life is my message.” A well-known Indian poet and scholar; Professor Umashankar Joshi, who personally knew Gandhi, mentioned to me that Gandhi’s way was not communication but communion and that his deep involvement in the subject made Gandhi one with it.

Before asking people to fast, Gandhi fasted himself. Before asking others to remove untouchability from the lowest caste, Gandhi lived with the untouchables, He refused special treatment in jail and so on. This was exemplary, for any action Gandhi asked of others, his advice was, “before you transform others, you should transform yourself”

This is again found in Indian mythology which insists on a special relationship or bond between the actor and action. In many ancient rituals, persons conducting them become possessed and therefore indistinguishable from the act performed by them.

Ancient Indian aestheticians were aware of this transformation and prescribed strict codes to this effect for the artist to achieve Rasa *Siddhi* (the attainment of emotion). In the *Kuchipudi Bhagavata Mela* dance drama, for example, the man playing the part of Lord Narasimha (though his part is very brief) has to be on fast and perform puja before coming on stage. According to Hindu mythology, Narasimha is one of the ten incarnations *(Dasaaotara)* of Lord Vishnu, who appears before his devotee Prahalada as a man-lion. He kills his adversary the demon king Hiranya Kashipu by tearing him apart. This is a very popular dance item among *Kuchipudi* performers. Once an actor who played the role of Narasimha, so completely identified himself with his role that he actually tore apart the Hiranya Kashipu on stage!

There is further evidence for this phenomenon of identification between actor and action. Heinrich Zimmer writes, “According to Hindu theory, it (the mind) is constantly transforming itself into the shapes of the objects of which it becomes aware. Its subtle substance assumes the forms and colours of everything offered to it by the senses,

imagination, memory, and emotion. Accordingly, icon; in Hindu temples are not images symbolising god; they are not called *pratima* suggesting the likeness of a deity, but they are called *murti,* a Sanskrit word for embodiment and manifestation, a transformation of god himself or herself."

For designers to be convincing them too have to become involved with the object of their design, become one with it or indistinguishable from it. Only then can they expect to produce artefacts that are meaningful in the sense of reflecting the very mythology that guides users. It should also be a part of any designer's psychological reality as well.

Product meaning in two-way interaction

According to what has been said above, all designed products take on the image of their creator at the time they are born. The Nakashima chair and the Le Corbusier building are good examples of individual styles, of the marks left by their designers. When such artefacts are subsequently used, they not only gradually acquire the character of their users but also influence and give some of their character to those users in return. Thus, designer artefact, and user influence each other in a two-way interaction and become one with the emergent symbolic qualities or meanings that the product subsequently manifests. I recall the American film "Witness" in which the old man tells the child not to touch the gun because it sends out evil vibes. Indian product semantics does not consider this a superstition but a psychological truth. It is a common observation that individuals' mentalities and behaviour change drastically after they get a telephone in their homes. The telephone acquires a meaning through its use and affects its user in return. Similarly, a man's mental condition and behaviour will be markedly different when he has in his pocket, a gun, a million dollars in cash, or a rubbing stone. All emerge a; powerful symbols in the users' lives,

The interaction between designer user; and product, is also demonstrable with the products originally used and promoted by Gandhi. The cloth cap, for example, was chosen by Gandhi as an accepted, common man's symbol of dignity. This cap was a mundane and traditional product, and it is therefore difficult to say through whom its meaning was acquired, or whether it had a particular designer's style at all. However; at the beginning of the Gandhian movement it meant dignity. After Gandhi adopted and promoted it, it slowly took on all the values that Gandhi stood *for Ahimsa,* self- sacrifice, patriotism, equality and so on. This traditional Gujarati cap came to be known as the Gandhi cap and became the main symbol for Gandhism.

After Gandhi's death, the Gandhian values started eroding but his so-called followers kept wearing the Gandhi cap, not so much because it stood for his values but to take political advantage of the Gandhian image. They initially succeeded. But soon their true intentions surfaced, and the resulting interaction gave a new meaning to the Gandhi Cap. In popular movies, theatre, literature, etc., the Gandhi Cap now is the symbol of hypocritical and deceitful politicians.

Gandhi in his lifetime seemed to have been very much aware of this two-way interaction between product and user He took great care in maintaining compatibility between, what the objects he was using meant to the others and the personality he sought to project, He was also much concerned with how the objects in his immediate environment would influence him as a person and therefore surrounded himself with artefacts whose symbolic qualities would enable him to realise the values he stood for.

The mud hut, the postcard, the half-dhoti, and the staff not only stood for his principles, but also influenced him to lay down those principles for himself. For him these artefacts also stood as symbols for his people.

The limitation of linguistic and graphic communications

Existing means of linguistic and graphic communications have severe limitations. They entirely depend for their effectiveness on the user's verbal and visual literacy. In large sections of the world where such literacy is lacking, the linguistic and graphic forms are meaningful only to the educated and quite incomprehensible otherwise. One of the best ways to communicate with or design useful artefacts for such people is to learn from and adopt their own mythology, their own meanings/stem, and their own semantics as expressed through the artefacts they experience and handle daily. Not only does this guarantee an immediacy of understanding and natural involvement, it also reflects the fact that artefacts of everyday life always express themselves through more than one sense. Products cannot only be seen but can also be touched, heard, felt, tasted, and above all, used. Multi-sensory experiences provide the basis for whole gestalts and cross-sensory meanings provide richer experiences than could be conveyed by either talk or sight alone. In his essay on the "Necessity of Temples," Gandhi once wrote, "somehow or other; we [the people of India] want something which we can touch, something which we can see, something before which we can kneel down." This attests to Gandhi's awareness of the power of multi-sensory product semantics over mono-sensory forms of educated communication.

Action and the "product"

If products are classified as cither end products, intermediary products or tools, Gandhi used all these types for purposes of communication: the Gandhi cap, an end product; the khadi intermediary product; the charkha, a tool. Gandhi was not satisfied with projecting the first two as concrete and accessible symbols of self-reliance. He also wanted to emphasise the "process of making," and presumably therefore developed and insisted on spinning on the *charka.* His public meetings always made spinning a regular (symbolic) activity and gave it an important role in his own daily schedule. Spinning was only one method through which the need for action was expressed. The *Salt Satyagraha,* which shook the powerful British, was another essentially symbolic act toward self-determination and independence.

The importance of visual metaphors

Gandhi also made conscious use of the symbolic power of metaphors. For him, the *charkha* was not a mere tool that could be afforded and used by millions of people. Its mechanically transparent appearance became a simple- to-understand icon of the complex principles of self-reliance, active employment, and productivity. But through its resemblance to other valued symbols, as metaphor, it had even greater significance.

It resembled the *Dharma Chakra,* the wheel of righteous action, which has a long and deep socio-cultural history Gandhi realised the great metaphorical impact of this wheel; therefore, he and his followers adopted it as the main icon on the Indian flag. The wheel is loaded with deep-rooted meanings; the universe as seen with the inner light of illumination, the concept of continuous change, the Buddhist Wheel of Law, and so on. The *Chakra* is the most frequently found image in Hindu culture. Between these aniconic

and iconic meanings, the *Chakra* also best represented the transition from tradition to modernity that Gandhi strove for and sought to represent.

When Gandhi wanted to increase the mechanical efficiency of the *Charkha,* Morris Freidman, a German friend of his, designed an eight-spindle spinning wheel which increased productivity many times. Yet, Gandhi rejected this design saying that it looked complex to people and hence would not be accepted by them. It shows Gandhi's concern for the persuasive force of the metaphorical quality of the product as a semantic dimension more vital than its technical performance.

As a practising Indian designer for nearly twenty-seven years, I know of numerous examples of product failures due to ignorance of the persuasive aspect of their forms. Functionally, aesthetically, and economically excellent solutions are insufficient to gain acceptance and use. The improved bullock cart with pneumatic tyres is still not accepted by Indian farmers. Fishermen refused to live in the concrete buildings given free to them in place of their huts, In a recent case, even educated air hostesses refused to wear the more functional aprons because of the unacceptable meanings they conveyed. These rejections are not to be explained by sheer surface preferences but by the people's metaphorical grounding in the familiar and the sacred. (Refer Case Study, 2,'Thc Bullock Cart" in Section 2).

Appearance is not aesthetics alone

The appearance of an object is not to be confused with mere aesthetics. It too goes much deeper Its chief determinant is its semantics. Since "meaning is in the mind of the beholder," whoever wants to render something understandable must either communicate with and educate that beholder's mind or make use of myths already existing, beliefs already held, or meanings already familiar to the mind of that beholder Gandhi attempted both these methods.

Several enlightened political leaders of modern India now engage designers to make their meeting places, the podium, and objects on it visually attractive on site as well as on TV. Designers usually accomplish this by hiding ugly wires and microphones, selecting elegant furniture, tablecloths, etc. But what meaning do such places then project for the masses of poor people who are expected to attend these meetings? To them the semantics of political meeting places is cleat; and their reading is straightforward and simple: "Beauty is covering ugliness; Beauty is expensive and not affordable by us." In contrast Gandhi's *charkha* suggested, "This is our spinning wheel. It gives us strength against weapons. Its use is easy, and practising it is all that our historical fight needs." The indigenous *charkha* does not mystify its purpose like the beautifully designed podium does now.

This meaning of surface: forms, colours, and textures

The surface qualities of products, such as their forms, colours, and textures, are widely recognised concerns of product semantics. Gandhi used predominantly white and natural colour in the materials chosen for his artefacts. His walking stick was an ordinary one, without adornments. His eyeglasses consisted of simple circular lenses with a thin metal frame. The mud huts in Indian villages are usually decorated with beautiful drawings, patterns, and even colours. Gandhi carefully avoided these on his own mud houses. While he wanted his hut to signify the village hut, the avoidance of surface treatment not only

on his mud houses but also on the *charkha* and the *chappals* made all his products less locally identifiable and brought them closer to their archetypal meanings, meanings that were easily understandable by most Indians, without distraction by ornamentation. The semantic attributes of all his products are now described in terms of simplicity, austerity, economy, and minimalist attitudes, but deep inside always was the non-materialism of the Indian sages.

Gandhi's chappals and the Bauhaus

As has been described earlier, meanings of objects change in interaction among designers, artefacts, and social circumstances. Aware of the inevitability of such changes, Gandhi chose the products he promoted largely for their potential to convey archetypal meanings, and through his actions he very much assumed that they would acquire them. The *khadi* he used was initially a poor man's cloth, reflecting economic status. Under Gandhi's leadership, white *khadi* became a symbol of the freedom fighters, irrespective of their economic level. It became a political symbol of widely shared significance.

We have noted that when Gandhi chose his mud houses and carefully redesigned the *charkha* and the *chappal,* he eliminated all decorations, carvings, and traditional adornments, simplified their form, and reduced their appearance to their essentials, Surprisingly, his frequent advice "omit the unimportant" is quite consistent with several European design philosophies such as the tradition of the Ulm School of Design and perhaps even of the Bauhaus. But Gandhi's aim was not a formalist one; it was largely socially motivated. The omission of unnecessary ornamentation discourages social differentiation and can and did indeed symbolically support the tremendous integrative force his India needed these choices reveal his unprecedented awareness of the social and political dynamics of product meanings and their mythological connections. One does not quite know whether the minimalism and universalism of Ulm was similarly motivated, However, the situation in Germany at that time and Ulm's self-declared objective to aid the physical, aesthetic, and social reconstruction in post-war Europe suggests al least an unconscious use of product semantics there as well. (Refer Case Study I "The Toothbrush" in Section Across).

Contexts change meanings

Clearly, the product meaning that is examined here belonged to Gandhi's own times and arose in a particular socio-cultural and political context of use. Today this context has changed and so have the meanings of the surviving artefacts.

With the advent of cheaper, more durable, and easier to maintain synthetic cloth, Khadi became costly. With the freedom fight won, its victory also quenched its spirit. The rich elite, who could continue to afford buying and maintaining khadi as a product, started using it in order to distinguish themselves socially from those who could not. Today, wearing khadi is a mark of socioeconomic status. With this change in context, the very product that once was a symbol of equality is now a symbol of its opposite, a means to differentiate the rich from the poor and largely illiterate masses. The change in meaning of the Gandhi cap from a unifying symbol of members of the liberation movement to the symbol of corrupt politicians has already been mentioned,

The *charkha* (as seen in the Congress flag above) also changed its meaning drastically. As machines took over its functions of spinning, people no longer used it in communal

settings, and its earlier symbolic value eroded. Miniature models of *charkhas* started appearing as drawing room showpieces. Its wheel is still incorporated in the Indian flag, but it is also used in promotional material. Thus, the charkha changed from an active working symbol to a passive decorative element of other products.

Symbolic mediation

This article started by saying that product meanings are very persuasive. They can in turn be interpreted in terms of the powerful mythologies of the rich culture of India. I have tried to demonstrate that these meanings arise in interaction with their social contexts of use, particularly with those which include designers, users, and other artefacts in the same product territory. Perhaps the lesson to be learned from Gandhi's symbolic strategies is this; Successful artefacts symbolically mediate between the relatively stable, mythological heritage of a culture and the relatively fast-changing socioeconomic contexts of their everyday use. Without the symbolic reference to mythology, product meanings become entirely dependent on their variable contexts. They, therefore, semantically and motivationally become unstable. Without the expressive connection to their contemporary contexts of use or functions, traditional product meanings easily become mere decorative reminders of a no-longer living past While alive, Gandhi managed to maintain and revitalise the powerful mediation process involving himself as well as the product whose symbolic qualities he helped shape thereby. It is this symbolic mediation process between mythology and everyday life that product semantics must inform.

Many Indians consider Buddha, who lived only 1,500 years ago, already one of the incarnations of Lord Vishnu. Whether Gandhi will one day be treated as one or be forgotten is not as important as to learn from the exemplary way he acted in concert with powerful mythologies, shaped the symbolic qualities of several products, and thereby persuaded people to participate in a movement a movement unprecedented in modern times; not just against an imperial power but to simultaneously liberate themselves. I maintain that the material products of a culture can never be regarded as user independent in function or separately understandable entities. They acquire meanings in use, become integrated in everyone's whole life experiences, and interact with the mythology from which they derive their symbolic strength. They collectively participate in and carry forward the message of what that culture is about. Gandhi used semiotics for mass movement Designers could use it for mass benefit.

Note:

*Indian mythology has many gods. Vishnu is one among them. Hindus believe that these are but different manifestations of one Supreme Being.

Which Way round?

A man who had studied at many metaphysical schools came to Nasrudin,

In order to show that he could be accepted for discipleship he described in detail where he had been and what he had studied.

I hope that you will accept me, or at least tell me your ideas', he said, 'because I have spent so much of my time in studying at these schools!

'Alas!' said Nasrudin, 'you have studied the teachers and their teachings.

What should have happened is that the teachers and the teachings should have studied you. Then we would have had something worthwhile,'

Fitting the Man to the Task the Design Training Paradox

I have been a design trainee. I have also been a design trainer for a long time imparting training to two categories of learners. The first category is, the student designers some of whom impart design training to others in design schools or technical schools. The second category is, the other professionals like craftsmen, managers, engineers, voluntary workers, small entrepreneurs and bureaucrats who impart non-design training or supervision, in their own field of work

This article is an exploration of the qualitative aspects of such training, rather than its quantitative aspects.

Training of the trainer

The first question that arises is whether "training of the trainer" (TOT) should be different from training of the professional. Design training, by its very nature is practical application. The requirements for training a trainer depend largely on the individual requirements of the would-be trainer-whether he is a mentor type or teacher type. Therefore a would-be trainer in design requires good professional training experience and a guided internship.

In this context one can make three main observations or critical comments on the nature of training, the kind of training and the method of training.

Training usually involves three components-Man, the learner; the task or the profession and the trainer or the facilitator:

All these three components exist in an environment which is socio-cultural, economic and political. Any training which does not take this environment into account will not be very relevant to people there. Yet this is exactly what is happening in many countries, particularly developing countries like India.

Most countries see development primarily as "industrial" development. And there is a rush to promote such development through institutional training. Selected young individuals are trained in foreign universities; foreign consultants are called in, to give training; new equipment is imported along with its "know-how" and institutions are set up as "replicas" of foreign institutions sometimes with foreign collaboration. Such training is not guided by the socio-cultural, economic and political conditions prevailing in the country. Such a system of training once set-up, is difficult to change because trainees from such a system produce trainees of the same order for tomorrow, forming a vicious circle,

Let us look at the methods being employed to learn design. As Argentinean Professor Arturo F. Montague aptly put it; "The traditional approach to learning design (urban, agricultural and industrial) uses a combinatorial strategy of "Bauhaus-Ulm" methods by

Walter Gropius, Max Bill. Tomas Moldanado; the system methodologies of the sixties by Bruce Archer, G. Broadbent, J. C. Jones, S. A. Gregory;the user participation alternatives of the seventies by J. N. Habraken; the integrated design concept by Victor Papanek, also in the same decade as in the next one; the beginning of the "post modern" actions and proposals, and the Styling approach of the Americans are no longer enough to cope with the problems which affect most developing countries mainly in the Southern hemisphere. For people living in the villages of Gezira of Sudan, in the mountains of Tarija of Bolivia, or in the dramatic landscape of Bangladesh, most of the "Gute form" products, artefacts and environmental functionalistic ideas produced by Western technology do not fit properly with the roots and anthropological patterns of these cultures."

Montague is not the-'only one to voice such a concern. Design thinkers all over the developing world are increasingly expressing the same sentiments. Yet, till now there is scarcely any evidence of a successful indigenous design method which is developed and used in training in any of the developing countries. Due to the vicious circle mentioned earlier, borrowed systems largely prevail.

Technology first, creativity last?

The present age is admittedly the "technological age" and "information age." Therefore the rush in all areas of training is for "up-to-date and maximum technology" and "up-to-date and maximum" information. Training programmes are loaded more and more with technological and informative inputs. People are sent abroad to learn a new technology or to update an existing one. Obviously, with this imported technological knowledge, the skills and imported technological devices are essential. The higher technological training can only function with its own brand of "hardware" because the whole technical knowledge was developed around that hardware. For instance, a designer trained abroad to work on the most sophisticated computer-aided animation recorder, needs to use at home that very equipment, If his country cannot afford to buy it (along with all its attachments, spares and service}, he feels his experience most useless. Soon, frustrated, he migrates, usually to the country where he received his advance training where he will perform brilliantly.

The reason for his brilliant performance in a foreign country could be due to three reasons:

1. He was already of a high calibre since he was selected out of many by his country for his talents.

2. His rich and varied cultural past, as different from the country of his migration works in his favour

3. Being away from his motherland, his zeal to "become something", becomes a tremendous motivator and influences his work positively.

What are the repercussions? Let us look at the following case:

During the immediate post-independence days in India, the then Prime Minister Jawaharlal Nehru zealously sought the most modern technologies for India. One of the projects was "industrialised building" - which it was believed by many would be the best solution to ease the perennial "shelter problem" of India. Huge funds were spent, the best people were sent overseas for intensive training, the best equipment was imported with foreign collaboration, experts were brought in, to install and "transfer know-how."

Everything was ready. Then came the cement and steel crisis in the country. The new project required the use of large quantities of cement and steel as the main materials, so the project crashed. The shelter problem has not been solved till today and has in fact got worse.

There is yet another problem inherent in such an approach to development. The pace of technological change is increasingly rapid. By the time a developing country learns of a new technology and installs it, another technology elsewhere will have already replaced it rendering the developing country constantly one step behind.

Fitting the man to the book

Let us take a close look at the process of the "man-task-teacher" phenomenon. Firstly a need / want for a task is recognised. Then the resources are developed - both human resources and infrastructural resources like buildings, facilities, etc. Often, non-human resources are the first to be developed. Only then is the individual, the learner selected. The criteria for the selection is his fitting in with the institution already set up; his fitting in with the teachers there with their already acquired knowledge; his fitting in with the books which have already been written, I call this" fitting the man to the book."

The present design training approaches are so generalised that they ignore the "personal and individual" factors of the learner completely.

The curricula arc worked out based on an assumed "average" person. One student may be by nature good at field work, the other bad at analysis; one may linger too much in the fact-finding area; the other may often be undecided but most intuitive; or maybe unbending but highly creative and so on. Teaching of Design and Design training today is rarely based on such individual qualities.

Originality, a fundamental quality in a creative profession like Design, is thus demoted. This partly explains the eminence of many, creative professionals who opted out of the "organised training" programmes in schools. One shining example is Charles Eames.

Towards better approaches

It is not only difficult but dangerous to offer offhand solutions. Neither does the present paper allow a detailed discourse. I, therefore attempt to point the direction towards which we must move, towards which we must work persistently and. in time, evolve some solutions.

What are these directions?

Appropriate design process

Instead of "parroting" borrowed design processes and design education, a country like India which is different in so many ways from the West (from which often the methods are borrowed) must evolve its own design process and education, It should be an appropriate design method which fits the people, their cultural minds, their economic conditions, their own skills and their available resources.

One need not invent the wheel all over again, every time. But one must make his own wheel with his own means to suit his own conditions. There can never be universal solutions; however good they may be in their own context. Every problem and therefore every solution is relative and hence needs special handling.

One needs to be more specific and more descriptive. The Indian design trainers, by and large, are often aware of the "physical realities" of their own country and its people. But they are unable to address them. The factors inhibiting the development of an "appropriate design method" are the mental realities of its people. These for example are:

- The capacity to play with an inner version of the environment rather than with the outer version which is rational and functional. As Prof! Subramanian says, "The mythology-fit led Indian mind reduces everything to symbols of enormous tolerance." For instance, a computer coming into the house calls for worship of the machine.
- The subjectiveness of the Indian mind, transforming itself subjectively, into "the object" rather than viewing itself as "separate" from the object. For instance, a competent actor who plays villain on screen is hated in real life too.
- "Process-concern" rather than the "product" (result) concern. Whether it is the theory of Karma or (he theory of "unfinished images" in Indian temples, where the sculptor did not bother about the end product, it is the clear demonstration of concern only with a process.

These are realities difficult to explore but not impossible, to grasp. Men like Gandhi had grasped them and used them successfully.

Training for change

It is aptly said that the only constant thing is "Change." Therefore it is probably wiser not to follow the "donkey-carrot" example, by trying to "catch" a new technology and install new technical equipment. A better alternative would be to train the minds (inside or outside the country; one need not go to any far or foreign lands for this) to cope with the change; to develop creative capabilities which can meet effectively an unforeseen situation, and to develop "professing" visions. This does not mean we should ignore the technological breakthroughs. On the contrary it means going deep into the subject and imbibing the scientific principles behind such breakthroughs, which can then be the basis for "appropriate" application to suit the individual country's needs as well as its future demands.

Bending the book to fit the man

Design activity is centred around man, the user. This is unquestionably so. Therefore the training of the designer should naturally be centred around the trainee. What is to be considered, are his natural and individual capabilities which should be allowed to grow in order to reap maximum benefit. He should not be created to fit the standard mass requirement, or the "book requirement'. This does not necessarily require one trainer for each trainee. What it requires is an open atmosphere conducive to personal and inquiry-based learning. A kind that allows "reciprocal action between individuals; between teacher and trainee and between trainee and trainee. It should be concerned with personal construction and reconstruction of knowledge, skill and values." Then there would be freedom from knowledge - a true creative liberation.

Section Two

Design: Human Perspectives and Concerns

On his own

The King had allowed a pet elephant loose near Nasrudin's village, and it was destroying the crops.

The people decided to go in a body to Tamerlane to protest.

Nasrudin, because he had been known to amuse the King at times, was appointed leader of the delegation.

So overawed were they by the magnificence of the Court that the group pushed Nasrudin into the audience-chamber and fled.

'Yes,' said the King, 'what do you want, Nasrudin?'

'About your elephant, your Majesty,' stammered the Mulla.

He saw that the King was in a bad temper that morning.

'Yes what about my elephant?'

'I was thinking that it needed a mate!'

Design and Rule: Design Colonisation

Colonialism and design

The design situation in the contemporary developing world has dramatically changed recently. India is but an example. Design has become the new exhilarating profession and the designer, the new star. After the liberalisation policies of the present government, design, particularly the kind that boosts exports or boosts consumerism is seen as the key activity in India's economic success. Design and designers are appearing regularly in newspapers, magazines, T.V shows and in advertisements. There are designers' clubs and "designers' Saturdays" where designers meet regularly. One design consultancy group in Pune even publishes a monthly newsletter of its own.

All this seems very good

It is said that a wise man learns from the mistakes of others. What India is witnessing today was witnessed by the West in the 1980s. By the 1990s the Design bubble in the West burst. "The design boom became its own worst enemy and choked on the froth of its own hype. Far from being the basis of the solution to societies' problems, it became.....," "one of societies' problems." If the Indian designers are wise, they would carefully analyse the reasons. The aim of this article however, is not to go into the reasons but emphasise the crucial aspect of human rights - the domination of one power or one group over the other with respect to design. One good way of analysing this aspect is to take a close look at the definitions of the key terms involved.

First let us take a look at the latest definition of design as accepted by the ICSID, The International Council of the Societies of Industrial Designers. According to ICSID, design is not mere" Form Gebung" (form giving) any more. ICSID says that "Design is an activity involved in the creation and delivery of form, content and structure of development of wealth of nations and to improve the quality of life of its people in a broad sense" (ICSID Bulletin, 1994).The questions that arise directly in this context are - what is the quality of life? Is it only having more money and more goods?

This leads us on to look at what colonialism is.

The Shorter Oxford Dictionary defines it simply as "control by one power over a dependent area or people."

If design is directly involved in the "development of wealth of a nation and in improving the quality of life of its people, then, how can it not have an important role in the "control" of both, which when turned negative is nothing else but "colonisation?" Mohandas Gandhi, the great leader who successfully fought colonial rule in India, once said in reply to a correspondent, "If we have many sharks, and we do not know how to combat them, we shall deserve to be eaten by them."

The basic tenet of Gandhian philosophy is strictly this: Any power or domination of one by the other is wrong. The Indian struggle for freedom was a struggle to stop this domination. Domination is one form of violence, Gandhian idea of non-violence should be seen as opposing this violence rather than mere avoidance of physical violence because history has shown us that the Gandhian freedom struggle was not without physical violence and therefore cannot be termed as non-violent struggle. What we are presently concerned is the designers' role in supporting this domination.

Currencies of power

No matter how design is defined, the fact that it is a powerful tool is unquestioned. Design plays a significant role in bringing the fruits of science and technology to use by the people. The caution once given by Padmabhushan Professor U.R. Rao with regard to science and technology would equally apply to design. In the Year 1994 addressing a convocation at an Indian University, Rao said "philosophical statements such as 'if we are to lead the world towards a hopeful future, we must understand that technology is part of the planetary environment to be shared like air and water with the rest of mankind' remain only as statements." The reality, however is that science and technology have been monopolised and zealously guarded by a minority of advanced nations. We are witnessing the old colonial domination. With a new technological imperialism, a mindless and ruthless technological hegemony is adroitly being employed by the advanced nations for imposing their influence and control over the developing world. Only lip service is being paid towards creating a new international economic order in which all countries can progress as partners by sharing the bounties of science through appropriate instruments of technology transfer Science and technology have become the most powerful currency of power for continued exploitation and domination of the developing world. We have to implicitly recognise that science and technology are the principle means of producing new wealth and any country which ignores the development of science and technology, on a self-reliant basis, will inevitably perish in the modern world,"

In the above statement, if the word "design" is added next to "science and technology" wherever it occurs, the statement fits exactly to the design profession as well. Design also is part of this most powerful currency of power If the designers of the "majority world " (I personally dislike the expressions like "third world" which sounds like the third class compartment or the "developing world" which sounds like some disability These are demeaning words. Let me therefore use my own elevating term "majority world" which is a fact) are not conscious of the fact that it is a currency of power; they will be greatly helping the colonisation process.

Economic status is a harsh reality. The rich and the poor are a world apart. Their problems are different. Their needs, tools, resources and views of course are different. This article is an attempt to look at the issues arising out of how designers are handling these differences and how in the process helping colonisation.

Who is the real beneficiary?

Indian designers often claim that they are helping people to benefit by designing products where function is improved; material consumption is reduced; costs are cut and so on. But if we go into each case we find that in a majority of cases, the real benefit goes to the manufacturer or a few wealthy customers, thereby further widening the gap between the rich and poor From the people's car created in Germany by Adolf Hitler in the past to the present people's car "Maruti" created in India by the Indian democratic government, the real beneficiaries are not the real people. The success of these products is the success of their help in seeing that a few people dominate over the others. Hitler's car helped genocide; Maruti unleashed a new life-style which is totally foreign and an ideological "sell off" At best it helped the urban neo-rich.

Importing design and crushing local talent

In a symposium on Design in Southeast Asia, I illustrated the dangers of a trend which is becoming common in the majority world or the derogatively called "Third World." And that is importing design from other countries under the name of collaboration. Apart from the disregard to the difference in culture, climate, social and economic contexts, such a trend eventually kills indigenous creativity and creates dependence. Any form of dependence leads to exploitation in many forms by the foreign country. These forms range from "dumping" unwanted equipment, activities or ideas; experimenting with "potentially dangerous" activities; long range harm like pollution and so on, to dictating terms of their interest. This is nothing but "product colonisation," (Refer Case Study 9 "The Oxygenator" in Section Across).

Importing design education and causing brain drain

Enormous increase in mobility and improvements in global communications made import of education easier today. While the positive side of this phenomenon is obvious, its negative side needs the approach of caution. Education became commercialised and became a commodity to be exported or imported. The "majority world" countries in their need to progress resort to importing education from the "minority world." Here lies the problem.

Philosophical and general education may be universal but professional education such as design education is specific. It has to be geared to the cultural, social, economic and physical situation of the country where it is located. Imported design education thus creates a situation, where after spending the most precious money of the people on increasingly expensive design education, we are left with graduates who have only the understanding of alien situations, alien problems and alien solutions. They eventually immigrate to the other country where they fit better Thus it serves the cause of the other country - the poor country educates its people with its scarce resources only to let the rich countries reap the benefits.

Liberalisation and design

Openness is a double-edged sword. It allows so much to come in but it also allows so much to go out. Freedom without control is what "jungle law" is all about. While a healthy competition leading to constant improvement is its main strength, its main weakness is the rule of the highest bidden When applied to design, the few designers in "developing countries" are most likely to serve the rich minority than the poor majority At the international level it also takes the best talent from any where on the globe actually serving the rich nations who can afford to pay more. As the poor Indian growing cashew nuts cannot afford to eat them himself, the poor nations will not be able to afford their own locally trained design talent. It sets a vicious circle. There will be less Indian designers and less Indian design teachers who will be available in the country and therefore design service and design education would become too costly for the Indians. As a result, the Indian Government or a few industries might get these two important services as an aid or under debit. The rest of the country goes without these services or with substandard substitutes.

Exporting labour and raw materials

As the local design becomes unavailable due to the reasons discussed already, the nation is left with no option but to export its resources in raw form, which is the classic colonial situation. The country exports raw materials and labour to foreign countries cheaply and later it will have to import the same in finished form at a much higher price from the very same countries. The situation will be still worse when the foreign countries establish industries in our country. Then, not only will the raw materials and labour be exploited, but many long term environmental and pollution problems will be insidiously created.

Designing for the "haves"

If we analyse the last few years of output of the Indian designers, we realise that design has been contributing significantly to quality improvement in mass-produced products and messages. This is very positive. But if we see what kind of products and messages these are, the statement would be different Design's main contribution in India so far has been in consumer products like TV sets washing machines, kitchen equipment, room coolers and private transport. This is a large, rich and upper-middle class market Very little has been done individually or through government support for the majority of people who are poor. Almost nothing has been done by the designers for small farmers whose number is the largest. We all know that eighty percent of the Indian population lives in villages and that India is an agricultural country Public design is almost non-existent. Thus Design is unwittingly encouraging the gap between the "haves" and "have nots" and promoting private good over public good.

Design isolation

The "majority world" designers, particularly Indian designers will do well with some introspection. How much of design is really integrated with Indian society or has it only remained an isolated, alien and exploitative activity? After more than four decades of existence it is not too early to ask such a question. If design is a "problem solving activity" and its concern is "to improve the quality of life" let the Indian designers take a look at the direction they are going in and the society they are living in. What is the designers' response to the major problems facing the country such as population explosion, unemployment, child labour and poverty? What is the designers' response to

the gas tragedy in Bhopal or to the communal riots in Bombay or the plague epidemic in Surat or to the terrorism in Kashmir? If design has no role in such crucial problems, design should not claim "to encompass every human activity".

Creating want

Another kind of colonisation, probably a more devastating one is the colonisation of the mind. Designers are said to be societies' "choice creators" which means that they give more and more "freedom of choice" to people. But this perception is only at a superficial level. In fact it is not so. Firstly, this "freedom of choice" works only under one huge precondition - availability of money. Hence, the so-called freedom is only limited to a few moneyed people. Secondly, and more importantly, it is promoting indirectly or directly the creation of want rather than freedom from it, which is real freedom. As the UNDP report of 1994 mentions, "the battle of peace has to be fought on two fronts. First, the security front from where victory spells freedom from fear. Second, is the economic and social front where victory means "freedom from want."

Global Vision

One of the apt descriptions of design is to put it as a synthesising or coordinating activity. In such a case it demands of the designer to have a larger view of things. In the present times of globalisation it requires all designers to have a deep global vision. If this global vision is present, the "majority world" designers certainly would not follow the industrially advanced countries. Wolfgang Sachs wrote recently, "if all countries in the world "successfully" followed the example of industrialised countries, five or six planets would be needed to serve as mines and waste dumps. "Advanced" nations are no models; rather they are aberrations in the course of history." More than half a century ago, Gandhi realised this, spoke strongly about it, and fought against it as his "bounded duty" Unfortunately designers in India and in other poor countries are following the model of the advanced countries where "more" is seen as better.

E.F. Schumacher's Small is Beautiful remained merely as an admirable slogan and "big" is still seen as better Very few designers in the majority world countries have realised this, even fewer have spoken about it and still

The spirit of viewing colonisation is not that of national or cultural identity for its own sake or that of territorial imperative. It is learning from the past and learning from others' experience. Even, learning from others' experience could be very positive if it is done with complete understanding of its context. The blunder of following the others is when it is done without any regard to the context of solutions. That is the time when it sets in the colonisation process, Mahatma Gandhi clarified and emphasised this point constantly in his writings. Western civilisation is urban. Western Countries are either with a small population, for example, England and Italy, or big, with a sparse population, for- example America and Canada. So they can afford urbanisation, But, India is different It is a big country with teeming millions and predominantly rural. It has a long ancient tradition entrenched in their minds. Therefore, the imitation of the Western model becomes a trap. Gandhi wrote that "what is good for one nation situated in one condition is not necessarily good for another, "One man's food is another man's poison."

It is true the world today is quite different from what it was half a century ago when Gandhi expressed his views. The technological and social shifts have caused design

paradigm shifts too. The individual designer is being replaced by large teams with different expertise. Design of single products or messages is being replaced by design of total environments or identities. One also hopes that private profit would eventually give way to collective benefits and further promote democratic values. Some designers are thinking in this direction. I here is talk of "Design for society" and there are a few who are trying to design things that "liberate" than "captivate" their users. After all, a designer like all other professionals is first a human being and then a professional. His skills must stand firmly on this "human base" lest he becomes a "human robot." The human base is becoming increasingly necessary because the technological advances of the present are such that the skill part of the human activity is being rapidly replaced by mechanical and electronic gadgets ever more efficiently than before. What is now required more and more is not a skilled designer (by skill I mean knowledge and aesthetic sense included) but a broad based, socially well integrated, humane designer with a broad global vision.

Whose servant am I?

Mulla Nasrudin had become a favourite at Court, He used his position to show up the methods of courtiers.

One day the King was exceptionally hungry. Some aubergines had been so deliciously cooked that he told the palace chef to serve them every day.

'Are they not the best vegetables in the world, Mulla?' he asked Nasrudin,

'The very best, Majesty,'

Five days later, when the aubergines had been served for the tenth meal in succession, the King roared:

'Take these things away! I HATE them!'

'They are the worst vegetables in the world, Majesty,' agreed Nasrudin.

'But Mulla, less than a week ago you said that they were the very best.'

'I did. But I am the servant, of the King, not of the vegetable.'

Politics is not a Four- letter Word:

The Impact of State Policies and Politics on Design

Design can be defined in many ways. One way is to define design as an applied profession concerned with the quality of living in general, If by development we mean improvements in people's quality of life, then design certainly has a major and a crucial role to play particularly in the developing countries. In planned economics, policy level decisions by the government hold the key to successful and gainful operation of design. Policies may not be everything, but they are the main facilitators.

Enough has been said by experts all over the world about the design policies of their own governments, and even for other governments to try and follow. But not enough, if anything has been said about the policies which do not have direct design content, but nevertheless have a greater impact on design. This paper is an attempt to emphasise such policy implications.

For the present purpose, let us categorise the Government policies that bear an influence on design as Direct Policies, Indirect Policies and Lateral Policies.

Direct policies: Design policies related to recognition of design, establishment and promotion, laws to protect and support design, design subsidies and grants, design awareness, promotion and design training.

Indirect policies: Policies related to industry and trade such as import-export policies, foreign trade agreements as well as internal development policies related to economy, production distribution, etc.

Lateral policies: Those that relate to other areas such as culture, welfare, health, education and even subscription by Governments to certain political ideologies.

Direct policies

Design in India is age old but industrial design as a trained profession started only in the sixties. India today has around 800 practising designers, a professional society and two long-established major institutions giving professional education in design. An Institute of Fashion Technology geared mainly towards exports has been recently established. There are also design cells in some premier technological institutions. Many Indian designers are practising successfully abroad and the Indian design institutions are offering training to students from overseas both from the East as well as the industrially developed West Indian designers also teach at some of the best schools of design in the West. The national and international awards won by Indian designers and architects prove that the quality of their work is second to none.

This situation is certainly positive, if not adequate, for a continent of nearly a billion people. What were the Governments decisions that made it possible, considering India does not as yet have a design policy?

A beginning with faith

The Indian Government, like many, is not clear about what design is and how exactly it help; the national economy, and living. Yet it has faith in its usefulness and has therefore been quite supportive. The Government's first act of faith was to create the National Institute of Design (NID) at the premier level and give it autonomy. The second act was to establish the Industrial Design Centre (IDC) at one of the major Indian Institutes of Technology.

Labels are important

The second act was to make this institute responsible to the Ministry of Industry instead of the Ministry of Education. Thus it expected design to serve Indian industry as a practical aid, through professional training.

Employment matters

A desirable impact came when the Government recognised NID / IDC trained designers as eligible for public employment through the Union Public Service Commission. This not only removed doubts about the industrial designers' serious and useful public role, but also induced the private sector to take note of this recognition.

Value it with money

A commitment is well expressed through financial allocation. The Government followed the commitment with financial sanctions in the form of loans for design investments, such as setting up design offices/ design cum production units by Indian designers. While considering financial assistance through international organisations such as UNDP/UNESCO, priority was given to design. Such a policy attitude is significant considering the scarcity of capital in the country and many other pressing financial needs.

Spreading the message

The Indian Government has not articulated design policy as such but it is most supportive of promotional efforts such as the setting up of a National Design Council, provided the professional designers (i.e. Society of Industrial Designers of India) and the design institutes together articulate their needs. Some major international design events like UNIDO-ICSID 1979, International Design Week 1988, and national conferences were possible through such Governmental support Government encouragement also came through subsidies and through provision of design assistance to small industries and spreading of design awareness in the country in various states through the establishment of design cells, etc.

Much more could be achieved by Government through a national design policy, a design council, design subsidies, design grants, tax benefits for design, laws to protect the design profession, a design excellence mark and through introducing design in schools and universities.

Designers' responsibility

With such an open attitude by the Government, one finds three factors crucial to the development of design in the country. These relate to the designers' own responsibility.

Defining and redefining the role: While autonomy is a most healthy prerequisite for the growth of the design profession as well as the growth of design institutions, it also means responsibility and accountability on the part of the designers as serious professionals. To start with, they must articulate their role clearly and locally,

The designers in such cases must define their function to fit their own industrial and social needs in their own geographical, cultural and economic contexts. Not only that, they must also redefine it continually to match the changing needs of the changing times. Without this, the policies and the use of precious resources will be misdirected and may turn negative.

Demonstrating: An act of faith cannot last for ever. It needs to be sustained by an early demonstration of positive and concrete results. If the results are not evident within the expected time, the open policies of the Government may turn into vigilant or sceptical ones and once this occurs, it will be very difficult to re-establish faith.

Coming together: In a large democracy such as India, an important factor in making the Government listen to design over many other voices is to speak with one combined voice. The design institutions, the designers' society and the industry should come together to articulate and voice their needs. Without such integration, decisions would either be constantly undone or not taken at all.

Indirect policies:

Import and export policies: From survival of the first or preferred to survival of the fittest

A major change is evident in Indian industry since 1985 when the present Government adopted an open-door policy, liberalising import and export restrictions and issuance of industrial licenses. As a result, the following changes took place.

• the number of manufacturers in many sectors of industry have increased (for example 6 to I 5 per cent in two wheelers; 2 to 7 per cent in car models)

• the number of foreign collaborations has increased

• shortages are giving way to surpluses, changing the earlier sellers' market into a buyers' market

• tougher competition in the marketplace is felt acutely at home and more so abroad.

Today tougher competition is forcing manufacturers to turn to design, even if it is only "cosmetic" as a means of getting a competitive edge. There are many watch manufacturers whose products work well but do not look good. Leading tractor manufacturers want new designs to have a better image in order to stand out. Before the eighties the same tractor industry dismissed the formal aspects, a major component of design, as non-relevant in a functional product such as a tractor: Design comparison becomes particularly glaring when the Indian product stands next to a well designed foreign one in the international market. With, increasing awareness of design, the industry also wants to get the competitive edge by reducing cost.

The buyers' market has also forced the manufacturer to be more responsive to user needs which is the prime area of design. The design of the Indian water cooler which remained unchanged for decades was recently redesigned and sold most successfully.

An increase in the number of manufacturers logically means more jobs for designers, provided of course more awareness of design is inculcated. This is not an easy task, with India being a vast country with inadequate communications. The demand for designers exceeds supply, thus practising designers command good terms of payment, and work round the clock to meet the many deadlines. Many designers have become very choosy over accepting assignments. This could be considered a very healthy situation,

An increase in foreign collaboration also means that young Indian designers can work with foreign designers, and obtain foreign training. In such a seemingly happy situation, two vital design concerns emerge both relevant to development.

Firstly the already-scarce design talent in the country with its usual quota of brain drain is strongly attracted by the highest bidder. This leaves the less well remunerated developmental work either unattended to by designers, or attended to by less able designer's, and this can thus create a serious imbalance. In an economy such as ours where the average designer is not so well off, this aspect is crucial. Developmental areas such as providing facilities for the disabled, village communities, crafts, primary health and scores of others which need the best design attention and whose needs arc an immediate national priority, have to suffer;

Secondly, some crucial challenges arise concerning the growth of local design and I wish to quote two examples.

I here has been a phenomenal increase in automotive production in the country. In ten years the manufacturing figures have risen from 24,000 to 1 12,000 cars and 183,000 to 969,000 two-wheelers which is rightly termed as a "revolution". The two major industries, Maruti Udyog Ltd. making four wheelers, and the TVS group making two-wheelers, have Japanese collaboration. Both products have been very successful in the market. But what happened to the designer and design?

Maruti, as an Indian car; in terms of design for Indian conditions, is very unsatisfactory. Its design is excellent for Japanese conditions, but it is unsatisfactory for Indian conditions. Considering the poor roads and heavy traffic in India, it is a very unsafe car. Its structure is too delicate for the rough handling of Indian drivers and cleaners and more importantly maintenance and parts replacement are very difficult as the parts are not easily available. Nor has the price of this small car remained low. So, from a "people's car" for all, as originally intended, it has become the "status car" for a few. It should be noted that the company has not a single Indian designer. The design is wholly imported and there is even a tie-up on components which prevents their design and production locally.

In the case of TVS, the severe effect on indigenous research and development is more evident. The company does have a research and development wing but admits that the kind of research and development undertaken is "absorptive" and "developmental" as opposed to creative. By this it meant that the company is adaptive to foreign technology to suit domestic requirements. The research and development activity is thus limited to parameters set by foreign collaborators.

While the Maruti is new, the TVS group is old and has a high reputation for quality. Taking advantage of its reputation the company entered the two wheeler market a few years ago, It should be noted that in India two wheelers comprise 70 per cent of the total vehicles on the road. The TVS Ind-Suzuki motor cycle, a Japanese collaboration is doing well in the Indian market but the indigenous TVS moped is not. The company's Annual Report (1986) states that the poor performance of the moped is due to "non-availability of a foreign collaborator of repute." Significantly, TVS docs not view this as a lacuna of R & D promotion.

The aspect of making the best use of cheap skilled labour and local materials has never been taken up by industry because the imported technology/design is essentially labour-saving, capital intensive and uses the materials of the country from which it is imported. So the cost rises adversely affecting international competitiveness. Locally, it neither addresses the problem of providing more employment nor the problem of funds. In the long run such a situation encourages designers who are oriented to foreign technology and foreign resources. Besides, it often leads to neglect of local research and development completely. I his adversely affects the development of designers who have the country's real needs at heart.

Import substitution

Let us look at an example completely different from those of the giant industries. A non-industry, Shri Chitra Thirunal Institute of Medical Sciences and Technology, approached the National Institute of Design in 1985 to help them with the design of an indigenous oxygenator because its director; a top cardiac surgeon, was strongly concerned about the acute need of such a product and was worried about our dependency

on other countries for such life-saving equipment. The aim was to create an indigenous design which would be produced regionally by various small but well-equipped industries and to make the country self-reliant, firstly by meeting its own large demand and secondly by exporting excess capacities later. We worked with the client's biomedical engineering Learn and designed an oxygenator totally suited to Indian use and Indian production. It was better than the imported equipment in some design features such as combining a cardiotomy reservoir with an oxygenator. The design was well-acclaimed for its excellence and won the prestigious National Award for Meritorious Invention.

The product, however, could not go into regular production for two reasons. Firstly, with the policy of free entry reserved for life-saving equipment, the new local product could not compete with well-established foreign brands in terms of costs, since the initial costs of new products were high and the established brands could not afford to reduce their costs, even if only temporarily. Secondly it had to compete not only with the image of the established brand but also with the Indian attitude that "imported is best". (Refer Case Study 9 "The Oxygenator" in Section Across)

Bank nationalisation and decentralisation

A better indigenisation and long term design benefit is evident in the decentralised small and medium industry sector Major Banks in India were nationalised in 1969.They were encouraged to lend to small and medium entrepreneurs. Indian design hoped to benefit by this. Seed capital loans were given through industrial finance corporations to small entrepreneurs including designers. Industrial estates were set up in all states, offering space, facilities and technical know-how, including design assistance. Certain product categories were reserved and preferential tax benefits were given. This helped in the creation of a vast, small and cottage industry base, diffused but more indigenous, manageable, more flexible to change and hence ideal for design intervention. Small industry is also crucial for large industry in supporting it with ancillary and spare part supplies. An example is Aarvy Power Tools Company for which NID designed a system of power tools. This small industry had to compete with the monopoly of a giant industry such as "Wolf" which expressed no desire to change when the design solutions of a group of students were presented to them. Aarvy today is exporting successfully to several countries. However, this is an exception. As a rule the country's small industry sector employs even fewer designers mainly because of their low awareness of design.

Over protectionism

Over protectionism and heavy subsidies on the other hand could be harmful to the healthy growth of an industry /sector as they can create complacency on the part of the protected sector, and dependency on the Government often becomes permanent. Government then becomes a crutch for even In the Indian *Khadi* (hand-spun, hand-woven cloth) sector and craft sector this phenomenon is evident. These two sectors consisting of a large number of artisans have been supported and protected by the Government since Independence in 1947 with a number of policies of protection and support in various forms ranging from heavy financial subsidies to handling marketing for their products. Today, forty years later the condition of these two sectors is no better and self-reliance has not been achieved. The buyers wait for the discount season and mostly buy for the value of the raw material rather than for the craftsmanship.

The design institutes in India are involved successfully in many projects related to these sectors. One of the NID graduates working with a community of potters in Madanapalli in South India made national news by showing in a small way what design can do for development by giving the product a market orientation that is relevant to today's needs and also aimed at the right target buyer: Our experience reconfirms the appropriateness of this direction, The present public image of equating "handmade" with low quality goods slowly and primitively produced, combined with a reluctance to accept sympathy or help due to national pride, cannot but damage the spirit of the artisan and prevent any real success. Real developmental success is possible only if the Indian designer is involved on a much greater scale and more vigorously in this sector in assisting the artisan with a new market orientation, quality upgrading material substitution, up-to- date technology induction as well as creating markets with a new image projection of these sectors. The signals are there if one analyses the market success of products termed New *Swadeshi* such as Shyam Ahuja dhurries, handloorn cloth and many small private ventures following design direction.

Integrated and long term view

The National Institute of Design was involved in a joint venture with the Indian Institute of Management, Ahmedabad in the adoption for development of a group of villages in Rajasthan, What was realised in this exemplary experiment called "The Jawaja Experiment" was that no problem can be viewed in isolation and there should be an integrated approach which may have design as one major component besides many others such as management, education, etc. The much-lauded national efforts to redesign the traditional bullock cart could not really be put into practice for lack of such integrated and long-term views by the planners. There was no planned infrastructure for the sustenance of an idea. A positive example would be the Indian Government's policy on water management through the water mission which integrated hygiene, health and related areas with water and acted on long-range plans.

Complementary role

There are human situations where policies and design complement each other and cannot operate in isolation. In 1977, a large number of thresher users in Haryana lost their hands while operating the device at night. On investigation, the designers found that the device used had safety features but the farmers, who were in a hurry to complete the work, removed the guard plate. Such safety violations are never strictly dealt with by the Government, What can a designer do about aspects which are beyond his control? Indian women drivers refuse to wear helmets, even of the best quality. They are embarrassed, Carpenters decline to use work benches which are economically sound. They are used to sitting on the floor: What is needed in such a situation is a design which is responsive to human behaviour and culture (than only catering to physical and aesthetic needs) supported by a policy that is practical and enforceable.

Lateral policies

Design always works in a political, socio-cultural and economic setting. This setting therefore has a dominant role to play in the success of design for development. The decisions related to such a setting arc important considerations for design growth, and in directing design type.

National commitments

Major national commitments usually create dynamic activity all around and often cause rapid employment of design in that direction. Whenever the Government is politically committed such as in the areas of agriculture, family planning, energy, environment and the present “technology mission,” it has induced more design in that area. Its positive effect is that it provided design the right direction as well as given it the right image. A good number of designers are employed, albeit temporarily on such projects, and many meaningful designs such as energy-saving stoves, better farm tools, aids for the disabled, etc, have emerged.

Media policy

A few years ago, the Government liberalised policies regarding the import of television tubes and components which caused an immediate media revolution in the country. Most Indian homes, including the urban slums and rural huts, have television sets now and television viewing has become such a national phenomenon that the nation as a whole stops work in order to watch a popular programme. This has not had much effect on the designing of television sets because nearly all the sets produced are kits from abroad which are only assembled locally through screw-driver technology. But what has happened is an explosive increase in the demand for local graphic design and video film-making to feed television. This has caught the Indian graphic designer’s off-guard and the overall quality of programmes has so far remained poor, despite or because of the Government’s total control over television. Nevertheless, the design potential seen in some excellent communication projects raises hopes.

(Refer Case Study 3 "The Devanagiri Script” in Section across)

Culture, crafts and glamour

Design is a high visibility profession since it deals with the end product and the user So common recognition and reinforcement of the type of design image comes involuntarily from its major involvement in public projects and major publicity, regardless of whether the designer agrees with that image projection or not. In the recent past three major phenomena of significance appeared on the Indian scene.

Festivals of India abroad

These have created a major source of design employment mainly for the visual communicator and exhibition designer. They have been the “Indian designers’ haven” due to the huge nature of the projects, the enormous funds, and overseas travel, with associated perks such as top contacts (a most important source for future commissions) and above all great publicity in and outside the country In fact, the “designer star” is born.

The star image is sustained and given an even higher profile by the media in promoting the most expensive, luxurious and fashionable products and services. There is the emergence of designer jeans, designer ties, designer watches and designer collections. Some companies further glorify designers for their own interests, with adjectives such as “the famous so and so designer uses.....” etc. Design has become high fashion.

In the area of crafts a major project at the national level was undertaken and executed in 1985, It was called “The Golden Eye”, in which design celebrities from abroad were

invited to come to India to look at a craft of their preference or fancy, and "design" unique products for production by skilled Indian craftsmen for eventual marketing abroad. Some young Indian designers acted as a link between Indian craftsmen and foreign designers in translating the idea of the latter into products. The outcome of this much publicised project was a range of "unique" products of a high artistic standard. Thus design has turned into "high pedestal art."

What the above phenomena did to Indian design is to project a design image in total contrast to what the country and its development needs.

In a country where the correct awareness of design is already low among all levels of people, such high publicity events will have long term damaging implications which are very difficult to correct later.

Products and the consumer

In a planned economy, the Government has the responsibility of providing its people with a good living standard within its economic boundaries. In order to achieve this, the planners must be more perceptive towards people's real needs instead of being misguided by other issues. Take the following cases.

In an effort to develop a beach in South India, the Government wanted the fishermen to vacate their seashore huts and offered them spacious flats instead. The fishermen accepted the offer, took the flats, made money by selling them off and reappeared in huts on the seashore. Similar cases are repeated in many slum rehabilitation projects. The slum dwellers return to their original or near their original homes where they had previously established contacts, customers, employment and a pattern of living. The problem with such well meant decisions is the lack of the deeper perception of the real problem. In similar cases which were successful, it was the people's participation in the decision making which helped. Lack of participation alienates people from the solution. (Refer Case: Study 12 "Appliqué Textiles" in Section Across).

Laudable efforts in the right direction have been put in the design and development of energy saving *chulhas* (stoves), water-saving toilets, solar cookers and bullock-carts. These are promoted by Government and are well publicised by the media. But most of these projects lack the coordination, integrated view and infrastructure for sustained implementation on an appropriate scale. The bullock-cart, for example, is approached via the established pattern of modernisation through the use of bearings, pneumatic tyres and steel tubes, with not enough thought on the dependence of the villager on spares, the displacement of the local carpenter; the disregard of local materials, the problems of centralisation and such realities. (Refer Case Study 2 "The Bullock Cart" in Section Across)

In 1986 the National Research Development Council which funds indigenous innovations asked me to assess an electric gum massager which I considered over-designed and harmful in the context of the Indian economy. This case is not an isolated one. There arc barbecue stoves, grill stoves, coffee shakers and a host of other products which are not relevant or not really necessary to the Indian life style. Such products rob scarce resources and design talent from real needs. The market competition caused by the recent liberalisation policies was so great that manufacturers went into an array of ventures which can only be called superficial. Ceiling fans, for the first time, started

appearing in dark colours instead of functional white and with added fake gold trimmings and fake carvings, The manufacturers of two-wheelers, including the functional cycles, started employing designers to put coloured lines on the products. A giant industry commissioned a graphic designer to facelift their tractors through graphic treatment,

Through various ways, prestige is being fostered and real values are put aside in the selection and use of a product. Soft drinks are being consumed even in rural areas in place of milk or tea though the former is many times costlier and less nutritious. In middle class homes, huge rexine-covered sofas, unsuitable for the hot climate, and expensive and difficult to maintain, are a common sight. Concepts of modernisation, deep-rooted in people's minds, make them view televisions, refrigerators and cars as emblems of social status. Frequently, consumers are less concerned with function than with appearance. Not surprisingly many poor houses display television antennas externally even though the householders cannot afford to own a television set.

Culture, modernity and identity

India is a multi-cultural society existing in different time zones. It is one of those countries where many centuries are telescoped into one and which has a multicultural society united by a deeply shared experience. It is not surprising that there is confusion and misunderstanding about identity, culture and modernity. At all levels, from planners to masses, this prevails. Culture is often thought of as the "glorious past", having little to do with today, and is often defined as music, dance, and fine arts. The question of identity is also treated as reliving the past, at least symbolically. Modernity is treated as its opposite, which has to do with high technology and is essentially associated with the opulent West.

Can we not use the highest technology for the development of the most tradition-bound areas? We have the exemplary cases of video programmes being used by the rag-picker women of Self-Employed Women's Association (SEWA) and the efforts of the Indian Space Research Organisation which has brought television sets to remote villages in Gujarat. Only if planners view culture and high technology along these lines, will design achieve its rightful major significance.

Knowledge before equipment

It is considered that access to the latest technology and equipment is necessary for a country's development. While this may be true, the one important requirement is to have the latest knowledge. Hardware orientation must be replaced by software orientation. More important than the number of television sets is, how they arc being used, and how soon one can be self-reliant for hardware. Computers and VCRs have come into the Indian environment in a big way but their use has not been planned. In today's rapidly changing technological environment, equipment soon becomes outdated. Often, giant foreign manufacturers load the country with their outdated products and having a monopoly on the spares and feed material, "blackmail" the purchaser In addition, because this equipment has been designed to suit physical and social conditions in the country of origin, the buyer country is subjected to payment of design costs for unnecessary facilities at enormous national expense. (Refer Case Study 5 "The Duster" and Case Study I "The Tooth Brush" in Section Across).

Means and ends

There is a popular misconception that "the ends justify the means". In this context, the Bhopal gas leak tragedy in which thousands of people' seriously suffered, must be remembered. Good design is concerned with the process of manufacture and use, as much as with the product itself. Development policies regarding the means of production, distribution, new material acquisition and employment are important for the right action with regard to design.

People's solution

In a sub-continent such as India there is never a dearth of design problems. So many of them remain unattended. Pressed by "necessity" people often "invent" their own solutions which may be crude but nevertheless genuine, indigenous and functional. Milk is supplied to two- and three.-storied flats with a simple rope and' bucket. Old buckets are recycled to become no-cost stoves. Empty kerosene tins are transformed into no-cost storage bins. The appropriateness of such solutions lies in the fact that people know their own problems best even though they are not always in a position to articulate them. For designers this could be an essential first resource. Policies must consciously appreciate this and promote this innovativeness of people.

The barefoot designer

A problem most, countries, particularly developing ones, face is not the lack of design talent but sustaining and directing their best talent towards areas where it is required most. There are two aspects to this. One is migration to more remunerative," better life" countries. The other is, within the country, the concentration on more remunerative corporate service or the more comfortable and better life of urban areas. Thus the most needy majority in the country, which is rural, often remains unattended. The policies required here are neither the ones that "force" the designers to work in villages nor the ones that ask for "sacrifice" creating a feeling that one is punished for excelling. What is needed is to create conditions that encourage the best ones to remain in the country and to go back to the villages. (See the article on Barefoot design in this book).

Politics and the designer

Professionals everywhere tend to avoid politics. This tendency seems to be even more prevalent among Design professionals. It is true that today's politicians particularly in countries like India are most corrupt, unprincipled and gross in their behaviour But it is a blunder to underestimate the impact of politics and politicians on any profession. The impact is even more significant for a young profession like Design, Politics is an important part of society and no one can afford to be indifferent towards it. It is politics which makes policies, allot necessary resources / funds and govern bureaucrats who implement the policies.

It is a well-known fact that Britain's design profession got a tremendous boost under the active support of the then Prime Minister; Margaret Thatcher. In India, the late Piloo Mody who was an architect was a prominent political leader He made the architecture profession in India permanently secure by bringing in legislation through parliament that all urban housing plans must be approved by qualified architects. He also fixed the minimum fee for an architect's service as six per cent of the construction cost of the building. This ensured good earnings for all architects since the construction costs continually soar high in India.

The Planning Commission of India is the apex government body which sets the policy directions for the country regularly through its Five-Year Plans. The Indian government allots resources as per these policy directions. The chairman of this Commission is the Prime Minister. The deputy chairman and members of this Commission are appointed by the Prime Minister's office. In all these years, no designer was ever nominated to this Commission.

In my personal view the prime reason for the poor state of The Design profession in India in spite of its excellent design capability is this lack of active political support. Even after half a century of independence and industrial development, there is yet no National Design Council. Even the Professional Design Society is not functioning due to lack of support from government and industry.

The fact that presently the Indian designers are much in demand and that many of them are able to earn extremely well gives an erroneous impression that the Indian design situation is excellent. The truth is to the contrary. The present designer demand is high because the supply is very low. For a country of such vast population the number of designers trained each year is disproportionately low. Those designers who are earning exceedingly well are doing so not by design fee but the commission or profit of execution which they also undertake. The real situation is that design impact is hardly evident in Indian products and communications.

What needs to be done?

• First of all, a country must define for itself, development related to its own needs: socioeconomic, political, cultural, and appropriate to its resource. This will decide the articulation of the type of policies for design or those having a bearing on design. Imitating the successful policies of others may be easy but in the long run may be wasteful and harmful. This is not to say that learning from the experience of others is wrong. It only means that experience should be viewed in its original context and its principles must be well understood.

• In a world which is increasingly getting closer give and take between countries is definitely desirable, While give and take is inevitable, what is good should be carefully decided by the planners. What is good for healthy development? The inflow of foreign capital, goods and equipment should be discouraged, but the acquisition of advanced knowledge, to be used ultimately for the country's own needs, should be encouraged.

• There should be a very controlled balance between "international openness" and "domestic protectivism." It is imperative for any foreign involvement to necessarily promote, not kill, local research and development talent.

Technology and design transfer from other countries must be done with great care and concern. There should never be a wholesale transplant. Technological or design solutions must always be adapted or redesigned: to suit the following:

• It must be realised that development is not "catching up with yesterday's West or East." It is developing one's own capabilities to the maximum. Not only that, true development is to realise one's best and to use it to become a pace-setter in some areas, to stand with dignity in a competitive world. So, there should be a constant search to discover those capabilities and ascertain how best they can be promoted. Education should be oriented towards such a search rather than towards overseas schooling.

• People know their own problems best, and planners and designers could learn a lot by a sincere study of people's own solutions. Research and documentation efforts must be directed towards this goal earnestly and continuously.

• In predominantly rural countries such as India, policies must be drawn up not only to discourage the "brain drain" from the country, but more importantly to encourage a "brain gain" into rural areas. The "barefoot designer" could be one such good approach.

• Policy makers must be able to look into the future needs of their own country within the context of world development and have the ability to consider problems in an integrated manner. They should be conscious of the major impact of many other policies on design which do not directly affect it. Isolated solutions are often inappropriate.

• Much good can come about by making decisions and executing them in a participatory manner rather than in an autocratic manner

• Last word: Design would flourish only with active political support. We need to be sincerely engaged in politics. This could be done through political lobbying; representation to the Parliament and a number of other ways.

Having a good design policy is insufficient for good design growth and its ultimate and significant role in development. Only when Government policies are made in appropriate directions in all related areas, will design have its maximum positive benefit not only for its own society but for the international society as well.

Learn how to learn

The Mulla sent a small boy to get water from the well.

'Make sure you don't break the pot!' he shouted, and gave the child a clout.

'Mulla,' asked a spectator, 'why do you strike someone who hasn't done anything?'

"Because, you fool,' said the Mulla, 'it would be too late to punish him after he broke the pot, wouldn't it?'

Tools for Change: Learning from the Artisans

Problems of change

The real India consists of rural India where nearly eighty per cent of its people live and work. India being an agricultural country, the people of rural India are essentially farmers engaged in producing food, artisans engaged introducing artefacts, and professionals' providing services to farmers. The production of artefacts is local. These artefacts are essential for life, for the farmer for producing food but they are also important in fulfilling all his other needs. These range from devices for fetching water; cooking, serving, storing food and so on, to devices for playing, for making music (man does not live by bread alone), and a whole range of man-made objects. They are in fact the creators of the man-made world. They are the *Grama Shilpis,* who shape the village with their hands. Aptly, their professional deity is Viswakarma the shaper of the Universe.

Viewed in this light, therefore one can perhaps consider the designers, and architects of today as belonging to the profession of artisans, probably .of a different kind.

The Industrial Revolution changed the past methods of production and this led to the birth of architecture and design. Together they (architecture and design) started changing-the face of the earth as it never had changed before from a macro view-the highways, skyways, and skylines to a micro view-the chairs, the shirts, the buttons and the food wrappers. The noticeable changes were all of their making. The artisan, particularly in India however, did not transform himself into a designer or architect. The socio-industrial situation created extremely difficult problems for these creators.

India is also a country of simultaneous existence. Here the bullock-cart and the space-ship exist simultaneously. The post modern advances in science and technology simply took positions of coexistence beside traditional ways and traditional artefacts. But coexistence demands its price. One aspect of this price in India is the decline of the artisan.

While the population of India is increasing at an enormous pace along with its associated human needs, the artisan/craftsman communities are ironically dwindling at almost the same pace. The skilled artisans are leaving their family professions of countless generations and turning to other "jobs."

The jobs are of unskilled urban labour but they yield a better income and offer better financial security, compared to their traditional skilled jobs. Some of them migrate to towns and cities in search of jobs and find work as labourers, domestic servants, peons, and so on.

The younger generation artisans study in schools, learning various subjects which have no relevance to their family craft nor any reference to it This type of education further alienates them from their family craft and its environment. They lose respect for their family craft practised for generations. Added to this, is the fact that they grow up seeing the hardships the family has to endure, while practising the family craft. They desperately want to try something else. As a result, the artisan families have greatly reduced in number and their art has declined, and sometimes died altogether; or is ready to die.

An added difficulty is that many of these Indian craft traditions are oral traditions. In the absence of any document, the oral traditions, once lost, can never be revived. It is a permanent loss. Let me quote a few examples. Patola weaving is a unique Indian craft which produces exquisite cloth by weaving separately dyed warp and weft threads. It is a very highly skilled craft. It takes several months to weave a single sari. Only two families now exist of these famous Patola weavers of Gujarat. Only ten years ago, there used to be, in Uravakonda, Andhra Pradesh, six workshops using natural indigo for dyeing. Today, there are none. Their difficulties are basically due to their inability to cope with modernity - the modern needs created by modern technology and modern values. Let us briefly try to understand the situation.

The artisan /craftsman in the past were designer; producer and distributor, all in one. He was in direct, personal contact with the user and understood the user's needs very well. This situation has changed now.

The purchasing power of the clientele around him in the village has become progressively less and is now limited to the bare, essential, survival or subsistence level* artefacts like the cooking pots, farm implements, cots, etc. Even these products are threatened by mill-made goods from outside. On the other hand, the artisans' greatest potential lies in activities like carving, embossing, painting, and those have become luxuries which the villagers can no longer afford due to their meagre earnings. The artisans particularly those engaged in such sophisticated traditional decorative skills are forced to look for clientele from far away cities, and from abroad.

Due to this increased distance, the artisan has been forced to deal with and cater to an alien clientele, whom he never knew, never saw and never understood. He does not know the clients' needs or the market prices for his skilled products. The artisan also does not speak the language of his client- both literally as well as metaphorically. This has led to exploitation by the middle-man, who prefers to perpetuate this situation and exploit it for his own selfish gain,

Modern production and the artisan

The modern industry has affected the artisan in three ways.

First, the mindless environmental exploitation by industry is depriving him of his raw material resources, which are now increasingly becoming scarce and unaffordable. Wood, for example, is all taken away in tonnes by the paper industry and the packaging industry; it is the same case with cotton, wood and other materials.

Secondly, industry, with its speed and mechanical reproduction system offers comparatively cheap products and creates unbeatable competition. Whenever industry tries to imitate a particular craft like the tie-and-dye sari or the natural dyed colours through chemical and photographic means, the competition kills the craft. It creates confusion and unfair comparison.

Thirdly artisans also lack the support of aggressive advertising machinery which the industry has. When his clientele were only local, his only advertisement was word-of-mouth, But, now with distance, this is no more practical. He needs media support badly but he cannot afford it.

There are also other real problems which are weighing against the artisan heavily. One is the lack of security and family welfare which was taken care of by patronage or by the yearly remuneration in the form of grains by the farmer. The other is the lack of capital for investment needed for raw material, accessories, workers daily wages, etc. The changed situation demanded other inputs. Not only is the artisan/ craftsman required to know the tastes and needs of the distant client but he is also required to package his product and transport it to him over long distances. He is required to market his wares: through direct and indirect means. He needs knowledge of this. He also needs the knowledge of elementary business management such as billing, book keeping, taxes, octroi, crediting and loaning, banking, etc. These are modern world demands.

All this has caused a decline of the artisan not only by affecting his survival financially, but also spiritually. On the one hand it has affected his moral values because he has had to resort to methods like bribing officials, smuggling, cheating, etc., to get his raw materials on which his whole work and livelihood depends. On the other hand, as his capacity for initial investment weakened, he leaned on the support of the middleman's

finances and his vested interests. Since he did not know the users' needs and tastes, he had to rely almost entirely on the middleman's "orders" even though they were contrary to his own feelings. He" was forced to create for cultures unknown to him and often use substitute materials unknown to him. This has affected the creative confidence of the artisan/ craftsman and rendered him a mere provider of highly skilled cheap labour. This is the contextual framework in which an artisan works today.

Since my aim in this article is not to probe into these issues and search for possible remedies, I do not wish to go further into these aspects. I would rather focus on an aspect which is less discussed.

Learning from the illiterates

As a designer long engaged in managing and personally conducting training programmes for artisans and craftsmen, I feel, it would be enriching to turn our attention to the human side of the artisan. Apart from looking at the artisan/craftsman as a "producer" of objects adding to the GNP in rigid economic or statistical terms, we cannot forget his significance in other non-physical terms; in terms of his contributions to human society. Maybe it would help a little in his regaining his lost confidence, his weakening spirit, and securing for him his lost respect in society.

Most artisans are poor as well as illiterate. Nevertheless, they are highly skilled and well "educated" in terms of their long and rich experience. There are often many unrecognised strengths amongst such people, particularly the artisans. They are sometimes storehouses of knowledge, which would constitute a wealth of learning that could be made available for others in society. It is aptly said that in oral cultures when an artisan dies, a hundred libraries are burnt down. This wealth of learning would comprise firstly what the artisans do and secondly, the way they do it. A few representative examples in each case might suffice to illustrate this point.

Materials:

The creation of an artefact starts with the material in raw form, which needs shaping. The good artisan/craftsman not merely knows this but he has the necessary rapport with his material. His way does not mean simply seeing it, reading about it and thus getting to understand it. He is actually involved with the material. He touches it with his own hands, plays with it, fondles it, and then uses it. He is all the time surrounded by that material, day in and day out. Take, for example, a potter His whole life from childhood to old age is spent with clay, his raw material. He smells it and breathes it. Thus, with this kind of involvement and attachment, when he touches the material, it reveals itself to him. He gets an intuitive feel for the material which, like love, could be something beyond his reason. But that feeling is the perfect, one. As the eminent Japanese-American craftsman-designer Nakasimha says "the soul of the tree" should be listened to by all those people who use wood to make various products from wood. One must have the love and patience to listen and the compassion to respond to its voice,

Tools:

Very closely related to raw materials arc the tools one uses to shape the material, Rapport with the tools works the same way as rapport with the material. It is common experience that tools, with constant use by a single person, get moulded to his way of handling. On the other hand, the person also gets used to a particular tool; gets conversant

with it and develops automatic and intuitive, involuntary responses. A mundane tool, such as a fountain pen or a draftsman's rapidograph will not work as well in the hands of another person, as with the regular user who has developed a rapport with, and an emotional bond with it. This closeness between the two manifests itself while shaping the material and creating the product. The artisan loves his tools and the tools age and mature with him in his hands. He, through use, modifies them to suit his own specific purposes and even at times creates his personal tools.

Collective Consciousness

If we look at the process, we realise a fundamental difference between designers and artisans/craftsmen. Designers have highly self-conscious and introspective modes of thinking, while the artisan's approach is a natural, unselfconscious, action-based approach. The artisan at times innovates afresh but he does so around a basic solid solution and a method handed over to him by tradition and perfected and modified over years by several other artisans. Since this is an action-based approach, there is a collective consciousness and intuition mainly at play. His thinking and solving is through doing, and there are usually no drawings, pre-plans, etc. They evolve on the job. For an artisan, design and execution are one. The work of a potter well illustrates this point

Owing to this action-based approach, no records were made and maintained by the artisans. This approach only helped him develop good intuition and inherent capabilities, particularly aesthetic functioning, Although an artisan usually has no written rules and formulae apart from the oral culture handed over to him over generations, he has unwritten codes and has imbibed artistic sensibilities as well as sensitivities. He may not articulate or reason but he strongly and intuitively reacts to colours, proportions, harmony and various other aesthetic aspects. The "turned-wood'' craftsman does not even mark earlier the different sections to be turned into different, shapes and sizes. Yet, he never falters in proportion, symmetry, harmony and other aspects because of his highly developed visual sensitivity.

The Kalamkari craftsman never traces from a master sketch. The style and the vocabulary is clearly in his mind and it flows directly on to the cloth he is painting. The humiliation is when he has to subdue his sensibilities to the pressures of the middleman and to the distorted tastes of the financiers, who force him to imitate a form or to draw a form alien to him. The artisan uses colours and forms in total harmony with his culture and surroundings since that is the only reference he has around him and he draws his artistic strength from them.

Use of Surroundings:

Once in Madhya Pradesh while talking to a master weaver at his small hut, I was finding it difficult to relate to a highly stylised motif of a bird which he had woven. He stopped suddenly in the middle of the talk and said, "Ssh! Do you hear that bird call?" I listened to the call coming from a tree in his court-yard. Then he led me to the tree and showed me the bird there, which had inspired him. The artisan keenly observes the environment around him and uses it extensively in his work. All his references come from his immediate surroundings. In the absence of this cohesion between the artist and his environment, art is bound to be disharmonised.

Non-model approach:

The other factor which is of considerable interest and a source of learning for designers is the artisan's spontaneity. The creation of an artefact often takes place in his hands without previously-made drawings. No preliminary concepts, no scale models, no mock-ups and such pre-planned guides. Whatever incubation is necessary, whatever preparation is necessary happens probably internally in his mind. With his mental brief of the problem and with his mental, often wisdom-based solution, his hands bring out the final product directly. Practice such as this also demands a strict discipline where the artisan cannot afford to make any mistakes since there is very little chance of correction on the final work. It demands the confidence and total control of the medium and the materials he is using. The work produced by such a "non-model" approach has freshness and vitality which the "model" approach of the modern design profession may not have. One often wonders how the seasoned artisan achieves this with ease. Apart from the rigour of this practice he relies on time-tested procedures and strictly observes them. At times, the strict adherence to this procedure may make it almost like a ritual, but whatever the problem, the procedure certainly guarantees the artisan the desired effect.

The procedure becomes so important that the artisan considers it as part of his religion. Many crafts have religious rituals as part of the craft process. For example, the "charakku process"-the art of making the huge ceremonial vessel (around 20 feet in diameter) in solid brass - is so elaborate and so very "religious" that any deviation from the established practice makes it impossible for the casting of the enormous vessel to be carried out. This includes exact timing in the day or night to start or end each step of the process.

Body as a live tool:

The final work produced by an artisan may be highly complex, intricate and astonishing. But if one looks closely at the kind of tools he uses, and the other aids of his work, one observes a fact worth remembering. His tools are extremely simple in their function with no glorification at all. Some of them are produced or reshaped by the artisan himself to suit a particular purpose of his. These are made with materials and techniques which are locally available. The aids he employs are not only simple but manual.

These are ordinary materials such as a stone for plumbing, a piece of thread for drawing a straight line; an available stick for measuring a crushed twig to act as a brush and so on. Fingers and other parts of the body are often used as tools for measuring and proportioning.

The artisan uses objects around him as aids to his work. A tree in the vicinity or the legs of a cot can be used for tying some thing. Parts of his body, for example, his thighs are used by many an artisan for giving a twist to thread, feet to press something in order to get a firm grip etc. Likewise other parts of the body are used in many other ways.

Whether he is creating and executing functional artefacts for daily use or he is induced to create a work of art for decorative and religious purposes, he is strictly following the practical considerations of the would-be user or he is following the paths of his imagination where he can exaggerate and exemplify. He uses his body and its anthropometric measurements as the basis.

The use of such simple human aids has two distinct advantages. Firstly, such devices make the creator-executor self-reliant. He is not dependent on external equipment and its demands. Today's Indian designer/architect for example has to depend on the import of a mundane drafting device like a "Rapidograph." It needs the import of a pen, along with the accessories; ink and cleaning liquid, etc. Secondly perhaps more importantly the use of such simple devices influences the work in a manner which lends control of the work to the artisan/craftsman; without the "device" ever dominating the work. The final creations always thus remain down-to- earth and practical, (Refer Case Study 5 "The Duster" in Section Across).

For example, the Naga women of the North-east hills use loin looms, which they can carry around easily. This produces cloth only of a certain narrow width. This limitation in turn influenced the dress culture of that community.

The artisan's work has always had a great local identity since the materials and the tools used and the skills employed are totally indigenous. The concepts spring from the local tradition and culture. The identity of an artefact is so vivid and so localised that one could point out distinctions between artefacts from one village and the neighbouring village; or from one community to another community in the same village. The change in custom and beliefs influences his work.

Not only have that, even the inner composition of the local soil, water and moisture or dryness in air also influenced his work. Take for example, the case of Kalamkari paintings. The chemical .composition of the river water at Sri Kalahasti, influenced the development of a particular red colour achieved by Maddar roots. In other river waters, the colour would not be the same red. Similarly the presence of humidity in the air in a region would facilitate the artisan to work on very fine thread and weave it into fine cloth. The flowers and leaves available in one locality influence not only the artisan's imagination but also manifest themselves in his work. The stylised mango motif appears in the work of artisans living in regions where mangoes are grown.

Home as workplace:

The most notable feature of the artisan and his work is that his work is home-based and family-based. This has many factors. One important among them is usually overlooked but nonetheless is an important social factor. The artisan does not have to spend long hours away from home and family. The proximity to his family reduces tensions and the psychological dissatisfaction usually caused by the distance factor or by monotonous office work. Work at home promotes harmony within the family

The closeness to work-within the living environment relieves one of the stresses caused by isolated work. One could also put in more work, "as and when" convenient. This is a far better situation in terms of productivity. All spare time could be used and the work could be intense, yet more relaxed as the compulsion to follow a compartmentalised time frame is eliminated. The craftsman is free to evolve his own work discipline according to the convenient time available.

Another important factor is the team which works to create artefacts within the artisan system. It is usually the artisan family with very little, if any outside help. This brings the family together and gives a feeling of collective achievement. The wife, the children, the old parents; every member of the family usually participates, in helping with the work,

according to his or her own level of capability and type of contribution, This may take the form of only fanning the blow-pipe or mixing the materials on top of the stove or just drying the finished work in the sun. Each and every act has its own importance; it is valued; and there is a sense of participation by all an essential aspect of team work,

When home becomes the workplace, then that place becomes also a place of natural and automatic, unselfconscious learning. From the moment the artisan's child is born and even before, he is constantly in the environment related to the artisan's professional work. The child grows up in that environment and naturally picks up the great skills around him.

A real education, a work-oriented, real-life oriented education takes place. Like the traditions of the Ustads (musician-teachers) and dancers in India, family traditions thus continue harmoniously. The child in fact will have inborn capabilities since a particular craft skill and thinking are in his blood.

Keeping up with change:

Most of the artisan's work may be tradition-based but creativity and innovation can be found in plenty in the way he adapts his creations to ever-changing needs. Innovations can be seen even in people's solutions to many day-to-day problems. These solutions too spring up from the demand or "pull" of economic and physical necessity as well as the urge or "push" of the inherent imagination in him which is awakened by his constant keeping in "touch" with the problem.

Examples of such inspiring work by anonymous people are all around us. In Ahmedabad and parts of Gujarat small pieces of left-over cloth are used by women traditionally for the craft of appliqué work to create beautiful coloured fabrics. This craft is now used to satisfy such needs as bags, dresses, cushion covers, etc. of modern society. Another "refuse" craft which is newly developed is the use of rags to make colourful ropes. (Refer Case Study 12 "Appliqué Textiles" in Section Across).

In the weekly Sunday market at Ahmedabad, one finds women artisans selling their goods even as they work on the spot, using only a couple of basic tools to make stoves *(sigidis)* from pieces of scrap tin. Using only a small process of hammering and riveting, the woman artisan creates a product in front of the customer's eyes. This product works well and is offered at a very low price, since only scrap is used and there are no overhead costs.

Many artisan-homes in the villages are "guide-books" for architects on how to do space planning and how to organise light, wind and other amenities. For example, in Kavitah, a village thirty kilometres away from Ahmedabad, every weaver's house is very impressive. It is a small one-room house which accommodates all the family's needs and needs of the workshop. The kitchen is in a corner with a bamboo ventilator grill on top. The vessels arc all neatly arranged on a platform fixed overhead on a plank. The storage area consists of clay and wooden bins in a corner, the tops of which are used for sleeping. The loom, the main equipment of the weaver is placed in a "pit." It is a pit loom, A low window is situated near the loom in such a manner that the natural light falls on the weaving threads. I he front portion of the hut is a small veranda where people meet each other examples of this kind are not isolated but are common in many artisan homes.

Investigation and serious study would reveal many more interesting aspects from which we the designer community can learn and benefit. The key factor is a revision of our views regarding the lives of the declining artisans, their work and their-methods and bring forth a new vision, for; it is certain that some solutions and methods can change and become obsolete, but not a class of people and their long evolved principles of living and working.

Dry in the rain

A man invited Nasrudin to go hunting with him, but mounted him on a horse which was too slow.

The Mulla said nothing.

Soon the hunt outpaced him and was out of sight.

It began to rain heavily, and there was no shelter.

All the members of the hunt got soaked through.

Nasrudin, however, as soon as the rain started, took off all his clothes and folded them.

Then he sat down on the pile. As soon as the rain stopped, he dressed himself and went back to his host's house for lunch.

Nobody could work out why he was dry.

With all the speed of their horses they had not been able to reach shelter on that plain.

'It was the horse you gave me,' said Nasrudin,

The next day he was given a fast horse and his host took the slow one.

Rain fell again. The horse was so slow that the host got wetter than ever; riding at a snail's pace to his house.

Nasrudin carried out the same procedure as before.

When he got back to the house he was dry.

It is all your fault!' shouted his host. 'You made me ride this terrible horse!'

'Perhaps', said Nasrudin 'you did not contribute anything of your own to the problem of keeping dry?'

For the People, By the People: Design without Designers

Products of everyday life are used by and relate very closely to millions of ordinary people. Especially, in the developing countries, these mundane products acquire greater significance because of the special nature of the economic, social and human problems existing there. In such a "developing" situation, the industrial designer with the worthy task of relating things and people play a vital role in affecting change - an important ingredient of development. His role is, however not understood unless the background in which he performs is made clear:

Mundane things and the millions

India has one-sixth of the total humanity spread over an area of 327 million square kilometres. This vastness is nothing but an indication of the enormity of the scale of its problems. In the words of an eminent Indian journalist "it is a continent carrying the traumas and tangles of backwardness and poverty, of dirt and disease, of remarkable sensitivities in the realm of thought and expression, of skills and capacities traditional and modern, which have already made it the seventh in the list of industrialised nations but with about the lowest per capita income."

Of all the living spaces, the kitchen represents best, people's attitudes and their culture. In the comparatively more traditional rural houses, the kitchen and household activities acquire sanctity. A corner of the Indian kitchen is always kept for God, and cooking and eating are done as holy acts. The ancient Indian scriptures, the Vedas consider food being life-giver as God by mentioning *Annom para-Brahmam.* Even cleaning and decorating the house and the household products are done religiously as acts of invitation to the Gods.

The household product whether a utensil or a device was always highly regarded in Indian tradition. In Hindu marriages it is a custom to give household products as gifts and it is a must for the father to send along with the bride, all household utensils and appliances for starting a new family As such, these will be exhibited to the whole neighbourhood before use.

Even today, household products such as utensils are bought more as investments in metal than as functional objects. As in the case of jewellery, these items are bought by weight and used to decorate the front room showing one's status and to be utilised by pawning when in extreme financial difficulties.

In the Indian culture where the woman's place is firmly anchored at home and where the joint family system persists, with enough people always at hand for household chores, the powered appliances were hardly necessary. But this situation is gradually changing. Rising literacy plus the economic circumstances require the women to go out to work. Compulsory job transfers, increasing individuality, breaking up of the joint family system, changes in regional food habits plus the lack of availability of good affordable services resulting in single persons having to attend their own household work-all these are creating a new demand for more efficient household equipment.

This condition, however, has two major limitations. First and foremost is the price of the product. Most appliances though economical in operational cost, are beyond the economic means of the individuals who really need them. Some of the exported items like refrigerators cost more in India where they are produced, than abroad. This is because the Indian government considers products such as refrigerators and fans as luxury items and imposes very heavy tax though in fact, in India's hot climate these products are necessities. Next is the availability of cheap human labour. While in the developed world, mechanisation of home equipment is the result of the near disappearance of domestic servants, in India, labour is available even for drudgery because of its ever increasing high unemployment.

Besides, there are other aspects of human behaviour The Third World community suffers from an incurable inferiority complex. There is unquestioning admiration for

foreign goods and foreign ways. The high standard of quality is always taken for granted in a foreign product. Being popular abroad, the modern, powered, home appliances are primarily a prestige than convenience for Indians. Not infrequently, modern household appliances find a place in drawing rooms and in showcases for display rather than in the kitchen and dining halls where it ought to be in real use, It is not surprising then, that many a client, manufacturing appliances like refrigerators seek *a.* designer's service in the end only to redesign the door handle or to suggest a new colour scheme. Almost all micro-wave ovens in India are used merely for warming up the food which is pre-cooked. This is because Indian cooking is such an elaborate process which a micro-wave cannot accomplish.

Most home appliances in the Indian market today are based on foreign (developed country) models, with little consideration for Indian conditions or use. In most Indian homes, cooking and eating are still done sitting on the floor but none of the household equipment is designed for a sitting posture. The products in all reality promote imported lifestyles and since that is possible only with people of the upper income level, unconsciously promote a hierarchy of class all together. Having a refrigerator and air-conditioner is more of a class indicator than a convenience. Having an imported refrigerator and an imported air-conditioner, preferably of a larger capacity is still "higher class". In such subconscious class struggles, the real needs revealed by the use of such mundane items as litter bins, broomsticks and toilet cleaning devices are ignored.

The Industry

The industrial production of modern household appliances hardly began before India's independence in 1947.The industry could take off only in the early fifties when the Indian Government restricted imports and when traders and experienced technicians came forward to produce simple items like electric stoves, room heaters and heating elements. Gradually the production of other sophisticated items like ovens, food mixtures, and washing machines was started.

Realising the labour intensive character of this industry, its low capital investment in machines, its simplicity of manufacture and assembly, the Government of India in 1967-68 reserved this industry for exclusive development of the small-scale sector:

The industry, well established today can be classified into three main groups.

The first group comprises tiny units working in non-conforming areas or small residential premises and producing components for the main product manufacturers. These units have no machinery /equipment and are mainly dependent on outmoded methods of manufacture and the inherent talents available with the skilled workers engaged by them.

The second group comprises small units producing ordinary appliances using the above components with indigenous machinery and equipment. Their testing and quality control is limited to continuity insulation tests only. In spite of their limitations, they produce copies of appliances of popular imported makes like Murphy, Philips etc.

The third category, the smallest in number consists of units having suitable factory space of their own or rented in industrial localities. The proprietors or partners are well-informed and forward-looking, having technical knowledge of the products manufactured. Besides this, there are a few large-scale industries, well organised and

very well equipped (mostly with imported machinery). They have their own marketing channels and are popular Almost all the small-scale units face dealer exploitation due to lack of their own marketing channels and lack of adequate indigenous equipment.

The scope for designing household appliances for export is considerable since the advanced nations are shifting to high technology items such as dishwashers, deep freezers, etc. But unfortunately, Indian Industries lack the knowledge of the latest developments in design and construction which are economical. To give an example, the Indian electric irons made of cast iron excel in quality but are not preferred abroad where the consumer is used to steam irons made of aluminium alloy.

A vital factor for Indian Industries is material. Certain popular raw materials are very limited in the country and hence their use is critical. The raw materials alone account for nearly 65 per cent of the export price. The value added is hardly 35 per cent which is indicative of India's inability to take advantage of its cheap labour in offering competitive prices in the international market. Thus there is obvious need to design products involving less material and more labour.

The Industrial designer

Industrialisation started in India with heavy collaboration with leading industries of the developed world and production was based on the designs of foreign parent firms. As soon as there was accumulation of production know-how and development of productive capacity, the collaborations ended, and the stage was set for innovative, appropriate, local designs. But the cultural dependency persisted, Unauthorised copying started at all levels of production. The user also trusted "foreign" product or products resembling foreign ones. The research design and development departments of industry, were forced to copy from a foreign product sample or if it was not available, from the catalogues. This situation continues even today,

It is not unusual for the industrial designer in India to be approached by a client along with a catalogue for him to copy. It stands to reason that the Indian manufacturer misunderstood the industrial designer; for ironically, the idea of an industrial designer as we know now, also happens to be imported from the developed world.

In the rapid technological change and in the dual coexistence of social and economic values in India, the designer's role is not at all clear. He is according to the industry, an expensive, glamorous and superfluous beautician. Like the foreign product, often he is a prestige symbol to the client. As a non-technical "appearance" designer or so-called stylist, he faces contempt from the rigid, functionalistic engineers. The same is the case with the large-scale industry as well which is relatively well informed, resourceful and forward looking.

The role of an industrial designer working for a small-scale industry is even more difficult than his role in a large-scale industry. As the small entrepreneur is even less aware and cannot afford different specialists, the designer would be required to give not only design service but related services like packaging, instruction manuals, exhibition and even production know-how wherever he suggests new materials or processes. The lack of design awareness leads to a lack of scientific and rational attitudes towards design. There were times when the client called his wife who is hardly aware of design or related areas, for taking a design decision regarding a household product.

Government policies

The recent policies of the Government of India decided on the manufacture of household appliances by small industry and laid emphasis on export promotion. Technical and economic aid is given to the small entrepreneurs, and as a result "modernisation" schemes in the field of domestic appliances started vigorously in all states. Though these have failed to make effective use of industrial designs and are content with technical improvements, a start has been made by inviting the designer to be present in certain tasks of modernisation.

Lately, the Indian Government laid emphasis on appropriate technology and this happily resulted in individuals and institutions working on the development of mundane but essential products. The worldwide energy crisis necessitated working of people at all levels on devices such as solar cookers and fuel saving stoves. (Refer Case Study 8 "The Gas Stove" in Section Across).

For the people, by the people

There is a great variance between economy of production and user requirement and Indian design tries to cope with it Answers to real needs spring up from the people themselves. Innovative men from all walks of life-the poorest street vendor, the social worker, the engineer, the craftsmen, and the teacher are designers without being called so. One sees many such unknown designers whose design products are available on pavements and in weekly open-air markets where poor people buy household goods. They are all made individually by hand from waste or recycled or inexpensive local materials. Kerosene tins are turned magically into lockable storage containers, oil tins are turned into spice boxes, old buckets into stoves, scrap iron into kitchen tools and so on,

An interesting case is the development of the lighter-cum-cleaner for the pressure type kerosene stove. This device, which one has to buy separately as an extra. Was originally a semicircular asbestos sheet contained in a wire mesh and was provided with a wire handle. Costing only 75 paisa, this inexpensive product eliminated the danger of burning one's hands while lighting the stove. Kerosene had to be poured on to the asbestos before lighting the lighter

Later came an extremely simplified version of the above which costs only I 0 paisa. This meant a 90 per cent cost reduction. This device could be dipped into the kerosene bottles with ease thus eliminating kerosene spillage while pouring.

Take another amazing example. To solve the problem of nozzle holes getting choked with chute, a cleaner was originally developed which was a small tin sheet with a pin pressed in at one end. It was sold at a throwaway price of 5 paisa which is less than half the price of a toffee.

An improvement on this is a simple device using recycled spoke of an old cycle wheel. One end of it is bent to become a handle while the other end has a nut so that the pins can be replaced or adjusted. The handle is insulated with an old plastic tube. It is made of recycled materials such as used tin sheets and wire, and costs only one rupee. All these devices are sold on pavements and are created by people living on them.

They are crude but functionally effective and the shapes are "basically sound as usual in traditional subsistence level design." These are functional and cheaper so much so that any attempt to apply modern "designing" would raise the price before anything else. Such

homespun inventions and adoptions may not seem much compared to the high technology of the developed world but in the developing world of less and less things and more and more people, they are gaining increasing importance. More importantly, these are eco-friendly because they are reusable materials and nothing but hands and hand tools are used in their production.

These products are not always crude either: The hand pressed kerosene lamp is such one example. It combines elegance and functionality. It could be used on any flat surface or hung on a wall and its wick could be made by the user from any waste cloth.

This does not mean that the designer is no longer needed here, but to point out the direction for the designer to take. This situation throws him a challenge and offers more responsibility. Safety is the neglected aspect in products, particularly if unbranded. When commercialism dominates other criteria, social responsibility is its inevitable casualty. Recently, a device called "curdomat' to make instant curd from milk has appeared in the Indian market. The natural process of curdling the milk has been artificially hastened and no thought is given to the side effects. On the basis of the slogan "variety is the spice of life", this device may succeed. But should we not ask whether it is really healthy, whether it is really safe, whether it is really good in the long run and whether it is really congenial to our conditions?

Surely we should.

Design pointers

The industrial designer should be socially, culturally, and economically responsible; particularly so if he is working on household products which are used by most. The living patterns, cultural values, human and material resources must be the basis for designing.

The household product should be brought down from the "status giving" pedestal to the millions who really need it. For economical if not ecological reasons, household products should be repairable and not disposable as in developed countries. They should be suitable for operation as well as maintenance by not-so-literate people who lack previous experience in operating. The wick type kerosene stove which is designed by the author for fuel saving and safety, is one attempt in this direction. (Refer *Case* Study 7 "The Wick Stove" in Section Across)

The awareness of good design among the public, industry and government is a paramount necessity in India. The importance of design in affecting the quality of human life must be realised. This is the fundamental justification for the existence of design in the world of starving millions. The industry needs to be convinced that design is not exclusively formal and that it can mean actual enterprising in addition to profit. This is best done by demonstration than by deliberation. Nothing can be more convincing than an actual case example.

Complementary to this, there should be centres for information and resources such as traditional and modern materials, documentations and directories, product samples and prototypes. But such centres acquire no meaning if they simply remain as passive store houses. They should be active in collection and more importantly in discrimination of resources in various ways.

Design resources may be extended to industries, particularly to small. craft and cottage industries through training personnel, conducting special courses, design clinics and workshops, so that design is readily accessible and its contribution seen.

If design, in its various ways, has to reach "real" people who exist in remote villages and road less small towns, ugly slums and crowded footpaths of cities, the designer needs to go there too. He cannot remain away in his "ivory tower", nor can design be the exclusive function of a few. Only when designers have the best understanding and commitment to the problems around them can they operate most effectively.

Development in the Third World is seen as "the realisation of human personality with people as its focus". In such an event, employment becomes the key, which increases production and thereby yields economic power to people. The designer is needed to help employment generation first and subsequently as the purchase power of the people increases, cater to the growing consumer demand.

The Yogi, the Priest and the Sufi

Nasrudin put on a Sufi robe and deckled to make a pious journey. On his way he met a priest and a yogi, and they decided to team up together.

When they got to a village the others asked him to seek donations while they carried out their devotions.

Nasrudin collected some money and bought halwa with it.

He suggested (hat they divide the food, but the others, who were not yet hungry enough, said that it should be postponed until night.

They continued on their way; and when night fell Nasrudin asked for the first portion 'because I was the means of getting the food'.

The others disagreed: the priest on the grounds that he represented a properly organised hierarchical body, and should therefore have preference; the yogi because, he said, he ate only once in three days and should therefore have more.

Finally they decided to sleep. In the morning, the one who related the best dream should have the first choice of the halwa.

In the morning the priest said: 'In my dreams I saw the founder of my religion, who made a sign of benediction, singling me out as especially blessed!

The others were impressed, but the Yogi said: 'I dreamt that I visited Nirvana, and was utterly absorbed into nothing.'

They turned to the Mulla. 'I dreamt that I saw the Sufi teacher Khidr, who appears only to the most sanctified.

'He said: "Nasrudin, eat the halwa, - now!" And, of course, I had to obey.'

The Barefoot Designer: Design as Service to Rural People

Design: West and East:

Of late, in the world design scene, there is an upheaval. The modern movement, the reductionist the rationalist and the mechanist-type design movement is in a state of crisis.

The cause of this crisis is the emergence of various new post-modern design styles which questioned the earlier ones. The principle "Form follows function" is confronted by "Form follows fun" and "less is more" is countered by "less is bore." This changing ideological base is seen by the world design community as the beginning of a paradigm-shift in design. This shift is not an accident. It is the inevitable result of a shift in the aims of modern technology and in the social, moral, and economic values guided by that technology.

Unfortunately, this paradigm shift which originated in the West is almost blindly being followed in the other parts of the world as well. One may well question this statement. Why is it considered unfortunate? Why should it be different in other countries?

The answer is not difficult to find.

The type of technological development as well as the socio-ethical and economic changes caused by it are not the same everywhere in the world. There are vast differences. There is a very essential regional factor to be taken into account in each case, and this factor is the local culture of that region. Design is vitally and inevitably linked to culture, society and technology.

At the cost of repetition, let me summarise the Indian context as a case. India is a country with a vast rural population, a population with more than twenty-six regional variations of culture and habits. Amazingly, in spite of this vast diversity there is the commonality of a rich culture with an illustrious past, a characteristic shared with other Asians. A traditional Indian hut with its simplicity, beauty, character and appropriateness to surroundings is a good example.

On the technological side, modern technology in India did not replace traditional technology but quietly found coexistence with it. While the spaceship carried Indian men across the far reaches of space, the bullock-cart still remained the most used vehicle for carrying maximum loads on land. While large-scale industry made inroads into traditional ways of working in the direction of automation and mass production, economic necessity created small and medium-scale industries in the direction of batch production. Parallel to all this, the earlier craft and cottage industries continued to exist. On the social front, a similar situation can be observed-a blend of old values and the new. Women have come out of their homes to be educated, to do jobs and earn equally with men. Yet they have remained servile, vulnerable and exploitable. Young men and women have become "modern" and more open with regard to man-woman relations and with regard to the family and social norms of dress behaviour etc. Yet the old systems of arranged marriages, dowry system, and caste discrimination continue as before.

An abundance of manpower (including female labour and child labour), unexplored local resources, the scarcity of machine-skills and the scarcity of capital have characterised Indian economy. Spiritually, the Indian remains internally very religious and emotional. Outwardly, however, he is influenced greatly by Western materialism and physical manifestations of living. Coexistence is the hallmark of today's India. However, most of the contemporary Indian designs do not reflect considerations of this diversity and this coexistence. Such a lack of consideration is found in almost all the Asian and the other poorer countries, (Refer Case Study 6 "The Family Planner" in Section Across).

The design situation in the West is often taken as typifying the situation in the world. This is simply an illusion. Yet, paradoxically, designers in Asia have, by and large, ignored their own contexts and conditions by looking towards the West and being trained in the West.

In the initial stages, about three or four decades ago, when design was in its infancy there was perhaps no alternative to training in the West and looking towards it. But one cannot stay an infant for ever Design training and design profession in the West is naturally geared to its own needs, its own socio-cultural environment, its own values and its economy. It is suicidal to transplant solutions on to a completely different ground. Even some of the world's great designers have failed in such projects, when undertaken in alien, faraway lands. World-famous architect, Le Corbusier's design of the city of Chandigarh in India would serve as an example. Chandigarh looks beautiful but fails to suit the living habits of the local inhabitants. It may be possible intellectually and rationally to understand a culture, its technology and its economics, but it is nearly impossible, without living in it, to feel the inner truth of this culture, the social values and the ethos, in their many subtle aspects, in order to find suitable solutions.

Two concerns:

Mahatma Gandhi, the great Indian leader and social reformer wrote in 1921," I do not want my house to be walled in on all sides and my windows to be stuffed. I want the cultures of all lands to be blown about my house as freely as possible. But I refuse to be blown off my feet by any. I refuse to live in other people's houses as an interloper; a beggar or slave.... Mine is not a religion of the prison-house. It has room for the best among God's creation."

Gandhi's invaluable advice of letting cultures of all lands to be blown about freely but refusing to be blown off one's own feet is worth following not only by the Indians but also by the people of every country. At present, majority of the countries in the world seem to be getting swept off their own feet. Such Westernisation is the first concern of this article. Designers of a country are well advised to look at their own culture, ethos and design vernacular in order to learn from it.

The second and even more serious concern, which should be the concern of every conscientious designer, is urbanisation of design. Design has remained essentially an urban activity everywhere. The attempts of urban Indian designers to design village products such as the bullock-cart or the sickle have been largely unsuccessful. The reason simply is that they were alienated solutions within the same land.

A call:

In a country like India where eighty per cent of the population live in villages, how can design play any role in people's lives when it does not cater to the village population? Therefore, my call is for a design movement. Since the situation is similar in all industrially developing countries one can call this a "majority world" design movement call.

The key phrase for such a call could be — "Go to the villages and take the government with you." Unless there is a massive thrust, a movement in a "designed" direction, design in the "majority countries" may continue to follow the directions set by the West, and designers may, for years, keep on "designing" devices and communication systems for

the urban citizen and the elite and contribute to perpetuating the existing imbalance between the urban rich and the rural poor; rather than alleviating it

The dominant media in countries like India are urban based and these naturally project the technology of an urban based culture, its design and social values, while the rural voices remain feeble and unheard. Popular film, TV, radio, magazines and books-all are urban and in turn western-influenced. The continuing pre-independent education system and a hangover admiration have contributed to this situation. The whole of India, which has created professional practitioners of design for over a quarter of a century, has trained a very small percentage of students from rural backgrounds. Out of these, even further less went back to villages to work for people over there. The media promoted design through glossy picture magazines and flashy FV shows. This type of expensive and elitist design was thought of as "the only design" by the public as well as by industry. It has mooted the widely held wrong idea that design is for the affluent, for the competitive economy and for export Design has become a "fashionable" commodity.

In India, due to the recent economic crisis, design is talked about only in terms of its power to sell more and earn profits, mostly for its own good, abroad. The vital fact that design is a tool for the betterment of life has been ignored completely.

It is unthinkable in India, for a slum dweller to approach a designer for improving his crumbling shelter; or a poor farmer for improving his primitive sickle or a washer man for a better way of identifying his customers' clothes.

Even if an Indian designer in a burst of zeal, enthusiasm and probably a feeling of guilt offers to practise a different kind of design for the "real" people and offers to return to the villages, two questions stand paramount:

First, Can he?

Next, Will he?

The former refers to his competence and capabilities and the latter to his values and aspirations in life.

Urban designer and rural survival:

At the cost of inviting the wrath of many designer colleagues I would argue that it is unlikely that a city-trained designer really has the capabilities to operate in a rural set-up, It needs an in depth knowledge as well as an understanding of the local culture, methods, needs and the design vernacular; quite apart from an understanding of the village economy, community, psyche and ecology where the need operates. Indian designers, for example, know nothing about the coconut tree, though it is an abundant local resource with centuries of social, religious, and economic significance and of immense use, in daily life, even today. Mud, bamboo and thatch have been the most widely used housing materials for ages in rural India, yet it is hard to find Indian architects who know enough of these indigenous materials to use them well in their design of houses.

This is also the case with all other disciplines of design. We talk of the brain-drain and how highly educated young graduates go to work and serve in countries other than their own. A similar internal brain-drain is happening within the country..

A minority of the urban designers actually come from the rural areas just as the author does. For a number of reasons they do not *go* back to their villages. They invariably settle

in the urban area. They are a loss to the parent rural communities, even if they make their mark internationally.

There are a number of reasons for this non-return to their native villages. Some of the reasons are the lack of facilities for living and the lack of facilities for working (designing), The lack of facilities for living would include modern well equipped hospitals, English-medium schools, airports, theatres, clubs, electricity and so on. Lack of working facilities would include computers; communication links; infrastructure and so on.

So, he cannot return.

And will not return.

In any case it is impossible to provide design service to large numbers of rural communities using highly trained urban professionals. The cost of training a designer is so enormous that the number of such trained designers will always be insignificant compared to the vast number of rural people who need their services. Their fees will be high and unaffordable by the rural people and their knowledge is urban and western-oriented. At the same time, the rural people also need their assistance badly.

Designers and design students in countries like India must educate themselves in the local culture, its needs and the vernacular. This has to be done on a war footing because everything is changing with utmost rapidity. This should be the first and foremost activity.

There is a strong feeling that physical proximity and involvement are two essential ingredients one must possess, without which there may be severe limitation of one's depth of understanding and feeling for the people one is concerned with.

Good efforts:

Perhaps it is worth reviewing here the efforts of some individuals and organisations in India who are deeply concerned about this serious problem.

A committed Gandhian named Ishwarbhai Patel runs a school for cleaning. It is called "Safayee Vidhyalay." It concentrates on the most important yet socially most looked-down work of cleaning latrines. Although the school is located in Ahmedabad city, every summer vacation he conducts training camps in villages. The students of the school live and work with the villagers to build latrines for them. Most villages in India have no latrines at all. Ishwarbhai designed special latrines which are inexpensive. He used village materials and constructed latrines which require the least amount of water for flushing. After the initial training, the villagers built the latrines themselves. In this way Ishwarbhai covered hundreds of village families, and this approach is worth emulating. (Refer Case Study 13 "The lolled" in Section Across).

There are many non-government organisations (NGO) which are based in cities but do field work in villages. For visibility, fund raising and for administration, city base is necessary. Designers are an important part of these voluntary, sustained terms. The advantage of such an arrangement is that the designers can work simultaneously for the urban as well as rural clients which ensures good earning on one hand and satisfaction of social work on the other.

The few design institutions in the country such as the National Institute of Design and Industrial Design Centre undertake rural design projects as classroom projects to encourage students to work for the rural areas. Many a time the institutes based in cities collaborate with voluntary organisations working in rural areas. This is necessary because the NGOs due to their sustained contact and work experience, act as guides and facilitators to the inexperienced students. The Institutes also include in their design training curriculum, courses such as craft documentation which requires students to visit villages and closely observe the craftsperson's and their families and document their work. Thus a respect for their work as well as a rapport with rural craftsperson's is developed.

The National Institute of Design has innovated an interesting course for the Foundation Programme students. It is called "Environmental Perception" (rural). During this one-month course, the students go to a village and stay there, experience village life, eat the villagers' food and work with the villagers. With deeper understanding they record the experience in the form of drawings and notes. For many urban bred students this experience works as an eye opener. More importantly they develop friendship and empathy for the rural people. As a result, after graduating some of them decide to work in the villages.

Design institutions in India also attempt to conduct training programmes for the village craftsmen or village communities. These are usually not conducted in villages due to lack of facilities. When these are conducted in cities, the response from the villagers is poor in spite of improved communications, the city and its gloss frightens them and alienates them.

Barefoot designer:

Some years ago, when this author was invited to address an international design conference, I first brought in the concept of the "barefoot-designer," taking a cue from the Chinese barefoot doctor. The idea behind this concept was to take design to the heart of the villages and make it useful to the people there. It will not work if we force the urban designer to go and practise design in the villages. Neither will it work if we ask the designers from a rural background to go back to their villages to work for their people. It also does not seem practical at present to establish design schools in villages or introduce design courses in the existing village schools as there is a severe shortage of schools in villages. Perhaps a workable approach for the barefoot designer would be to increase the number of design institutions in the country to the extent we can. Some of these should be located in small towns but their curriculum should be geared to rural needs.

Let us look at the "barefoot doctor" concept of China. It happened in the late 60s as part of Chairman Mao's Cultural Revolution.

"China is an enormous country with a huge population and in 1950, at the time of Liberation; the new government recognised that it had few material resources to cope with a disease-ridden population living in an extremely unhealthy environment. It realised that there was no way in which China's problems could be solved by health care along Western lines, using a hospital-based curative approach, high technology and highly trained and therefore expensive health professionals. National principles of health care were agreed upon covering four main areas for immediate action.

These were services to the people, disease proven Lion, integration of traditional and modern systems of health, both curative and preventive and mass campaigns involving everyone, especially the doctors. These campaigns increased public awareness of health issues and led to widespread acceptance of the responsibility of individuals for their own health and for the health of the community.

During the 1950s and early 1960s, environmental improvement came about through the elimination of pests such as rats, flies, mosquitoes, bed bugs, etc., and with the introduction of improved sanitary facilities, which also controlled and made productive use of human wastes. There were specific programmes of action: vaccination against smallpox; elimination of sexually transmitted diseases: broader vaccination campaigns, including vaccination of all newborns against tuberculosis; control of both malaria and schisto-somiasis through mass case findings; treatment and environmental action against the vectors of these diseases. To carry out these programmes, auxiliary workers were specifically recruited and trained and the programmes received full support socio-politically, including extensive use of the media.

Having, so to speak, cleaned up some of the most obvious and urgent health problems by the mid-1960s, the Chinese leadership, using the gathering forces of the Cultural Revolution, focused on the more personal health care needs of the population. Only about 70 per cent of the people lived in the urban areas, but this small percentage included almost all the professional medical personnel, leaving the vast majority of the population to their own devices, health wise. One third of all health professionals were forthwith ordered to the rural areas and, for the next ten years, either permanently or periodically, they provided health services to the villages in the shape of mobile medical teams. Coming face-to-face in this way (probably for the first time) with massive health care problems of the vast majority of their countrymen, it had an interesting as well as a salutary effect on China's high-level medical academics and public health officials. The vast burden of ill health was impossible for them to handle on their own and they may also have felt that the work that was needed was to some extent a waste of their own expensively acquired skills, A rural health service had to be provided and the decision was made to recruit and train village-level health workers-barefoot doctors, or more literally from the Chinese term "doctors without shoes."

Initially the barefoot doctors were multipurpose health workers chosen by the mobile teams in conjunction with the communities to be served, and trained as near as possible to where they were to work. Their training would sometimes be for short periods between times of intense agricultural activity since the barefoot doctors remained a part of their communities and shared in the day-to-day work of the peasants. They had the responsibility for preventive health care such as environmental improvement, vaccination and family planning. They also dealt with everyday illnesses and accidents and with pregnancy and delivery. They referred problems beyond their capability to the nearest medical centre. They seem to have had a very valuable impact on the health status of the Chinese rural people.

There is continuing education for barefoot doctors and career opportunities to the extent of eventual entry into medical schools."

In the proposed "barefoot" design system, each village or community initially would nominate a well-inclined person (preferably literate but not necessarily so) to get trained

at a Centre for design. The Centre may be located in the city. He will not be away from his village for a long time at a stretch. He or she will be trained in specific design skills and the knowledge relevant to, and most required by his community and its changing needs. He will learn to innovatively explore his regional resources in the best possible way, and create indigenous design solutions for the present-day market user needs, He will be equipped to cope with the scarcity of certain traditional materials (like ivory and rose wood in India) and to find judicious applications for new materials, like plastics, in forms most appropriate to the materials, and their processes. He will be made capable of finding appropriate alternatives for any unforeseen situations. He will be made aware of his innate sense of aesthetics and its application for human needs. He will be guided to design and do alt this within his own cultural milieu, taking into account the prevailing economy and the present day socioeconomic and ecological conditions.

Thus a good rural design service will be provided. The village community will pay partly for his training expense so that his service later is obligatory Trainees after this pilot training programme return to their village, practise designing as well as train others in the village as apprentices.

It is important that the barefoot designers remain part of their communities and share the day-to-day work of the poor villagers. They should not be away from their communities for too long. They should keep their ties alive.

In such a situation, the main function of city located central design organisations will be "training the trainers" or to use a clichéd expression, "being a seed farm."

This hypothesis was evolved based on my years of experience in India in organising and conducting design training programmes and field workshops for craftsmen, villager's, small entrepreneurs and voluntary workers-as well as from a few projects carried out by the National Institute of Design where the seeds of some of these ideas found successful application.

Section Three Design: New Dimensions and the Future

Tit for Tat

Nasrudin went into a shop to buy o pair of trousers.

Then he changed his mind and chose a cloak instead, at the same price.

Picking up the cloak he left the shop. 'You have not paid,' shouted the merchant.

'I left you the trousers, which were of the same value as the cloak'

'But you did not pay for the trousers either.'

'Of course not' said the Mulla 'why should I pay for something that I did not want to buy?'

QWER: Freedom in Design

Machine and machine language controlling man

Before we begin, let us consider two situations.

First situation: Imagine you are in the middle of an important public speech which is being recorded. The tape gets over and you are asked to hold on while the new tape is being fixed. How would you feel?

Second situation: Imagine that a reputed magazine invites you to write an article and sends you a meticulously worked out ten-page detailed instructions. How would you feel?

The reactions are usually as below:

In the first situation: You are happy to be told about the changing of the tape. You are assured that no part of your speech goes unrecorded. You don't mind the little break which could be managed with some pleasantries or other fill-ins.

In the second situation: You are pleased to get very detailed and clear instructions from the editor; so there is no room for ambiguity. It makes it easier for you to follow them.

Some individuals, particularly those in the creative fields may react differently Christopher Jones, designer and author of *Design Methods* and *Design Essays* is one of them. He felt greatly upset on both occasions. In the first case he objected to the break in the programme as an example of letting the machine control the man, the part controlling the whole. He felt that it was far better to let some of the speech go unrecorded than let everybody's train of thought be broken because of a technical snag.

In the second case he wanted to refuse the request. He wrote, now insulting really that we have all this mass of machine language instructions which we send to each other in a bureaucratic manner throughout life.

Perhaps this is over reaction. It is over reaction only in terms of degree of reaction but not in the nature of reaction. Both cases present situations of mechanistic control over the free human spirit. They are examples of the fine line between aid / tool and control, between protection and prison, If one is not careful, the structures which are meant for support can easily become barriers which imprison creativity and free will.

Design methodology, one of the most important among the tools available to designers, needs looking into in this context. I mention Christopher Jones and his two important books which are relevant here. His reaction to the two situations is from his *Design Essays,* which is interesting coming from a person who authored *Design Methods:* Seeds *of human* future. The Design Methods book has been translated into five foreign languages and has become a standard textbook in design schools all over the world. Many teachers even today use it as an impressive prescription and it is high fashion for the so-called intellectual type student designers to be seen with a copy. Between these two works, lies a question.

When does design methodology turn from being a tool to becoming a prison, controlling the designer?

Freedom from methodology

A methodology is a set of procedures to attain an object and it is meant to help the person who wishes to attain the object. But paradoxically, the moment a method becomes a prescription, it starts hampering the imagination and creativity which are the very basic foundations of a discipline like designing.

Applying a tongue-in-cheek remark of George Nelson, Gui Bonsiepe once compared the methodology of design to the design profession which had become a myth before it achieved maturity.

There is a caustic remark going around among American architects that design methodology has a special lure for those who are lacking in creativity; they use the system in their work not so much to achieve useful results as to dissemble their paucity of design ideas.

Bonsiepe cautions designers thus in his Arabesque of *rationality:*

"Rationalisation can obscure as well as illuminate. It is no mere coincidence that in psychoanalysis rationalisation means the abduction of evidence for a specific purpose under conditions of stress."

He concludes saying that "it is advisable to maintain the critical attitude towards methods in general and design methods in particular the rigour and perfection of the method spells its own end. A strict design method, however, has one place; a museum. Only old men are perfect."

Abraham Moles in *Methodologies-vers une science de factor* (1964) has put it rather plainly, "If they (methods) were highly structured, they would turn into recipes and would lose applicability in proportion as they gained precision."

"Today design methodology is in the same position as psychology in the 19th century when it hankered after the status of a" true" science. The method of science continues to be the idol of scientism. Care must be taken that design is not subjected to a heterogonous methodological ideal in which it will no doubt receive the label of approved scientism but will virtually nullify itself. Only when design methodology liberates itself from its often parasitic relationship with other disciplines can it move a stage higher. It would gain in independence and rigour which it will not acquire from any other source. Whereas those sciences which prepare "hard data" have long been mandatory for design methodology. It will have to expand in future to embrace precisely those branches of knowledge concerned with the more diversified soft data."

Jiddu Krishnamurti, a well-known philosopher of our times, commented on the domination caused by following a system or a method in general in his *Freedom from the known.*

"If I were foolish enough to give you a system and if you were foolish enough to follow it you would merely be copying, imitating, conforming, accepting and when you do that you have set up in yourself the authority of another and hence there is conflict between you and that authority. You have your own particular inclinations, tendencies and pressures which conflict with the system.

You think you ought to follow that system and therefore there is contradiction.

If there is no foothold... then there is freedom to look and to achieve. And when you look with freedom it is always new. A confident man is a dead human being."

Choice in numbers and choice in ways

Whenever an exercise is given in a subject such as design drawing, some students ask the teacher as to how many drawings they should make. How can one prescribe any fixed number? The teacher can only set a standard in quality to reach. The number of drawings required to reach that standard depends entirely on the capacity of each individual student,

In the same manner, whenever a project assignment is given to design students someone would ask for a procedure or a method to follow. Often such a request comes from a student having an engineering background; who has been used to the application of formulae and the rigid conventional methods in solving a problem.

I, for one personally, do not believe in giving any definite design method to the student because there is a danger of it becoming a formula and that is detrimental to the development of originality which comes only through individual exploration. The teacher or the client sets the problem and the destination to reach. There would be more than one way to reach there and it is the individual who should find his own path. In design practice it may also happen that the client is not able to set even the destination clearly and it is the designer's task to research and set it out for himself.

Designs to liberate and designs to imprision

Many products, without our conscious knowledge, imprison us. Take for example an every day object like a microphone. The speaker is obliged to go through a number of contortions to fit himself to the microphone so that he could be heard. This "product control" should not be misunderstood as media control. A shoe which allows the woman to walk only in a certain way no matter how gracefully is a control, so is a pen and a rapidograph. Trousers don't give one the freedom to sit cross-legged and it can be worn only in a certain way. Both are points of control.

A loose uncut, unstitched garment like a dhoti or a sari allows the wearer to sit in many postures and also facilitates the user to wear them in a number of ways. In India people use cloth in multi-purpose ways-to cover; to carry, to tie, to sleep, to cushion, to decorate and so on. It is thus a liberating object.

A helmet belongs to the category of imprisoning objects. This is the main reason in India why a majority of people do not like wearing a helmet and would rather take the enormous risk of a head injury. The existing helmets require the women to cut their long hair; many men to discard their turban (a strict religious practice); head ornaments not to be worn and most important of all the face not to be seen.

Logic versus spontaneity

Both logic and spontaneity are contextual. Both are needed in design. Logic dissects while spontaneity assimilates. Logic is needed to organise, harmonise, intellectually understand and rule, while spontaneity is needed to sparkle, to explore and to reach beyond the known.

Communication as understood by physical senses cannot come without a logical interpretation. A product cannot be produced without logical application of the knowledge of the production processes. But, rt is often said that logic is "like a sword and those who appeal to it shall perish by it."

Peter Mayle in "the art of thinking by jumping" ("Ideas on Design" by Pentagram) says, "It is the ability to do the job in a totally appropriate way that makes a good designer and that requires an unusual combination of apparently opposing characteristics. 1 he first is logic, which assesses the problem and accepts the rules which have to govern the solution. But you can be as logical as you like and still produce a dreary design. What separates humdrum work from brilliant work is the second characteristic - not normally given much freedom by logical people - and that is intuition."

"If good designers have anything in common, it is because they all seem to be equipped with a subconscious sponge, capable of absorbing a wide and unrelated range of stimuli to be tucked away at the back of the mind for future use."

Mayle argues that these "unrelated stimuli later become part of design solution by a process which can be called "thinking by jumping" as designers spend most of their working lives hopping back and forth between different contexts; dimensions and periods of time." (Refer Case Study 11 "The Letter Weigher" in Section Across).

Freedom from drawing

Modern designers celebrate drawing as the foundation of all design. Design starts with, and ends with drawing. Design schools put enormous emphasis on drawing in the curriculum for design training. Bryan Kneale, a professor at Royal College of Art, London said that "since the time of the Altamira Caves, drawing has been the language of the artist and more recently the designer Drawing is the only way to visualise, analyse and remember, "If you cannot draw; you can go through life without seeing anything." Drawing is beyond a tool for recording and beyond a tool for visualisation. It is a tool for thinking".

Design by drawing emerged when conscious design of hardware began in the world. Technical drawing in particular emerged as a necessity of mass production. It is unthinkable to imagine designing and producing a new object without drawing. But craftsmen in India create exquisite craft objects, sculptures, cloth paintings and textiles mostly without the aid of drawing. This ancient practice prevails till today in India. Due to this freedom from drawing, the craftsman has flexibility and ability to adjust each part to fit the next spontaneously as the situation necessitates.

More importantly he is also able to suit his work of creation to the unique requirements of each customer Christopher Jones describes (technical) drawing as a tool for standardisation and standardisation thinking and argues that technical drawing brought about the death of "tailor-made" ness. Whether this death should be lamented or not is an open question. For, after all mass production is here and is going to stay. What is required is the human edge and flexibility in modern standardisation thinking. This human edge is evident in the way people decorate and personalise an industrial product after buying it. In India such examples are the interiors of the auto-ricksha (a people's three-wheeled taxi); truck graphics, and the dashboards of even the most sophisticated modern cars.

Turning attention from producer to the user

Designer services are sought by the producer and apparently paid for by him. But indirectly a designer is paid by the user in the final analysis. Very few designers realise that their loyalty actually should lie with the user and not with the client who is only

hiring him and paying him on behalf of the user most designers take a patronising, "I know what is good for you" attitude and "gang-up" with the manufacturers to decide choices for the user and then brainwash the user with advertising campaigns. Very few designers spend enough time conducting in-depth research to find out the real needs and aspirations of the user. Fewer still allow the user to make his own choice by involving him in the creation.

Architect John Suter's idea of leaving a lot of designing to the builders and to the people who live in them is perhaps an idea of freedom without responsibility. In India, not users but builders design and build most of the houses and they arc ugly and un-liveable. Intelligent and sensitive users, at best, may know their needs and desires but they may not be able to design. A patient at best may know what he is suffering from but can hardly be left to suggest medication, The point is that designers must show a great deal of sensitivity in finding and attending to the needs of the user with tremendous personal and social responsibility. Many designers don't listen to the user as much as they should. They mostly listen to what they think the user-is saying. Thus they impose their ideas upon the product and the user.

Products creating needs

It is a popular belief that products satisfy the needs that exist. But often it is the other way round. Products create needs that don't exist. There was no need for television till it was invented. Now, television has become a basic need. So are many other products and communications. Each need thus created by a product gives birth to another need and this in turn to yet another thus forming an endless chain of needs and products. A television further led to a remote control, a TV stand, a video cassette player; a dish antenna, a TV cover, a video cabinet, a cable connection for private channels and so on. Interior designers are creating special TV corners in the drawing rooms.

The ever increasing consumerism and the associated global ecological problems are born out of such a chain of needs. No one disagrees with Gandhi's "the earth has enough for everyone's need, but not for any one's greed." But everyone, most of all designers find it difficult to name any product as "greed.'. They see every product as "need."

Chance design or freedom from planning

A little child engages in many activities without any planning or preparation. That is the natural way. As he matures he learns to plan and as modern life demands he cannot move without planning. The more industrialised a society, the more it demands from its people to plan. A plan facilitates action but it also takes its toll. It controls. If a friend drops by unexpectedly, it may be irritating and may be encroaching on something else you planned to do. But it is natural and welcome meeting some friend on the way. One has no prior tension. But if the visit was planned a week ago, one gets a lot of mental space to prepare for the visit, raises one's expectation, occupies one's memory and creates the tension of preparation and self-presentation. It may be efficient but the whole event becomes artificial and organised. Planning, organising and ordering elements constitute design. The alternative to this is chance design. Chance design is elaborately articulated by Christopher Jones in an article "Opus one, Number Two" in *Design Essays* which was written when he heard these words on his radio while writing. It was an accidental happening where instead of the conventional announcer the musician started talking directly to the audience. This is significant in terms of humanism - a radio in

which the authority is gone and we rely on the studio as we do in conversation. It is a natural way to rely on improvisation and not on planning. Perhaps chance design is also possible! Creative artists and designers such as well known film maker Jean Luc Goddard employed chance successfully in his professional work.

The charm of chance is surprise. It is also the delight caused by the unexpected. Isn't this the essence of creativity?

Obligation

The Mulla nearly fell into a pool.

A man who he knew slightly was near and saved him.

Every time he met Nasrudin he reminded him of the service he had performed.

When this happened several times, Nasrudin took him to the water, jumped in, stood with his head just above the water and shouted

"Now I am as wet as I would have been if you had not saved me! Leave me alone."

Leave Well Enough Alone: The Need for Restraint in Designing

The other side of intervention

In 1951, Raymond Loewy, who is considered one of the pioneers of the modern design profession in the West, wrote a book called *Never leave well enough alone.* He ends the book with a little story which most of us might be familiar with. Loewy wrote: "I like the story of the boy scout reporting the good deed of the day to his master"

"And what have you done, Ray?

Walter; Henry and I helped a lady cross the street sir

Very nice. But why did it take the three of you?

The old lady did not want to cross, sir".

Loewy questions himself after a long successful and most prolific design career" Have I done my good deed? Or am I one of the three boy scouts?"

This question which Loewy asks needs to be asked constantly by the designers and everyone involved in the serious task of development. It becomes crucial particularly in situations, such as the Indian situation with a vastly complex interface of tradition and modernity. If enough caution with an integrated view and a long term perspective is not exercised in the design and development plans, the efforts for improvement may turn negative and hurt people instead of helping them. The designer's intervention might turn to be harmful interference rather than fruitful assistance. In such cases Raymond Loewy's advice "Never leave well enough alone" deserves to be ignored by the designers in preference to "Leave well enough alone".

The following is one of the many real life case studies which argue this point. It is an Indian case but its lessons are universally applicable in similar situations.

It is the case of the people of the Kashmir valley, the most beautiful border state of India which has presently turned into the most troubled state due to the devastating terrorist activities and international politics.

The case history

The political side of the agony of Kashmir, the terrorism and the consequent disruption is a known fact. It is also well-known how this turmoil has been destroying the economy of the state. What this article attempts to show is a relatively unknown aspect of the economy which is related to wool weaving, the major occupation of the rural people of Jammu and Kashmir

More than 80 per cent of wool weavers in Kashmir and Jammu operate at the cottage industry level and belong to the unorganised sector. They are farmers as well as sheep breeders. They weave for their own families. They also weave for others, either on a piece rate system or for barter. Given the severe cold climate of the place, wool in Kashmir is not a luxury but a daily necessity.

As in all other sectors, developmental efforts of the Indian government stepped in. The department of Sheep Husbandry has taken up a vigorous cross breeding programme. It aims to convert, all the local sheep to Kashmir Merino (a cross breed with 75 per cent Merino blood) through cross breeding within the next twenty years.

In the Kashmir Valley local sheep are cross bred with Australian or Russian Merino, and in Jammu with Rambouillet. Efforts of the government department have increased 100 per cent wool production per sheep as well as increased the sheep population. Ironically, after all these efforts, Jammu-Kashmir state is still not producing enough wool even for its own consumption,

Wool used by the majority of Kashmir weavers (66 per cent) is mainly that of local sheep which belongs to their own flock. All the processes, starting from shearing to weaving are done by the local people, without depending on anyone for their raw materials. Now, in the last few years, the genetically engineered cross breeds have flooded the state. They are in fact the “designed sheep” albeit biologically.

The “designed sheep,” no doubt produce fine to medium fine wool. They are of better quality. But the crux of the problem lies in the fact that this wool is greasy. Removing grease from wool is an important procedure before spinning and suddenly the weavers find that they are unable to de-grease this particular wool at home, As a result, weavers and sheep breeders are forced to sell this better quality of wool either to the private sector or to the Wool Boards which eventually send the lot to the industrial sector for de-greasing and cleaning. The wool is then spun in spinning mills and is ultimately absorbed by the industry for weaving. The local weavers have no buying power to repurchase the ready spun yarn from the industrial sector. Cross bred Merinos would compel them to sell all their wool to industries and purchase ready goods at a higher price. So we see how a local occupation and craft has gone completely out of sight to be swallowed by the industrial sector Design has been instrumental in this.

It is not difficult to see how, in course of time, the weavers would lose their weaving skills and for many crafts associated with wool weaving and spinning the death knell would be sounded in this context. India is bordering on an internal situation, very

reminiscent of the colonial period where we were forced to sell cotton at a low price and import the finished cloth from England at a very high price.

There is another factor too. These cross breeds having been bred with foreign strains have a shorter life span and breeding capacity. Being rather delicate, these sheep are more prone to diseases, Veterinary services are hard to get in these areas. Furthermore, the Kashmir Merino yields white wool which is good for dyeing, but the local valley people prefer the natural coloured wool of their local sheep, which they are used to.

It is a real tragedy that the Jammu-Kashmir Handloom Development Corporation has little contact with the original sheep breeders and weavers to listen to their problems and as a result will perforce continue with their unsustainable plan of converting all local sheep to Merino within the next twenty years. IL goes without saying that the monetary benefits would all go to the wool industries of Punjab and Haryana, the rich states who buy the wool .The fact that they would wipe out the entire cottage industry of Jammu-Kashmir in one fell swoop and bring about starvation deaths like the weavers in Andhra Pradesh is one that both industry and science would rather not dwell on.

People's participation is imperative

Let there be no misunderstanding. This is not to say that development is not needed and the problem should be ignored. Development is needed certainly. But let it take into account that its designers and policy makers should be educated by the original settlers of the land and not be allowed to implement half-baked solutions and high-handed processes without their advice and consent. For the soundness of any design depends on the soundness of the study of the problem which is best known to the people who live with it. Apart from it being necessary to properly diagnose the problem, people's participation also plays a very vital role in the implementation of solutions. It will help them accept the solution easily as they will identify with the solution as if it is their own.

When a solution becomes a problem

A short time solution is not a real solution. In many cases it gives rise to many other problems whose quick solutions might give rise to some more problems and so on endlessly. In the end, the original object will be lost sight of altogether. The ancient Indian treatise *Panchatantra* has a story which is an apt illustration of this. A monk who renounced everything and was living in the forest is faced with a problem. Whenever he dries his only possession, his loin-cloth, a rat nibbles at it. A passer-by offers a cat as a solution. It temporarily solves the rat problem, but the cat requires milk. Someone offers the monk a cow, for milk. The cow needs its calf too. The cat problem is solved. But the cow and calf require a shepherd boy to take them for grazing, milking, etc. The boy then requires someone to cook and feed him. A woman. So, the monk marries a woman. A household is set up. In the process, the monk becomes a householder and the original purpose of monk hood is lost.

Many design solutions are also sometimes trapped in such situations. One product design creates many sub-product designs and the product population increases. One remedy for such a situation is for designers to realise the importance of redesigning and the importance of reducing the product inventory by combining more than one function in their design creations. (Refer Case Studies 9 "The Oxygenator" and I "The Tooth Brush" in Section Across).

The power of restraint

In their enthusiasm, designers often tend to project the design profession as an omnipotent activity which can solve all problems. Experience proves that it is not so. As a trained creative synthesiser, a designer could help in many situations but there are many areas of human endeavour where design has no role at all. This should be recognised and "leave well enough alone" should be followed.

In other situations design is more helpful in a supportive role only. A restrained design is more effective in some situations. Creative literature and performing arts have well utilised the beauty and power of understatement. The ancient Hindu yoga system proposes "no solution is a solution." It believes that at times instead of forcing the mind for a solution, one should leave it. Then in this relaxed condition, the mind will come out soon with a creative solution on its own.

Sustainable design

Some design solutions failing or giving rise to another problem in the long-run could be due to the lack of enough integrated vision in the beginning. A good analogy is the medical system. The curative, spot-attack type of medical treatment gives quick relief from suffering; but often the illness recurs. An integrative medical system like the Ayurveda is often slow in relief. But it treats the patient's body as a whole, rather than the specific area where treatment is required. It takes into account the intake of the body such as food, drink, smoke, etc as well as other habits of the person, the climate and physical environment. It regulates all these elements apart from correcting the affected part through medicines. They all work as a system to build the body to overcome the problem. The treatment takes longer but lasts longer

In design and development activities, sustainability is becoming increasingly important. For sustainability, an integrated design solution is perhaps the only answer One can't help thinking that if the automobile had been designed in an integrated way, the many problems we keep on encountering with each passing day (the accident crisis, the fuel crisis, the pollution crisis and so on) would not have been there.

Over designing

There is another kind of design restraint that is absolutely necessary, from the angle of ecological soundness. This is the restraint from over designing and over packaging. In highly industrialised countries like the United States of America or Japan, this is normal and it won't be long for it to be followed in other countries as well. For example, in Japan most lifts in public places have two control panels, one at the normal standing shoulder level for normal adults and another at the sitting shoulder level for people on wheel chairs. One wonders why the panel at the lower level will not suffice for both normal as well as wheel chaired people. There are also unnecessary specialised design items like pens, stationery and so on for "his," "hers," "kids," etc. It may further cater to "grandmas," "grandpas," "servants" and so on creating artificial compartments and an increased inventory.

The sincere question to be asked by the designer-is if a designed product or communication is working well, is it necessary to design it again just for the sake of design? Packaging is another area which is being overdone. For a simple product, there are cases inside cases in different materials under different excuses. Are they all really

necessary? Can our earth afford it in the long run in terms of resource depletion, cost and ecological problems? Germany has already taken a step in the right direction refusing to accept into the country, over packaged (usually plastic) goods.

The myth of change:

Creators of planned obsolescence often argue that change is 'a strong, and even vital human need; and designers must address it. There is a flaw in such an argument,

Change is a natural and inevitable process which applies to every living and non-living object. A child will grow year after year and its mental and physical characteristics change every year. Similarly a denim cloth fades in one year or bleeds with every wash. It is but natural. Where is the need to unnaturally accelerate this process or imitate it except for commercial exploitation? Like change is not perceptible in man at a certain age, during a short span of time, it is so with objects too. Why shouldn't we allow things also to gracefully age/change, and be sensitive to the beauty of that change? Designers are catalysts of change. They should be catalysis just as much as *a mid-wife is a* catalyst *during the birth of a child. Not pushers. For* any forced action and unnatural pace, and forced obsolescence produces violence.

From commission to mission

There is a prevailing notion that designers are catalysts of consumption. This notion implies that designers are perpetual promoters of materialism in the world. Many design professionals even believe that they are collaborators in the manufacture and marketing of goods and their loyalty is to the manufacturer who commissions them design work as a client and pays fees. These notions are false if we investigate deeply.

First, let us take the loyalty aspect. As noted earlier, the Design costs are ultimately put into the product's sale price along with many other costs. So in the ultimate analysis, the real payer is the user of the product, and the designer's loyalty must always be with the user. But let us not forget that the users' interests and good manufacturers interests will not necessarily clash. They could be the same.

Next, is the collaboration aspect. It is true that a designer earns by the royalties from the objects lie has designed or from the fees for designing an object (including communications).This means that more the objects sold or more the objects designed, the more he earns. This .situation does have a vested interest Look at the example of the architects. In India, according to government policy, the architect is allowed a fee of a certain percentage of the total building costs. The result is that the architect's livelihood and earning depend on most expensive buildings; where his effort is comparatively limited and the earning is better. The greater the expense, the better are his earnings. Who would then like to work for low-cost housing? This is the case with a doctor too. As long as a doctor earns by the number of visits he makes to the patient, his earning and interest lie in prolonging the illness and (may God forbid) the occurrence of more and more illnesses.

What is the solution then?

There is an ancient Chinese system according to which the family doctor is paid to keep the family well instead of the present payment of treating an illness. The doctor is paid a yearly fixed amount and if any of the family members happen to fall ill, the doctor

would have to treat him free, and at his expense. This ensures the doctor's concern for the well-being of the members which he did through regular check-ups, health advice, etc.

If we take a clue from this principle it is not difficult to work out solutions to orient the designer, for that matter any professional service in a socially beneficial way.

The designers of today will do better not to concentrate on consumption oriented objects but turn to service design. They should design strategies. They should offer creative solutions to problems on a variety of issues rather than create more and more varieties of objects.

Design would then become a mission instead of what it is today-a commission.

Appetite

'I have been unable to eat anything for three days.'

'Good heavens, Mulla with your appetite? You must be very ill!

'Not at all: nobody has asked me out to eat, that's all!'

Invisible Design: The Alternative Approaches

Service oriented design

The world is familiar with one kind of design, To put it in a nutshell, the 'familiar kind of design which is simply a situation where the designer is given a job or he identifies a problem and after working on it, offers a creative solution which enhances looks, eases production, improves function, satisfies users' physical and psychological needs and in essence sells well,

Designers such as Victor Papanek in his book *Design for the Real World* (1970) and Nigel Whiteley in Design *for Society (*1993) followed the tradition of *Art Worry* and strongly pleaded for socially responsible designs and for green designs in opposition to market led designs. Papanek's agenda for design includes six design priorities such as:

Design for the Third World; design of teaching and training devices for the disabled; design for health equipment; design for experimental research; design of survival systems and design of break-through concepts, instead of additive designs. (Refer Case Study 10 "The Wheel Chair" and Case Study 13 "Theloilet" in Section Across),

However whether it is market led design or socially responsible design, or green design what has been the focus so far is a kind of design that created a tangible end product. I appreciate developed world designers such as Papanek and Whiteley for taking up the cause of the majority world (somewhat presumptuously called the Third World) and I fully support the concerns expressed by them with reference to the deprived sections of human society. But there is another kind of design which is prevalent largely in the Third World. This is the design which is service or process-oriented in contrast to product-oriented design. Such design is developmental in nature and is non-tangible or invisible to people who are used to looking for an end product. In this article I would like to share some tentative thoughts on this aspect of design which has not been given enough consideration so far by design thinkers.

The design profession in the world did not commence with the Industrial Revolution. At least not in the majority of nations in the world. It is more correct to say that in the few industrialised nations, the design profession commenced with the Industrial Revolution. So how did design commence in the rest of the world? Take India as an example whose situation is comparable to other Third World countries.

Existential complexity

When the Industrial Revolution took place in Europe, India was under British rule as a colony and thus remained largely untouched by the Revolution. By the time India became independent in the late forties and took its first step towards development, the developed world had already completed its Industrial Revolution and was in the throes of the revolution of science and technology. Free India could not afford to be left behind and therefore had to cope with both the revolutions-Industrial revolution and the Science and Technology revolution, simultaneously.

Rornesh Thapar, an eminent Indian journalist called this challenge of Science and Technology in the developing societies as "two revolutions in one."

This peculiar situation created what Thapar, calls the "existential complexity."

"The new technological progress in economic terms also meant a shattering of the traditional form, object, function and their relationship. The introduction into the rural situation of the symbols and artefacts of industrial production and mass culture have demanded from the peasant, living in a traditional space time continuum, the capacity to discriminate and exercise deliberate choices,

The capacity to choose and to take decisions based on observation and analysis has no place in a tradition-nurtured society; and faced with the complexities of choice and altered meaning and relevance, man finds himself bewildered and insecure."

It is this existential complexity that necessitates various other kinds of designing in addition to the conventional "object centred" designing. In the other kind of designing, the designer does not play the role of "object creator/modifier" but takes on various other roles. The other roles are "process oriented" roles and hence it is appropriate to distinguish "object centred designing" against "process centred designing" by using the word "designing" as a descriptive epithet while discussing the latter. This kind of designing puts emphasis on basic human needs rather than on materialistic concerns such as utility and function. The focus here is on people not as consumers but as sensitive human beings. The designer's workplace is not his studio but the site where people live. Much of this designing is not designing for people but designing with people.

The other kinds of designing already manifested in India and which has made significant contribution to society can be listed as under the role played by the designer in each of this category of designing is specific and distinguished from the conventional role of designing a tangible artefact.

* Designing for the preservation of traditional wisdom.
* Designing for interface between tradition and modernity
* Designing for community rehabilitation,
* Designing for gender equality.

* Designing for human concern.
* Designing for social mobilisation,
* Designing for unorganised or small sector

Designing for the preservation of traditional wisdom:

Designer as documentor

Many countries inherit very rich traditional arts, crafts and practices which have been evolved through thousands of years distilled knowledge. This treasure of wisdom faces extinction very often because of three reasons:

1. Popular attraction to the new and the modern, in terms of technology and tastes.
2. The difficulty in relating this knowledge to present needs and desires of man and changing society.
3. More importantly many of these practices and knowledge belong to the oral tradition. The old practice of passing on the skills and knowledge to the next generation in the manner as property is passed on, is no more prevalent. The extinction of such wisdom in various world cultures only a loss to humanity as a whole in terms o also a loss in terms of usefulness and to posterity.

For instance let us take natural dyes. India is immensely rich in trees, plants and other vegetation which give natural dyes. In the past, the use of these dyes was prevalent throughout the country but today its cultivation as well as the art of dyeing has almost become extinct except for a few remote corners in the hills. Indian designers are working in this area to document the methods of cultivation and craft through texts, photographs, audio and video recordings. A designer being trained as synthesiser is best suited to do such documentation as he can best orchestrate other experts such as a botanist, chemist, farmer crafts person, dyer; anthropologist and the government official.

The designer's role here is to research, analyse, categorise and document so that this knowledge will be accessible to all people including designers.

Bamboo, cane, textiles and so many other traditional crafts are areas which could be worked upon. The list is endless.

Designing for interface between tradition and modernity:

Designer as trainer

The pace of modern technology is faster than the pace of life and culture. In many societies, particularly those with long traditions there is conflict between traditional practices to which people are used to and modernity which has evolved as a result of technological progress. As mentioned earlier, in countries like India, modern production has not replaced the traditional craft production. Both the types of productions co-exist. This creates the problem of matching the craft production to the needs of modern living since modern living necessarily follows technological progress. As a result, the market for traditional goods is shrinking at a rapid pace.

A case of this nature is the loin loom weaving practised in the North-eastern states of India. This kind of weaving by its very nature produces cloth which is immensely

beautiful but it is only about 12-15 inches in width. As the loom is tied to the waist of the woman weaving the cloth, the width can be no wider than the size of a woman's waist. In the olden days this cloth suited the North-east people's requirements for a tribal dress but today such dresses are not worn any more even by the tribals. Designers who are aware of the market needs as well as traditional craft limitations can play an important role here. The conventional way is that a designer designs modern products using traditional production methods. But that is not a sustainable solution to this problem, because that will eventually make the craftswomen dependent on the designer. Therefore, it is necessary for the designer to train some North-eastern tribal women to understand new markets and to create an appropriate product using the same traditional skill.

The stone carving craft is another example. The craftsmen could be trained by the designer to utilise this skill to create outdoor furniture, kitchen platforms and other products relevant to modern needs,

Designing for community rehabilitation:

Designer as community builder

Mass production and industrialisation have also made several communities in the developing world unable to survive. These are mainly rural artisan communities. Their work and skill have lost relevance to present requirements. A good case is that of a potter community in South India. The potters who used to make clay pots and clay pans for cooking and serving are unable to sell clay pots anymore because Indian people now use metal utensils for cooking and eating, and durable and inexpensive plastic utensils for storing and carrying.

The potters who worked for generations with clay have no alternative.

A designer approached one such community in a village in Andhra Pradesh. He analysed the city market where clay products are needed and discovered that city lawns, gardens and hotel lobbies provided opportunities for clay pottery. He convinced the community to reorient their skills to produce garden pottery in clay (terracotta). He acted as a catalyst for the community and worked amongst them to equip them in dealing with the new clients (Hotel Management), packing and transportation, raising bills, taking advance to buy raw materials, etc. He also showed them on how to save, how to invest and how to use the income for education and other purposes. Designers in such cases act as community builders.

In a similar case in Jawaja in the western part of India, the designer joined hands with the professional management team to work with the village cobbler and weaver communities. The team helped the community to organise themselves as a co-operative, manage their finances and accounts while putting their traditional craft skills to design and produce for the modern needs. They were also given guidance in marketing their products. One factor which is permanent in these cases is to make the community self-reliant and sustainable,

Designing for gender equality:

Designer as catalyst of reform

Earning capacity has long been a key factor in establishing and continuing the gender inequality and oppression of one sex by the other. In recent years this inequality has been

the focus of attention the world over and various social reformers are working on this important issue. This problem is acute in the Third World where social habits are deep rooted and widespread poverty makes the role of income imminent Designers can play significant roles in solving such issues.

Take the case of the slum dwellers in Ahmedabad in Western India. The Muslim women in these slums are traditionally oppressed and though they work hard at household chores -in slums even daily chores as fetching water; washing clothes, cooking are very arduous -their entire dependence on men makes them vulnerable for male exploitation. Their religion prevents them from going out for work. A designer persuasively and patiently worked with these women, taught them simple skills of stitching and designing appliqué work products which could sell. This way of generating income, empowered the women. The women have been able to unite and sustain the activity on their own till date. A detailed case study appears in another article in this book. (Refer Case Study 12 "Appliqué Textiles" in Section Across).

Designing for social action and mobilisation:

Designer as an activist

Design is usually seen as passive in terms of being involved in the burning social, economic and political issues. But some designers are proving that notion wrong. They are showing that the designer can play an active role in social and political mobilisation. This active role is different from the usual campaign design, poster design, photographing, film making, writing and so on. Some young film makers in India are making films on an issue and are using that film as a means to mobilize people. The film becomes only a tool. The film for example is taken personally to the people by the designer and shown to groups connected with the issue. Films have mass appeal and carry conviction like photographs. The film is used like a "white paper" and a discussion is generated and even an action is initiated. Some of these efforts have resulted in implementing political decisions in favour of people.

In one case, the designer equipped a group of self-employed women of a voluntary organisation in Ahmedabad with video cameras and trained them to record their work so that they could present them as issues for discussion, debate and social actions. Court cases have been fought successfully with the help of such records for the benefit of people.

Designing for human concern: Designer as missionary

There has always been concern by some soul-searching designers for the under privileged in the society These are the aged, the blind, the disabled, the AIDS victims, the terminally ill and so on. This concern is usually reflected in either awareness communications or through products which are brought out to help them. But this kind of help is merely the tip of the iceberg. There are numerous problems in this approach particularly for the under-privileged in the developing world. The problems relate to reaching out to the right people who cannot reach designers nor help themselves. Many needy people are located in very remote areas. They also relate to contexts and environments and to the aspects of sustainability. Thus it needs an alternate kind of designing approach which is attempted by some young designers in India.

In the remote tribal hamlets in the hills, people's problems are usually unattended. They have no access to "designed products and communications," But there are always unsung heroes. In one indigo example a conscientious designer left the city's comforts and went to these remote areas to live with the people and work with them to be accepted and to be taken into confidence. There he influenced them with "designed" activities, keeping in mind, their skills, inclinations, their time availability and peculiar social beliefs and customs. Designers are most suited to do this kind of participatory designing because of their ability to find creative solutions to unpredictable problems. On many occasions the designer has to first educate himself with the language, customs and beliefs of these indigenous people by living and working with them.

Designing for unorganised or small sector: Designer as an integrator

Industrialisation is prevalent in varying degrees in various countries. Many developing countries have a vast number of small-scale industries besides large-scale industries. India has the largest concentration of small-scale industries in Asia. Some of these industries manufacture parts or accessories for large industries as vendors while the others make and sell their own products. The nature of the problem of small industries is quite different from those of large-scale industries. A small industry cannot afford to employ many specialists such as technical consultants, management consultants, product designers, graphic designers, liaison officers and so on. Many small industries can't afford to compete with large industries in paying the designer. The feasibility is that the government subsidises or employs designers to assist a group of small industries, normally located at industrial estates. A designer in such cases is expected to act as a multi-disciplinary professional. He is required to solve not only design-related problems but also problems related to raw materials, production, packaging, and product promotion marketing and so on. Often these problems are interrelated and the designer's role as an integrator becomes crucial. His role is service-oriented rather than end-product oriented.

There are also vast unorganised sectors in countries like India. The unorganised sectors consist of roadside mechanics, mobile repair units, street toy makers, festival decorators, rag pickers and so on. Their numbers as well as their contributions to society is immense but as they are unorganised, they remain faceless and unrecognised. The unorganised sectors require design in an integrated fashion just as the small- scale sectors. They need designer not to design products for them but provide consultancy on aspects of production design distribution, management and soon.

Considering the changing complexity of modern society as well as the changing nature of the means of production, it is natural that the conventional role of the designer also changes. In future, design has to transform into many other ways to serve the needs of society. It is essential that both designers and design users are aware of these changes so that these issues can be addressed more meaningfully

Design relevance and irrelevance

Nigel Whiteley in Design *for Society* argues that most people involved with design find it irrelevant and meaningless. It is because of the way design has been projected so far-placing sales profits before even aesthetic functions. American designers like Lipponcott projected design as "no good unless it meets the acid test of high sales through public acceptance." The eminent Henry Dreyfuss categorically stated that "Industrial designers are employed primarily for one simple reason: to increase the profits

of the client company." Britain's minister for Design, John Butcher went so far in glorifying international competition and winning markets that design almost sounded like "the law of the jungle." "Here is design at wok. Winning markets; increasing profitability...that is what design is all about."

Thus while design has grown increasingly in demand and popular, it is unfortunately misunderstood as a high-fashion activity dealing with trends (the period element, fuelled by media) and skin-deep aesthetics (the superficial element, influenced by its past association with textiles and ornamentation). Expression of modern moods of form and styling features, fashionable and even flashy colour schemes are seen as "The Design." I consider this perception-the elephant and the six-blind-men syndrome. The high visibility aspects have made design a widely sought service but also did the damage of making design a narrowly defined activity. The fact that to design is to creatively harmonise and that its concern is total, global, ecological balance in which human beings are vital ingredients, is lost in the enamour of projecting the dazzle of the immediate superficial aspect of design. 1 he immediate dominates the important. A recent trend in design is to celebrate it in the form of personalised "signed products."

While heartily concurring with Whitley's statement that design is too important to celebrate, collect or historicise. I would go further to say that design is too important to limit itself to creating tangible products and communications only. Good design is not just good business nor does it suffice to say that it is just a business of creating goods and services.

This article tried to illustrate how designers may go beyond creating goods and services. Noted economist E.F. Schumacher stated allegorically that if you give a fish to a hungry man, you have solved his problem only temporarily. For the next meal and for the one after that and so on his problem continues to prevail. But if you give him training in how to fish himself, you have solved the problem permanently. The trainee eventually becomes the trainer and trains others thus perpetuating the activity in a self-sustaining manner. This is the TOT (Training of the Trainer) or the "Seed Farm" concept well accepted in other fields of human development

In the type of design activities that I have described in this article, the visibility is virtually absent as it does not result in tangible objects, at least not directly. This design is invisible. Invisible because, people are conditioned to seeing only what they want to see, the glitter and glamour of superficial designing. Besides, money the great motivator; is less available in such designing. It is also hazardous and often suspect as it involves treading the untrodden path. More often than not, the beneficiaries themselves are hostile to the designer People do not know in what way such design intervention can help them as they often lack knowledge about design and resources to hire a designer In almost all the cases that I have cited above as examples, the designer has to seek and find a role for himself and then approach and persuade the people involved.

If we as a society are open to the "other kind of design" or alternate design we can positively respond to it. The governments can fund such designing and design schools can train designers in a way that will equip and motivate the aspirants to professionally commit and contribute to such an activity. Non-governmental organisations (NGOs) working with the people can actively involve designers in their work. Designers, design-users and all those related to design should know such an alternative design exists. It is

democratic to have information. It gives everyone including the designer a fair chance to make his or her own choice. Some designers might find better satisfaction and more meaning in this kind of design.

In the end, as Buckminister Fuller said "one has to make up one's mind, either to make money or to make sense."

Section Across: Design Realisations/ Case Studies

Knowledge and practice

Mullah was in the middle of the sea on a tiny boat with a Scholar.

The Scholar holed about under the canopy and asked the mullah

"What kind of weather will we have today?"

Mullah looked up at the sky and answered "We is going to have a storm",

"Mullah!

It is not we is! It is 'we are'.

If you don't know grammar half your life is wasted!"

Mullah kept quiet while the scholar raved about the illuminating books he wrote on the subject.

Soon dark clouds gathered and a strong wind whipped the waves.

As the boat bobbed around; Mullah asked his learned friend if he knew how to swim.

"No. I had higher pursuits" came the proud reply.

Mullah jumped off the boat, shouting

"Ask your higher pursuits to save you. Our boat is sinking and both halves of your life will be wasted".

Case Study: One

Design for Specific Culture: The Toothbrush

In Indian culture, the early morning practice of brushing one's teeth is not complete without scraping one's tongue. This practice has something to do with the kind of food eaten by the Indian people. The oily preparations and curry stick to the tongue and must be removed. Conventionally, this is done by splitting a twig and using the halves for scraping the tongue. In modern, urban homes the split stick is replaced by a stainless steel or plastic tongue cleaner. This scraper is always used along with the toothbrush.

The new toothbrush designed for the culture-specific needs of the users combines the functions of the toothbrush and tongue-cleaner; eliminating the need for a separate tongue-cleaner. Made of heat-resistant thermoplastic by the injection-moulding process, the brush has several new features. One end of it has a scraping part to clean the tongue. The design is well integrated and smooth, avoiding any sharp corners or pointed ends which may hurt the sensitive part of the mouth, and also ensuring efficient cleaning of the

brush after use. The base of the bristles is slightly curved so that, dirt does not accumulate at the roots.

The cross section of the body of the brush is "U"-type instead of the usual solid rectangle. A "U" type cross section is much stronger (it also uses less material). This minimises the chances of breaking at the neck. Existing tooth brushes often break at the neck because it is narrowest at the cross section, and the force falling on this part during brushing is the maximum.

With material saved, the body of the brush is made wider providing a comfortable hold. The brush can be hung conveniently at any place. The product is made into a prototype and used successfully

Case Study: two

Design for Rural Transport: The Bullock Cart

Of all modes of transport, India invests the maximum amount in bullock carts; more than Rs. 4,000 crores, including the cost of animals. The bullock cart is still the most important transport suited to the *kutcha* rural roads; it costs less per tonne-km than any powered vehicle. And in recent years, bullock carts have been carrying more than 100 million tonnes of goods annually, which puts them only next to the railways.

The bullock cart is also most economical. Considering that the capital investment of Rs. 1,000 to Rs. 1,500 with a low recurring operational and maintenance cost, and the fact that the cart lasts nearly 30 to 40 years, the investment works out to be only Rs.30 to Rs.50 per annum. Despite its key role, it was only recently that the bullock cart came into focus for improvement. There are several problems with the present designs, the major ones' being: the painfully heavy loads on the bullock's neck (often causing cancer), the high tractive effort due to the friction between the axle shaft and the wheel hub, the use of excessive materials for the construction of the cart and the effect of steel tyres on paved roads. There have been some new designs, but almost all of these new designs have eliminated cart manufacturing out of the rural sector throwing rural artisans and craftsmen from jobs.

A major consideration in a new design worked out at the National Institute of Design, is to retain cart manufacturing in the rural areas. Besides increasing the employment potential, it stimulates the growth of rural industries. The design also attempts to introduce alternative ways of using materials and simple equipment.

The new cart has three comparatively small wheels; the animals are not burdened with the entire load but only required to pull the cart. The two rear wheels are pneumatic, while the front wheel is solid. They have 41 cm (16 inches) rims which can accommodate the new improved tyres available in the market. One can also use old tyres and tubes of light trucks, which cost not more than Rs.40 to Rs.50 each. The steel rim can be fabricated in the village itself by a simple manual process. The hubs arid spokes are of wood. The existing hubs can also be made from old wooden wheels. The steel rim is fitted over the spokes. The hub has two conical roller bearings to minimise friction.

The axle beam is a steel pipe fitted with wooden cylinders at both ends. The cart frame consists of three longitudinal wooden beams bolted to the axle beam. The front wheel acts as a guiding wheel. It has wooden spokes and a fabricated steel rim, over which a

solid rubber tyre is fixed. This can be easily made from an old rubber tyre by cutting off the side walls.

The yoke beam is attached to the front wheel. The yoke beam and the draw bar together are free to move in three planes, reducing the load and the injurious effects on the bullocks considerably.

* The pitching plane- to compensate longitudinal dislocations of the cart body and to prevent the yoke from jumping on the animal's neck

* The rolling plane- to overcome lateral disturbances of the carnage, compensate for the varying heights of the animals or lateral displacement of the cart owing to different ground levels,

* The yawning plane- to enable easy turning and good manoeuvrability.

The comfort of the bullocks has a direct bearing on the overall efficiency of the bullock cart system. To avoid injury to the neck of the bullock, the new design has simple leather saddles. The other problem is damage to the hooves on rough grounds. The traditional solution is to nail metal shoe slips on to the hooves. But observations revealed that the metal shoes slip on paved roads and are dangerous on wet roads. To avoid this, rubber pads from pieces of old rubber tyres are fixed to the hooves. The new bullock cart is designed in such a way that its total cost would not exceed that of the existing one.

Design: Mohanchandra

Case Study: three

Design for Communication: The Devanagari Script

Of all the means of communication available to man, language is perhaps the most important and immediate. The pluralistic Indian subcontinent has a multitude of languages and scripts. There are 15 official languages in existence today in addition to English, English plays an important role both as a link language and as an international language officially recognised by the government and learnt as the third language in schools throughout India. In fact, English is given priority over other languages in institutions of higher learning.

Though many Indian languages follow a similar system of vowels, consonants and vowels, the scale of the Indian problem is enormous due to the large number of totally different languages with their own scripts. Unfortunately there is so little progress made in the field of Indian type face design, while so much else is changing rapidly in the Indian society,

I he letter-forms of the traditional Indian scripts remain the same as they were in existence centuries ago when printing first commenced in India. These centuries-old letter forms are but derivations from the ancient forms of Indian writing with the hand, using either a reed pen or a stylus. Scripts such as Devanagari, Gujarati and Bengali were derived from reed pen writing, while scripts such as Tamil, Telugu and Malayalam were originally created on palm leaves using a stylus. The use of the stylus was later developed into a quill-pen style. In the experienced writer's hand the reed pen created the most graceful curvilinear form with very thin to very bold variations in each letter and generated a very interesting calligraphic style.

Reed pens and quill pens are no more in use in our modern times. They are replaced by pencils, pens, felt-Lip pens, markers and many other modern writing tools. Almost all these new tools created linear letter forms of even thickness. But all the letter printing presses produced the traditional reed-pen style letter forms as far as Indian languages were concerned. At the same time, the letter presses in contrast used the standard types as far as the English language was concerned. Thus a formal disharmony prevailed wherever English language print form and Indian language print form appeared together.

Since the reed pen forms were not designed for print production, these forms started giving problems in mass production such as improper ink-flow due to thin-thick variations.

On the other- hand, the increasing complexity of present-day communications demands greater flexibility in the use of letter forms than that is available so far The quality and the variety of messages/information requiring dissemination are immense but this requirement is severely limited in case of reed-pen based Indian scripts to only three variations, bold, normal and italic. These arc also restricted in their size reduction.

Another peculiarity with Indian scripts is that although these are vastly different from one another, they have all adopted the Arabic numerals for writing numbers. This is very functional but visually the script and the numbers are in disharmony with each other. This is also the case with English type forms when they are used along with Indian scripts. This problem is most prevalent because India has a national policy of three languages. According to this policy all official announcements, signages, etc. must be in three languages: the local language, the national language, Hindi and the international language, English for wider communication. The newly developed Devanagari type addressed this problem by making the letters and numbers follow the same visual logic and expression. The new letter forms stand in complete harmony with the English letter forms whenever they are used together

As a result of all such problems, many Indian designers of newspapers, bill-boards, street hoardings, etc., create and use their own letter forms in their work compounding further visual confusion. A most common example of this confusion in letter forms is seen on the Indian street which is full of hoardings.

All these reasons mentioned above, prompted a project to design a major Indian script, employing the best high technology that is available to affect communication among the masses.

The script called Devanagari of the national language “Hindi” was chosen for design and development.

The new type design aimed at meeting the modern communication demands of variations in point size, thickness and height of the type faces. Its form is conceived as linear form with even thickness which caters to the new needs of mechanical and photographic reproduction and allows maximum legibility. It stays in harmony with other modern forms of writing and also with rapidograph writing which is the standard practice used universally for technical drawings.

The new Devanagari was tested for suitability of application in a variety of modern media such as newspapers, books, advertisements, exhibitions, displays and public signages.

After the successful creation of the new Devanagari type, the same style is adopted to design type forms in other major language scripts in India such as Telugu, Tamil, Kannada, Urdu, Bengali, Punjabi, Oriya, Malayalam and Gujarati.

The State Bank of India, the largest national bank in the country, is the first organisation to apply the new type face in several languages in their several branches spread in different language-based states of India.

Design: Mahendra Patel

Case Study: four

Design for Ecology: The Bicycle

This project originated with a concern for ecologically sound transport In India, the bicycle may well remain the major form of personal transport for the masses, who are poor.

It is several times lower in cost, compared to any other mode of personal transport and therefore is the only vehicle people can afford. It is extremely robust with minimum maintenance, is light and lasts forever: Besides, it is an answer to problems such as pollution, parking, and energy shortage. And it also caters to the need for physical exercise.

Although the bicycle came in existence into the world as a hobby vehicle meant primarily for a single person, with little luggage, it is mainly used as a sports vehicle or a health device. People bought it for fun and kept it as a luxury item. But in the Third World countries like India its use is for totally different reasons. Here it is a vehicle of utility, and is a multifunctional object. It is used in so many ways for so many purposes and under so many conditions. For millions of poor families, it is a bread earner It is used as a meal delivery van, as a school bus, as a milk supply van, a family car, a fodder van and so on. Even the first rocket of India was taken to its launching site on a cycle! Its design however, is centuries old.

A user survey revealed some basic problems on the widespread usage of this light vehicle. Few cyclists observe legal requirements such as a lamp, brakes, bell, and loading restrictions. The problems are aggravated under bad road conditions as well as the heavy and awkward loads carried on the bicycle. The major problem is one of personal safety which is due to transporting of loads such as sacks of grain, milk cans, chickens and sheep for slaughter and many other such items. Theft of components like the lamp and bell is a frequent problem.

Maintenance and replacement of some parts, such as rubber pedals, is yet another problem. The rubber wears off quickly in severe heat, exposing bare feet to hot metal. Chain slippage is also chronic, due to slackening from over use, as well as heat. The rim brakes also wear off quickly and slip frequently particularly in wet seasons. The rider is not protected from rain or sun.

The outcome of this was put on a matrix for the designer to identify the relation between user requirements and design constraints such as material, production method, market, etc.

For a better understanding, the historic development of the bicycle was studied. Information on various contemporary bicycle designs was collected and analysed,

including some of the latest technical and conceptual innovations. The ergonomic study brought into focus the effect of various anthropometric dimensions of the human body It set parameters to help decide the optimum dimensions of the vehicle. A number of alternative solutions were then conceptualised each with particular emphasis on one aspect of the problem.

The final solution selected for development included considerations of structure, function, economy and ergonomic factors. It is called “Sind” in order to evoke the Indianness of the cycle. The bicycle is designed to carry more than one person. The frame size has been reduced to make it stronger and lighter. The cross-bar is positioned at the approximate centre of gravity of the vehicle, so that it is easy to carry the bicycle. The luggage carriers take their weight along this line, closer to the ground, so the loads do not affect stability. If the load is a person, he can, when needed; safely get off by touching the ground. The low cross-bar also facilitates women wearing saris, men wearing lungis, dhotis, etc., to mount the vehicle conveniently.

The riding position and other safety factors are the same as in the conventional bicycle. The central distance between the principal parts is also unaltered so that standard parts can be used with the new design. The height of the handlebar as well as that of the scat is adjustable by hand levers so that a wide range of people can use the same vehicle. This eliminates the need to produce a range of sizes. The geometrical structure of the handle bar has been simplified and ergonomically suited hand grips are used. Instead of the 12-part conventional bell, a single-part alarm device has been introduced.

A sturdy welded rear carrier frame forms an integral part of the total frame structure. This not only makes the structure rigid but also helps in distributing the load uniformly over the frame. The frame carries a drawer-type carrier so that it can be used both to store things and to sit on.

The chain can be tightened by chain tighteners whenever it slackens. The need for a tool kit is avoided by the use of convenient wing nuts and levers at key places. Brake defects have been found to be the main cause of road accidents. Therefore, instead of the conventional rim brakes which are liable to slip on muddy roads, back-pedalling hub brakes have been introduced for positive operation,

The governor construction is simplified and an integrated casing to accommodate the standard hand-torch has been provided. This eliminates the need for buying special cycle lamps. It also prevents lamp thefts. Additional attachments include a trailer; a frame-structure for odd loads, an accessory to fit an umbrella and a child-seat.

According to Indian government policy, the bicycle is an item for manufacture in the small-scale sector. Although many entrepreneurs expressed their interest, the radical change of appearance is an inhibiting factor. A project study has been carried out for this reason with the Gujarat Industrial Investment Corporation (GIIC). A new prototype of the same design has been made, using all local materials and techniques. After years of pursuing, the design has finally been taken up for production by a group of engineers trained by the entrepreneurship development programme of GIIC.

The Corporation has found that existing production facilities for bicycle manufacture can be readily adapted for the new design. This is an important asset in overcoming initial resistance to the new look, Manufacturers need devote only a part of their capacity to the

new design, enlarging its output after the market is more established. GIIC finds that a further advantage is the suitability of the new design for current government-assisted programmes of decentralised manufacturing at the district and village levels. The new design has been taken for production by a new state financed small-scale industry in Gujarat.

Design: S Balaram

Case Study: five

Design for Appropriate Technology: The Duster

The blackboard and duster are still indispensable in most primary schools of the third world where other audio-visual aids are lacking. The ordinary duster; however; can hardly be said to be efficient, a point which perhaps hardly occurs to its users.

Dusters are usually made of solid wood with thick felt pads either nailed or pasted on one side. They are needlessly heavy and inconvenient to handle. Felt is a good material for erasing dry chalk, but the felt soon gets clogged with the chalk dust and loses all its efficiency. There is no way of cleaning the clogged felt. The felt piece often comes off the wooden body because even the strongest glue cannot hold such fibrous material. If the felt is nailed, the nails get exposed due to wearing of the top felt layer and soon ruin the blackboard. Besides, there is no convenient way of placing the duster near the blackboard for ready use. It is not surprising, therefore, to see teachers using a rag rather than duster; to clean the board.

A new design was evolved by the author to suit the village schools as well as the urban schools. It attempts to combine the flexibility of the rag and the rigidity of the wooden duster. Moreover, this design is simple and inexpensive to produce. Common materials which could be recycled could even be used.

A piece of bamboo cut vertically away from the centre forms the body while a piece of cloth or foam of sufficient length, rolled and pushed into the body, forms the duster. The cut tube, due to its elasticity holds the roll firmly. The body can be a tube made from any material such as plastic, cardboard or metal, depending on their availability.

There are no joints in the duster. When the roll is choked, it could be easily removed, washed and replaced. Wet cleaning is also possible with this duster. The cylindrical Form fits more conveniently into the hand. By making a hole on the top of the Lube, the duster could be hung on a pin on the side of the blackboard. The cloth or foam roll can also hold extra chalk pieces, unlike the existing dusters. The same design could be used as a blotting pad by simply inserting a blotting sheet over the cloth or foam roll.

Design: S Balaram

Case Study: SIX

Design for Women: The Family Planner

Family planning efforts in India have not been quite successful. They have not reached the majority of the population, which is rural. Many superstitions about modern methods of family planning prevent common people from practising it. Many illiterate people

wrongly believe that any form of contraception will endanger their health, vigour, potency and such highly valued qualities of life.

Thus although modern methods of family planning involving vasectomy, the loop, the pill, the condom, etc., are being propagated by the government of India through campaigns, legislation, subsidies and benefits, they have met with limited success.

Indirectly, family planning was practised by earlier generations when they resorted to mental and physical abstinence from sex during certain periods strictly in accordance with the scriptures.

A scientific method of family planning that comes close to this concept, and can perhaps be more readily accepted for that reason is the rhythm method, which has an additional advantage in that it needs no external aids or operations. The rhythm method is based on the biological fact that in a woman, the egg is receptive to fertilisation only for about 72 hours after ovulation (release from the ovary) and that ovulation generally occurs in a woman 1 3 to 15 days before the commencement of the next menstrual cycle.

All that a couple need to do is abstain from sex during this 72-hour period. The method, though not foolproof, is highly effective and made more effective if the couple abstain from sex during an additional caution period close to the unsafe period. Though for a few women the menstrual cycle is not uniform and depends on emotional factors, about 75 percent of women do have a regular menstrual cycle. The length of the cycle varies from 21 to 38 days. It should be thus possible for most women with a regular cycle to work out their own safe period for sex during any month.

A cheap and simple device developed at the National Institute of Design, could make family planning more acceptable. It indicates the safe and unsafe periods for sex in a woman's menstrual cycle on which the rhythm method is based and could be more readily acceptable because it dispenses with unpopular external aids.

The safe period indicator has been designed based on an innovation by Dr G. S. Randhawa of Patiala. No bigger than the size of one's palm, it has two rings, an inner and an outer, which slide into each other

The inner ring has 31 calibrations representing dates in a month. The outer ring has variations in the menstrual day cycles ranging from 21 days to 38 days marked on it for different women. The 28-day cycle, the most normal case, is marked by "M". The outer ring is colour coded with green, orange and red, to indicate the safe, caution and unsafe periods in a month, respectively.

On the first day of her menstrual cycle, the user only has to move the inner ring so that the date coincides with the number on the outer ring showing the length of her own menstrual cycle. The colour codings will then automatically indicate the safe, the unsafe and caution periods for her. The rings can be locked in position by a locking pin and a ratchet mechanism to prevent accidental rotation.

Women might feel embarrassed to use the device in front of others or forget to consult it. Therefore, the new safe period indicator is designed in the form of a handy mirror, which will go into the hand bag. This will also prevent it from being misplaced and will remind the user whenever she looks into her mirror (which may be quite often)! The numbers on the device and the instructions have been worked out in Hindi and English to suit the regional requirements. They could be in any of the regional languages too.

The safe period indicator has polypropylene as body material. This can be mass-produced using a small injection moulding machine at an estimated cost of Rs.3. A few working prototypes have been made and presented to a client, who is about to manufacture it. A patent on it has been obtained.

Design: S Sethuraman

Case study: seven

Design for Small Industry: The Wick Stove

The wick-type kerosene stove is probably the most widely used means of cooking in India, particularly in the urban areas. At least two-thirds of the total 3.2 million tonnes of kerosene consumed annually is used for cooking, though most stoves, similar in design, come in mild steel and in brass. On an average, a mild steel stove costs about Rs, 25 while a brass stove costs around Rs.110. However, their efficiency of heat utilisation is only around 42 per cent; besides, they create several problems in actual use.

A stove unit designed at the National Institute of Design, and based on laboratory models developed by the scientists of the Indian Oil Corporation and the Indian Institute of Petroleum, Dehra Dun, gives a 50 percent higher efficiency than other models. This has been achieved mainly by minimising heat losses and carefully controlling air intake for maximising combustion.

Designed for production by the small-scale industry, the new multi-wick stove has a square fuel tank (see fig.) which has a higher capacity compared to the cylindrical tank of the same diameter. It is also more stable. The fuel tank capacity is increased to 2.24 litres, thus reducing the number of fuel fillings, which are not only cumbersome but cause wastage, too, A: wider fuel opening provides for easier filling, Despite the increased tank capacity, the depth of the tank is reduced giving better capillary action for the wicks. Apart from the normal pair of perforated sleeves to maintain the flame, two more burner casings are provided for conserving more heat. The outermost, burner casing is lined inside with thick asbestos not only to prevent heat loss but also to allow safe handling of the hot stove. The burner casing has, at the bottom, a grill with measured perforations to let in the exact amount of air for efficient combustion. The wick-guidance unit is designed for convenient wick filling and control. Instead of a separate guide for each wick-carrying tube, there is a common casing which is also grilled to control air intake.

Housewives generally have to remove and replace all the sleeves every time a stove is lighted. Besides burning and dirtying the hands, there are always chances of misalignment of the sleeves. And if the sleeves are not exactly concentric, the heating would be uneven. To eliminate this problem, all the sleeves are preset and integrated into a single unit which is hinged to the body so that it could be opened and closed conveniently without misalignment. The present methods of putting out the stove are also very unsatisfactory. Blowing on it is unsafe and sprinkling water affects the life of the sleeve. This is avoided by lowering the wicks. The alternative method is to close the top opening of the sleeves with a disc.

There are certain other features of the stove. An oil level indicator on the fuel tank shows the oil level. Adjustable vessel supports help to well accommodate a wide range of

vessels from very large (for boiling water; milk, etc) to very small (for melting butter; etc.).

Rubber lining at the joints prevents conduction of heat from the body to the fuel tank. As an optional attachment, a thin circular band is provided to form a wall around the vessel-seating (not shown in photograph). It protects the flame, thereby not only reducing heat losses further but also making the stove safer to use - an important point for women working in loosely draped saris. The unit consists of stoves, one with a high heating rate for faster cooking and the other with a low heating rate further saving fuel (figure shows only one).The parts of these stoves are interchangeable. The simple frame holding this double unit has provision for keeping common kitchen implements like tongs, etc. The stove is designed in 18 gauge mild steel sheet with vitreous enamel finish ensuring a strong body that is not affected by spillage and scratches. The stove, on commercial production was estimated to cost around Rs. 25, an amount quite affordable by a middle-class Indian user.

The client, Indian Oil Corporation proposed to market the new stove as a delux model to the middle-income group of the Indian society.

Design: S Balaram

Case Study: eight

Design for Health: The Oxygenator

Open heart surgery requires the use of an oxygenator for storing and treating the patient's blood during an operation. Many hospitals in India now undertake open-heart surgery but oxygenators are invariably imported. This raises the cost of the operation, worse still, it raises the dependency on another country. The Sri Chitra Thirunal Institute of Medical Sciences and Technology Trivandrum was keen to design and develop indigenous equipment which could be used for this purpose. It chose to work on a bubble type hard shell which is disposable. The product should be able to hold about 3 litres of blood, with a flow range of*')* to 6 litres per minute. It should have an aluminium coil heat exchanger. The initial production quantity was estimated to be about 3000 pieces per year

The Shri Chitra Thirunal Institute had done some preliminary work and had developed a laboratory model which now required designing to make it into a usable and marketable product which would suit the Indian conditions and its production capabilities. After discussions with the clients, NID designers felt that the task required in-depth understanding and a "zero defect" solution, since the product is in the "life saving" category.

The project started with information collection and analysis. Visits were made to the hospital, discussions with doctors were held and existing literature related to heart surgery and related products was intensely searched. Information on the existing oxygenators in use in the country was collected and analysed. It was found that all the existing oxygenators were imported.

The cost of these imported oxygenators varied between Rs. 2,200 and Rs. 2,750.The cardiotomy reservoir is separate and its cost is extra. In the case of child patients, a separate pediatric oxygenator was required. In the operation theatre, the equipment was connected with many crisscrossing tubes.

Making the equipment more compact by reducing the number of component parts; safe performance; the use of medically suitable material; economy in priming blood requirements and creation of a distinct identity for the new product-were taken as the main design considerations, based on the study.

As an experiment, the designers decided to work at the Sri Chitra Thirunal Institute, while evolving the concepts. It facilitated intense interaction between the designers and the client and contributed immensely to the pace and quality of the solution.

After a week at Trivandrum, six preliminary concepts were developed by the NID team and presented to the client During discussion with Dr M. S. Valiathan the Director of the Sri Chitra Thirunal Institute, an eminent heart surgeon, the designers suggested the idea of combining the oxygenator and the cardiotomy reservoir another imported equipment, into a single unit. He encouraged this ingenious idea. The NID team then developed two alternative concepts for an oxygenator combined with a cardiotomy reservoir One was based on a circular cross section and the other on a rectangular cross section.

Both these alternative concepts were carefully checked against the design parameters established. One of the parameters was the need to preserve blood at every stage of the operation. This is of primary importance. The product should be adaptable for use by both adults and children. The product aesthetics were also important since it was to be used in the operation theatre where the array of equipment was frightening and the interconnections disorderly. Product graphics had to be clear and legible, with clear instructions, markings and codes, leaving no room for confusion.

The circular concept was chosen after discussions with a production expert on the aspects of production suitability.

At the next stage, the selected concept was developed into a full fledged design with all details at NID. Technical drawings were made and the material was selected after discussions with Indian manufacturers of plastic products. Material and manufacturing costs, being major constraints, were examined in detail. All the functional details and initial ideas on graphics and packaging were examined by the project coordinator from Shri Chitra Thirunal Institute who came to NID for the purpose.

The final product was named the “Chitra Variflo Oxygenator” The new equipment is disposable and of the hard-shell type. With a transparent polycarbonate body it clearly shows blood levels. It remains unaltered under pre-use sterilisation. It has unique features compared to other bubble oxygenators in clinical use, It combines the adult and pediatric oxygenators in one unit. In addition, a cardiotomy reservoir with micro filter is integrated with the oxygenator. By turning the flow control module the oxygenator can be converted from adult use to pediatric use and vice versa without interrupting the profusion. If necessary the cardiotomy reservoir can be disconnected and the micro-filter can be by passed without affecting the oxygenation function.

Making a prototype of the new design took about two months. Meanwhile, the product graphics for the new oxygenator were designed with ergonomic considerations of clarity, legibility and blood visibility, etc under operating room conditions. Suitable packaging, an instruction manual and pamphlets were also designed.

The prototypes made at Shri Chitra Thirunal Institute were tested initially on goats under operating conditions similar to those for open heart surgery. The equipment worked well, and the operation was videotaped. This videotape was submitted along with other documents for approval of the new product by the Ethics Committee, a high-powered body of legal and medical experts whose role is to scrutinise thoroughly the new products for absolute safety and suitability when used on human patients. The committee approved the new oxygenator. The product was exhibited in 1985 at a medical exhibition in the USSR. It also received the prestigious National Award for Meritorious Invention from the National Research & Development Corporation of India.

Postscript

At least 15 oxygenators of the new design have been used successfully for open heart operations by the Shri Chitra Thirunal Medical Centre. However"; the client is unable to produce and market the new oxygenator commercially. Although no detailed cost estimates were done scientifically the client estimated the cost of the new oxygenator at around Rs. 3,200. This was lower than the combined cost of the existing oxygenator and cardiotomy reservoir but certainly higher than any of the imported oxygenators sold without cardiotomy reservoirs. Added to this is the fact that the product has not caught the public eye. Indian patients have a marked faith in the allegedly "superior" quality of imported products. No thorough market research however has been conducted. The designer therefore suggested the following:

* A scientific cost analysis by an expert in product management.

* Thorough market research by a competent body to find out the potential, both domestic and overseas.

* An appropriate powerful marketing strategy, advertising, user education, etc.

* Place the new design for release in phase II of marketing when the client establishes himself and release it as a deluxe or export model. Meanwhile for Phase I, NID designers and SCTIMST scientists should work out an entirely new design with the sole purpose of cost reduction, stripping all the value added components.

Design: S Balaram and Dhimant Panchat

Case Study: nine

Design for Energy Saving: The Gas Stove

In the late seventies, a public organisation, the Indian Oil Corporation (IOC), approached NID for the design of a liquefied Petroleum gas (LPG) stove after a successful wick stove design job. I.O.C. scientists had by then worked out a gas-burner which was 15 percent more thermally efficient than comparable existing burners. The client wanted a distinctly new gas stove design to be developed, based on this new burner He wanted to maintain and enhance the favourable reputation earned by the "Nutan Wick Stove" and wan Led a similar new identity for the gas stove. I.O.C., being a public organisation, would offer the new gas stove and burner singly or independently to various deserving manufacturers for a nominal fee, for simultaneous production.

As a beginning, the designer visited gas stove manufacturing industries in Faridabad and Ahmedabad, conducted a survey of users and dealers, studied I.S.I. specifications, held discussions with consumer research groups and conducted literature search at the NID library, On analysing the data thus generated, it was found that gas is the most inexpensive among the cooking fuels and it is the people's most sought-after medium, since it is cleaner (no smoke, no chute), faster (maximum heat generated), and cheaper. In fart, people arc willing to pay thousands of rupees to gas dealers who also sell gas stoves. They usually force the users to buy gas stoves of their choice and of which they hold the dealership. To cope with the enormous increase in demand, several gas stove industries have started, But there was no substantial improvement in the design of these stoves. A few have started aggressive advertising and sales promotion activities.

The few changes in the product involved such extraneous additions as "grill" facilities (based on Western cooking needs), glass doors, etc. These have only increased the product price but have not added real value.

Gas cooking remained unsafe, and the controls economically inconvenient. The product was needlessly heavy, bulky and difficult to clean,

Based on his analysis, the designer developed his own brief and tried to deal with the real problems to add real utility to the new product and bring the cost radically down. He developed concepts using a "minimalist design" approach in order to get maximum benefit using minimum materials and processes, stripping out every extra element. The modular approach was used for developing concepts where the product could grow as the needs increased, from a single unit to double and triple units.

During the concept presentation, the client found the concepts presented too revolutionary for the Indian housewife and feared that she would not accept them. The designer then worked out some more concepts which were not totally revolutionary, yet gave the product, a distinct identity. These designs called for a sheet metal body and standard components. Subsequently there was a long silence from the clients, probably due to changes in their top management. The new Research and Development manager took some time before calling in the designer to restart the project. In fact, the I.O.C scientists tried designing the stove based on the preliminary concepts presented by NID earlier but these attempts did not succeed. The new Manager adopted an open and supportive attitude towards the designer. The brief was reviewed and NID worked on that brief and made a final presentation. Manufacturers from all regions were called for this presentation, for their comments. The designer considered their problems individually and incorporated flexibility in his final design, making minor changes in components, colours, graphic, etc., according to each one's need.

The final design was a stove with a mild steel sheet body and a brass burner. It has a thermal efficiency of about 70 per cent compared to 58 per cent in the existing stoves. This helps the users retain their refills 17 per cent longer. It has a visually distinct form and is light in weight. Its rounded contours are cleanable. The stove top was slightly concave to collect spilt food, which was a major cause of clogging in gas nozzles, causing accidents. The brass burner as well as the vessel supports are easily removable for washing under a tap. The stove is comfortable to handle. The knobs are of standard qualities which were selected for their ergonomic suitability. A flat band has been provided on the body to place the controls and display them neatly. Rubber legs are

provided to allow cleaning underneath the stove. The body is chrome-plated but it can also be painted in one of the four suggested colour schemes according to regional preferences, Guidelines are given for the display of individual companies' existing graphics. The price of the new stove is comparatively low.

The final design was presented with design drawings, colour schemes, full size mock-up models and a report. The client then got prototypes made and tested. After successful testing, the design was released by IOC for simultaneous production by several small units in the country. This was possible since, in India, the number of consumers is very large and the capacity of small-scale production units is very limited. The new gas stove has been patented. It has won the National Research and Development Council (NR.DC) Award, and was offered as an available "know-how" resource to other countries through the United Nations Industrial Development Organisation (UNIDO).

When the new stove and the new burner were offered, six manufacturers undertook to produce and market the new product. But by the end of the eighties, none continued to produce them giving the high cost of its production as the reason. They preferred to use only the (which improves efficiency) and to use it with the particular b they were already producing and marketing. The other reason was most users were not aware of the fuel-saving aspect of the new stove, which is not directly perceptible. The IOC tried to persuade the Indian Bureau of Standards to raise the standards of the LPG stove's thermal" efficiency from 60 to 65 per cent. This would lead to the development of; new, more efficient stoves, making these specifications obligatory for the/ small-scale units which manufacture them.

Design: S Balaram

Case Study: ten

Design for Special Needs: The Wheel Chair

While there are many problems of the able-bodied which demand immediate attention, the handicapped minority, whose number is steadily increasing, has remained relatively neglected. To the disabled, what hurts most is their dependency on others for simple daily activities, and the attitude of sympathy and pity. Constant pity hurts one's spirit.

A physical aid, therefore, plays a crucial role in the lives of the disabled. And for those whose lower limbs are incapacitated, the wheel chair is a convenient device to sit on and move about in.

The existing wheel chairs in our country arc, however, heavy, expensive and unwieldy. They usually have a hard seal which transfers the jerks and shocks from the undulated ground to the thighs. The four small castor wheels make it very difficult to go over ditches and other obstacles; turning is also a little difficult. Some chairs are foldable, but as there is no locking arrangement, the chair tends to fold with every jolt.

In all the wheel chairs today, all main structural members are pivoted to single point to facilitate folding of the unit. So, the whole weight of the occupant acts on this single pivot point, making the chair structurally weak. The back rest and the foot rests are fixed and not adjustable for people of various heights and physical builds. Besides, most of the wheelchairs do not have hand-rails for wheeling which means dependency on someone else for moving it or handling the rolling wheels which carry dust from the ground. The

foldable wheelchairs have a canvas seat, but as the frame is not rigid, in actual use the seat becomes uncomfortable.

Unlike ordinary chairs which are used at a fixed place for a definite function, a wheel chair has to carry its occupant from place to place. Existing wheel chairs seem to overlook this important aspect. They do not, for instance, take into consideration the height levels of the sanitary fittings. Wheel-chairs in India are still those which are manufactured with the help of given aid or they are imported. They do not satisfactorily suit the social, psychological and physical requirements of the Indian user

These were the considerations behind the design of a new wheel chair at the National Institute of Design, Ahmedabad. The chair is constructed in lightweight mild steel tube to be strong as well as stable and less prone to vibrations. It has three wheels, instead of four. The two main wheels are standard bicycle wheels and in the rear is a standard castor wheel. A large-size castor wheel of 20 cm diameter is chosen to facilitate easy movement on uneven ground. The single castor wheel provides better turning facility within a 40 cm radius. This rear wheel is attached to the body with a cantilever which gives a suspension effect and absorbs normal shocks and jolts. The rolling noise of the wheels has also been considerably reduced.

The seat and back rest are designed and is a single detachable unit; this helps the transfer of the person, particularly if he/she is a child. This unit can also be used as a seat for writing, reading, etc. The single unit has a rigid frame fitted with a comfortable leather seat which could be tightened whenever necessary. The seat itself could be attached to the body at different levels to suit, different users, a child or an aged one. The minimum level is kept at. 3.6. cm to match the height of the Indian toilet seat, so that the transfer is easier:

An important feature is that the new chair has detachable foot rests which could be adjusted to suit the user's resting requirements. The wheelchair also folds into a more compact size than the existing chairs' for convenient storage and transport in buses, trains, etc. The unfolding is lockable. The wheeling hand-rails are made of cane, which is lighter and cheapen The design was developed after a close study and continued dialogue with disabled persons at the Apanga Manava Mandal, a home for the disabled at Ahmedabad. Reactions from inmates who tried the prototype were quite positive. This chair could be produced by a small- scale unit. Standard components like pipe joints, Lubes and standard bicycle wheels are used to reduce the cost. When mass produced, the cost is estimated to be 30 per cent lower than that of the existing wheel chairs.

Design: ShailendraYagnik

Case study: eleven

Design for Innovation: The Letter Weigher

How many times, after writing a long letter or after stuffing enclosures along with it in the same envelope, have we posted it with misgivings, feelings that it may have been under-stamped? Alternatively, we have to rush to the nearest post office during working hours, stand in a queue patiently and get the letter weighed. All this could be avoided with a handy letter weighter.

In offices where a number of letters are posted daily, a common balance made of brass or stainless steel, with pans and weights, is used for weighing. It gives accurate reading, but is cumbersome to operate. Modern offices use a weighing scale, but even this is too bulky. What one wants to know, in fact, is not the exact weight of the letter but the right postage needed. The postage is usually specified in steps of 5 gms and so it is enough if the readings are taken with allowance for at that variation.

Apart from their cost, the present weighing devices are not designed specifically for letter weighing and hence they are not wholly suitable for this simple operation. People do not post merely from offices and post offices but also from railway stations, airports, hospitals, factories, houses and so on. Hence, the need is for a compact and more convenient letter-weight device-one which could be carried perhaps in one's pocket- of modest cost and suitable for modern offices and modern houses. These are the kind of considerations behind the letter weighing device designed at the National Institute of Design, as part of a student's project.

The new device is nothing more than a simple circular plate of plastic, of the size of a palm. It follows the principle of a moving fulcrum type of balance, using its own body weight as a counter to the object weighed. Different fulcrum points are located on the body of the plate which is graduated from 5gm to 50gm, which is the usual requirement for letters.

At each fulcrum point there is a pin with a head where one can hold the device and lift it. At one side of the circular plate there is a spring grip to attach the letter to be weighed. There is a horizontal line across the circular plane of the plate. The approximate weight of the letter is known by simply attaching the letter to the spring at one side of the device and then lifting the device by holding one of the pins marked at the 5 gm step, till the line stays horizontal. The marking at that particular fulcrum point indicates the weight of the letter attached.

There arc hardly any complicated parts hence the device would cost no more than a stapler; a file punch or any other device of a work table. It needs no loose weights. It could be attractively finished in a wide range of plastic colours. It could also be used as a paperweight in offices and on the tables of executives. It is handy and can be easily carried in the pocket. The device has been calibrated with a standard weighing machine using standard weights. It is fairly accurate. The user can clearly mark the weight of the letter within 5 gm.

The body material is polypropylene which is inexpensive as well as durable. The calibration could be easily made by silk-screen printing. The holding pins are made of stainless steel and fixed to the plate. The production method is very simple and suitable for both small-scale and mass production. The device could be produced by turning on an ordinary lathe for batch production, or with a small plastic injection moulding machine for mass production. A few prototypes were made and tested very successfully. The cost of production would be about Rs.10 a piece.

Design: M O Patel

Case Study: twelve

Design for Craft: Appliqué Textiles

Art and design have often been misunderstood. Design is wrongly believed by many people as an elite activity and a cosmetic treatment applied to make things and messages more pretty. Though designs' key role in fostering industrial economy is recognised, its role in the social upliftment, particularly in the development of women, is hardly realised. Of the nine hundred and fifty million population of India, the women outnumber the men. Indian democracy was led by a lady Prime Minister; Indira Gandhi for repeated terms. There are states of India which are ruled by lady chief ministers. Yet, the condition of the majority of Indian women is appalling.

The woman has to do the dirty work at home as well as outside. Her kitchen is smoky and inefficient. The improvements of modern technology are inaccessible to her. Her children do not go to school as they can't afford the education. They can't afford even hygiene. They are poorly nourished as their families are struggling to eke out a living.

In Ahmedabad, on the banks of the river Sabarmati there are slums. One of the communities numbering about two hundred families lives in Paldi area. These are poor Muslims. The men do heavy labour in the mills nearby. Those who cannot find work, pull 3-wheeled cycle rickshaws.

Before the 1973 floods, the women supplemented the family income by doing odd jobs in nearby households and by growing vegetables on the riverbed. Together; the families managed to survive.

Roshan Begum was one of them. The slum did not have facilities such as toilets, drainage or electricity. A few years ago, there were floods in the river Sabarmati. The Paldi slum was swept away, rendering these families homeless.

A voluntary organisation called Ahmedabad Study Action group (ASAG) consisting of young architects / designers was concerned about this. With state support, the organisation designed low-cost houses for the people, acquired some land on the periphery of the city and rehabilitated affected people there. The new houses that were given to these were durable brick houses. Unlike their earlier houses which were ugly sheds, these had electricity and water facilities, but the people required more money to use them and to maintain the houses. The women particularly suffered a lot because they could not earn any longer as these houses were isolated from the main city A free school and a free clinic started by voluntary workers could not function because the children had to work in wayside tea stalls, etc., in order to help the family survive. They could not afford a nutritious diet Concerned with these problems; the voluntary organisation approached the National Institute of Design for design intervention. The National Institute of Design has a programme in which students go out and study the social problems of communities. They then try to work out a realistic and implemental design solution. The NID designers visited the rehabilitated community and talked to the women. Income-generation by some means of work which the women can do sitting at home seemed the right approach because the Muslim religion prohibits women from going out of their homes. The conventional definition of design is to create better products and messages. But the requirement of this situation was employment and livelihood generation.

How can design create employment and income-generation? A market survey conducted by the designers indicated that there is a growing market in India as well as abroad for' new designs in decorated textiles using traditional Indian craft skills. But the

problem was that the rehabilitated Muslim women did not possess any craft skills at all. The basic step seemed to be to get the women trained in a simple craft. A further step then would be to train them in creating new designs. The NID designers were conscious that giving one good design for the women to produce is not really a long term solution. As noted economist E. F. Schumacher said that by giving a man a fish, we can solve his hunger only for that day. But if we train him in fishing, we can solve his hunger for life. Out. of many Indian textile crafts, appliqué (patch) work was chosen since it is easy to learn and it requires no equipment nor any special facility. Furthermore, the raw materials for appliqué work are small, cut-pieces of cloth which are abundant in Ahmedabad as waste at hundreds of tailor shops and many textile mills. India has a long tradition of appliqué craft. Pipli village in Orissa state is well-known for the most colourful appliqué work. Traditionally the people there used to make huge colourful umbrellas for religious festivals. The designers decided to train the women of this community at the NID, A programme was made accordingly and a group of women were selected out of the same community and sent to NID for training.

Roshan Begum was part of the group that was selected for training. After the first day, the women refused to go to NID and attend the programme. The ultra modern building, the English-speaking teachers and students frightened them and the girls dressed in fashionable Western clothes upset them. The uninhibited artistic atmosphere had totally alienated them and made them feel insecure. NID was taken aback with this failure. Some time later a student called Chandra took this problem as a challenge. She wanted to do this as her final year diploma project. Chandra decided on a different course of action. Initially she did not insist on design at all, she simply made several visits to the community and made friends with Roshan who was more than willing to listen to her

Slowly but steadily, Chandra won Roshan's confidence and worked with her Sitting in Roshan's kitchen, she first taught Roshan the basic skill of hand stitching, In the beginning she let her stitch freely anything she liked. She then taught her to hold the pencil and draw with the help of a piece of wood. There was no table or chair or drawing board. Gradually Roshan took a liking to stitching and became good at appliqué work.

Chandra prepared some designs that could sell in the contemporary markets in India as well as abroad. She showed Roshan many other good design examples and inspired her. Then she taught her to design on her own.

Roshan initially designed and made some simple pillow covers. Chandra took her to the Government handicrafts emporium, introduced her to the General Manager: She guided her further as to how to talk to the wholesaler and other such key people. Chandra also coached her in the basics of business such as pricing the product, accounts, bills, stocks, etc.

Roshan's newly made pillow covers were put for sale at the Gujarat State Handicrafts Emporium. Roshan was pleasantly surprised when her first batch of pillow cases were sold at a price she never expected. This gave her confidence. The other women in the community who were sceptical earlier; now came forward to learn.

Roshan became their teacher and leader. They felt at ease learning from the person of their own community and of their own sex. This is a crucial factor and NID helped these women to form a co-operative so that their interests were protected.

The designs were kept simple and geometric so that they are easy to handle. There was also another important factor; being Muslim women, they have a natural inclination to make geometric compositions because of the religious tradition of Islam.

The women started with pillow covers using plain bordering with different colour combinations. Gradually, as their skills improved, rhythmic line patterns were introduced. Later, triangle patterns in a row and variations in horizontal and diagonal pattern combinations were tried out. Finally the women were able to design and stitch sophisticated square compositions in different colour combinations. All these were vibrant and rich in colour. These appliqué work textiles brought to the fore the unique and distinctly identifiable Indian palette as well as Indian forms and shapes. After gaining confidence and enough experience, the Muslim women started designing and making larger pieces such as quilts and bed-covers, totally on their own. Sometimes many of them worked on a single piece.' The co-operative soon became self-reliant and at present is very successfully selling to Indian Emporia which export these products.

The women are happy to be able to earn more without the need to go far away, and for being able to stand on their own feet It gave them the badly needed support income. More importantly it gave them economic independence and thereby increased their social status. The women are grateful to design. Design here did not stop at creating a new or better product message or a system. Here it played a lead role in ushering an economic and social change by training the women in designing as well as producing, It has started an endless chain because these women in their turn, hopefully will train the others in the next generation of women.

Design: Chandra Razdan

Case Study: thirteen

Design for Human Dignity: The Toilets

Though food and related activities are highly respected in the Indian tradition, toilet and related activities are treated otherwise. Yet every thinking person knows the connection between the two. Not only is the act of sanitation not given enough thought in the past but the people involved in sanitation are considered as the lowest class of society who are not even fit to be touched by others. These belong to *Bhangi, Valmiki* and *Chamar castes* commonly referred to as Dalits. The Bhangis are sweepers. Their occupations are so greatly shunned that no other caste Indian will indulge in this petty, unpleasant task necessary for elementary hygiene. These people render a unique sanitation service to the country as sweepers and scavengers. Yet they are treated as the lowest among the low and deprived of opportunities for social, economic, educational and spiritual betterment.

India's great politician and social reformer Mahatma Gandhi made it one of the main issues of his social programme to better their lot and reaffirm their lost dignity. He therefore called them *Harijans* -the children of God. He lamented, "We have reduced them to the level of the beast. They earn a few coppers but only at the expense of human dignity."

After 1947, in Independent and Democratic India, by means of constitutional provisions, the legal position of this "scheduled" caste changed for the better and at

present India is ruled by a President, K R Narayanan, who hails from this very caste. Yet ironically at the most social levels the deeply entrenched discrimination and despise towards the people of this particular class continues. Even today at the brink of the third millennium, one finds in India a sweeper doing his dirty (physically) job with a bit of tin, bamboo basket and a broom, the *Age* old implements of this used in dismal occupation. There has been little improvement in the system of cleaning toilets which remains crude and unhygienic.

The situation is made more pathetic by two other factors such as the shortage of toilets and their poor quality. Toilet facilities are so completely lacking in India that only 30 per cent of the inhabitated area in the country has toilet facilities. Covered drainage does not exist in villages and only 10 per cent of the cities have proper drainage systems. Even in Gujarat, one of the prosperous states of India, it works out to be approximately one toilet for every 30 people.

The existing toilets are mainly of two types: the basket type dry latrines and the waterborne flush latrines. In the basket type latrine, the night soil is left in a pit or a basket, which requires the services of a scavenger He has to clean the pit/basket everyday with a broom and a bit of tin and carry away the night soil with his bare hands. This inhuman practice of carrying the night soil can only be abolished by the introduction of scientific tools and well-designed cleaning equipment.

In the waterborne type latrines, the night soil is flushed out using water through the sewage pipe to be drained away out of the city to a sewage plant or some other place. In many areas where sewage pipe lines are not laid, the night soil is flushed into a septic tank nearby, constructed specially as an underground collector

Compared to other types of waterborne latrines, septic latrines cost more to construct, need more water to flush and the septic tank needs to be emptied and cleaned once every five years.

The basket latrines are simple, cheap and for this reason used much more widely than other types of latrines, But these are also very difficult to clean thoroughly and, generally remain dirty surrounded by numerous (lies and stench,

Thus there is a need to install more waterborne latrines and to convert basket latrines into waterborne latrines which are more hygienic. The ever- increasing problem of water shortage and the widespread shortage of drainage lines require the design of a waterborne septic latrine that is easy to install and simple to use by illiterate people. It should be inexpensive so that it is affordable by the common man and it should also be designed in such a way that it could be easily cleaned.

There are two types of septic latrines in existence; one is the aqua-privy latrine which needs a little water for cleaning; the other is the hand flush or water-seal latrine which costs less to build and requires little space.

Taking good design aspects from each of the existing types, the Planning Research Action Institute (PPAI) of Lucknow designed a new type of latrine system and called it the PRAI system. In this system a toilet pan with an outlet pipe is connected to a pit made of bricks. The pan is initially made of galvanised mild-steel sheets with a funnel-like shape and a rubber flap. The Safai Vidyalay in Ahmedabad, a unique school dedicated to cleaning, had taken up the PPAI latrine and after constant experiments over a long time

redesigned it. After many trials, the metal pan was finally replaced by a pan moulded in cement.

To avoid stench and flies, the main targets of hygiene, a P-type trap is provided at the end of the pan. This trap could be flushed easily. The slope of the toilet pan is increased so that the excreta slip easily into the pipe, due to gravity. The inside of the pan is made smooth and non-sticky so that a minimum amount of water is required to flush out the excreta.

The pan is connected to a septic tank or soak-pit. The connecting pipe is made of either cement or China-clay and is so attached that it protrudes 6 inches inside the pit. The pit is circular in shape measuring 10 feet deep, with a diameter of 4 feet and is constructed with bricks. In every brick layer four or five gaps are left before the pit is covered with a cement lid.

Excreta is flushed with the use of a little water into the pit where the waste-water and urine escape through the gaps provided and leave the solid excreta to turn into sludge.

The pit is emptied periodically and the sludge, which by then is turned into solid manure, is transported to the agricultural fields to be used as fertiliser. This way the centuries-old human indignity of manual handling of excreta is avoided.

The Safai Vidyalay approached the Gujarat State Government for assistance in implementing the new design in various rural areas of the state where toilets are badly needed.

The Government recognised the new design and decided to convert all the basket-type latrines in Gujarat into waterborne latrines of the new design. This was a good development but it created a sudden demand for such large numbers of the newly designed latrines that it was not possible to meet the demand by the hand moulded cementing process. Therefore the Safai Vidyalay approached a reputed large-scale ceramic industry called Parasuram Pottery Works to take on the mass production of the newly designed pans; Parasuram Potteries started producing new pans out of China-clay.

The State Government offered subsidies for expenses such as the product cost, transportation and so on. But, manufacture of the produce and its access to places where it is required is only half the battle won. The other half is the crucial aspect of installation of the toilet system in the villages and more importantly making the system acceptable by the people there.

Safai Vidyalay invented a scheme to solve this problem. It regularly conducts summer camps in villages for city students during their vacation. The students who volunteer for a summer camp are trained in the installation of the new toilet. Then they go to each village, camp there and mix with the people and win their confidence. The Safai Vidyalay involves the village authorities such as the *Panchayat* and gets villagers themselves to participate in the installation work. Thus the students and the villagers together build the new latrines as *Sram Daan* (Donation of Labour).The important point is that the villagers see the new latrine as their own. Once they own it, they use it and take care of its maintenance in future. Besides, as a by product, the villagers and the young students from the city develop an understanding of each other, which goes a long way. Lakhs of villages in Gujarat are thus fitted with the new latrines and thereby benefited.

The reputation of the project spread and two other Indian states have taken this as a model and started work in this direction.

This is only a beginning made by the Safai Vidyalay: In future this has to grow in all directions in order to cover all the villages and towns of this enormous country, carrying the message of human dignity.

Design: Ishwarbhai Patel

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