

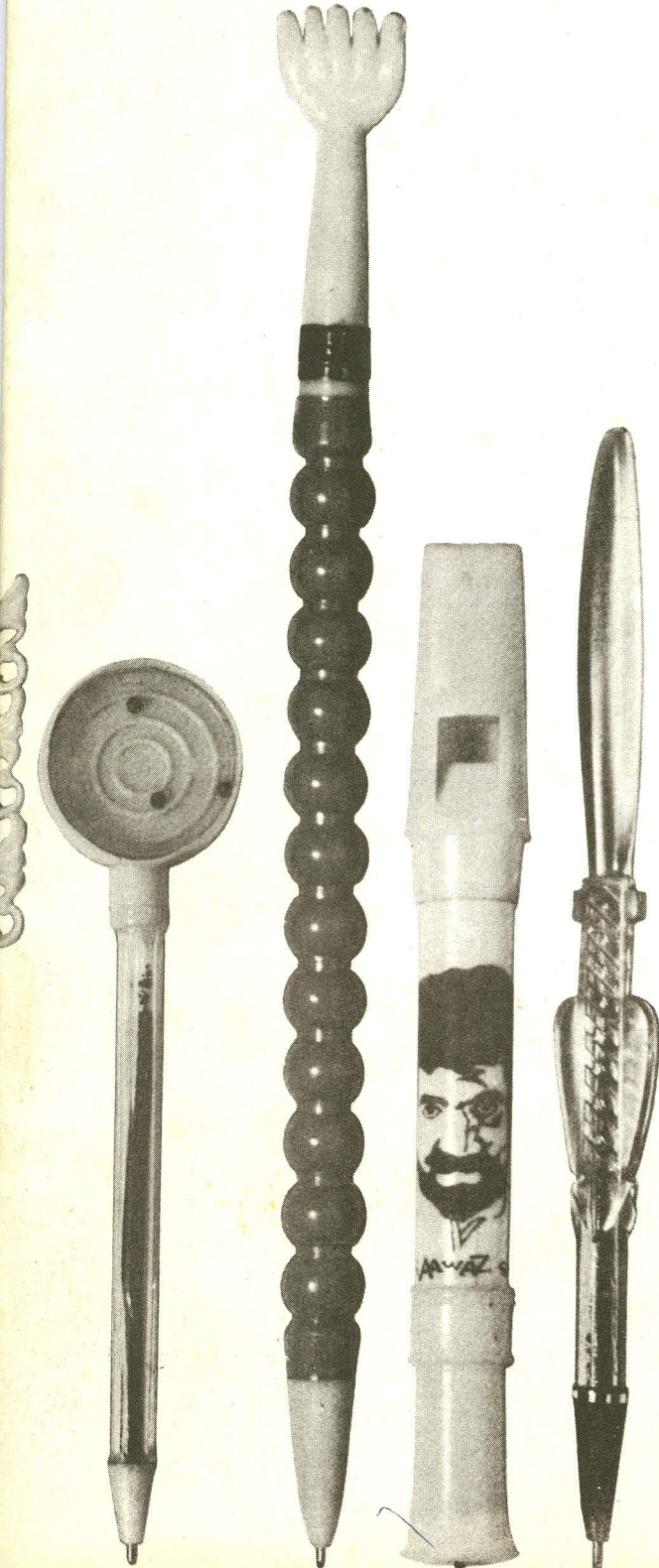
Abhikalpa

Abhikalpa = Design

(From Sanskrit 'Abhi' = towards, in the direction of;
and 'kalpa' = plan, proposal, prescribed rule or method)

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Abhikalpa

The Journal of Industrial Design Centre

Issue 1

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Cover: Ball pens from the Indian market

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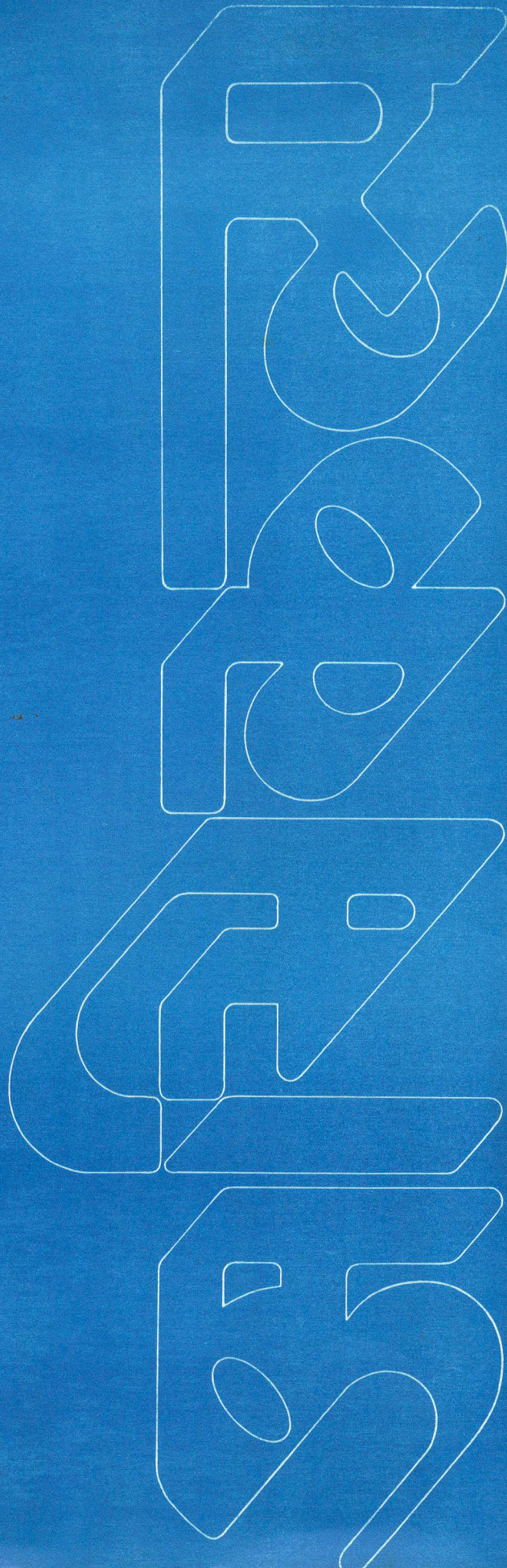
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About 'Abhikalpa'

It is four years since the last publication of Industrial Design Centre - 'A Decade of Design Experience' - came out. These four years of silence - were also the years of extraordinary activity and growth in IDC. We were too busy to write.

The UNDP assistance programme to IDC began in early 1979 and has just ended. We are much richer now - with contacts from distinguished designers and visitors from all over the world, with new ideas and insights gained from stay abroad, and with equipment for our various laboratories and studios.

The scope of our work is broadening constantly. From being a design school just teaching product design - we are now involved in research and design also. Our involvement in areas like Visual Communication & Product Ergonomics is growing. We are more active now - in more areas. We are currently involved in researches in Perception, Applied Ergonomics, Audio-visual Communication, Devanagari Typography; Design methodology; Design Traditions & Design History. Even in areas like 'Basic Design' where the last word in design pedagogy was supposed to have been said in Ulm & Basle - we are trying to develop a new approach more appropriate to our needs. Because the cold greyness of the Ulm approach just does not fit in the warm colours of this country.

'Abhikalpa' will try to report what has been happening in IDC - in design, teaching and research. We hope to go deeper into issues than the usual picture book design magazines. Though this issue contains articles from contributors from IDC only - 'Abhikalpa' will welcome contributions from everywhere. It is intended to be a forum for raising issues, discussing ideas and reporting results - we hope you will make use of it.

Expression As A Basis Of New Form In Industrial Design

A.G. Rao

2

Industrial Design is a young discipline. We can see the beginnings of its identity in Bauhaus (1914) the famous school of Design in Germany. Even at Bauhaus, the roots of Design were in Arts and Crafts. The methods used by practising designers at this time were subjective and intuitive. The education of design was more by practice and through apprenticeship. We can say that designers at this stage mainly depended on what Polanyi calls 'Tacit Knowledge',¹ the knowledge one exhibits while doing things and practising professions but is unable to articulate.

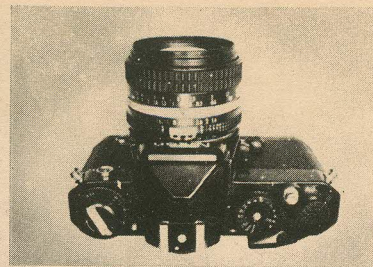
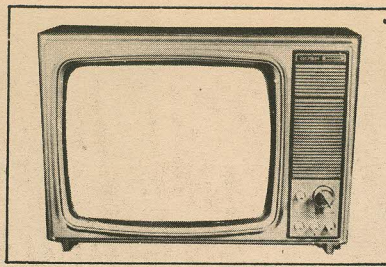
As Industrial Design got more and more entangled with Engineering, the importance of articulating this tacit-knowledge became obvious to design-thinkers. Assertion by Sir Misha Black of Royal College of Art (England) that Industrial Design is an extension of engineering, and acceptance of a formal definition by ICSID (International Council of Societies of Industrial Design) as suggested by Thomas Maldonado, Rector of design school at Ulm (Germany), are land-marks in the articulation of Industrial Design.

Yet, Industrial Design lacked the academic back-up to stay at par with well established disciplines of Science and Engineering in an Institutional structure. Its ways of working and procedures could not be easily and convincingly explained or institutionalised. At this stage, an exhaustive contribution came from Prof. Bruce Archer,² who is probably the earliest to suggest a systematic method specific to Industrial Design. His method, influenced by the problem-solving methods in Science and Engineering, gives a broad structure suitable to Industrial Design, but hardly goes into details concerning the 'Form' in Design. Infact, designers who deal systematically with all the other aspects of a product, resort to completely subjective methods when it comes to dealing with the form of the product. As a result the task of articulating those aspects, which are the very concern of designers, is left out and designers conveniently draw their Artists' Masks at this stage if pushed into a corner. It has been in the purview of philosophers to talk about the aesthetic aspects of Arts. Industrial Designers, being engulfed with technology, seem to pay little attention to what philosophers have got to say on aesthetics. Consequently, such articulations of Art which could provide rich theoretical background, seldom form the basis of the pedagogy of Industrial Design.

With these very concerns I propose to examine Expression as a generative tool, to arrive at new Product Forms, Expression as related to product refers to the physiognomy of a product. In the past, expression has been associated with living beings. But thinkers like Rudolf Arnheim have extended it to non-living things when he says "....., expression is not limited to living organisms that we assume to possess consciousness. A steep rock, a willow tree, the colours of a Sunset, the cracks in a wall, a tumbling leaf, a flowing fountain and infact a mere line or colour or the dance of an abstract shape on the movie screen has as much expression as the human body and serve the artists equally well."³

Obviously Arnheim is refering to the feelings or emotions that the 'Form' could generate in a person when he/she perceives it. According to him, Nature expresses itself to evoke feelings and emotions in man by its very form, proportion, colour, etc.,. Similarly we conclude that all man-made objects as well could express themselves. But what is the designer's role in the creation of this expression? Let us look at the definition of Industrial Design⁴ proposed by Thomas Maldonado and accepted by ICSID. "Industrial Design is a creative activity, whose ultimate aim is to determine the formal properties of objects produced by Industry. By 'formal properties' is not meant the external features but rather those structural and functional relations which convert an object into a coherent unity from the point of view of both the producer and user."

In this definition one sees the overcautious approach of not refering to 'expression' at all. 'Coherent unity from the point of view of producer and user', is supposed to contain the expression aspect of form. In fact, this definition is a reaction to the situation, then prevailing. Industrial Design was by and large being identified with the 'styling', the superficial, decorative approach as practised by some designers at that time. Maldonado's definition would give an impression that the 'formal properties' which the designers determine are a natural outcome of taking care of structural and functional relations in the conception of a product. This notion, which all experienced designers know as incorrect is well clarified by the British philosopher Louis Arnold Reid⁵, when he says, "Structure and function, however, as independent facts and in themselves, are neither beautiful nor ugly. To a perceptive



ent who sees them as embodying the "values" of function and structure, they may appear as beautiful (though it is a doubtful assumption that any structure may be so perceived). Sheer structure often delights and may be aesthetically perceived (with the inward selectiveness which aesthetic perception always involves) and in some cases it may be enough for an architect to let the structure show. But this is a *deliberate and aesthetic choice*. Often, however, the architect shows up the aesthetic quality by selective treatment, emphasis, simplification, elaboration. This takes many different forms."

So we can see that the designer is making deliberate aesthetic choices, which would result in the aesthetic expression of a product. And what does an Industrial Designer express? We can certainly put aside 'self expression', as Susan Langer⁶ did, while discussing the expressiveness in Arts. Now we can look back at Maldonado's definition, which lays the boundaries of Industrial Design clearly by emphasising its link with the maker and the user. The expression in Industrial design is inherently related to the manufacture (make) and use. Expression that relates to the manufacture (make) comes out of the designer's depth of understanding of material and process, in short technology, as well as the attitudes, values and skills of the maker.

Expression that relates to the 'use' comes out of the psychological relationship of the user to the product. How a person connects or aspires to connect himself/herself with the product when he or she comes into contact with the product as an individual, a professional, a family member and as a person belonging to a particular sect, belief or society forms the basis of this expression. We may call this aspect of 'form' as the "psycho-physiognomy" of a product. We shall explore in greater detail how this can form a basis to generate new 'product forms'

We can divide all products into five categories on the basis of the psychological relationship of man with a product.

1. Products for personal use
2. Products for family use
3. Products for professional use
4. Products for public utility
5. Products for religious or ritual use

1. Products for Personal use:

Personal products become the very extensions of 'one's self'. They are often the physical extensions of one's body like a pair of spectacles being an extension of the eyes, as also being extensions of one's personality or image. Self identity, is the key-factor in the psycho-physiognomy of such a product. The different ways that people identify themselves, may give us clues to articulate the basis on which to generate new product forms. Feelings such as strong, soft, delicate, rugged etc. could be used as one such basis. Images like those of a Scientist, a Businessman, a Sportsman, a Religious believer, etc., could serve as another basis. How the first basis is used in case of a 'pen' is described in detail later.

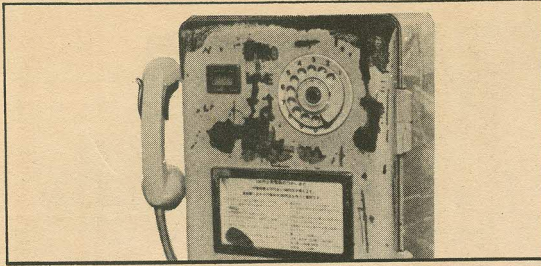
2. Products for family use

Products used by a family, are an extension of the social, ethnic and cultural values of the family. When products like a refrigerator, a T.V. set or Furniture in a household are used by a family, the identity with the product is based on the class to which the family belongs and not so much with their individual personalities. Even a 'social rebel' belongs to a 'rebel class', and the values which control the psycho-physiognomy of the product stem out of their culture, ethnic group, social customs and so on. This is because, the concept of a family is of social, ethnic and cultural origin.

What the product means to the family psychologically and what it has replaced historically, would give us the clues for the psycho-physiognomy of a product. Thus a T.V in an Indian family is an object central to social gatherings like an idol of God or Goddess and receives all the care, importance and decoration an idol commands. Thus the study of these subtle psychological and metaphoric relationships between the products and the users can bring a new dimension to the formal expressions of the products used by a family.

3. Products for professional use

In this case the product is an extension of one's profession or work, which one does to earn a livelihood. In India, machines and tools are worshipped like Gods, especially on the Ayudha Pooja day⁷. Indian worker readily accepts an expression of 'awe', 'fear' and 'danger' in the machine, as it is for him, a God or Goddess in the ferocious form.



In fact the safety-guards on the machine are quite often removed by the workers, for operational convenience, inspite of knowing the dangerous consequences. The visible expressions of a function seem to be an important factor in a machine. Again the machine is a colourful Indian God with all the details of its functions. Machine as a slave which may be a Western 'metaphor', is not quite the same in the Indian context.

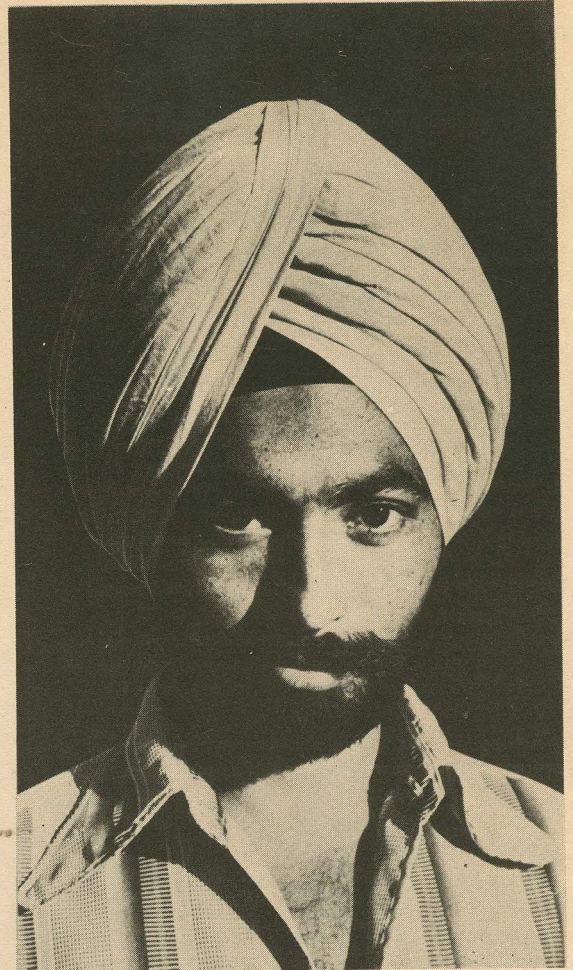
Professions by their very 'functions' acquire images depending on the philosophy or belief expounded by the dominant professionals from time to time. These images provide the base for expression of the products used for professional use. Thus scientific instruments may have to look 'precise', agricultural machinery 'rugged', medical equipment 'clean' and so on. Designers will have to study the nature of these professions in detail in order to articulate these expressions in all their subtleties. In designing an electric forklift one may have to articulate expressions like 'strong', 'healthy', 'modern', 'reliable' rather than 'rugged', 'gigantic', 'conventional' in order to enhance its acceptance.

Thus we may contend that the articulation of 'professional images', keeping in mind the metaphoric influences, could give us the basis of psychophysiology of products in this category.

4. Products for Public Utility

Products used by the public in a society are the extensions of the society itself, with all its cultural and traditional values. Public behaviour tells a lot about the psychological state of its people in relation to one another. Thus the defaced signs of a New York local train, or a broken public telephone in Bombay, are signs of psychological frustrations of the users in that society. Products for public use may ask for 'expressions' which would appease or counter such frustrations. The expressions may also depend to a great extent on what the future society or human psychological relations ought to be. Sometimes the products in Public, by their very expressions may provoke undesirable behaviours. A barbed-wire fence is such an example.

Intellectuals, poets, writers, newspaper editors, futurologists, anthropologists and designers form an important group who could articulate the desired expressions of public products. Thus, in case of a hospital environment expressions like openness,

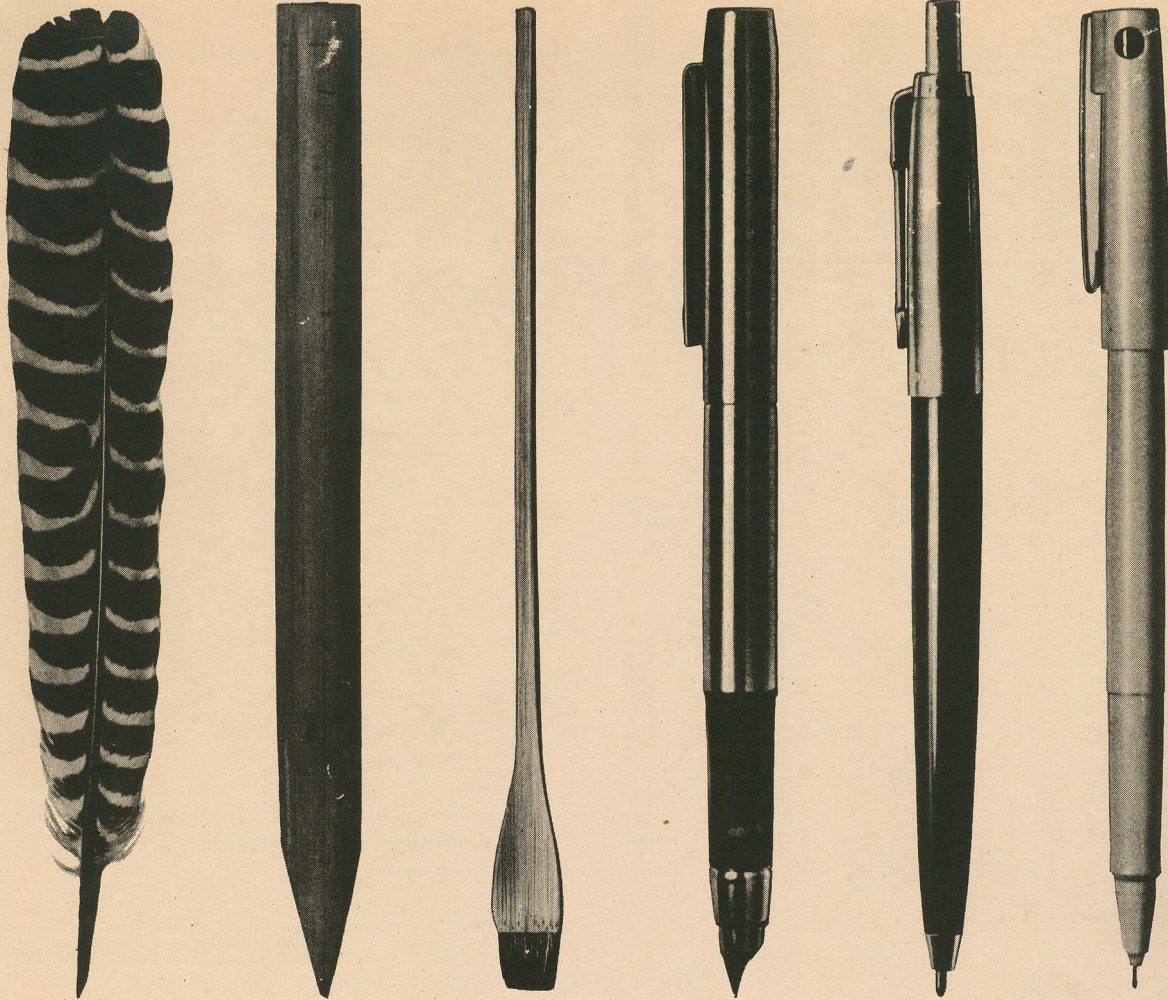


friendliness, life and health, as articulated by a designer or a psychoanalyst would give more appropriate clues than if the patients were to convey their image of the hospital or a bureaucrat were to opinion the nature of a hospital.

5. Products for religious or ritual use.

Products in this category are the extensions of religious faiths and beliefs and the ritual practices carried on from the past. Product expressions are articulated by religious 'gurus' and the ancient books of knowledge. The expressions are of conscious and subconscious origin. The study of the philosophical backgrounds of these religious and ritual practices with their indepth significance would give clues for product expressions. Thus, in case of a helmet for a sikh, though person's safety and comfort make it a personal product, the religious significance makes it a religious product and the deep meaning and significance of the existing turban need to be understood in deciding the expression of a helmet.

Any product can be grouped into one of the above categories to get clues for deciding the psycho-physiology of it. Complex products may belong to more than one category. We shall examine how the product expressions can lead to new product forms in case of a 'pen'.



A 'pen' may be classified as a personal product as it is normally a personal belonging. The literary meaning, 'writing instrument using ink', only gives us the functional boundary of the pen. We can look at the 'history of pen' to understand what it means to the user.

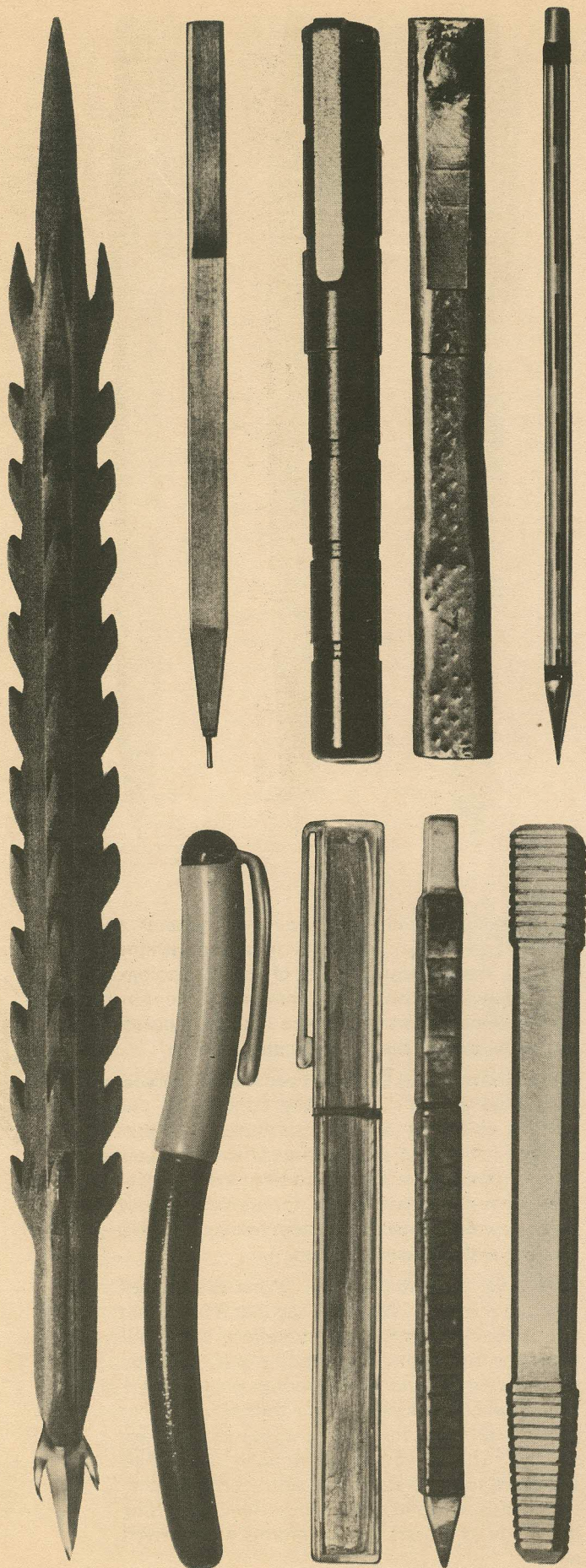
In the beginning pens were made out of feathers, quills or reeds. Its latin origin 'Penna' means 'feather'. The sanskrit name 'Lekhani' means 'something to write letters with'. The pen at that time represented a prerogative of the educated. The whole set, the pen, ink-container and a writing plate was carried by a courier. It had a religious, literary authoritative link with the user. Personal identity was coupled with this prominent position in society. And it is not surprising to find Sanskrit texts giving, the symbolic significance of colours by linking to casts: Brahmin type of pen with white colour gives happiness, the Kshatriya type with red colour leads to poverty, the yellow coloured Vaishya (businessman) type of pen gives plenty of money and the black coloured Asuri or Shudra type of Lekhani (pen), deprives the writer of his wealth⁸.

The advent of 'fountain pen' changed the functional boundary of pen substantially by having the

ink-container within the pen. Pen became a personal possession that could be carried with the person. The 'expression' was of the technology which was articulated by the brand-name. Pens by Parker, Sheaffer and Swan were cherished possessions because of their brand names.

The introduction of ball-point pen made it a mass-consumed article. Throw-away concept in this pen led to less of personal attachment. The felt-pens which started as sketch pens soon became writing pens, with the micro-tips. We can see how these pens have led to the introduction of many new designs in the Western Market, to make it a personally identifiable pen.

Now if we put the question, "What does a pen mean to the user?" We could say that it is an item of 'personal identity'. It can reflect one's self image or aspiration. Feelings like soft, delicate, strong, precise, etc. were used as poetic expressions which persons identify themselves as, to generate different forms of pens, in a student task at I.D.C.⁹ The above expressions were first studied in Nature to understand the abstract formal characteristics associated with these feelings. Using this study as a basis new pen-forms were arrived at.

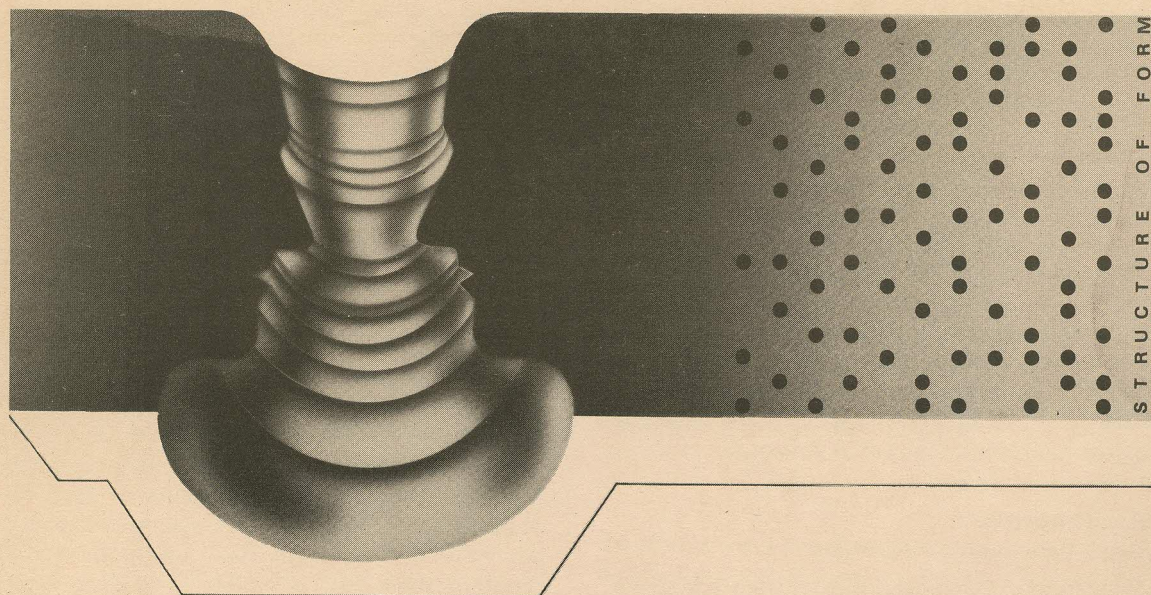


It is significant to see how this exercise has led to different unified forms of pens with a wide variety (though the same task in the hands of an experienced designer could have led to better results). It may be worthwhile to examine the innumerable, amusing but senseless designs of pens appearing in the Indian market as the makers have no clues as how to deal with a saturated market.

Thus we may conclude that articulation of Expression can serve as a basis to generate new, meaningful, product forms in Industrial Design.

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9. The task on 'expressions' was set by Kirti Trivedi & A.C. Rao for M.Des. students as a part of, "Studies in form" course (1982 - 83). I.D.C., I.I.T., Bombay 400 076. ●



The Concept of Visual Structure

This is an attempt to focus attention exclusively on some of the issues related to creating the form of the objects. Designers have always seen form as a response to complex functional demands of users, market and manufacturing. Within this pragmatic framework, the concepts of rightness of form, tends to be treated as moral judgement. This is unfortunately a limited view of the issues involved in creating new forms. In fact, our knowledge and understanding of the complex issues interacting in the act of creating new forms, is far from adequate, and it has not received the attention it deserves.

One of the most unexplored area in the studies of formal issues, is the concept of structure of form. In this series of articles, we will be concerned with the structure that we can perceive directly, and since as designers, we are mostly dealing with visually perceived (non-verbal) information we will mainly attempt to understand the structure of form.

The importance of study of structure in understanding the nature and behaviour of objects and events, needs no proof. People from such diverse fields as physical and social sciences, engineering, management and literature are all concerned with understanding the structure, and some of them

have even developed and used elaborate tools and methods to understand it.

Perhaps we as designers, have failed to recognize that the understanding of structure is essential for comprehension and control of any complex phenomenon, and that each field must attempt to understand structure, from its own point view. Though, as designers, we are concerned with shaping of the form, the idea of visual structure has remained vague and largely undefined.

There is of course a considerable body of literature dealing with formal issues. A fairly large section of this work deals with classical concepts like order and organization of formal elements, and implies references to structure of form. These studies discuss the nature of relationships between the elements of the form, without reference to its meaning. Technically this work deals with the syntactical aspects¹ of form, but is more often referred in design literature, as studies in visual grammar. Though these studies touch the important concepts in structure, like pattern, organization, symmetry and dominance etc., it is unfortunate that these are treated as isolated concepts². So it is not surprising that, in spite of the available background material on structure of form, these studies fail to project a coherent concept of visual structure.

The present understanding of structure of form, is dominated by the geometrical concepts of space. The independent physical existence of object/shape in space, influences our perception of spatial properties. With the result our treatment of the spatial concepts, appears to prefer Cartesian framework, with no specific role for the observer. Such an object centered and geometry dominated approach to spatial concepts, in fact shows a distinct advantage, when tackling the technological problems such as physical production of the shape/objects. As we will see later that, in spite of the merits of this view point, the overpowering influence of the physical existence of the object/shape in space, does lead to some confusions. Often, references to structure of form, tend to get mixed with the discussions on the structure of the object. Our task here is to selectively focus on the former concept i.e. the concept of visual structure, and search for principles that govern it.

Visual Structure from an alternative View Point.

While form has an independent existence in space, to a human observer, its three dimensional existence is an indirectly constructed reality. Moment the light energy activates the two dimensional retinal matrix, the stimulus object has already transcended its three dimensionality. For further transmission, the part of the spatial information is even converted into a temporal form. This reality suggests an alternative angle, where the form of the object is treated as a message or information, being perceived and processed by a human observer. This is the framework, through which we will look at the formal issues as well as the concept of structure.

In this series of articles, we plan to understand the cognitive capabilities of the observer, to process this kind of messages. Later we hope to establish the important role that the structure plays, in extending our surprisingly limited cognitive capabilities, to process the kind of variety of messages, that we continue to receive.

As we will see later, to search for structure in the incoming messages, is the only way to cope up with this enormous input³. We grossly underestimate the number of messages, that man continues to receive, from the rich and complex environment. Task oriented search for messages, coupled with the need to detect what goes on in the world around him, continue to build up the information load, that he must process. In spite of the severe handicap of his limited capacity to process information, he must deal with this load, for his effective functioning and survival in this world.

The objects in the manmade environment and the variety in their shapes, form part of the numerous messages that he receives. He uses, in fact develops, strategies to deal with such a large input, that he can not afford to totally neglect, nor process. The new concept of structure emerges out of these cognitive strategies used, to handle large number of messages of enormous variety: a concept of structure that not only includes the present geometry dominated ideas, but goes beyond them.

In this introductory article, we will start with the role of structure in communication of messages, and later turn our attention to the concept of visual structure.

Message and its Structure

As designers, we are dealing with the communication process of a specialized nature. Though the designer constructs the message with specific intentions of influencing the viewer, the actual communication between the object and the viewer, is almost one-sided. The fact that the viewer has the freedom to choose the message, makes it important to construct the message in a way, that ensures it against any major loss in information transfer (or in the process of receiver extracting the information). Similarly the construction of the message must also ensure that the meaning and the intentions of the designer are effectively conveyed.

A clear understanding of concept of structure and its role in communication, is relatively of recent origin. It is now accepted that the perception of structure of the message is prerequisite to acquiring meaning,⁴ and that the intelligibility of the message is closely related to the amount of structure it possesses.

Structure can be broadly defined as totality of relationships in a set of elements. Since the concept of message (or form), itself necessarily implies existence of relationships in the elements, any group of elements that qualify for a status of a message, by definition, must have a structure. It is the structure that separates the message from the random noise, and it is again the differences in the structure, that discriminate one message from another, when the differences in the elements are minimal. So a study of message necessarily implies insights into its structure. As we will see later, these observations remain valid, even in the processing of visual messages.

Understanding Visual Structure

The structure of the objects as well as the structure of the form remain some of the primary concerns of the designers, in teaching as well as in practice. However there is a tendency to mix up the two similar concepts: the physical and the visual structure of the object. The mix up must be seen as a characteristics of design approach, which accepts the dependency of form and structure on function and technology. The correspondence between the two categories of structures is not a necessary condition, as seen in the examples of pre-modern & post modern works.

Structure was previously defined as totality of relationships in the elements of the objects. So, for understanding of particular kind of structure, it is important to define the 'nature of relationships' and qualifying conditions for claiming the status of an element.

In physical structure, the concept of elements is guided by the technological principles, while in visual structure, the concept of element is governed by our perceptual abilities to recognize discrete items. This difference leads to some interesting situations in identifying elements. An example will explain the point. A hole in a component will have to be considered as a visual element, but it has no physical existence. Typical elements like openings, grills etc. are visually more significant, but have limited role in discussions on physical structure.

While this obvious example is included only to prove the point, there are other cases, where greater discretion is required to determine the elements. A single physical component may have several visual elements, or two or more physical components may combine to form a single visual element. Obviously we need a set of well defined criteria, based on our cognitive ability to isolate an element.

In analysis of physical structure, depending on the objectives, several alternative forms of relationships can be used. Relationships like 'is fixed to' or 'supports' are helpful in understanding the nature of interactive relationships between the components. Two elements are assumed to be physically related, if the condition mentioned in the relationship is fulfilled.

Forms of visual relationships that we can perceive, are fully governed by our cognitive abilities. Because these abilities to perceive structure develop slowly with age, we are hardly conscious about it. In fact these abilities appear so natural that our

current understanding of the concept of visual structure, neglects relationships other than the simple and obvious spatial concepts like symmetry, regularity and repetition. It not only shows our lack of awareness of our natural abilities to extract relationships, but also our geometry oriented object centered bias, that emphasizes the existence of object in three dimensional space.

To define the nature of relationships that we can perceive is not an easy task. Fortunately, a large body of literature already exists in this field. Perception and processing of visual information has been an important area of research, in psychology. Though this research is conducted with slightly different objectives; their results are of considerable significance to our discussions here. The concept of visual structure that we are attempting to develop, mainly uses the research findings in visual perception as source material.

Interestingly our cognitive processes share important features with structuralist theory, which proposes that the receiver chops up the message into simple elements and reconstruct it following a certain rule. The visual messages that we receive are also similarly analyzed into simple elements, and they are reassembled using specific rules to construct a likeness or reality. These set of assembly rules develop the visual structure of the message. The discussions that follow have immensely benefited by the structuralist approach.

This common basis between the structuralist approach and the cognitive process, opens up several new sources. Though we are primarily interested in visual (non-verbal) messages, we can learn from how other forms of messages are processed by man and machines. It is important that, along with the study of human information processing, We also study the concepts developed in communication and information theory and language processing, which have largely influenced the contemporary views on communication. So, these would also serve as important secondary sources for us.

We are not interest in looking at the concept of structure, as an end in itself, and hope to conclude this series of articles, by relating it to the typical cognitive motives of the observers. Though we have chosen to treat form as a message, we will maintain our touch with the real world situation. We plan to relate the concept of visual structure, to the typical observer tasks, influenced by the techno-commercial role that the object is expected to play.

In such a framework, it is important that form of the objects not only can be discriminated from other forms, but it should have capability to attract as well as retain attention and lead the observer to its important features. The form must be so designed that, the minimal formal information picked up gives a coherent picture, sufficient to recognise as well as to group the form, into the class of objects, it is designed to belong to. We also hope to explore the role of structure in these typical tasks of the observers.

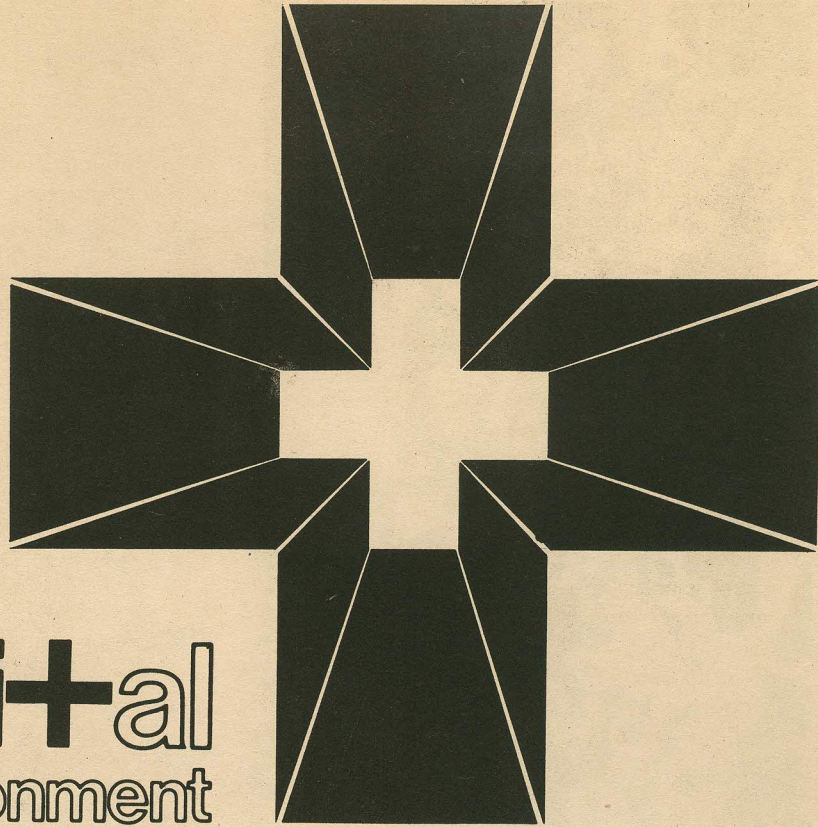
We will deal with the role of structure in information transfer, storage and retrieval at syntactical level, where structure only includes the pure visual relationships in the elements, with no reference to the meaning of the form. The semantic issues, dealing with the meaning of form, will be discussed only to the extent, that these issues are supported by the syntactical propositions. The limitation is mainly prompted by practical considerations, but is fully supported by the treatment in communication theory.⁵

In this introductory article, we started with the role of structure in the communication of messages. Since we are dealing with the communication process, viewing structure as a result of processing of input information appears more appropriate and relevant. We will later turn our attention to the concept of visual structure.

In the series of articles that will follow, we will review the work of Gestalt psychologist, who first implied the concepts of structural relationships. Later we will concentrate on the concepts like 'information and structure' developed by researchers, who were influenced by information theory. We will also discuss the influence of physiology of the eye, the neural transmission process and processing of visual messages, on the concept of visual structure. We will build our concept of visual structure on the research findings in these areas and later relate it to the observer tasks mentioned before.

References:

1. The term syntactical aspect refers to pure visual relationships between the elements, contributing towards visual coherence in the form: a coherence developed by the physical attributes of the elements and not by their meanings. The term semantic aspect refers to the meaning of the form or its units. Meaning includes the denotations and the connotations associated with it.
This terminology is borrowed from Semiotics, which classifies meaning into three categories: Syntactic, Semantic and Pragmatic meanings. The division appears valid for communication process in general and has been effectively used in graphic design studies. Since we plan to study form as an input in the communication process, it seems logical to adopt it here.
2. One of the important exceptions is Paul Klee's notes, which include elaboration of the concept of visual structure. His interpretation of 'structure' reaches beyond the simple geometry dominated ideas. We will discuss some of the visual concepts that he has proposed, but from an entirely different stand point. For full discussion on Klee's concept of structure refer, Spiller, J. (ed.), Paul Klee Notebooks, The Thinking Eye, Volume 1, Lund Humphries, London, 1961, PP. 217-292.
3. While problems of information load are discussed in most of the literature on human information processing, Eleanor Gibson discusses in detail man's search for structure in the incoming messages. For further discussion refer, Gibson, E., Principles of Perceptual Learning and Development. Appleton - Century - Croft, New York, 1969. pp. 140-142. Also refer pp. 115, 119, 120, 124, 128.
4. Garner, W.R., Uncertainty and Structure as Psychological Concepts, John Wiley and Sons, Inc., New York, 1962, p.145.
5. Problems of message transmission can be treated independent of the content of the message. It is argued that the meaning rests on a set of conventions, which are a priori common to the receiver and the transmitter. The meaning is not transmitted; potentially, if pre-exists the message. Refer Mole, A., Information Theory and Esthetic Perception, University of Illinois Press, Urbana, 1968. p.197.



hospi+al environment graphics

Ravi Poovaiah

This project on Hospital Environment Graphics was undertaken by Industrial Design Centre with the help of a grant from UNDP.

Here we document the results of the 2 year study. It is our intention to see its application in the Indian hospitals.

Hospital Symbols

Communications in India suffer from a major drawback because of the very diverse cultural, traditional, lingual and social backgrounds of the people.

In-India, there are as many as 14 major languages and 1,600 dialects.

Secondly, out of a total population of 684 million, 60 percent of the adults are illiterate.

Thirdly, people do not communicate easily because of cultural - traditional constraints such as the free mixing of the sexes, castes, different religious communities.

These factors force communications to resort to greater and greater generality and simplicity.

Consequently, there is a felt-need for an alternative language, common to people with different languages, to literates and to illiterates. This being an impossibility, we have tried to evolve a system of symbols to help communications in specific areas of public interaction such as railway stations, hospitals, public transport, recreational centres etc.

This project is the beginning of such an endeavour.

Below are documented symbols for use in Indian hospitals, the first of a series to be developed.



Need

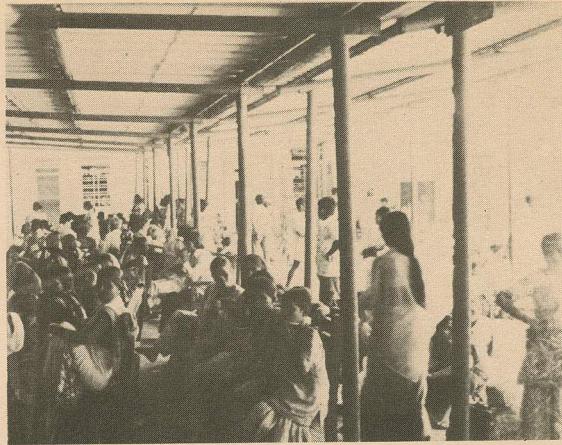
At the very outset it was discovered that there was no existent data pertaining to this problem, one reason for this being that Indian hospitals do not employ any system of symbols. Therefore before starting on the design process, the magnitude and the exact nature of the problem had to be ascertained. With this in view, five major hospitals, run either by the government or the municipality within the city limits of Bombay, were chosen for study. The results of the study showed that there were two main aspects of the problems deriving from the absence of a sign system.

First, there was the confusion that resulted from using a number/numerical system for identifying the departments, counters, etc. It was found that 35-40% of the people coming in to the hospital to utilise the services invariably stood in the wrong queue, and secondly, as a consequence of the confusion, there was delay on both sides - on the part of the patient as well as on that of the hospital staff.

Since the queues were lengthy, the patient often wasted over half an hour before realizing his error.

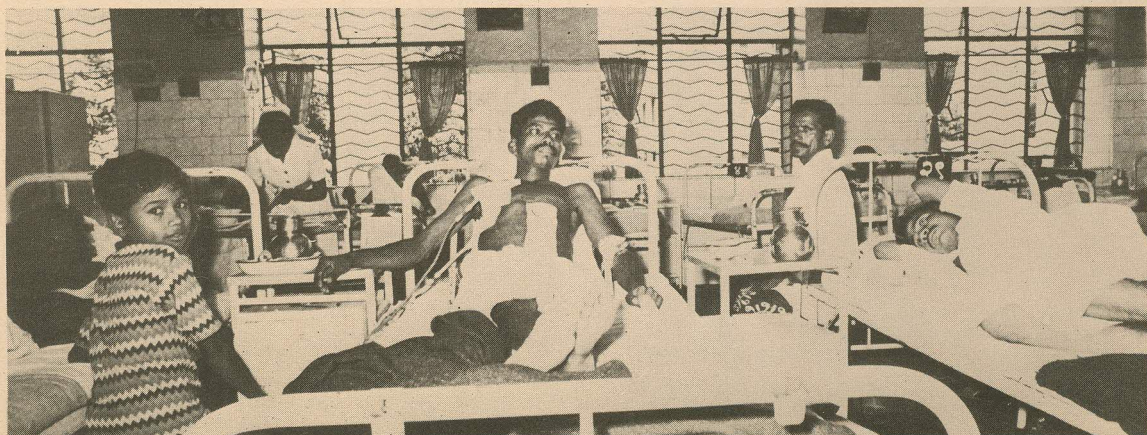
Given these considerations, the design problem was specified thus: a set of visual symbols which would clearly and unambiguously convey the meaning for which they stand. As these sets of symbols would constitute of a visual language, the solution had to be worked out within the parameters of synactics and pragmatics.

It was felt that visual symbols, appropriately used would go a long way in ameliorating these trying conditions.

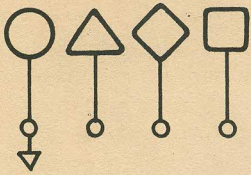


Clockwise from top

- view of the main board indicating various departments. The departments are numbered and these are changed according to necessity.
- the patient often waits in a long queue before his turn in front of each department.
- these notice boards written in the regional language are not readable by all the patients and visitors.
- a view of the general ward.



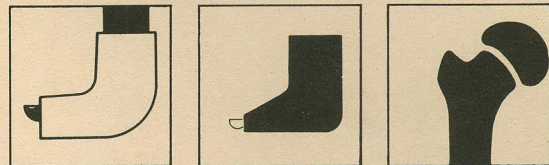
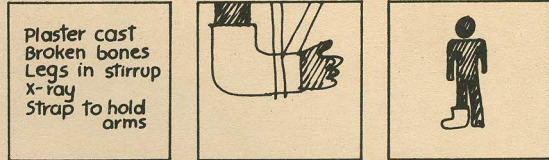
	Broadly, the approach was the creation/generating of a large set of possible solutions which were progressively narrowed down and refined till the final set emerged. The design solution also involved a dialectical movement between the designer and the user. Thus, at every stage, the process was modulated by the response of the public.
Message Areas	As a first step, all the major facilities where a symbol was necessary, were identified and classified.
Variations	In order to generate possible solutions pertaining to each message area, three methods were employed:
from people	First the public themselves were requested to propose solutions. They were interviewed with the aim of finding out what association they had regarding the particular message area. Key words of the images people have were documented. They were also asked to sketch what they thought an appropriate solution might be.
from designers and hospital staff	Secondly, creativity sessions were held involving designers and staff of some hospitals in order to generate solutions.
Through data collection	Thirdly, existing international solutions were documented. This procedure resulted in the accumulation of a large number of solutions for each message area.
Evaluation by the people	The next stage consisted in going back to the public for an evaluation. Without volunteering any information, the public was shown the complete set of possible solutions and asked to mention what these represented. When the results were tabulated, it was discovered that out of the whole set of possible solutions a few were semantically more appropriate than the rest. These few were then passed on to the next phase of the process.
Evaluation by designers	This was the syntactic stage, consisting of an evaluation by designers. The designer's task was to work them over and refine them so that they were graphically more compatible with each other.
Ergonomic research	Following this was the pragmatic phase where ergonomic studies were done on aspects like visual distances, amount of blackness perceivable, minimum thickness of lines and required enlargements.
Redrawing of symbols	In the light of all these studies and evaluations the symbols were redrawn, incorporating the ergonomic features and established standards and then made to match with each other.
Re-evaluation by people	Next the people were approached again and asked to evaluate them for recognition and aesthetic values.
Redrawing of symbols	The symbols were corrected and redrawn.
Operational test on site	The final stage, which involves operational test on site for effectiveness, is being carried out.



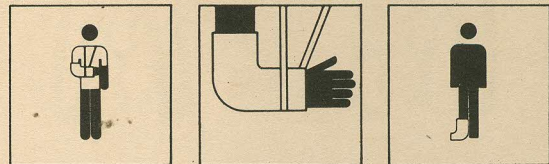
Message Areas

I. D. C. Library
L. I. T. Bombay.

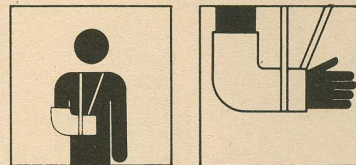
Variations



Evaluation by the people



Evaluation by designers



Ergonomic Research

Redrawing of symbols



Re-evaluation by people

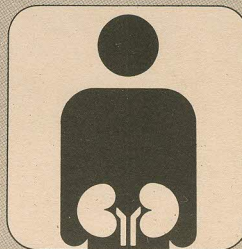
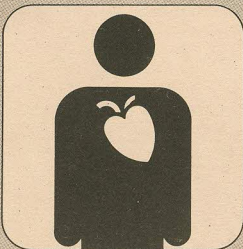
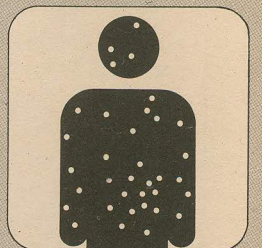
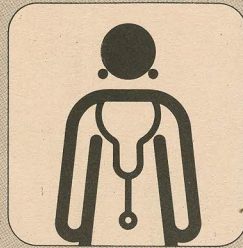
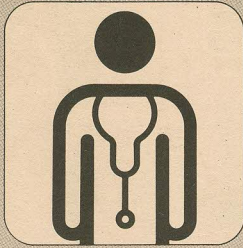
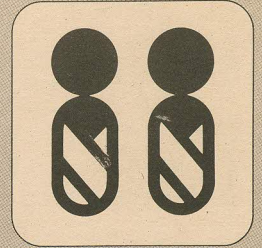
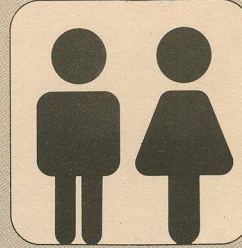


Redrawing of symbols



Operational test on site



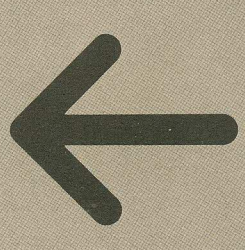
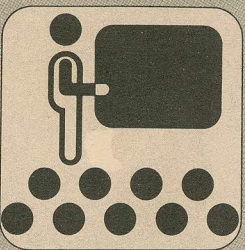
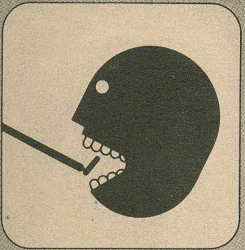
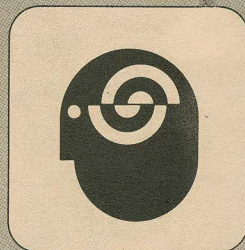
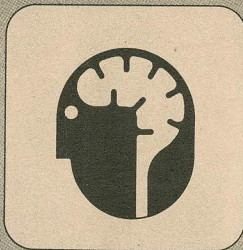
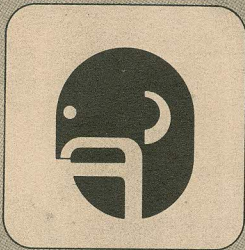
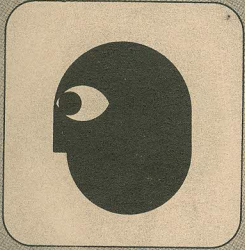
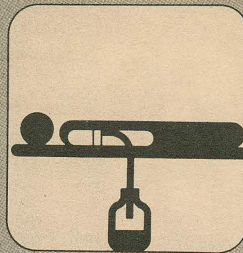
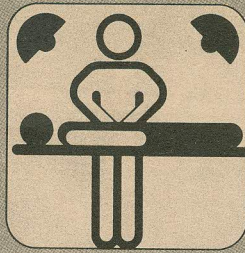


- Man
- Man
- Male Doctor
- Orthopedics
- Cardiology

- Woman
- Woman
- Lady Doctor
- X - Ray/Screening
- Respiratory

- Rural Man
- Pediatrics
- Nurse
- Dressing
- Urology

- Nursery
- Pregnancy
- Dermatology
- Gastrology

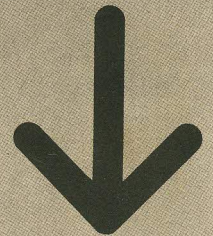
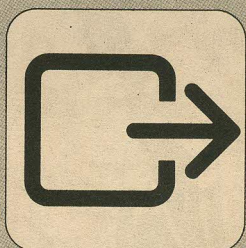
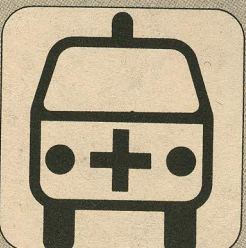
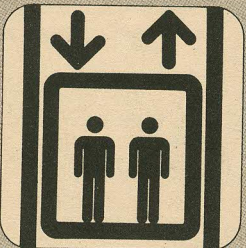
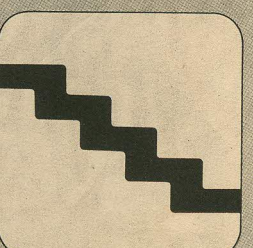
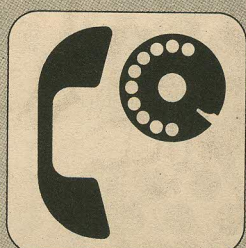
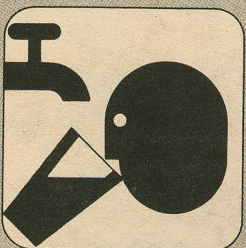
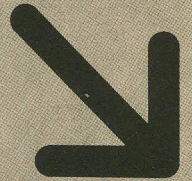
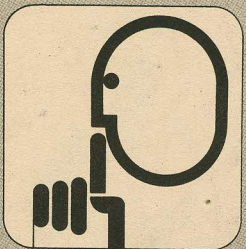
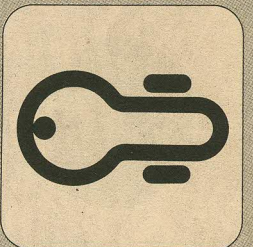
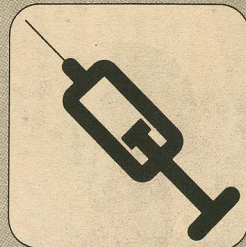
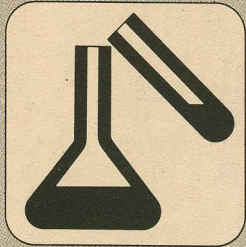
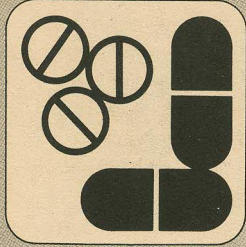
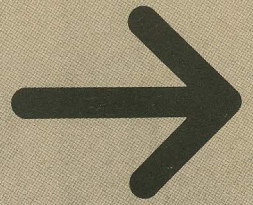
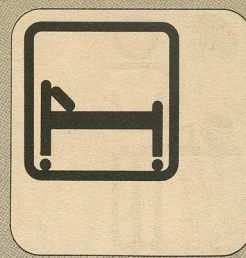
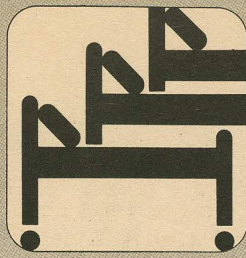
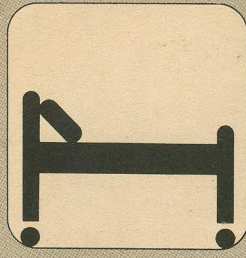


- Medical examination
- Ophthalmology
- Dentistry
- Registration
- Gents Queue

- Operation theater
- ENT
- Physiotherapy
- Medical School
- Ladies Queue

- Blood donation
- Neurology
- Handicapped
- Trash bin
- Gents Toilet

- Emergency
- Psychiatry
- Waiting room
- Ladies Toilet



- Special ward
- Dispensary
- Enquiry
- Canteen
- Lift

- General ward
- Laboratory
- Keep Silence
- Drinking Water
- Ambulance

- Isolation ward
- Injection
- No Smoking
- Telephone
- Exit

- Toilet
- Staircase



The second most populous country with a population of about 684 millions in 1981¹, India is one of the rapidly developing countries in the world. On the industrial scene, India has been ranked amongst the top ten manufacturing countries² and if export is any indicator, we export 60% of all our manufactured products. However, it is agriculture which still forms the dominant sector of the economy, accounting for almost two-thirds of the total workforce. Common to both the sectors is the fact that most of the agricultural and industrial labour belong to the low-income class, their low wages being not so much on account of their lack of skill or experience as to the phenomena of widespread unemployment and poverty. As a result, they place themselves by and large, at the mercy of their employers (land-lords or mill-owners as the case might be) without developing any sense of awareness regarding their rights to a suitable work-environment. The disequilibrium that ensues can be seen in the fact that against an energy expenditure of 2900 to 3400 kcal for a heavy manual job, the Indian worker receives an average energy intake (mainly in the form of carbohydrate) of around 2730 kcal only³. In other words, the workers, whether industrial or agricultural, work at the cost of themselves. The system works in a vicious circle where rising unemployment and increasing poverty drive more and more people into working for low wages, this in its turn, making the cost of labour extremely cheap and compounding the employees' already detached attitude towards the sub-standard working conditions. The net result being that, the physiological & psychological cost the worker himself pays for every unit of production remains unaccounted for and by and large ignored⁴.

Labour market aside, the manufacturer in India commands a sellers' market even with his consumers/buyers. He has to his advantage the factor of a low standard of consumer - awareness, and gets away by marketing products not always designed ergonomically or aesthetically; (probably, this could account for the Indian consumers' fascination for products of a foreign make). With the market at his command, the manufacturer is saved from any fierce competition that might have driven him to perfect his product, unlike his counterpart in the West who has an international market to reckon with and a highly competitive situation, arising out of a high level of consumer-awareness. It is our contention that the typical Indian situation, explained above, makes the manufacturer unaware rather than unwilling to perfect his products with due regard to the relationship in the man-machine environment.

Consumer - awareness apart, the Indian standards of vehicular safety are essentially inadequate. Of the many mishaps that take place every day, it is probably those caused by accidents on roads which claim the highest toll. The above may be exemplified by the fact that in Thane district (one of the districts in Maharashtra) alone, the number of bus accidents and the resulting casualties that have taken place in the past three years are as follows:⁵

Year	No. of bus accidents	No. of casualties
1980-'81	244	17
1981-'82	257	30
1983-'83	227	21

The widespread notion that as much as eighty to eighty-five percent of the total volume of accidents is caused by the drivers' negligence⁶ is a misnomer. Given the fact that the influence of liquor affecting the drivers' senses while he drives is negligible⁶, the possibility of the drivers' cabins being ergonomically ill-designed, needs careful examination.

Beside these there are innumerable ergonomic problems existing in different sectors like Agriculture, Industries and daily life.

A brief review of the above Indian situation calls for increasing attention towards studies in ergonomic/human factors & industrial design.

Institutions in India with teaching and research facilities in Ergonomics:

Ergonomics as a special subject at the post-graduate level was first introduced in 1971 by the Department of Physiology, at the University of Calcutta. Prior to this, researches in this area concentrated around work - physiology, in organisations such as the Central Mining Research Station, Central and Regional Labour Institutes, the All India Institute for Hygiene & Public Health, National Institute of Occupational Health & others. However, teaching & research activities in applied ergonomics in relation to industrial design were initiated only as late as 1979 by the Industrial Design Centre of the Indian Institute of Technology, Bombay which was also credited with establishing in the same year, an advanced-level modular applied ergonomic laboratory⁷.

Aims of the Ergonomics Division at IDC:

Given the needs of the country in terms of its ergonomics and design requirements the aims of the Ergonomics Division are:

1. Teaching Ergonomics at postgraduate level as part of the programme in Master of Design.
2. Conducting research activities on basic and applied ergonomics
3. Generating data for establishing Indian ergonomic standards
4. Providing research facilities in Ergonomics to Indian designers
5. Conducting short term courses for different industries institutions and public sectors.

Advantages/Uniqueness at IDC.

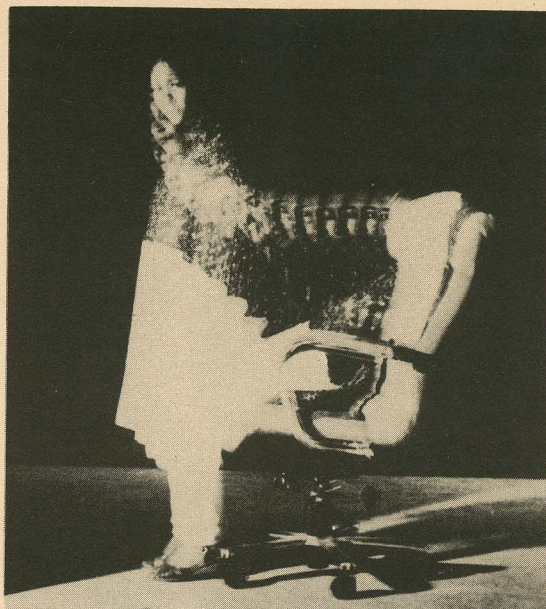
A major advantage at IDC is its proximity to the industrial belt of Bombay. This makes the industries accessible to IDC in terms of field investigation/data collection as well as in promoting designs that have been worked out at IDC. Secondly as part of IIT, IDC is in a better position to secure expertise from the various branches of the sciences and technology for organising collaborative studies and for receiving valuable suggestions. Thirdly, with its own workshop facilities at disposal, it becomes possible to evaluate a product both at the R & D stage and at the actual production stage by means of prototypes and simulation techniques respectively. Finally, IDC recognises the basic philosophy that without appropriately combining the principles of ergonomics and industrial design, the whole concept of design remains incomplete; following which, an attempt towards a dialectical understanding between the two under the same system, has been in progress.

Education Programme:

The Industrial Design Centre offers a two year post-graduate programme called the Master of Design (M.Des). The pre-requisite for this course is a bachelor's degree in any branch of engineering or architecture. The course in applied ergonomics is taught in the second semester of the first year and includes a brief review on the anatomy and the physiology of human body, bio-mechanics, work physiology, special senses, biostatistics, man-machine system & environmental factors. Each lecture topic is followed by studio works, where the student goes through some practical training in the same field. He learns how to collect the relevant data and to apply the same. During this

period he is also taught the technique of simulation. In the 2nd year of the programme an elective course on advanced ergonomics mainly in the form of a short project, is offered. All these projects are selected from different industries of enterprises. A two-year Master's degree on Product Ergonomics, as a part of the M.Des programme is on the plan.

In summary India, is severely suffering from two basics aspects. Lack of basic ergonomic/human factor data for the product designer, Industries, agriculture etc. Awareness of human/consumer right by understanding true design philosophy. It is the duty of young ergonomist/human factor engineers of India to fulfill those two criteria for our mother land. To fulfill our achievements we need more personnels through more and more educational institutes by opening up their ergonomics sections.



Applied Ergonomics

Compulsary Course - ID 632

Man-Machine - Environment System, Gross human anatomy, Static and dynamic anthropometry, Muscles, Static and dynamic work, Bio mechanics, Biological Transducers and nervous system, Controls and displays, Psycho-physio-logical aspect of design, Mockup study and simulation techniques in design evaluation, Bio-statistics, Project works. Use of standard data, charts, nomogramms and manikins. Environmental factors.

Elective Course — ID 657

Electrophysiology and its application in product design, use of eye movement recorder and electro-oculography in visual analysis of Product. Use of close circuit TV in movement analysis. Ergonomics of human energy expenditure and its application. Research oriented work and short paper communication.

Reference:

1. Times of India, 1982, India's population may double in 32 years, Report, 26 December.
2. Indian Express (Sunday Edition). 1983, US rank India among Top 10, 6 February, Page 5
3. Nag, P.K., R.N. Sen, G.G. Ray and D. Chakraborti, 1978, Nutritional and Energy metabolic status of Indian workers performing heavy manual jobs, J. Maduri University, India, 7: 47-52
4. Ray, G.G., 1981, Ergonomics: Man-Machine relations, The Economic Times, May 10, Page 5
5. New Building at Thane bus station planned, 1983, Report in Times of India, June 14, Page 3
6. Ray, G.G. and A.G. Rao, 1982, The ergonomist's nightmare, Science Today, Times of India publication, 16: 42-43
7. Kreifeldt, J.G., 1981, Human factors and Industrial Design in India, Bulletin, Human Factors Society, 24:6



Manfred Hermann, furniture designer from West Germany recently spent six months in IDC teaching and designing furniture - as a UNDP expert. Hermann graduated in product design from the celebrated Hochschule fur Gestaltung, Ulm in 1966. He has a design office in Ulm specialising in furniture development and design - working for some of the leading furniture manufacturers in Germany including Lubke, Roder Sohne, DLW, Erbracher, Duravit, Hailo etc.

I talked to Hermann on the day of his departure from India. We covered a lot of topics - ranging from many uses of the Godrej cupboard & peculiarities of Indian furniture manufacturers to the question of the freedom of choice the users have in the so called free markets of the developed world.

In reality there is no freedom. Product lines are decided on considerations of machine time, manufacturing set-ups; warehousing costs and marketing economies - leading to 'manufactured trends' which may have no relation to user needs. Designer is just a puppet in this game. 'They control me' - laments Hermann.

Nothing demonstrates the extent of this control more eloquently than Hermann's admission that in his 20 years as a designer - he had never before made a design totally his own - till he designed and made his 'India' chair here. It took the liberating atmosphere of a design school in India for Hermann to feel the possibility and freedom to experiment as he liked. Though even here, it was five months before this realisation came. Like a bird which has been caged so long - it has forgotten it was born to fly.

Kirti Trivedi

You have now spent six months working and designing furniture in India. What aspects of our situation strike you most - as being different from the German situation?

Manfred Hermann

You remember we had a joint discussion in Rao's house soon after I had arrived. I wanted to know what kind of components were available - we had discussed the components. That is the first difference - in Germany it is easier to get information and components. Then I learnt that day, in that discussion, that 90 to 95 per cent of the furniture is still handmade in India - I could not believe it. In Germany it is more mechanised - we have about 1600 manufacturers of furniture. In every town - even in Ulm there is a lot of furniture industry - typical middle scale medium size industry.

In the Indian furniture situation or style - is there something you found to be very different?

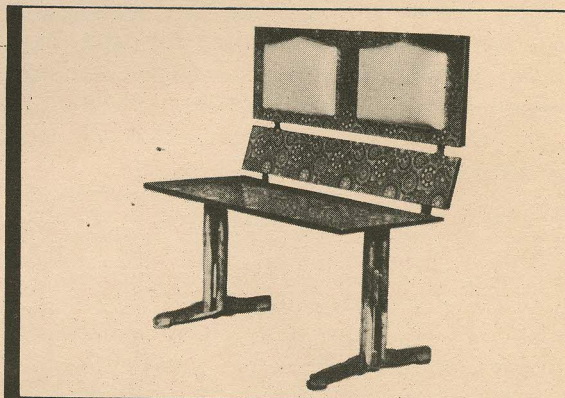
In the new furniture?

No, in every day common furniture?

Whatever you daily see when you go to restaurant or when you go to Bombay - that is the normal daily confrontation with furniture. There mainly I saw this steel furniture. The Godrej Cupboard is very typical for me - & then this restaurant furniture - I do not know how it is made - this right angled bent ..

The Udipi restaurant furniture?

Yes, which you see everywhere. Sometimes with cushions - I heard 'Memphis' got its inspiration from there. And then the folding steel chair which you find every where - that is the most typical.



So the Godrej Cupboard, Udipi restaurant furniture and the folding steel chair. Is there nothing similar to these in Germany?

No. The phenomenon in Godrej is that you can use this cupboard everywhere. You can use it in office and you can use it at home - I think at home it is used as a safe?

Yes, as a safe for keeping the jewellery and the cash and the expensive saris.

So this is very different. In Germany office furniture is made in steel too - but in the domestic furniture people prefer wood.

Let's review one by one the projects you did in IDC. You started with the garden bench. What was the concept there? I think as that was your first project here - you were probably trying out the workshop also.



Yes. Actually it was a quick project. There was an exhibition and Nadkarni asked me to do it for that. One interesting thing in that bench are the really thick tubes which I used -

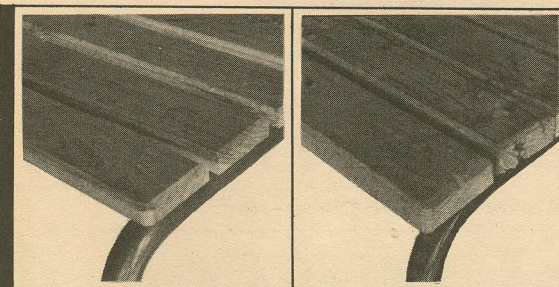
In all your designs here - you have always used tubes. Do you like tubes so much?

Well, it has to do with my education - which was metal education - so it is a question of background. With a different background I might have worked in wood or canvas. I use tubes because it is a perfect semi-product - it is easy to bend. With tubes you can do so many things. And then here there was nothing else - I was going through the stores to find out what is there - & there was just this tube - which was waiting to be used.

Was it specifically a garden bench or exhibition bench?

Both. Nadkarni said they want to use them afterwards here in IIT - so it is not a special exhibition bench. What do you think it is?

It looks like a typical garden bench - except for this fine - radius on the planks - which is not so common.



They did not make the radius in the end. You know when they produced it -

I know - the production version was a really crude job.

I could not understand that at all. These people were given the prototype and the drawings and then how could they build something else?

I can try to explain. Basically we don't have an indigenous furniture culture - we have a furnishing culture. So when a piece of furniture is made - it is usually a copy - as seen somewhere in a catalogue - or in a film - & then it is only the

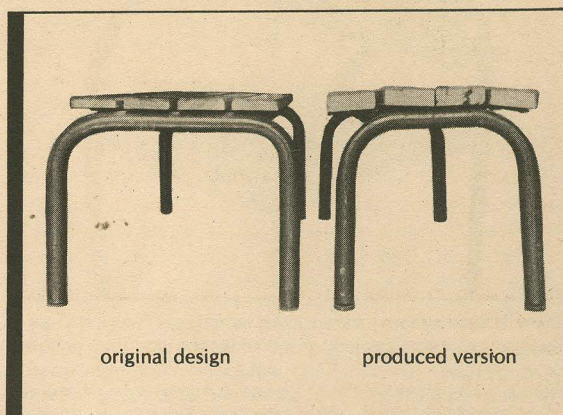
gross form which is made. There is only a vague idea of its use or details - & furniture design or making has not yet reached the level of refinement where you think about details. As long as you make something which generally looks like the original - it is OK. Details are not considered so important - not only in furniture - but in product design also - people who control production do not think details are too important. They do not even perceive that they have not made it right.

May be that is so. But in the whole design process the detailing is very important - and if you work out details it is natural to expect that it will be done - they have to only produce it.

Furniture making is not really working as an industry here - so that culture is missing. In a regular industry - if there is a drawing of a component - they will make it exactly like that. In furniture - they only follow the original as a guide line - it is never taken too seriously.

In this case - it was not a furniture manufacturer who made these benches.

No, it was an exhibition contractor



The legs had two tube bendings - which they made - but the angles and dimensions are wrong - it is not stackable any more - it is higher. This is what I do not understand.

Actually, everybody here feels that they can change a detail - drawings or designer's authority is not so sacrosanct. Even if they don't understand the reason for a detail - they feel they can change without consulting the designer. It looks, say - very difficult to them - so they simplify it. The attitude or discipline of exactly following the designer's instructions does not exist - not in furniture making at this level.

Is it there in products?

Even in products the same problem is there to some extent. Furniture industry works on a freelance level - freelance makers feel that they can change according to whatever is available. I think they changed your material specification also, - they used a cheaper, inferior wood.

They changed other dimensions also -

It is because they can't understand the reasons. To them - it seems like so much unnecessary work to make it as you specified.

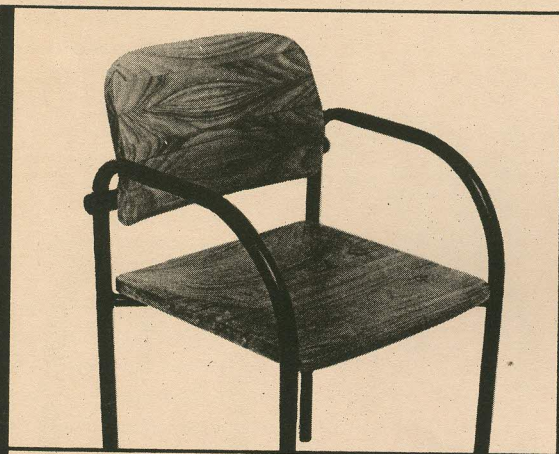
But even if they don't understand - they have to only exactly follow the drawings. Once a designer has developed something - then it is only a matter of translating - no more thinking is involved.

There is thinking on the contractor's part if he makes according to your design - he spends more money and labour. So he changes the details - He gets a bigger margin by not making it like the drawings. He feels nobody would notice it.

If you are copying it from a photograph in a catalogue - may be I can understand this. But when you have an actual prototype and drawings - then -

But there is no control. They know it will be accepted even if not correct. There are these exhibition contractors who thrive on these kind of urgent jobs. They do anything and they know it has to be accepted - so they see no point in doing an exact job - it costs more money to them.

Let us come back to discussing the designs. You used this combination of steel tubes and teakwood in everything you designed here. Is that the material combination you feel most comfortable with ?

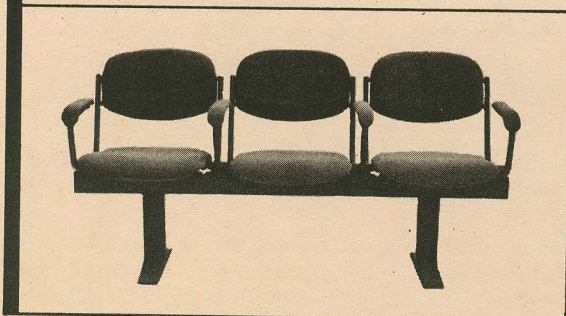


There is a difference between the bench and the first chair. This first chair was specially designed for the workshop people as an exercise - just to try and make everything from wood. The back rest & the seat is all carved and hand made - even if you make it in Germany - you still have to make it that way.

So the second chair was more of an exercise for the workshop people ?

Yes. I thought to give them something which I could later on combine to make a chair. So I gave them this wooden seat - and to the metal workshop the tube bending. Later on there is a difference, because this seat and this backrest are hand made - but in the convocation hall chair there are pieces that are mass produced. When I found this bent plywood seat I felt very happy - when you are used to getting these kind of components - and that is my context - & then you come in a vacuum and don't know what is available. So I felt really happy when I found something which I could use.

This project of auditorium seating - was it closest to your working system in Germany for designing - where you use a lot of existing components, and then develop some new joints or details to put them together ?

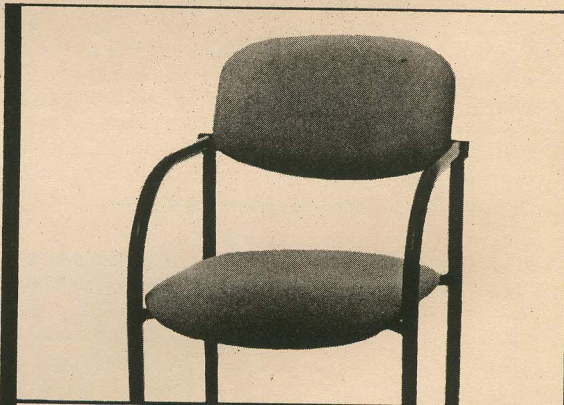


Yes, that was the closest. Also there was some kind of a perfect brief in this project about what is wanted. At least it was like my situation in Germany - where I develop concepts - and also work in the workshop & make prototypes. Even in Germany in such a project you have to be with workshop people & talk to them - and so it was the same sort of situation. But this chair is not a new chair - it has a very well known support structure - where you mount several seats on a single central support. However here it is adopted to your materials and techniques - it is a really rough design - I could never sell it in Germany. But on the other side the system is interesting for the future - because it can be the basis of a seating system - you can go on to build die-cast joints - and it could be made into several systems - for airports etc. using the same support. I am very proud of it because in making it I used some of my knowledge from my apprenticeship days.

How long ago was that ? Your apprenticeship ?

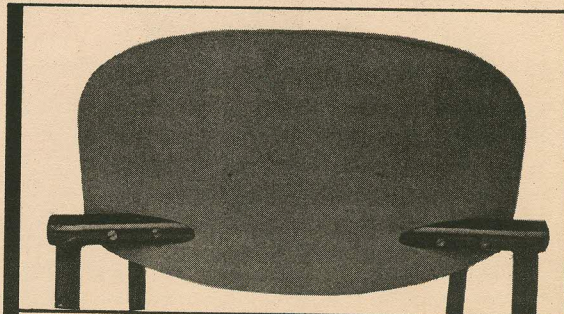
Do you know the system in Germany ? You go to school until 18 years - then you have to go to some workshop or factory and learn a trade or profession - by doing it yourself. I was learning to be an engine fitter - you have to do this for 3½ years and then there is an examination. That was my training - & when I was working in the workshop here - drilling, making threads I remembered those days. That was - I think about 30 years ago (laughs) -

Your next project was the office chair. What was the brief for that ?



That was a joint project to make something together with Achutha Rao. We discussed and decided to make office furniture. Perhaps it came because I'm working in this area - and then I tried to go on from the first chair. This time we had these plywood pieces. However this chair is not ready yet - but I think it can be the basis for a system - if somebody takes it up and develops it further.

What was the concept - the new idea in this chair ?



If you look how the back rest is fitted - the back rest fitting is new.

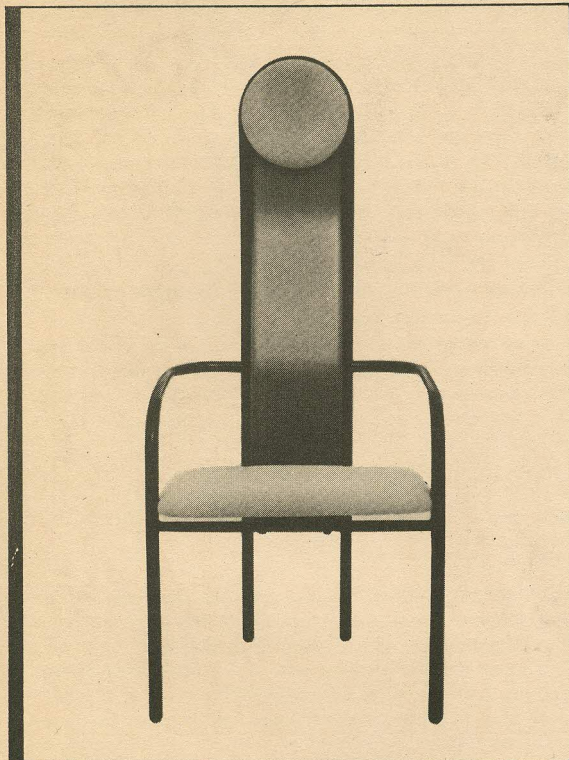
And the cross joint at the bottom ?

The cross joint at the bottom is a very well known joint for stability. It is not so common here perhaps, but it is very common in Europe. I used this because you need a stable connection. It is used in wood also - it is a typical construction principle which is very often used. You can make it knock down also - if you separate the cross. I knew this joint - it works, it was safe and there was no risk: Always with a piece of furniture - a chair - everybody will sit on it - so it better stand up.

And your last chair - I was told you like to call it your India chair. Is that correct ?

Yes

Do you think this chair would not have been made if you had not come to India - in this kind of form ?



I don't know really - I started with this arch shaped back - It was a one-day design. There was no fear. One morning I thought about it and then I was working at it till the evening - & then it was ready - though I still had to make the drawings. Perhaps - if I would not have come here - this chair would not have been made. You know - the other chairs are really serious chairs, more conservative - this one is different.

Do you know everybody in our workshop calls it a 'wedding reception chair' - I think it is a very appropriate name. It is formal & dignified - and yet not solemn but joyous and happy. Have you been to a marriage reception in India - where both the bride & the groom - sit on chairs like thrones - your chair I think is a kind of throne.

I think it had to do with my whole time in IDC. I am not used to teaching - it was something new for me - so it was a really heavy situation. After may be 3 months - it was more or less all right - I began to relax. Also, if you remember, I was guiding Ratna on her Executive chair - & we used to have discussions with Dr Ray to fix the ergonomical data. The ergonomist only gives you data - which looks very restrictive - but I wanted to say with this chair - that even with ergonomics situation is still open.

How do you feel about this chair ?

I like it very much

Of all the projects you did here - you said this is the only one which might get made in Germany

Well, this chair has something in which somebody may be interested. There is a difference from the usual chairs -

In all your work in IDC, you seem to have repeated certain things - for example you used blue colour or the tubes in all the chair. Why was that ?

It was not so deliberate. I did not create a specific colour or mix it - I just went to the store and saw what is available. You know blue is a colour which keeps quiet - but is different from this drab greenish grey colour you see everywhere on metal furniture in India. That is one point I don't understand about India - on one hand the people are so colourful - and then on the other hand the furniture colour is so drab. Even in fabrics of upholstery you have so many possibilities - but it is as if they are afraid to use colour in furniture.

Did you see blue as an alternative to chromeplating - because I suppose you would have chosen chrome for this kind of furniture in Germany - but here it was difficult to do -

It was nearly impossible. On the other side there is recently a movement to try colour in serious furniture also - in executive chairs or in conference room - they are using colour. Also the climate here is really corrosive - and very bad for chrome.

Similarly you used this foam upholstery material in all your chairs. You mentioned just now that we have such colourful fabrics - but you also did not use it - you only used this plain colour. Was there a special reason - or was it just because you found somebody here who could do it nicely - ?

That was one reason. The upholstery in furniture is a very skilled job. You need very skilled people - very good people - specially when you are making a prototype. In Germany they say - every hundred years there is one good upholsterer'. I myself don't know very much upholstery - I can only explain what I want. So in this case I wanted to go the easiest way - & not make too many experiments. In upholstery, every fabric has a different characteristic. This foam fabric which I found here - is flexible, it stretches & is easy to control. Then it is not as vulgar as this rexine which is so common here - I hate that material - and I wanted to show other possibilities.

You said you did this chair because you wanted to get away from the routine, serious kind of work you have been doing. Your work in Germany is also of a very serious type - do you do such free projects often to get away from that kind of work ?

No it is the first time (laughs). It is the first time. There are lots of sketches of such ideas - but I never made them. Once I had a crazy idea - I wanted to make this design - three round cushions as a chair - but I never made it. Here I felt the possibility and the freedom - I felt the support of IDC - I could use the workshops - and there was nobody who would question or say no - so that was the reason I felt I could do it here.

Do you think there would be a change in your style of design because of being in India for six months ?

There may be an influence.

What kind ?

I don't know - what kind ?

Living for six months in a different country - with different kind of visual environment and attitudes - do you think it will change your work in Germany - when you go back ?

In general - no. Because it is a question of context. I get my assignments from a context which would not change. But I want to follow this chair - try variations on it - so perhaps it would be a change.

Do you think you would do more experimental work now - more free work ?

That is the dream of every designer - to do free work.

May be the next time you come - you can do only free work - no office chairs or auditorium chairs. Because it is so easy to experiment here - so simple

That's right. When I came here - initially I was very tense. You have been abroad yourself - so you know the feeling - You don't know what is expected of you or how to perform

Yes, you have to prove yourself. You're the official UNDP expert on furniture design -

Yeah. I don't like this word - you know. This 'expert' - I hate it. (laughter) - but that you have to go through. But for the future this feeling will influence - that you can make something of your own. At present I am designing only by looking and watching the market. I get a brief - it is orientated towards the market and my thinking was looking in one direction. This could be a way to get more liberty - but on the other hand as a freelancer you have to find a client somewhere.

You know the Italian designers - who do so much experimental work. Is that kind of situation not so common in Germany ?

No, not at all. All German furniture is very serious. That is the difference between the mentality also. The Italians they are more able to play - while the Germans are really straight on. The German design is something which shows quality - and the Italian experimentation.

Has it always been like that or is it a post - Ulm phenomenon. You know the whole Ulm approach was like that - serious, scientific and correct - but humourless. Did that influence the attitudes everywhere - or has it always been the German way ?

I think it has always been like that. But if you take Ulm - in the products of Ulm - you don't see any furniture. Furniture is a thing which you can develop anywhere - if you are on a beach you can think about it. With other products it is more difficult - a tv or electric fan - you need the technical counterpart immediately. I don't know why - but in Ulm they did not do furniture.

So there was no furniture section in Ulm ?

Yes, No department, no teacher, and at least no project.

That means it was very unlike Bauhaus. So much furniture came out of Bauhaus-

That's right. But the situation was different, too. If you look at Bauhaus - there was lot of domestic work - lots of lamps, and kettles and all this domestic ware. This really you don't find in Ulm. They only did technical stuff - machines and medical equipment - very serious and straight work.

In the sort of German situation you describe - I don't really understand - why do you develop new designs at all ? Usually the difference from an existing range to a new range is very marginal. You have a furniture system which is already very well designed - ergonomically and technically - with correct details and an almost perfect solution for that context - then why do they need another system ? They never make a big formal change - it is always within a very small range. Then how does the work get generated ? Let us say, for you - when the client comes with a new project - what does he say ? The context and the boundaries of the project are so fixed - in the same circle you have to vary only a little. Then why change - why not continue making the already perfected solutions ?

That's a question - it has to do with an economical system. On the one side we have a free market and for the manufacturer it is a question of market. It depends on how a programme is selling - how is the market response. Even if it is a new development and it is very expensive - but if after three years there is no response, it is cheaper for them to make something new and replace it. Producing, storing a range - if there is no response - it is wasted space and wasted time - & no returns at all. So there is a decision - we have to replace it somewhere. Then there are fairs, trends you see - you can see which direction the furniture is going in internationally - & then it is to follow this direction - But in deep it is only a variation. Because a chair is a chair and it is very difficult to really change.

In that situation - how do you get your brief in terms of form ?

In terms of form there is nearly no brief. You get a brief from the marketing management - they describe the other systems. They show what has a good response in the market - the trend - & so they give a brief - we want to make a programme in this level at this price - and our competition is this & this & this - and OK we want to use bent plywood, or tubes only or die cast elements etc. - the technical aspects - and so it is a real open brief. After this brief you work out a concept - & then they decide whether to go ahead or not.

So at brief level - the form is your decision. Then who sets the limits to formal innovation - that you can only go so much out of the way - do you set it yourself after looking at the trend ? Do they set the limit that we want only a little bit of change and only in this direction or do you decide ? Formal changes - could be very drastic total changes - or they can be minor variations to be with the trend. Who decides how different to make a range ?

That is a decision of marketing

Suppose you want to make a big change - a sudden jump - do they pull you back ?

Yes there is always a control. They control. If you compare these different furniture companies - you will see every manufacturer has in his programme - though they are different programmes - one equal formal expression. So there are some manufacturers who are more outgoing - others who only go a little step.

So when you suggest something really different what would happen - they would tell you it does not fit or what ?

They have their own way - but they control me and at least they say - no in this direction we don't go. But then afterward I am free to find another manufacturer - but it takes time. You have these relationships - for the designer also it is dangerous to jump from one manufacturer to another - just because they are in competition. So you stay with one group or 2-3 groups - and try to make different designs - but there is no real change.

Interdependence of Creative Arts

We give below a passage from 'Vishnudharmottara Purana' - an ancient treatise on Arts - dated to 3rd century A.D. In the passage Vajra requests Markandeya to teach him the art of image-making which is supposed to bring happiness in this as well as the next world. However, as Markandeya explains - one cannot learn the art of sculpture without having knowledge of other arts on which it is dependent. In this way, we are introduced to a tradition conscious of the relation and interdependence of various arts. From sculpture, we are led step by step to painting, dancing, instrumental music and singing. Singing involves literary compositions. This leads to literary arts and the knowledge of languages current in India at that time: Sanskrit, Prakrit and the unending variety of Apabhramsa. So a treatise on visual arts begins with a discussion of language, grammar and literature. The passage is reproduced here from the Gaekward oriental Series Edition of 'Vishnudharmottara Purana' edited by Dr. Priyabala Shah.

Vajra: O sinless one, How should I make the forms of gods so that the image made according to rules may always manifest (the deity)? (1)

Markandeya: He who does not know the canon of painting (citrāsutram) can never know the canon of image-making (Pratima laksanam). (2)

Vajra: O Scion of Bhrgu Race, explain to me the canon of painting because one who knows the canon of painting, knows the canon of image-making. (3)

Markandeya: It is very difficult to know the canon of painting, without the canon of dance, because O king, in both, the world is to be imitated (or represented) (4)

Vajra: Explain to me the canon of dance and then you will speak about the canon of painting because O twice-born, one who knows the practice of the canon of dance, knows painting. (5)

Markandeya: Dance is difficult to understand by one who is not acquainted with instrumental music (Atodya). Dance can in no way be known without it. (6)

Vajra: O the knower of Law, speak about instrumental music and then you will speak about the canon of dance, because O excellent Bhargava, when the instrumental music is properly understood, one understands dance. (7)

Markandeya: O Acyuta, without vocal music, it is not possible to know instrumental music. One who knows the practice of the canon of vocal music, knows everything according to rules. (8)

Vajra: Explain to me the canon of vocal music, O the Best of the holders of Law, because one who knows the canon of vocal music, is the best of men who knows everything. (9)

Markandeya: Vocal music is two-fold—Sanskṛta and Prakṛta and the third Apabhṛasta, however is infinite, (10),

O King, on account of the variety of local dialects, its limit cannot be determined in this world. Vocal music is to be understood as subject to recitation and recitation is done in two ways, Prose and Verse (11).

O knower of Law, Prose is as found in conversation while verse is as in metre. Metre is of many varieties. (12)

विष्णुधर्मोत्तरे तृतीयखण्डे

द्वितीयोऽध्यायः

- वज्रः- देवतारूपनिर्माणं कथयस्व ममानघ ।
यस्मात्सन्निहिता नित्यं शास्त्रवत्साकृतिर्भवेत् ॥१॥
- मार्कण्डेयः- चित्रसूत्रं न जानाति यस्तु सम्यङ् नराधिप ।
प्रतिमालक्षणं वेत्तुं न शक्यं तेन कर्हिचित् ॥२॥
- वज्रः- चित्रसूत्रं समाचक्ष्व भृगुवंशविवर्धन ।
चित्रसूत्रविदेवाथ वेत्यर्चालक्षणं यतः ॥३॥
- मार्कण्डेयः- विना तु नृत्तशास्त्रेण चित्रसूत्रं सुदुर्विदम् ।
जगतोऽनुक्रिया कार्या द्वयोरपि यतो नृप ॥४॥
- वज्रः- नृत्तशास्त्रं समाचक्ष्व चित्रसूत्रं वदिष्यसि ।
नृत्तशास्त्र विधानज्ञश्चित्रं वेत्ति यतो द्विज ॥५॥
- मार्कण्डेयः- आतोद्यं यो न जानाति तस्य नृत्तं सुदुर्विदम् ।
आतोद्येन विना नृत्तं विद्यते न कथञ्चन ॥६॥
- वज्रः- आतोद्यं ब्रूहि धर्मज्ञ नृत्तशास्त्रं वदिष्यसि ।
तस्मिन्सुविदिते वेत्ति नृत्तं भार्गवसत्तम ॥७॥
- मार्कण्डेयः- न गीतेन विना शक्यं ज्ञातुमातोद्यमच्युत ।
गीतशास्त्रविधानज्ञः सर्वं वेत्ति यथा विधि ॥८॥
- वज्रः- गीतशास्त्रं समाचक्ष्व सर्वधर्मभृतां वर ।
गीतशास्त्रविदेवाथ सर्वज्ञः पुरुषोत्तमः ॥९॥
- श्री मार्कण्डेयः- संस्कृतं प्राकृतं चैव गीतं द्विविधमुच्यते ।
अपभ्रष्टं तृतीयं तु तदनन्तं नराधिप ॥१०॥
- देशभाषाविशेषण तस्यान्तो नेह विद्यते ।
गीतं पाठवशाज्ज्ञेयं स च पाठो द्विधा मतः ॥११॥
- गद्यं पद्यं च धर्मज्ञ गद्यं संकथया स्मृतम् ।
पद्यं छन्दोविशेषेण छन्दश्च बहुधा भवेत् ॥१२॥

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