

Design Before Technology: The Emerging Imperative

M P Ranjan
National Institute of Design
Ahmedabad, India.

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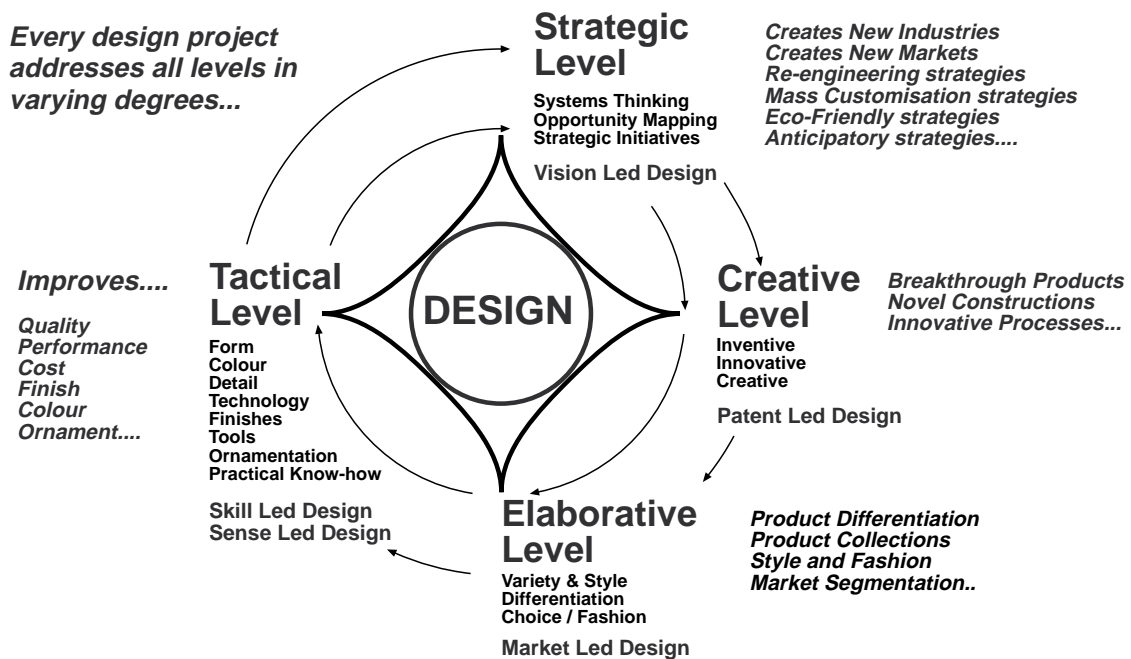
The paper is supported by visuals and scenarios covering four NID case studies and one design proposal.

A lot of thought and feeling has gone into the preparation of this paper. The title is controversial. "Design Before Technology" seems to imply that technology has a lesser role and that is not my intention. I would like to clarify at the outset that human ingenuity and the betterment of our existence on this planet does rest to a great extent on the benefits that science and technology can bring to our lives. However, there is another partner that needs to be specially emphasised and that is design. In our country, in India, we have over the past fifty years paid a great deal of attention to investments in science and technology and with similar and massive investments having been made in the area of management. We see as a result a large number of labs set up around the country which have been focussed in science and technology and an active management training infrastructure.

Indian industry and Government have made massive investments in both the sectors of science and technology and in areas of management while the corresponding investment in design has been lacking. It is therefore imperative that we emphasise the role of design and provide a redefinition of such a role so that we are able to reposition ourselves to draw on the benefits of the emerging networked economy that will connect the world in new and imaginative ways.

I have been teaching and thinking about design for over three decades ever since I joined the National Institute of Design as a student in 1969. I had the opportunity of working with some of the finest minds in design being at the crossroads in India for design development and design thinking. Last year I had the opportunity to try and formulate some of these ideas on design in a paper that I prepared for a conference in Brazil. I bring this up here so that I can share some of the cumulative findings that we have discovered about the possible roles for design in the coming years and we believe that this is slightly different from many interpretation that both industry and government and colleagues elsewhere in the world have been holding about design and the possibilities with design. I present a simple model of design that suggests that it could work at multiple levels within our interface with science and technology and

The Spectrum of Design Interventions: Industrial Design in the Global Context



commerce.

The model captures a sort of segmented structure where design may be applied at many levels with the various stages of creation of products and systems. At the tactical level, design deals with improvement of quality, improvement in aesthetics, improvement in performance and many other such characteristics that are measurable and this role, I believe, is well understood. At another level design deals with elaborating solutions to meet individual and varied market needs. This market led design unfolds many alternatives and plays a critical function within an industry to deliver differentiated products and brands to cope with market competition and varying needs of individuals and in some cases also to address the whims and aspirations of people. At yet another level we enter an area of innovation and creativity where the concepts developed by creative contributions within particular industries open up patentable configurations and copyrightable content. These provide control systems which make the use of the intellectual property rights a tool for value generation and it is the effect of these innovations that shows up in the form of wealth of nations, companies and individuals.

At the fourth level, where design is used at the strategic level, the tools of this profession and the advanced concepts of creation and visualisation can be applied to the visualisation of totally new products unthought of in prior years and in providing perspectives for interaction all the way into a distant and sustainable future. Such strategic design thinking requires new mind sets and new skills on part of the designers who are to work on such tasks. This is an area I think we need to look at very seriously in our attempt to explore how information technology and design will play a part in shaping our landscape in

the next millennium. In this lecture I am going to therefore largely focus on the strategic level of design intervention and try to articulate the roles that I see for designers in moulding and shaping the alternate futures that are available to us.

In this paper I shall attempt to outline some of the features and the corresponding tools needed to operate such strategic design initiatives and how this will in turn impact on the emerging scenario of concerns and concepts that are facing the design community as a whole. I will also try and relate to this approach the growing body of opportunities that are emerging as a result of developments that are already underway in the information technology industry and in the rapid assimilation of the networked sub-cultures into our day to day lives. Further I shall try to illustrate some of these by our own attempts to see how a community of designers at NID, as part of our education and research, have tried to explore these dimensions in the form of a series of case studies and this process is an on-going one with new initiatives being proposed every day.

I have chosen four case studies and one proposal that I hope will illustrate the theme and the main thrust of this paper.

Case 1: INFARM: An agricultural pest monitoring system for the Indian Farmer

Case 2: MANDALA: A digital system for senior citizens that helps build meaningful community interactions amongst retired people in our cities.

Case 3: Indian Healthcare Project: Digital monitoring of health issues in Indian villages with special emphasis on empowering local women to help themselves.

Case 4: Electronic Voting Machine: Democracy by digital means in a highly differentiated country with numerous languages and cultures that co-exist.

Case 5: The Crafts Bridge: An e-commerce initiative for the Indian Craftsman - a preliminary proposal

The case studies I wish to share with you emerged over the past ten years of interaction with industry and through the research projects at NID where electronic and information technology products and systems were attempted by designers looking at strategic possibilities of making major contributions to the way we live and work using these new technologies. The first two case studies of INFARM and MANDALA are student design projects that were sponsored by Apple Computers Inc. as part of the Apple Student Design Competitions of 1995 and 1996 and these went on to win critical acclaim at the ICSID congress in 1997 at Toronto.. The third case is yet another project conducted by Apple's research wing in the USA, where one of our students had an opportunity to work as a member of the Apple team on field work in Rajasthan and to assist on design related matters while looking at the implications of technology in the health care sector in India. The India Health Care Project therefore had raised many new issues and methodologies and our students' participation opened new possibilities for design contributions in such efforts.

These three projects follow the user centered design approach that has been advocated by the Apple Computers team and this has had a strong impact on how we perceive the role of design at NID. The iterative process involved in seeking the participation of the user in the design process followed by the rapid

generation of concepts that are cyclically tested with the users at every cycle is a remarkable form of design that has many lessons for the design community. In recent years many designers have adopted such methods and delivered remarkable results of which the Hultafors hammer and the Dyson vacuum cleaner are stimulating examples in the market. The attitudes that such an approach fosters requires the shedding of personal egos on the part of the designer and the formation of closely knit multi-disciplinary teams in order to make the desired results effective. The human needs and aspirations are the driving force that sets the agenda for such design research and the market forces play a secondary role when the issues of environmental degradation and impact on society are the key issues to be addressed.

Design leadership with vision and empathy is then the critical area of focus and the designers of the next millennium will need to learn to integrate information technology in ways that can empower the people who need to use them. The promise of INFARM is in the designed possibility that the illiterate farmer can use the handheld device at a reasonable cost much in the same way that we have seen in the positive impact of the spread of telephones in our country by using the medium of public ownership as against private ownership of telephones. The density of telephones owned by individuals is very low but the wide distribution of public telephone (STD) booths all over the country has given each Indian the means to reach a telephone almost anywhere in the country without having to own one. Access to expensive resources rather than ownership is a very satisfying condition and it indeed proposes a very sustainable model that can be applied in many situations.

The fourth case study is a professional project handled by my faculty colleagues at the Institute in 1988 at the request of the Indian Election Commission which led to the design of the Electronic Voting Machine that is today being used in our country's national election process. The technology for this device was ready in 1988 but the human condition for its full implementation is yet to be realised in full measure as yet. Further the suspicion of some political parties in the opposition and our belief systems rooted in traditions did not permit its wide spread use till today. This year, in 1999, for the first time the electronic voting machine that was designed in 1988 was put to use in forty five Lok Sabha constituencies which returns candidates to the National Parliament. It was used in various previous elections in a test mode at state and assembly levels over the past ten years each at a much smaller scale. The gestation period for the assimilation of such a radical solution is not unusual. We can anticipate through the success of this round of implementation that such products would be common place and the issues for making this to work are definitely not technological. The fact that it has survived the test of the real users is because the design team had the wisdom in 1988 to conduct semiotic analysis through field trials of the various concepts before the final versions were recommended to the client. Field testing at the early stages of the design process is both a necessity and an imperative for successful design service in such complex techno-social design challenges..

The lesson that we have learned from these experiences have influenced our education programmes in many fundamental ways. The focus on attitudes and

human concerns besides the usual emphasis on the technical, aesthetic and economic feasibility aspects has I believe been a progressive change in our teaching style and content. Human concerns are to do with deeper values and feelings of people and this brings into sharp focus many issues dealing with spirituality in design, the philosophy of design and in the underlying meaning of design. These must become the guiding principles that we need to look at very seriously and appreciate the new roles and the significant roles that can come out of such thinking for the design community as a whole. Now if we recognise that this is the kind of role that we want design to play in the next millennium we can discuss how we should interface with the science and technology and with the management capabilities that we now have at our disposal in a global networked economy.

Four years ago I bought myself a computer at home and two years ago I got connected to the internet from my home and it has changed my life and that of my family in many ways. I have written more letters and I have communicated with friends and interacted and seen many new and unusual sights and it has changed certain basic assumptions that I held, perhaps permanently. This I believe is only a beginning. Where do we take off from here? Where will it lead us? What are the roles that are unfolding for design and designers? How do we realise the human mission that is staring us in the face? How do we evolve this into new forms of design action mediated in an increasingly informed global economy? These and other related issues are something that we need to seriously think about and I hope that the case studies that I share will be indicative of some of the possible directions.

I do not claim to have all the answers but these are the directions that come up to me — from deep down from within my belly — not from my head, but right down from my guts that these are the areas designers need to work in. I am quite convinced about the concerns that face the design community and of the need to orient our young people towards the design possibilities of these new technologies and this realisation is absolutely critical in reshaping the role of design in the future. Using digital technology therefore is not a means to entertainment or education or just a tool in our everyday lives but it will be a way of life, it will be the way of collaboration between families and colleagues and it will be the essence of the business environments within which we perform and operate. Design needs to recognise this fundamental new development and respond to this opportunity in new and imaginative ways. The design agenda is thus enlarged to include the creation of scenarios and in our using our unique flexibility of thinking and expression in helping society in visualising those desirable futures and in turn have the humility to listen to the lone and gentle voice of the user in modifying and selecting the concepts that will prevail into to the marketplace. All other pet ideas must be left aside in deference to the feedback from the users in all humility that comes with accepting the expression “the user knows best”.

Teaching a course at NID dealing with design concepts and concerns has raised many of these issues repeatedly. This course has led me to interact with young students in raising these questions in the search for appropriate answers. We have come to some new insights together and we have also developed new

assignments which suggest that design is not just to do with the creation of products and systems but design is to do with the visualisation of complete scenarios along with the appropriate business models that will make it relevant to the user groups for whom it is intended. So if designers need to work in such a mode, we cannot continue to work as specialists who deliver some special kind of material knowledge to a segmented industrial team. Design of this kind also needs a team oriented work culture where no individual can possibly play a singular role, a role that was much celebrated in the past, a role of the design hero. Some of our institutions and some of our award systems and the reward systems that we have set up within the design community therefore needs fundamental rethinking. Celebrating individual excellence is motivating but mobilising teams that can bring together all those critical capabilities that will eventually develop and deliver appropriate solutions to very complex problems is extremely important and I think this is where we need fresh thinking and fresh ways of organising and doing things. This is why I stress in the terms “design concepts and concerns” with reference to my course, and the term “Concerns” forms a central role in this debate.

This brings me to the last example that is in the form of a very preliminary proposal, the idea of a “CraftsBridge.com” that connect craftsmen and designers in new and meaningful ways. I shall not patent these ideas and I wish to draw all of you into this design challenge by proposing to build a community of networked individuals and partners who will interact with hundreds of thousands of Indian craftsmen and build new bridges of commerce over the internet. New opportunities will emerge for development and meaningful craft activity that is sustainable. The crafts communities of India and other countries can collaborate with distant designers and serve global markets and in this process generate wealth and satisfaction that is ecologically sensible and culturally enriching for all the participants. Many design questions come to the forefront.

What will be the shape and content of such a portal or service? How will a Gujarati speaking craftsman interact with a French fashion designer and deliver a unique piece of fine embroidery to the world market that will be mutually satisfying and make good business sense at the same time. What will the interface be at both ends? What technologies will need to be mobilised and how clever must the software be to decipher the nuances of the purposeful conversations that need to take place across the oceans and across cultures without making both speak in some Pidgin language thereby reducing both to the least common denominator of simplistic communication?

What will skilled carpenters and basketmakers ask of such systems? How will their clients reach them? How will the commercial transactions have the degree of security and credibility that is desired at both ends? How will this system ensure an equitable relationship between the users? These are a sampling of the very vexing questions that the designers of such systems must find answers to. I believe such systems are possible today and the creation and delivering of such systems is the new agenda for design action. Many of the issues and concerns that need to be addressed here are not technological although we all recognise that information technology will have a pivotal role in offering possible solutions. But the shape and content of this technology must be mediated by

several group processes and we must in this process put — Design before Technology — if we are to achieve the kind of results that we must expect from ourselves in the next millennium. The same approaches will need to be used to identify a large number of new opportunities in areas of real need and design will be used to give shape to these possibilities in order to move them from virtual world of ideas into the real world of human existence within our lifetime.

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