

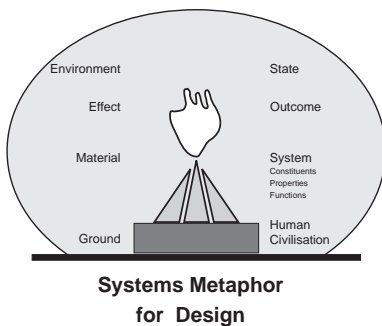
# Design Education at the Turn of the Century: Its Futures and Options

**M P Ranjan**

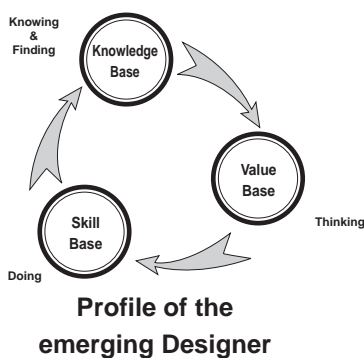
Faculty of Industrial Design  
National Institute of Design  
Paldi, Ahmedabad, India

*This paper is based on a lecture delivered in December 1994 at the Industrial Design Centre, IIT, Bombay at the International Design Symposium "Design Odyssey 2010" and prepared as a paper in June 1998 for discussion amongst design teachers at NID and for subsequent publication.*

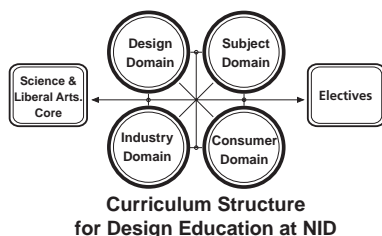
The year 2000 is just around the corner and the change of the millennium is an opportunity for looking at the future, the future of the design activity, and what I am going to share with you is not necessarily the state of design in the nineties but the directions towards which we at NID have been moving both our curriculum and our educational processes. I have divided this paper into four modules.



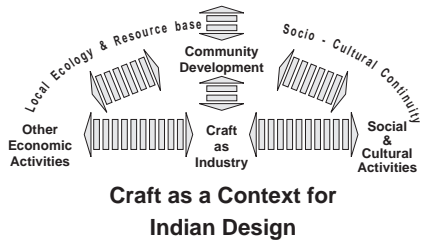
The first model looks at design itself as the subject of discussion and debate and I have used the metaphor of fire to define its various facets. I will be elaborating this idea later particularly because there is a lot of misunderstanding about design, as to where designers can work and what are the emerging opportunities for them would be in the next century. Many people in India tend to think that design is something foreign and wonder as to what could be the counterpart for this profession in India. Hence this metaphor deals with design as a development tool using systems thinking to provide a framework for responsible action.



The second module deals with the knowledge, skill and value base of the designer of the future. It provides us with a framework for looking at the profile of the emerging designer and a basis for drafting a curriculum to develop such a creative and concerned professional. The third model outlines the curriculum structure that we have developed at the Institute to meet this objective.



Our recent efforts to review the NID's education programme resulted in a flexible curriculum structure that can produce the variety needed to cope with divergent interest paths of individual students and demands from across the entire spectrum of Indian industry.

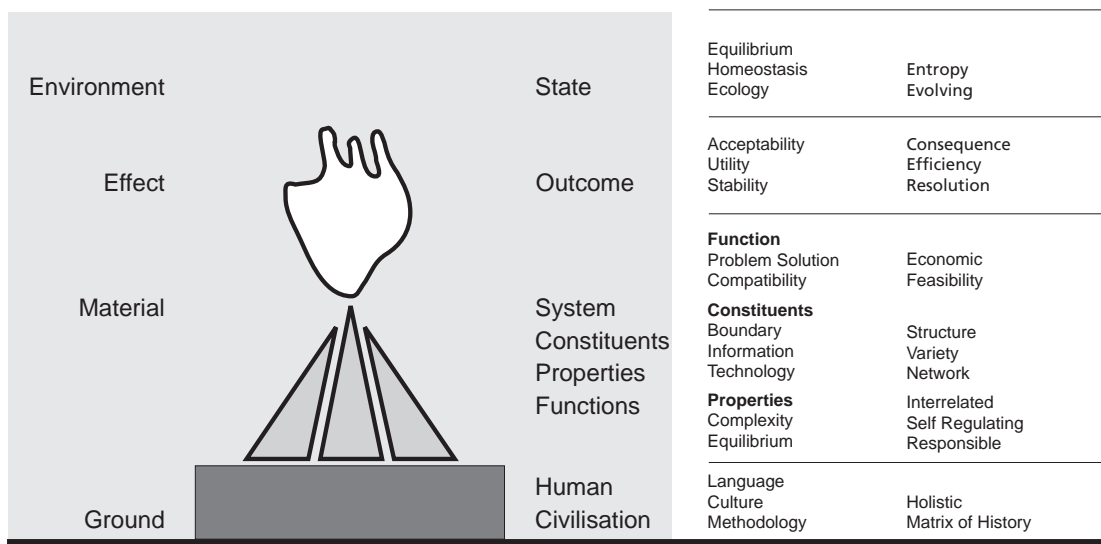


Finally, I have drawn up a fourth model to propose that craft in our country is also an industry and this is a definition that we have developed at the Institute and in fact a number of our design graduates are working in this sector today.

While working in a craft or a decentralised small-scale manufacturing sector we find that design helps create and support an enormous employment base and it can also be a powerful tool for development. This model develops our understanding of one major context in which our designers will be making their contributions, that is in the enormous sector of crafts as an economic and development activity. This does not exclude the other areas that designers are currently working in, namely the organised industrial sector. The crafts sector and the organised corporate sector are seen as two ends of a continuum, as in a developing economy a variety of types of manufacturing technologies will coexist, each has its place in the growth of the economy.

This is the kind of scenario that I am going to deal with, to give you a preview of the directions that will be explored. Let start with the first model defining design. We have as I have said we have used the metaphor of fire to define design. When we look at fire we see that it has various components — Fire (Agni) is a process — it burns, it is a process situated in a context, it is always with reference to a particular situation, it is never without a situation or context, so this context is represented by the ground. Design too can happen only with reference to a context. There is always some kind of processing of material, that in the case of fire may be the burning of wood. You all know that with any combustion of material there is an effect created by that process and there is

## Systems Metaphor for Design



Based on educational explorations at NID, 1992  
Students: Nipa Doshi, Manish Chandra & Samit Roy Choudhury  
Teacher: M P Ranjan

always a transaction with the environment. Hence in fire, air or oxygen is taken in and something else is given out, heat, light, smoke etc., this is the kind of complex transaction that I consider an adequate expression for the systems metaphor for design.

This means that design is a complex activity. There is not a single product that we would look at and say that it is a simple product. Take for example the simplest of the products that you can think of and explore its effects. If you look at it only as a product of technology, that is as some material transformed into a functional shape, then it would seem simple, take for example a pin. You will say that it is a very simple thing. But look at the ways in which a pin is used and when you bring the user domain into your examination and also the potential hazards that the pin represents into your purview the complexity becomes visible. A little pin in the hands of a child can have disastrous consequences. So there are a whole lot of other issues that are connected with even the simplest of products and these issues also have to be kept in the mind of the designer while he is working on that product. So it is becoming increasingly evident that design has to look beyond the object itself as a mere artifact produced by technology to the effects of these objects on a complex set of user related parameters and finally the effects of these objects on the environment at various stages of their life cycle.

This leads us to re-evaluate the role of design and to anticipate the shape of the design activity in the years to come. This is particularly important because this is not the way that design has been thought of in the past. We are beginning to understand the complex nature of design which means you also need a fairly complex method of dealing with it. Design methodologies need to be re-evaluated and innovated to cope with this complexity. We usually tend to simplify everything to basic things because you can administratively handle them with ease but we are beginning to discover that this method of management is not the answer to the problems at hand. A lot of technological development in recent years has created negative results, some with catastrophic consequences. We are certain that the exploitation of technology without the use of design processes that take cognizance of the long term needs of users and environments will lead to disaster. However our governments are yet to understand this lacuna in the manner in which they manage and fund science and technology initiatives in a fragmented manner.

We know that pollution is a result of unsuitable fits, improper product development and all kinds of problems have come up because of an over simplification of the apparent problem in search for short-term solutions. Therefore, it has become a necessary condition that we find out ways of dealing with complexity and we do not try and oversimplify the matter for administrative convenience. So here in this model of design we are really looking at the analogy of the human civilisation as the base which means all of history and all of human knowledge as something we can connect up and use for design application. Because there is a link between what you do within a culture and what you could do in another culture. These cultural differences become critical, which means knowledge about culture and the sensitivity to that kind of a relationship is important to be able to respond appropriately to meet diverse user needs. Hence we need to understand the key elements in culture and the

elements of civilisation in our design initiative. Some of the key elements are language, culture itself and our understanding of it which comes into play when we actually operate with an acceptable methodology.

If you look at fashion systems, it has very strong relations with these elements. However, I propose that the same kind of relation would come into play when you are working on a machine tool. If you are designing a new lathe for a group of workers, it is important to understand their own cultural and historical backgrounds, I do not know why we have to have stand up machines when Indian craftsmen would prefer to sit on the floor and work. Why do we not actually have the possibility of having work-stations which are appropriate to human preferences. We have indiscriminately adopted foreign technology but we have not adapted it to our own cultural and to other local factors. So we just resort to the wholesale import of objects and artifacts and we tend to devalue our own capability in resolving these needs and in the process we actually put ourselves at a disadvantage permanently. When we question these processes it also raises an argument for some kind of indigenous reappraisal of what we are doing and why we are doing it.

This also implies that we need to reappraise a whole range of methodologies that have been developed in the past and which were found historically valid by many professions and such re-examination also applies to design thinking. When I say methodology, here we are looking at various kinds of processes of decision making that we have practised and these are processes we have adopted as designers. These are objective and democratic processes and not autocratic ones — I like it therefore....! There are processes of transaction with users in the evaluation and selection of design solutions that we need to learn — how to actually generate such data and use it sensitively within our design work is a necessary outcome. Hence, in the model fire as a metaphor for design, there are a set of ideas that are being stated as desirable states when you look at the environment. Some of these ideas have been derived not from the models of the hard systems analysts, rather it has been derived from the principles of ecology. When you are talking of ecosystems they are actually soft systems. They are no hard boundaries for these systems which can be modelled and reduced to very simply and straight forward network diagrams, they have very fuzzy boundaries and they are extremely complex in their structure. The relationships are very deep. Hence I think that this kind of understanding is required when you look into any phenomenon or event. If you are designing a house there are so many layers of meaning associated with the house. Eventually the synthesis of a form and the appropriateness of that form is followed by the acceptance of that form by the community with whom you are working for, only if you are able to understand all those layers and map them adequately into the solution. Now, in order to do this you need to develop some kind of holistic model that can manage this complexity. It can not be fragmented. Eventually for the purpose of analysis you will have to break things down into components and subsystems but you will have to develop a method of synthesis to be able to put it all together as a coherent whole.

Similarly when we talk about system, we need to define it. What is a system? For the purpose of our understanding, we have divided the concept of system into some components which have constituents, properties, and functions and

this model is an outline of some of these ideas. In the functional domain we are looking at the solution of a problem. Invariably designers are presented with some kind of a problem. Usually a design problem, and there are some kinds of solutions which would be accepted as an outcome of that design exercise. Similarly there is a question of compatibility of the individual set of criteria with the complete range of issues at hand. All these have to work together. When you look at the constituents of a system, most systems seen in the ecosystem model would have boundary conditions where you could say clearly state the boundary within which the system exists and beyond that boundary would lie its relationship with other systems and both these parts are very strongly the constituents of that system. The flows would be both of information and technology or action. Any system of objects contains a great degree of information. This is not normally understood or dealt with adequately, and this is why when we design we tend to overlook some of these issues. This is also why when we buy VCRs and other electronic equipment you also get a big fat book listing operation instructions which tell you how to operate that VCR, which is actually quite an unnecessary addition to the product if the information aspects of that product had been designed keeping people in mind. If you are given a spoon you do not get an instruction manual with it to show you how to eat with it! But if you are from another culture perhaps you may indeed need a manual, I have seen many people trying to eat Dosa and Idli with a fork and knife, with disastrous consequences— the Sambar ends up on your lap. (Dosa and Idli are South Indian dishes that are always eaten with bare hands by the local people and Sambar is a lentil soup that is eaten with these.)

Now what is this information content and how is it critical for design? The question is one of understanding. The understanding of a technology or an object resides at the interface of the various layers of the system and this understanding should ideally be available to the user at each level of interface. When you see a chair you should be able to know that it is a chair. So how is this kind of information built into that object? Similarly when you normally see a traditional house, you know which is the front of the house, there is some markings on it in some particular way that identifies the entrance and these are the elements that architects know very well with which to compose spaces so that you feel at ease in some areas and you create tension in other areas deliberately because that is the information that is fed by the very nature of the configuration that is presented. Technology as all of us know is also important because you need to know the techniques, the materials and processes that go into building and making products and systems. Similarly there are certain properties which are always present, one of those properties of a system is complexity as opposed to being complicated. Being complicated is not a desirable property, it is not what we want. Complexity, however is desirable because complexity means that it resolves many interactions and smoothly permits the transmission of information within and outside the system. Like a living tree, it is extremely complex system, but it is not complicated to comprehend.

You can understand the distinction here if you look at the corresponding set of terms in the table on the right. Equilibrium is a desirable state for the system. We do not want it to be fluctuating erratically, no. Over a period of time there will

be changes within systems, we recognise that nothing will be static if it is living. It has to vary and therefore we look at it from that point of view so on the corresponding side when you are looking at function you are looking at economic feasibility; similarly under the constituents there is structure, variety and network. Variety is another important condition because as a result of this acceptance of this model that why you need variety you can just say you need one thing but no there are so many different states and variants and it is also essential to understand that in nature variety is the essence of our survival. Otherwise it will lead to the extinction of our species. The fact that when you look at the system model there are many other concepts that come up which are the interrelated nature of events and activities, the self regulating nature that means it is not imposed from outside and calls for responsible kind of action from the designer. At the higher level of system, when you are looking at the outcome of a design operation, one of the major concerns is acceptability—that means the fit of the design with the user and not only that you are able to map the design to the user needs but that the user accepts the design and adopts it. In the marketing domain this ensures market success but much more important than that is that the user loves the product system

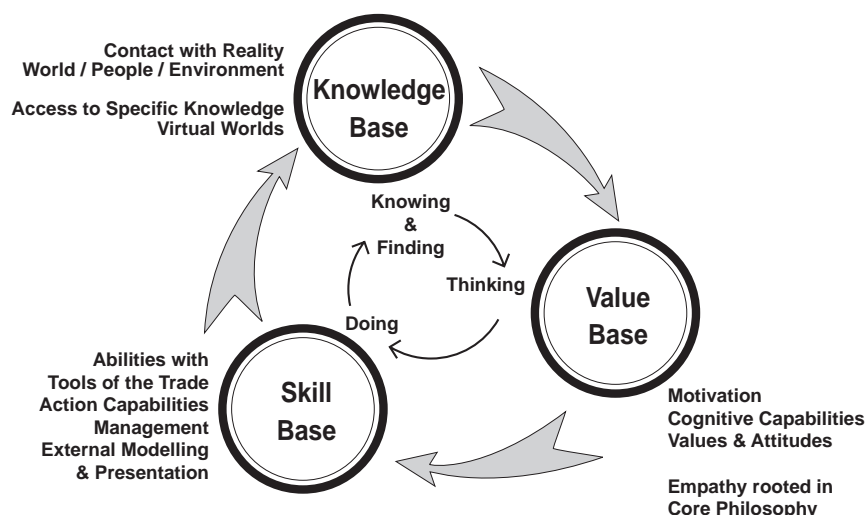
For example, the house that has been built is something that he owns, not only in the sense that he has paid for it, but that it actually assumes all the desirable qualities that are necessary for total acceptance. It has to have utility and stability and these are easily understood qualities. At the highest level you are looking at performance of any of these systems over time because of we have talked about life cycle designing. If you look at that whenever we conceive a product now a days designers are increasingly conscious of the after use of the product. After it has outlived its normal life what happens to it. Does it create a huge junk heap. So there are many processes that are being built in to make a products eco-friendly and these concerns are taken up right at the beginning of the design exercise, right at the stage of outlining what the product brief would be. The product itself is worked into that brief. So I think that these are some of the major issues that come up when you look at design as a system activity and obviously from this it is a very tall order for any single individual to resolve. To say that we have to resolve all these variables and also to be able to deal with this kind of complexity is certainly a tall order. However, I believe that it is possible to do this, provided we are able to build up both the person and also provide a suitable methodology with which you can ensure that this model does not require the designer to be a superman. It is not possible to operate in this mode as an individual designer working in his or her atelier in isolation. It will have to be done as a team work and this insight is essentially redefines the nature of design itself.

In the past we had great designers and great artists, all held in awe by the general population. They used to be labelled the “Great Designer” and we put him on a pedestal and our design museums are full of such examples. We have this phenomenon in architecture as well, we have it in industrial design, we have it in the fashion design realm. A lot of this hero cult or the star designer cult kind of thing has been an accepted way of life for designers. I do not believe that this will be the direction of the future, the future will be determined by collaborative work of many disciplines because obviously design is a multi-

disciplinary realm and in design team work can and will be a necessary condition for designing the simplest of products. Unless we are able to work in teams with the designer providing certain competencies and other disciplines from sociology, psychology anthropology, economics and technology providing the rest we will not be able to meet the complex needs of our society. We will need to name all the disciplines that are required depending on that task and we must find ways to bring in that set of capabilities together to carry out the task. This is what this model implies.

So if you now look at kind of capabilities that we are seeking in the designer we see a new configuration of capabilities that needs to be defined. This brings us to look at the profile of the emerging designer. Hence the second model outlines the profile of the designer within a triad of capabilities and attitudes distinguished under the categories of the Knowledge base, the Value base, and the Skill base of the designer. I will start with an elaboration of the knowledge base. It is very interesting that when we start looking at what is the required knowledge base for a designer we are trying to identify what we need to teach our young designers we find that the depth and breadth of this knowledge base is indeed staggering. Is this at all possible? What do you teach these designers when they seem to need to know so much about so many fields of knowledge?. I think at once we recognise that we need to teach designers how to learn as and when this knowledge is needed. This knowledge would be both field based knowledge drawn from direct experience and knowledge from other disciplines as recorded in the archives of these disciplines. We recognise that we can never teach them everything they need to know in any school or programme and that there is no discipline on this earth that a particular designer does not need for some specific task to be resolved. For example, if he is working on eye glasses or spectacles or protective frames or some other similar medical

## Profile of the emerging Designer



equipment, he needs to know everything about the eye, he needs to know about that branch of medicine at a fairly deep level of understanding, he will also need to know about the behaviour of the people, he will need to know not only user of a particular type, he will need to know fashion system, the psyche of the person and so many other issues will come up to grab his attention. Obviously you can not package all this knowledge into any single programme of study. So obviously it is learning skills and access to knowledge that is an important capability that need to be developed. Experience of searching and finding relevant knowledge that is repeated in an iterative manner enables the person to be able to access it quickly, effectively and efficiently in any given situation. This however implies a flexible attitude to learning and knowledge and a capability of keeping this attitude alive with repeated use.

So it is possible, we believe, to equip young designers to be able to acquire such learning skills and today we have new tools which enable us to do this far more effectively than it was ever possible before, This is why the term virtual world has been indicated in this model. We are talking of access to computer data bases through which you can avail of on-line a large variety of data bases located world wide. With such access possible, at a cost you can afford we are able to look at published text anywhere in the world and one would be able to access it at any time and for this one needs to develop the new skills of knowledge access, the Internet search. You need to have a particular kind of skill to achieve dramatic results, for example the skill of librarian would enable ease of research and discovery of pertinent resources. The designer would have to understand and divide the domains of knowledge and be able to identify the domain within which a particular kind of information can be found and that information needs to be obtained instantly at a reasonable cost. With the new information tools that we now have, it has become much simpler to do this kind of information research almost anywhere in the world. There are however many things which are not available in the published domain. Obviously the designer would also have to develop capabilities to go out into the field and acquire some of those critical bits of information for themselves or be able to define that specific knowledge task to somebody else who is competent to realise that objective. This may be a market survey or a psychographic analysis or whatever else that needs to be obtained or it might be even be an engineering testing procedure for evaluating a particular material.

The designer starts by defining the information need and then determines whom to contract for such and such a domain specific task. This is the kind of relationship which brings teams together and these teams are assembled or disbanded as the work progresses. However a far more important outcome is that a continuing contact with the real world is maintained with constant observation of how people live and work, an alert attitude that ensues from this approach. It is a highly sensitive and simulating kind of knowledge that is developed through this process of interaction. The designer also needs to have a general awareness about the state of the world, the people and the environment, because it is this awareness of current issues and world view that becomes important at the strategic level of designing. The first stage of design is usually an entrepreneurial decision where we have to decide what to design and the subsequently we have to go on to how best to get it done.

Without this kind of strategic overview one would surely miss the big picture altogether and develop something which is totally and absolutely an out of context with the reality. Knowing and finding is that dual ability of both having some basic knowledge over a broad spectrum along with the capability of developing and discovering that which is needed to be known. This also implies that there are a large number of specific cognitive capabilities which the designer would need to develop and nurture. This model of designer profile shows that we also need to keep in mind that a core philosophy, the value base, is critical because we are dealing with complex issues and demands highly responsible responses of the designer. For this the designer would definitely need a high degree of motivation and a great degree of flexibility to deal with the ambiguity generated in the design process. Designers are constantly dealing with ambiguity and they need to be good at this. The nature of design as a discipline is steeped in ambiguity.

Designers are constantly at the threshold of some critical development issues, it has many unknown aspects and uncertainties. Most important of all perhaps is that one has to develop a sense of vision which is rooted in the perception of some promising opportunities that will drive the search for appropriate solutions. This keeps the design entrepreneur going ahead and the vision directs what is being done at each stage of the design process. This view of design also implies that there is nothing called value free design. Scientists have realised this the hard way while designers are still to grapple with these issues at the professional level. Vision and values play at the emotional and the cognitive levels and are influenced by the styles of thinking adopted by the designer. Thinking skills have become increasingly the focus of research and now there are several experiments going on worldwide, especially in the realm of cognitive psychology to see how we solve the problems and on the various modes of thinking, styles of thinking and actual skills of thinking adopted in design. Here we are talking of those dominant among designers such as visual thinking skills dealing with generation of form and structure and its evaluation. For instance anybody wishing to work with materials and on form transformations would have to develop cognitive capabilities to deal with visual form, to generate new and viable form and to manipulate form in the mind first and then by hand, or in any other process such as on the computer. Whatever the tool or material, it is definite that these skills need to be clearly demarcated so that training programmes can be developed for each of these specific skills. It is clear that each specific capability can be enabled or strengthened by the design of appropriate assignments and training routines just as new advances in athletic training has resulted in remarkable improvements in competitive sport.

I strongly believe that it is possible to improve general and specific capabilities in each of these domains of thought and action. If you look at the skill base which is in the domain of action, design action has to do with acting on incomplete or fragmented bits of information. There is a good deal of research needed in this area and design schools can contribute by supporting the kind of pedagogic research that can be conducted with design students as an integral part of the design education process. There are very interesting research studies which have compared scientific and design related thinking styles that show us that these two styles are distinctly different. Scientists as a group try to discover operating principles in an analytical manner and then they apply these

to solve a technical problem. On the other hand, designers work more by offering alternate scenarios for solutions and subject these to systematic evaluation at a later stage. But it is not that these solutions will be offered as recommendations for action as most are tentative scenarios for possible solutions, which are then evaluated and many are rejected. So there are cycles of solution building and reworking of these based on peer and user review which goes on and on. Similarly, each discipline in design deals with a different set of tools of trade depending on that particular discipline or particular specialisation that is chosen. For instance, if you are a textile designer, we expect them to be capable of actually weaving, knitting and printing and so on. Textile designers are expected to understand the behaviour of yarn and fabric structures as well as be sensitive to subtle interplay of colour and texture at the fingertip scale of feel, touch and look. With an architect however, they are a different set of skills expected and similarly there are variations amongst other design specialisations. There are some capabilities that are general to all designers and these perhaps form the core of the basic design training that all designers receive.

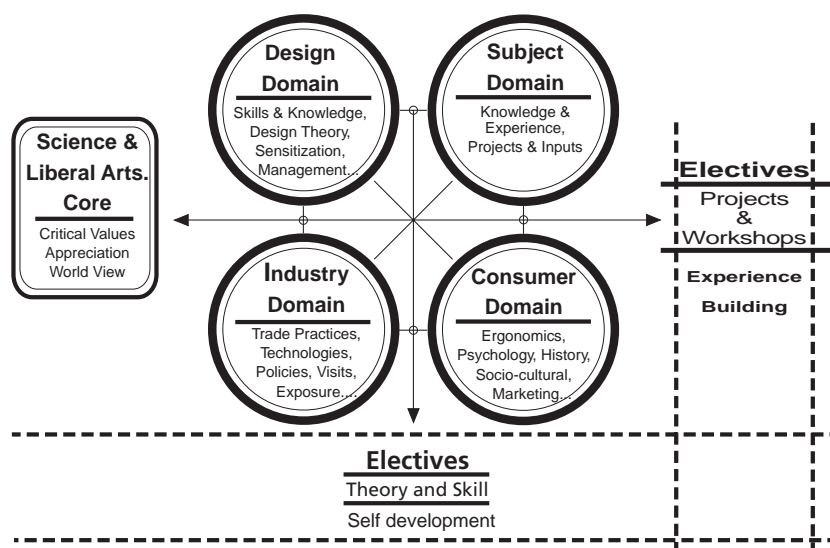
Management is another important capability for design. Managing the project, managing people, managing time and managing finances is something that designers working with teams have to be particularly good. External modelling and presentation are also necessary capabilities that are critical for design action. When I say external modelling, it means that whatever is conceived in the cognitive model should be simulated and shown in demonstrations and presentations at various degrees of abstraction and realism. This visualisation progresses from the fairly abstract to the very concrete expressions of a design prototype or working model. The diagram accompanying this text is a model that reveals the structure of my views on the subject just as the text is an articulation of its content, each at a different level of abstraction. The diagram, is a highly abstract model but it is more effective in capturing structure at a glance while the text mode provides additional explanations that help understand the model. But if I make a prototype chair, it will be a more concrete model that can be subjected to a number of evaluative tests. So as designers you are required make models from very abstract expressions of structure and content right down to highly concrete or real objects that represent the particular realisation of that abstract idea. One other capability is the ability of presenting ones ideas in a convincing manner. Sometimes this is as important as the capability of visualisation, which is why we at design schools spend a lot of time on this aspect of training for our students.

Information is central to the processing of design ideas. As one gathers information based on a strategy or overview you find out more about what you need to know. In the beginning you have a vague idea of direction and you discover as you along specific paths and directions. A designer needs the capability of dealing with ambiguity and must have the motivation to keep going on with very limited access to information. Designers create information based on concept visualisations that help clarify desirable and undesirable directions. This process of discovery then determines the kind of profile we need in a designer. It is somebody who is able to do this kind of search and discovery through a process of visualisation and scenario building, a kind of what if game plan. Someone who is able to generate knowledge and be able to continuously

learn as the cycles of observation and visualisation continue. You do not stop learning when you leave a college, as a designer it is an ongoing process and somebody who is able to do this is the kind that will fit the profile of emerging designer. Designers are always faced with a scenario of change, all the tools that we use are changing rapidly, all the materials are also being changed through improved processes and material properties being developed on a daily basis and to top it all the requirements of a complex marketplace are changed rapidly . It is therefore not possible act unless as a designer you are constantly updating yourself.

So based on these two scenarios outlined above, one of the profile of the emerging design professional and on the understanding of the complex nature of the design activity we set out to review our design education programmes and individual courses and assignments at the National Institute of Design. I was also involved with the team in Delhi for developing the curriculum for the Accessory Design Programme at the National Institute of Fashion Technology, and the same model with some variations was developed and used there. Basically we were able to define design education into four distinct domains. These are the domains of Design Knowledge, Subject, Industry and User. The subject domain can be focused on those areas of specialisation that the design student chooses to learn in this new curriculum. Design knowledge, or the design domain, is a general capability that include certain specific skills and knowledge areas that all designers need to know. There are certain skills like drawing, which we think are the key abilities that the design student must do because it is critical for external modelling capabilities. When I think of something I may be able to draw it, perhaps the drawing mode is the quickest way to capture what is in ones mind and share it with colleagues and clients.

## Curriculum Structure for Design Education at NID



Similarly, model making in materials is another key capability. There are whole lot of capabilities that are addressed in the basic design courses that we teach our students. In addition there is a whole body of design theory, dealing with form, dealing with relationships and structure, dealing with materials and processes and so on that form part of design theory . Then there are those elements which have been borrowed from engineering, from medicine and from various other fields like ergonomics that form part of that kind of broad theoretical base that is necessary for design education. Just as the technologies mentioned above are now seen as core capabilities, aesthetics and art history would form a part of design theory. Therefore the body of design theory has been developed by the assimilation from a variety of disciplines and certain core elements from each of these disciplines have been assimilated into the design curriculum. Over above all these knowledge and its associated set of skills, in the domain of design there is a very strong need to sensitise the person to issues of quality. Becoming highly sensitive to quality is critical for design thought and action. Quality can be perceived and measured in a variety of ways. Sensitisation however becomes critical for domain of design in that it means you feel something is not right when you see or act. For instance, when we get into a bus or a train as you move about your daily life, you are constantly looking out for problems, your problem seeking antenna is up and you are constantly observing people and situations. You find people bumping into each other you know or feel that something is wrong. It is an observational kind of sensitisation and if the feel is not right it sets the designer listing design opportunities to be tackled later. Similarly management and design management are a core capabilities in the design domain.

Subject knowledge is built up of both knowledge and experience by individuals who wish to specialise and work in a particular areas of design. Design students would select projects repeatedly in that particular area and develop their capability and understanding of that area in the process of this experience. Someone who wants to eventually become an automobile designer would start doing more and more projects in this area after doing basic design courses. So they become in the sense specialised towards this area and they learn a lot of things about that particular industry and the particular subject area. Any particular area, take for instance jewellery , is a huge universe of specific skills and knowledge to be learned about Other designers may not have a similar body of skill and knowledge. Designing books needs in depth knowledge about type, about paper and printing process and so on. So these domain specific subject areas would be chosen by the student and specific expertise is built up during the projects. Similarly there is strong need for linkage with industry because the industry is changing rapidly and we need a deep understanding of trade practices, technologies, policies of trade and Government policies in each of the industry segments that we work in. These have a direct bearing on the outcome of the designers profile.

The area of the consumer domain is critical because any designer needs to understand the user and their needs, to understand the ergonomic aspects, the psychology of the user, their history - social and cultural aspects and various marketing process that enables us to reach the consumer. It is not enough to produce quality goods, it has to be delivered to the user, it has to be accepted and it has to be used, and at the ultimate level it has to be loved by the user. So

this entire cycle has to be understood. In addition to these specific domains we also need a very broad world view that is provided for in the Science and Liberal Arts Programme. Here critical values and an appreciation and a world view is developed because it is important to have a macro-view of emerging trends in human thought and action. In order to design something that will be used 5 years to 10 years from now needs a long vision that is based on an appreciation of these trends. Obviously whatever is designed, whether it is a system, a product or an object, it has to be projected into the world of future. So you may need to know the way current events shape the future and in some way be able to project this as a sort of trends. Tracking these trend and understanding desirable directions is a major preoccupation of design thinking. It is not just forecasting and extrapolation from today's raw data into the future but to build scenarios of likely outcomes and derive insights thereof. For instances, health and fitness issues are increasing in strength day by day, it has come out of the concerns about the effects of pollution and poor lifestyles. They are interconnected and in the various global events which are taking place. We may be part of it or not but there is no escaping the impact as it is happening all around us. This means that there are opportunities out there and changing perceptions offer possibilities for the new services indicated within each of these trends. Growth in telecommunication is another global trend with the veritable explosion of Internet use across the world. There are more people in services today than in manufacturing and agriculture. There are shifts taking place on a daily basis and on a systematic long term basis. What would be the scenario after 25 years from now? I think these are the kinds of questions which indicate opportunities and it will also provide insights into a whole new set of new design challenges that will emerge in the future.

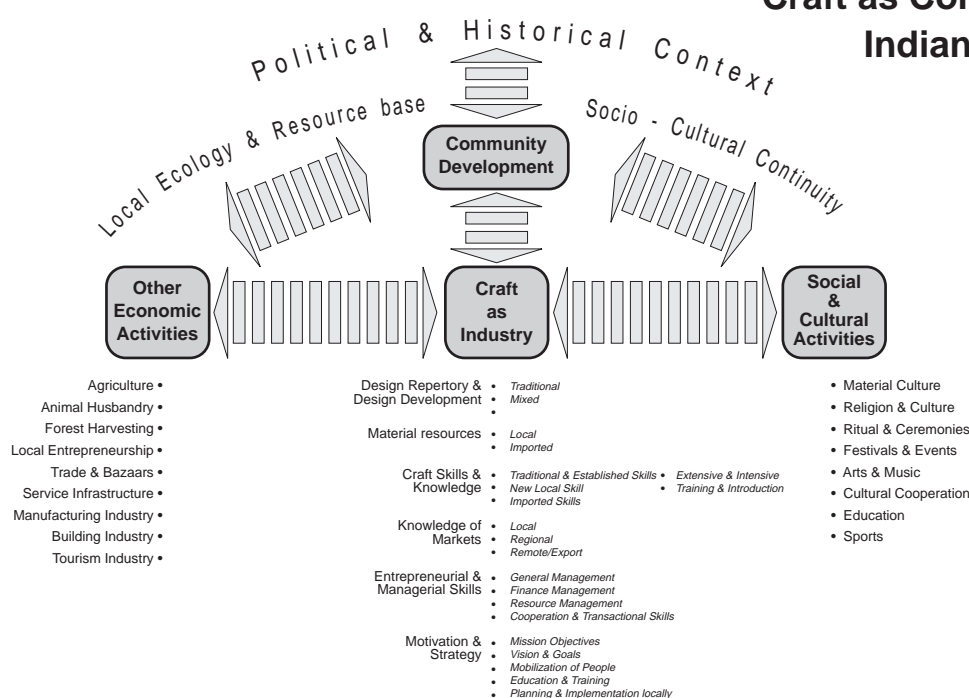
In order to see that this kind of thinking and a self learning capability is developed amongst our students we have proposed a series of elective courses and the students wishing to learn can choose for subject areas for themselves. Motivation and self learning are closely connected as the choice is determined by one's vision of oneself and of one's areas of interest. Therefore following interest paths in learning new skills and knowledge can be both stimulating and durable. The students identify the package of options in terms of experience building projects as well as classes and lectures, reading to supplement areas that they need to take up. Several kinds of self studies are encouraged individually and in groups. So it is not for the school to be directing that you shall learn this and this. As a student you have been given a frame work, and it is expected that one should be able to drive oneself to fulfil the envisaged profile that one sets for oneself out of a large range of options that are needed in the marketplace.

The model of the designer profile helps students to build an ideal that they would like to place themselves in so that a context is established based on which one can negotiate the various inputs that are needed. This is also the kind of frame work that we think will be successful in being able to generate the variety of designer types that are actually needed, because we recognise that individual adjustment is important in making these choices. Therefore as a student of design you need to map these two models together.

We also see craft as an important context for design activity in India. It is an important one and it is a huge sector both in terms of employment generated and the revenue generated in both local and export markets. Today for instance the export from the handicrafts sector alone would be in the region of about 15,000 to 30,000 crores of Rupees, exact figures are not available. It is a critical sector in our country since we do not have much capital to invest in infrastructure and industry and crafts sector provides an avenue for a vast number of entrepreneurial people to fend for themselves with dignity and satisfaction. We see craft as a channel through which we can generate enormous economical revival in India. So when we look at this area, we are not looking at craft as an activity of artistic expression alone but craft again as an industry that generates goods and products for a vast range of markets. Many people start getting all romantic about it and say that how the country has had a great 5000 years old tradition in the crafts. The only efforts that this attitude fosters is a focus on preservation and conservation. Our focus is not to bask in the glory of yesteryear but to look for its relevance in today's economy. Craft has a very important social and economic role today. Why are we not promoting the production of those products and systems that we need for everyday living through the craft route and the craft processes? Why is the country focusing on artistic handicrafts alone at the cost of promoting the crafts as a legitimate avenue for the production of everyday products of local and export markets? This perception is changing gradually due to some sustained efforts of our graduates working in this sector over the years and due to the efforts of the Institute in various Government forums.

We have been doing sustained work in the area of craft but we find that there is no design school in the country that stresses on making people capable to work in the area of craft design as an area of specialisation in spite of the enormous potential and need. Not even at NID. This was therefore part of a proposal that

## Craft as Context for Indian Design



we had put up to Rajasthan Government and they are starting a school in Jaipur for training “design-techno-managers”, that is what we are calling them, those who would be able to work in the decentralised sector, in the field and be able to be catalysts for change in this sector of our economy. These designers and managers would be a sort of entrepreneur, who would be able to gather skilled and unskilled people, mobilise people and actually mobilise local development action. For instance, I have done a project research project on the Bamboo crafts of the northeast of India and we published a book on that research. It has become evident that this material is fantastic resource for design understanding of Bamboo as a material and of the people who developed the craft over the centuries of exploration and use. Bamboo is not historical material of past, but I believe it is a material of future if designers learn to use this in fantastic new ways that the material can lend itself to. If you combine bamboo biotechnology research with agriculture capability of our villages, you can actually grow material which is stronger than steel and these can be grown in large decentralised plots. In mixed forms of agriculture you can grow bamboo on the outer perimeter of fields and still have space for other food crops in controlled cultivation plots. We could grow particular species of bamboo depending on the material properties desired from out of any one of the 120 odd species that grow in India. If you choose a particular species to be converted into a particular kind of product in a very controlled way means that you are getting raw materials at a very low cost. Bamboo can be very rapidly grown and these could be converted locally into a products which could be used locally or for export markets. If this kind of village level enterprise could be build up based on this model, it is a sustainable model that does not create pollution, it does not create any run away effects which are undesirable. It create a sustainable kind of farm to industry model that could help village self-help programmes with very little need for capital inflow or aid that usually saps self confidence and initiative. You can see several village communities in the northeast doing this even today. In Arunachal Pradesh and we found that the whole village takes a 2 days holiday and they go off to collaborate, collect material and build a bamboo bridge that was needed by the community. All of them had to cross a stream to get the other side of a local river to reach their the fields. This also happens in Mizoram and other places. But such collaboration is something we tend to forget nowadays. Unfortunately such local collaborations are being undermined by the increasing use of central management of our state and central tax economies and by the shift in focus of our managers and politicians to the needs of the urban elite while giving lip service to the needs of the village folk.

We see the cooperative format as the kind of structure that has worked well in some sectors such as the textile crafts in South India and in diary farming in the Western Indian State of Gujarat. In many other places it has not worked well since the structure was appropriated by local or central political forces and by the forces of corruption and exploitation. But leaving all these examples aside, I think this format has tremendous potential as a development tool with the help of committed catalysts who can bring knowledge resources and organisation to the village economy. Locally available materials can be converted into marketable products and services for local and export markets. We perceive the need for new skills and design knowledge so that the craftsmen may be supported in a fast changing world on matters of design and marketing strategy.

Craftsmen need supports on what kind of products need to be made, on the product features to be included and on the characteristics and aspirations of user groups. We have seen many of our craft products which are misfits that are not appropriate for a particular market although a good deal of skill was expended to produce them. Such waste of resources and effort can be avoided by the mobilisation of suitable knowledge and information into the craft sector.

We see the possibility of social and cultural activities playing a role in generating opportunities for the craft industry. For instance, the material culture of a society, meaning all the various products and systems that are used at home for the support of daily activities could be the base which the craft industry could address. Religion, Cultural ceremonies and Festivals can all provide opportunities that can be used to create products to be delivered through the craft as industry model. I would not imagine that you need a religious object that is only produced in a factory in our so called industrialised society and I am sure that the craft object will serve the purpose eminently. We are moving into the information age, when factory centred mass production will not be the only norm. Craft has a future, in fact, we will have an advantage over many other forms of production using this model. Similarly, the model shows on the other extreme a whole lot of economic activities which are village based that could be brought back to the craft sector with a new vigour of research and design. Agriculture requires a lot of tools. Those tools could be produced in a craft model provided there is a knowledge base that can support quality and performance attributes. With sufficient investment in research, sufficient degree of development and dissemination, it is possible to ensure that these kinds of products are also locally made. Fishing is a major activity in our villages, it is a major activity for women in the village from which they can be self employed. Now, can we make efficient tools for fishing not only for fishing but for preservation of fish, for storage, transport, cooking, packaging and the entire range of activities and may be used to process food. Design could be used to look afresh at some of these areas of need and opportunity in today's context and be used to offer contemporary solutions for a vast population to implement and benefit from.

Similarly, there is lot of local entrepreneurship embedded in our trade and bazaars and in our manufacturing industry. The building industry could be the a huge user of craft sector. There is no reason, why you should have a lamps, which are made only in a factory. There could be lamps, which are made locally, but the quality must be very good and I am sure it could be produced and delivered at the right price. So these are the kinds of situations that we see where craft can play a vital role in the local economy. The local ecology, the resource base and the social cultural continuity of a particular region would form the base from which we could develop appropriate design directions. But this is only one model of design action in our country. It is not only the one. Because the designers who are working in it have many individual choices that can be made and can work in the craft sector or choose to work in software development or in engineering and automobile or in any other sector of the economy. But the possibility of the crafts sector represented by this model is generally overlooked and therefore, I felt that it is important to talk about this particular area at some length. But this does not exclude the other kinds of

professional opportunities that the Indian designers have to exercise their skills. This model was proposed to the Rajasthan Government in the context of a need to set up a new Institute to train designers for the crafts sector and they have accepted it and they willing to invest in the setting up of such an Institute. The Feasibility Report that we drafted for realising this objective was accepted by the Government of Rajasthan and the proposal is being carried forward and the Institute is being set up in the state capital of Jaipur.

I think this country needs many many more Institutes of this kind, where the Design Management and Technology capabilities of the kind we are trying to build up over here, are replicated and used to create competent and committed human beings and design professionals who are concerned and capable of playing the role that has been outlined above. The capability of working in teams, to be able to then assist in a variety of fields in responsible actions that can transform our economy in many significant ways. The ability to handle complexity with empathy, knowledge and skill will be the hallmark of the emerging designer. This is a new form of design that we will see unfolding in the next millennium. Developments in information technology will provide us the platform for action and the access to tools that will transform design education and practise in significant ways in the years ahead. Therefore design education at the turn of the century will need to address all these issues and opportunities and transform itself to be able to create the new breed of designers who will be needed in the coming years.

