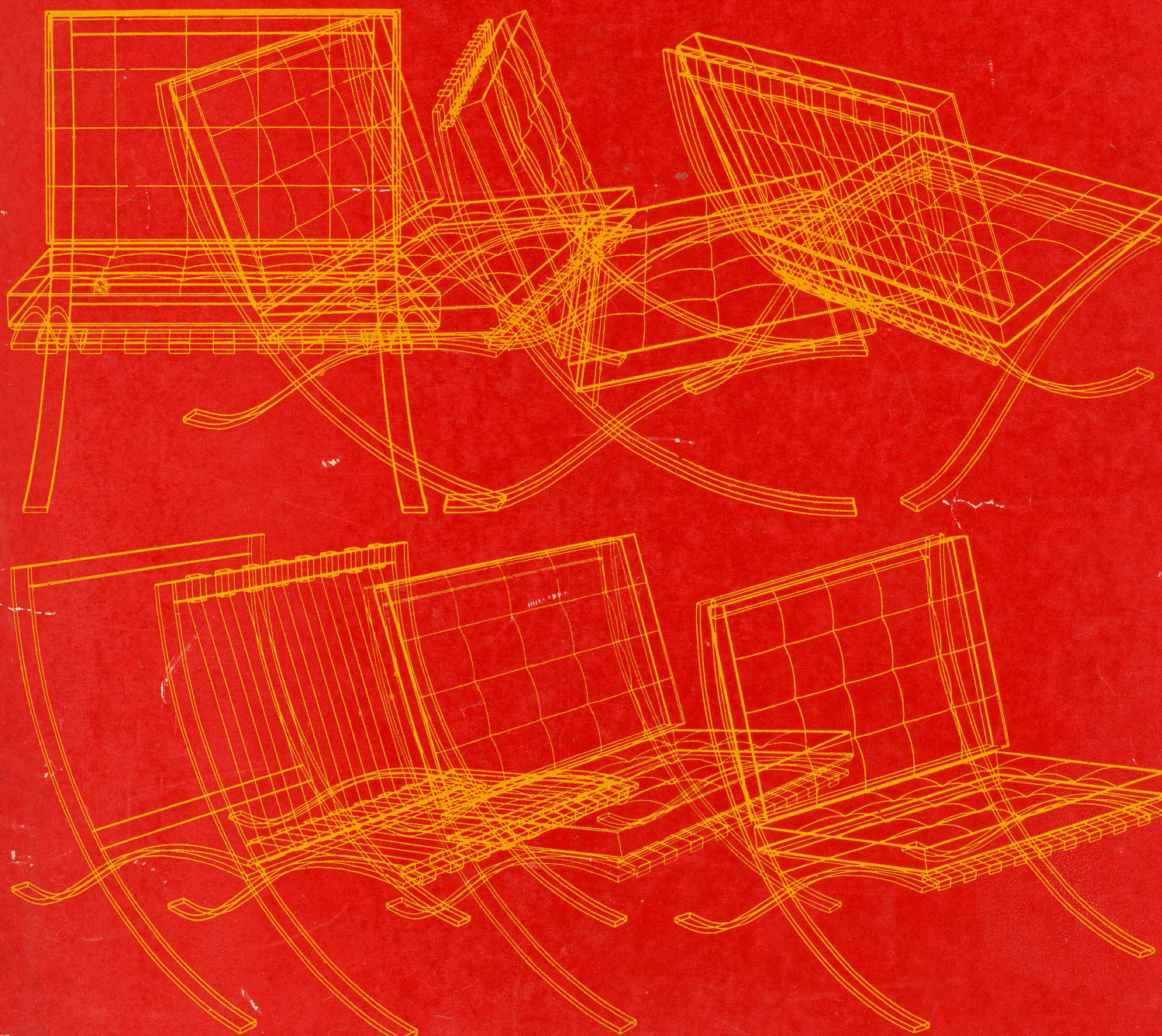


IDC

Output 4

Industrial Design Centre IIT, Bombay



IDC OUTPUT 4

July 1981

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Foreword

S. Nadkarni

It took little longer to bring to you this fourth issue of IDC output due to heavy commitment during the last two years. 'IDC-Decade of Design Experience', a special publication was however brought out to commemorate the 10th year of our existence. This publication received a overwhelming response in India and abroad also helped us to establish a different identity of our programme. This is very significant happening to us as the very philosophy of the programme is aimed to give different direction which is close to our economy and social needs-a difference in materialistic needs of developing countries and developed countries.

The first decade was spent in getting our concept accepted in various quarters of decision making institutions. The next obvious step would be the implementation, where our control is limited. We would like to concentrate influence on two major programmes during the next decade. One to impress on government to start design council to induct designers in various areas in national programmes and then to promote our philosophy in different design fields such as Visual Communication, Environment Design etc.

The worst for any educational institution would be period of stagnation. I have seen many design schools here and abroad are dying due to lack of intellectual input. They have become grinding mills, bringing out stereotype products every year. To be alert in grasping the new development in technology and other sciences and to put forward new concepts in methodology in design education which will ultimately bring design culture nearer to our life style. With this in view we are organizing a National Seminar on Design Education which will explore the above mentioned possibilities and bring some new thinking in Design Education. This is an opportunity to judge in depth,

relevance of our existing education programmes to the needs of our country. This will be for the first time that all types of design faculty will be meeting and discussing on one platform. We hope to make such seminar as a continuous activity where every year one school would take responsibility to hold such get-to-gether and discuss the specific programmes relating to Design Education.

An award of UNDP funds to IDC was feather on the cap. This assistance, not only broadened our activities but also brought new mood among our faculty members. Most of them will be going abroad to search new information which will strengthen our educational inputs. Another valuable out come of this assistance is starting of ergonomics laboratory, which will give an extra strength to our existing programme. As committed in UNDP programme we have also started Master of Design, a degree programme which received encouraging response; and for the first time we are able to reach maximum in-take of the 15 students.

All other activities under UNDP programme are running smoothly as per the plan, and if every thing goes well we are hoping to have an exhibition of results of various projects, by the end of next year. Thanks to the Ministry of Education and UNESCO without which this could not have been possible.

During the last few years IDC is continuously engaged in promoting design by holding seminars, workshops and consultation which has resulted in growing awareness among the industries in public and private sectors. Organisations like BHEL, SISI, TATAS, JYOTI, WANSONS LTD, to name a few have taken advantage of these programmes.

State of Industrial Design in India

K. Munshi

About industrial design in India, one can only say that it has a long way to go. After almost twenty years of its existence in India it is still peripheral. It has not penetrated into the government, civic and municipal administration, where it could contribute effectively for social benefit. It has neither made inroads into the giant public sector which holds more than 60% of the total investment in industry, inspite of the availability of competent professionals in the country. Only industries that have patronised industrial design are small and medium sized ones making consumer durables like radios, TVs, home and kitchen appliances, fans, and small manufacturers of industrial electronic equipment. Big and heavy investment sector like Indian Railways, manufacturers of trucks and passenger cars, manufacturers of heavy farm and industrial equipment are generally not using industrial design services in any form. The reasons are many viz., lack of awareness on the part of management about industrial design and how it can benefit their organisations; reluctance to share decision making power regarding a product with an industrial designer; misguided confidence of certain generalist managers that they can do better than a trained professional designer; inability to fit an industrial designer in the existing organisation structure and hierarchy; lack of experience of working with a consultant industrial designer; availability of easy (though costly) foreign collaborations; and the usual resistance to a new idea and new profession. There are many examples where industrial design could have been used very effectively but is not.

City and Industrial Development Corporation of Maharashtra (CIDCO) is planning and building New Bombay city-a huge urban complex-and they have not a single Industrial designer on their staff. Hindustan Machine Tools, a giant public sector undertaking making almost all types of machine-tools, wrist watches, printing machinery, plastic injection moulding machines, tractors etc., have only one industrial designer. Bharat Heavy Electricals Ltd, another giant making electrical generation and allied equipment have shown interest in industrial design by sponsoring their engineers for short term courses in industrial design. Once they almost lost an export order because of very crude appearance of their equipment. As a result they have started a "Appearance Engineering Cell" in their R & D establishment.

Indian Railways - one of the biggest railways systems in the world-are doing without industrial design-and if we look at their passenger coaches, signage systems, traffic flow patterns on the platforms, ticket dispensing systems, quality of the hardware and other services they badly need treatment, not only aesthetic but ergonomic as well.

Once these big industries start making use of industrial design services, they can absorb industrial designers by scores. And if design institutes do not match their requirement by producing more graduates and post-graduates, there is bound to be shortage. On the other hand if design institutes increase their intake of students in anticipation of the openings to be created by these big organisations and any delay in the recruitment programmes will result in glut and consequent unemployment of designers. If the product development programmes are not planned well in advance by these companies, the country will be faced with perpetual shortage of designers or alternate shortages and glut. Both are bad. To avoid this impasse these big organisation which eventually will need industrial design services in some form or the other should start with a nucleus industrial design cell manned by one or two industrial designers and supportive staff and let it grow gradually but constantly till these cells are sufficiently equipped with men and materials to meet the needs of the whole company.

K. Munshi

Faculty Member of Industrial Design Centre, and at present on study tour of Europe under United Nations Development Programme. He is also actively associated with Indian industries as design consultant.

After that new recruitment will be done to take care of the designer turnover. In fact two big companies - Tata Engineering and Locomotive Co. Ltd., manufacture of Trucks and Philips India, a subsidiary of Philips, Holland, have set up industrial design cells and are in the process of gradual expansion.

Industrial design in India started with the establishment of National Institute of Design (NID) at Ahmedabad in early sixties on the recommendation of Charles Eames. During the initial years it trained graduates and post-graduates to man the faculty in the same institute. In 1969 Industrial Design Centre (IDC) was set up at Indian Institute of Technology, Bombay to impart-graduate training in Industrial Design (Product Design). IDC now offers 2 years M. Des. programme in Industrial Design to engineering and architecture graduates, while NID offers 5½ years undergraduate courses in various disciplines of industrial design like product, ceramic, furniture, textile etc. to School leavers. So far about 75 post-graduates have come out of IDC. About 50% of these are practising as industrial designers, the rest have gone back to engineering or architecture or taken up managerial positions. Some have even started their own industries. NID has so far produced about 30 graduates and about 15 post-graduates in industrial design. Many of these are employed in various industries. Some have joined NID as members of the faculty and some are working as free lance designers.

In 1972 many practising designers who had passed out of these two institutes felt the need of interacting with each other to air out their professional problems and promote industrial design. As a result Society of Industrial Designers of India (SIDI) was formed and registered. The first big event of SIDI took place in January 1977 when an exhibition of members' work was organised along with a Seminar 'Products for People'. This was organised in collaboration with IDC. The next big event for industrial design took place in January 1979 when UNIDO/ICSID meeting was held at NID which culminated in "Ahmedabad Declaration". At the same time SIDI organised a competition to give away "1st SIDI Design Award" and Certificates of Merit for good design to promote the cause of good design in the country. It appears that industrial design in India is ready for a take-off. But in reality it is not. People working for promotion of good design, although full of enthusiasm and zeal, are seriously handicapped because of lack of funds. The resources of SIDI which has taken up the task of promoting design in the country, are so meagre that it cannot afford to pay its membership fee for ICSID. The chances of giving away 2nd SIDI Design Award also seem to be bleak considering the finances available. SIDI Bulletin-the only publication on Industrial Design-could have been a source of information and inspiration-is limping for the same reason. Public funded institutes like NID and IDC are doing their bit for promotion of design but their primary commitment is to education. In India, we do not have a national body to promote design, like 'Design Councils' in various countries; and there are no budgetary provisions for industrial design in the parliament, the state legislatures or public sector corporations. Unless policy decisions at the highest level are taken to promote industrial design and the need for good design is felt in the interest of safety, productivity, economy and export, the take-off point will keep on getting delayed. The Ahmedabad Declaration on "Design for Development" which was the outcome of UNIDO-ICSID meet in January 1979 has raised the expectations of design community in developing countries and particularly in India, that UNIDO which has direct relations and influence with the official agencies here, would push the case of industrial design forward and strive to get it the rightful place in the policy framework of our country.

Computer: your Partner in design

Uday Athavankar

Can the computers be used as a creative design tool in fields like architecture, industrial design and visual communication? The question has been debated several times in the last two decades. Initial pessimism in the answers, though somewhat justified at that time, is dying off now.

Unlike other allied fields like engineering which realised the potentials of computer and adopted it with enthusiasm, the design problems of the kind faced by the architects, industrial designers and visual communicators are spatial and visual in nature and can not be easily defined numerically. These fields also allow considerable personal interpretations of the problems, and do not encourage standardisation of problem solving procedures.

The initial applications of the computers in these fields were as an analytical aid to solve complex design problems, where the relationships between various aspects of the problem are difficult to comprehend for an unaided mind. Considerable attention was also paid during this period, to bring objectivity in design decisions, that resulted in development of new design methods that could handle enormous data and yet remain sensitive to small details. Some of these methods relied heavily on computer support.

Though its use as an analytical tool in design is indisputable, of more interest to us here, are the possibilities of its application as an aid in evolution and communication of form - A phase in the design process that handles spatial and visual problems.

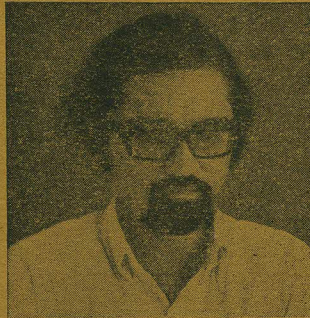
Most designers prefer to develop and communicate their ideas and images through three dimensional models. But models are time consuming, expensive & difficult to modify. More often, during early stages of design when preliminary concepts have to be presented, designers resort to perspective drawings, which are faster to draw and modify.

Several simplified methods are available to draw perspectives. However they are clearly inadequate. When dealing with complex objects, three dimensional representations having maximum correspondence with the end result, require considerable investment in time and are at times frustratingly complex to construct. Consequently the designers tend to use short cuts in such representations, that often lead to errors. Decision or judgements of the forms, on the basis of inaccurate representation, defeat the purpose of the drawing.

To develop or communicate the idea accurately, it is also necessary to represent the objects in perspective from various sides. Using conventional methods, everytime the angle of view is changed, all the constructional details of the drawing have to be repeated from the scratch. Elaborate repetition of the procedure discourages drawing of multiple views, even when the problem demands it.

This is where computer generated perspectives have advantages over the conventional methods. Once the data is stored in digitized form in the memory, any number of perspectives can be generated from different viewing angles, with considerable ease. All of them will be as detailed as the data is. The computer can untiringly repeat every detail in all the views.

The examples show a series of perspectives of the famous 'Barcelona Chair' designed by Mies Van der Rohe in 1929 for a pavilion in an exposition. Based on the orthographic drawings of this chair, the form was digitized using little less than 2000 points. Almost equal number of connections (joining lines) between the points were defined.



Faculty member at Industrial Design Centre (IDC). He has graduated in architecture & later studied at 'Institute of Design', Illinois Institute of Technology, Chicago, where he spent part of his time in studying computer graphics. He is also actively associated with Indian industries as design consultant.

The program performs several operations using this data and the instructions about the view. The instructions include viewing distance, drawing size and the values of rotations of the object along X, Y & Z axis. First series of perspectives show rotations of chair around the vertical axis. (Fig. 1).

The program¹ used for drawing the perspectives shown here, has several other unique features. The digitized Co-ordinates and the connecting lines of each part or component of the product is partitioned during the data entry. Each partitioned section can be labeled by the name of the component. The labels of the list of components that you plan to view, are included in the execution commands, a feature that gives full control over the image to be viewed.

In the example shown here, visual information about the frame, seat and back supports and the cushions is serially retrieved to construct a sequence of images (Fig. 2). This is not only useful as a presentation technique, but it is also a helpful feature for editing the data.

Ability to untiringly draw perspectives of complex 3D objects, has established its credibility as a communication tool, but it is worth while investigating the possibility of use of this graphic technique during the early exploratory stages, when solving problems like development of spatial compositions of components and later, the enclosure shapes. This is an important stage that precedes the development of a complete form configuration.

During this stage, it is customary to first draw perspective views of the schematic form of the object, using basic geometrical volumes of the shape being visualised. Using these block diagrams as a framework, detailed forms and its variations are sketched out. However limitations of the conventional methods of drawing discussed earlier, permit the drawing of only a few diagrams from

1. The program used in the chair example is developed by Professor Charles Owen, at Institute of design, Illinois Institute of Technology, Chicago. The programme has several other features like drawing stereo views etc. Some of these features like allowing partial use of data makes it particularly useful for product designers. The chair shown here was drawn using this programme on UNIVAC 1100 using CALCOMB Plotter.

standard viewing angles, mostly drawn using short cuts. Since the diagrams become the basis of further development of sketches of the design concepts, their accuracy of the proportions is important. Besides the Perspectives form, several viewing angles are equally important since they quickly bring-out Inconsistencies in the sketched design concepts. This feed back forms the basis for correction and development of the idea. Both these aspects are best dealt with in computer generated perspectives. Block forms are easy to digitize and accurate views can be generated from various angles with little extra effort. Later using these frameworks, details can be sketched out. Appropriateness of the sketched variations can now be checked from all these viewing angles. Interestingly, such rotations of product, bring the views closer to the conventional process, where designers hold the 3D models in their hand and lovingly rotate it freely in space, to get the feel of the form.

It will be even more exciting to use such a programme with other programmes that show greater promise of its acceptance. Once the data is available in the digitized form, it is possible to perform several operations like changes in the sizes and proportions of the object. It is also possible to selectively distort it along specified axis. Using this new data, perspective views of the new variations, can be directly generated for comparative studies.

This is by no means the only computer application for spatial and visual studies. Several designers have experimented with various ideas using computer graphics as a tool. These include organization of optimum floor layout of buildings, to connecting colour video terminals to generate alternative colour schemes for products. The aspects touched here represent one of the promising applications and is selected because of personal familiarity.

Rapid technological developments, for which this field is best known, is an important factor contributing towards its acceptability. New Computer Graphics systems, with keyboard input, CRT displays, and more powerful languages for graphic facilities are less inhibiting to learn because of their directness.

The interactive possibilities, bring the use of such equipment closer to the designer's way of working, and would probably be the most important factor contributing towards its acceptance by designers in future.

High resolution CRT displays, and more recent developments like textured, shaded images in colour and shadowing for increased intelligibility are bringing the computer generated images closer to the realistic representation, a feature that designers would eagerly look forward to.

Indian Institutions with larger resources are sure to use such systems in the near future. However it may be a matter of years, before such systems can find wide spread acceptance. Small design offices will have to be content in sharing such facilities with larger establishments. In any case, with such rapid developments in 'Computer Graphics' its entry in the design field can no more be ignored, but only encouraged.

Figure 1

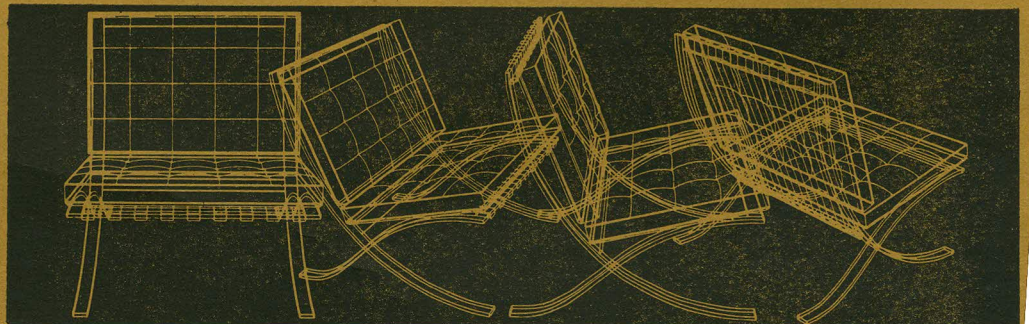
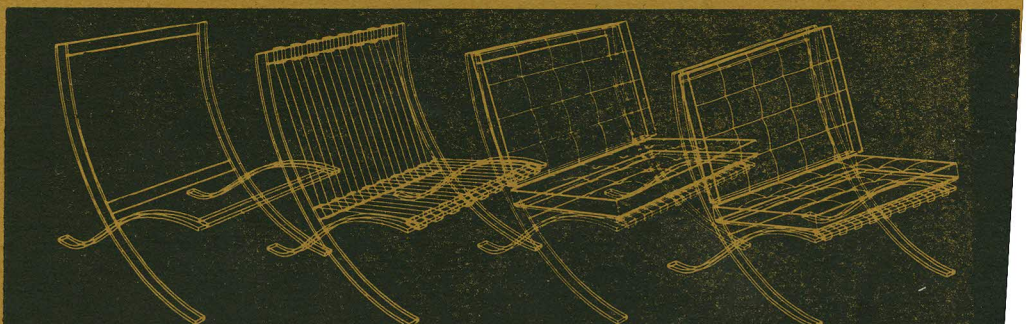


Figure 2



Design and Desarrollo

Ettore Sottsass

Speech made by author at the ICSID conference in Mexico city October, 1979.

Not being a professional Philosopher, not being a professional essayist nor a professional politician nor an ideologist and, finally, not even being and **integrated** professional designer, I was desperately thinking how I could deal with such general, universal, political, historical problem: how, in fact, could I have anything to do with the happy settlement of the world.

In my obtuseness as a common man, I was thinking that this kind of problems should be taken care of by specialists, by professionals, by very special professionals like for instance Mr. Carter, or Mr. Breznev, or Mr. Begin, or Mr. Giscard d'Estaing, or all these other gentlemen, to whom I never spoke, who never spoke to me, and whose faces I only see in the grey-faded pictures, appearing like ghosts, every day, in the newspapers, in the pale-blue newsreel or during election campaigns, sometimes. And, for what I know, all these gentlemen with all their well-dressed hundreds of helpers, with all their beautiful-haired secretaries and all their smiling, oblique-looking courtesans, they keep, very much to themselves, the professional areas where these gigantic problems are dealt with. I really don't know how I can interfere with their mysterious works.

So, what am I really being asked for?

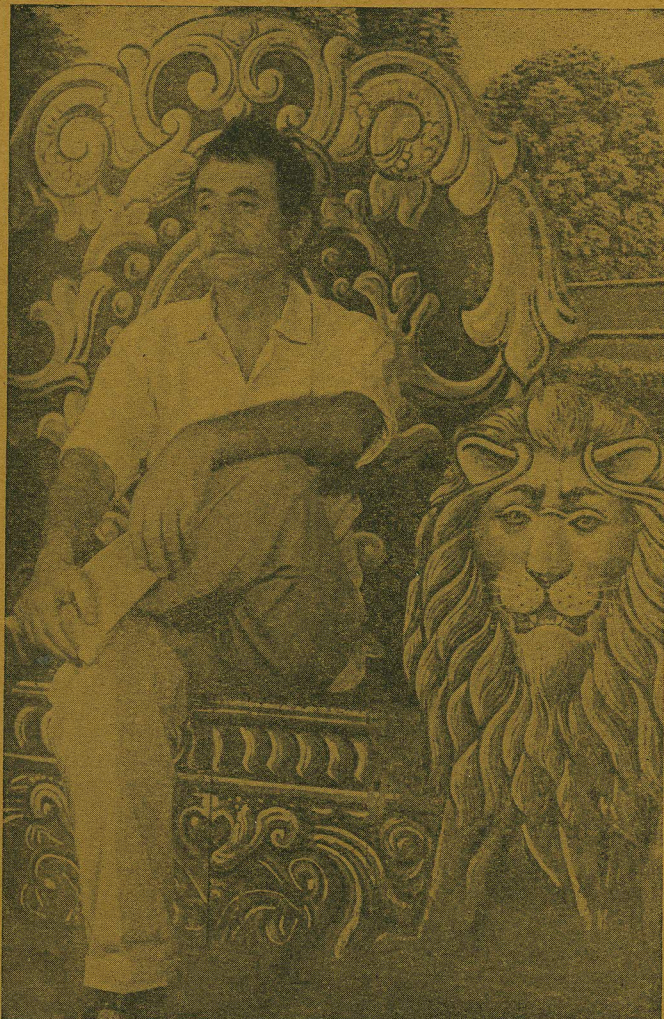
On the other side, the idea of having the round ticket Milan-Mexico City for free-and even more so-, the idea that I could have (because of this ticket) the possibility to see Mexico City-and more-, to speak with Mexican young or less young friends or even old architects, designers taste very good tacos spend some silent afternoons in front of the famous, ancient, Toltec and Aztec and Maya, and meditate. Here I am-not certainly to tell anybody something brilliant, but in fact to ask what does it mean, that we are here, all together, ready to discuss the relationship between design and "desarrollo": and particularly I would like someone to explain to me what does it mean, that word "desarrollo"; I am asking what vision, what utopia, what figure are we supposed to give to that so much ambiguous and obscure event which we are calling "desarrollo".

Because that is the point: if we are supposed to work for, or around, or about "desarrollo", shouldn't we have some idea on how that "desarrollo" looks?

I am wondering if one can be sure enough that there is any fixed, integrated idea or any fixed, real "desarrollo" in any part of the planet, that may authorize anybody to even use this presumptuous word, or if, on the contrary, there is no "desarrollo" at all, just - when it happens - ritualistic adjustment to uncontrolled changing of conditions, or just ritualistic adjustment to ever-changing of conditions of that planetarian general figure which we call-just to be quick-history-and of which **nobody** - **never** - has a complete, definite control, neither visionary nor-even less-scientific.

Unfortunately I have the feeling (I don't know if I am wrong) that we are just using this word as it is usually used as an imprecise metaphor, as a word that means nothing, just a simple way to cover, with a vague propaganda-optimism, the always-cruel side of history, the always-killing methodology that belongs to life: I am asking now if this idea of "desarrollo" does not look-maybe-like the Judas' smiling love-embrace that tries anyway to keep everything together:

-Beautiful architecture-barracks, so many barracks everywhere - Hiltons everywhere and "desarrollo";



Designer, sculptor and philosopher consultant to Olivetti, Fiat and many other Italian industries. His trip to India in 1961 has profoundly affected his work and way of life and his subsequent iconography combines surreal and pop images with mystical elements. Visited IDC as a UNESCO expert.

-Condensed decisional power-red flags everywhere-military parades-any flags everywhere and "desarrollo";

-Silver shiny Airlines-airports everywhere-tired waiters everywhere and "desarrollo";

-Friendly, very friendly banks-we are gently surrounded by banks-or state capitalism "and desarrollo";

-White yachts-Florida channels-Palladian, Frank Lloyd Wright villas and "desarrollo";

-Professional-academic-religious-mafia associations and "desarrollo";

-Military technologies-expenses-big weapons-markets everywhere- and "desarrollo";

-Sport industries-Olympic, national competitions and "desarrollo";

-Cars industries-religion of aggression- and "desarrollo";

-Alcohol-solitude industries- and "desarrollo";

-Porno-solitude industries- and "desarrollo";

-Solitude industries and "desarrollo"...

I don't feel so incredibly sure, so relaxed, so happy, any time I am supposed to see "tout court" the "desarrollo" flowing out like vital blood from the big economical, industrial, political, cultural programs of the big Nations: I really am not able to relax if I have to look at the "desarrollo" idealized and shown in International Fairs by all these big, government public-relation Institutes, by all these agencies of big and less big Nations, using all these big photographs, gigantic photographs of workers that are compelled to look like idiots, smiling down from tractors in the middle of seas of crops still to be cut; gigantic photographs of the same workers, maybe in the evening, being very happy and compelled to look more like idiots - with wives and friends dancing all together "the real dances of the people" in front of an accordion; - gigantic photographs of the Mister President looking - even the President-like a sort of idiotic father kissing a child-or (a little more as everybody knows, in all these happy governmental packages about "desarrollo", virginity has a large space, gigantic photographs of rivers and forests and mountains against the sun and golden lakes with a rotten canoe in the foreground just because, where nobody can live but where the Nation can hide a few hundred, silent red skins, there the beauty of national nature is well protected - don't you know that? And gigantic photographs of the very strange objects that have been sent to the moon and that pass, every twelve hours, over our heads, carrying atomic bombs-or are they carrying "desarrollo"? They also carry special instruments, special electronic inventions that tell you how the weather will be, so that you will not forget the umbrella when you leave home to go to the office; and, finally, due to the fact that the so-called "culture" has always to be taken in consideration, I mean music, art, architecture, design

and similar activities, again gigantic or maybe a little less gigantic, photographs of the Opera Ballet; fifty white young ballerinas dancing while the chorus of the Second Infantry Regiment is singing the standard song about some kind of freedom ...

It is because of all these strange images that I become very suspicious and now wonder if we are really supposed to stick to this idea of "desarrollo" that comes out from the happy screens of the big International Fairs or similar; if we are supposed to stick to the basic, super-white, super-western political statement and program for which "desarrollo" means the possession, at once (it does not matter how) by everybody, of more and more and just more pure Mechanical energy, and for which-as corollary everything else has to be sacrificed and obliterated as dangerous. Because these white Fathers, these white big Party Chiefs, these big white Presidents, these political professionals, these bureaucrats, directors, these standard white power people of any kind, bankers, industrialists, intellectuals, power people of any kind, really believe that there are not, there will never be, there have never been **other possible visions** of "desarrollo" than this western one, **nowhere**: not in Africa, not in Asia (which is big) not in Polynesia, not in ancient Europe, not in ancient America, nowhere.

All these big, powerful, white Fathers call all these places "underdeveloped" countries: these white Fathers are absolutely sure about the God blessed destiny of their vision of "desarrollo" to the point that our big, solid, standard western civilization, progress, "desarrollo", has become a general physical and cultural invasion, flood, aggression, colonization against the planet, against all the Nations which are different, all the Nations that do not fit: because-as it is-this kind of white "desarrollo" must be totalitarian and aggressive, to be able to survive, it must expand' it must involve everything and everybody, to get energy wherever energy can be found and to consume it, to the point of total entropy...

I am sorry. I beg your pardon if I get more and more uncertain, embarrassed about that general, standard idea of "desarrollo".

I am really uncertain, embarrassed, and even kind of tired because of the presumptuousness, the fanaticism, the stubbornness, the 'institutional nonsense through which our industrial white idea of desarrollo" is carried on, communicated to the people, spoken of, built up ...

In other words, what scares me always, is the fact that our dream 'of industrial "desarrollo" is so wild and uncertain that again, it assumes aggressive methods and produces indiscriminated destruction - tout court-of too many, more or less ancient, thick, biological and cultural deposits, utopias, achievements, conventions.

It scares me that every time we get involved with "desarrollo" it seldom happens that there is care, awareness of the shocks produced of who is going to be shocked, of the chains of reactions, of the chains of the chains that will, no doubt, develop.

Seldom there is that care; seldom there is that sense of reality and measure and gentleness, and this is why the idea of "desarrollo" most of the time is of no use, or of very little use.

Anyway, I really think that to distribute and possess energy, that's a very good idea.

And it is not even such a new idea as someone may believe. The old story of our planet I think, is the story of a destiny that deals with the possession of energy; sometimes possession by some isolated man, sometimes possession by families, sometimes possession by more people and so on. Sometimes, by energy, people don't just mean mechanical energy - sometimes they recall other kinds of energy because, as everybody knows, there are many, super-many energetical matters or forms of energy and so on ...

But let's stay as close as possible to the mechanical-chemical, basic, popular idea of energy;

— Bread, spaghetti, maccheroni, tomato sauce: to possess all that means to possess a lot of energy.

— Coca-Cola, Pepsi-Cola, Vodka, Black & White, Watt 69, Suntory-Sake, Tequila, Grappa, Pineapple juice, Orange juice, Margarita, good Chablis wine, good Chianti wine, Dom Perignon: to possess all that means to possess a lot of energy.

The light bulb over the table, at night, wherever it is, it makes one possess time and informations: that's energy in form of information.

Radiotelevision, high fidelity, stereos, telegraphs, teleprinters to possess all that means to possess a lot of informations: a lot of energy.

Cars, trains, airplanes, boats, bicycles, trucks, motorcycle, roads, to possess all that means to possess space as a form of energy.

All these kitchen gadgets that everybody knows: to possess all that means to possess energy.

Cold, hot water, hot air, cold air, ice, that's more energy.

Playboy, Pent-House, pornoshops, blue movies, pornoculture, male and female erotic culture: to possess all that means to possess informations. It gives a lot of energy.

And all these books, they are all informations, like condensed energy ...

More and more energy for everybody, to live longer, to be taken care of; to breathe mountains and sea air ...

So we are slowly but steadily stepping into a future which I happily see like the Festival of Welfare, the Festival of the possession of energy. Everybody finally very happy because of the possession of energy, everybody surrounded by a cloud, maybe a halo of energy.

Already it is possible, sometimes, to see people - more or less fat - opening the door of some immense car, coming out smiling or not, surrounded by a halo of possessions of a very large catalog of energies: and this is maybe what we are likely to see happening in the happy future of the "desarrollo". Everybody coming out from very new, beautiful cars, surrounded by splendid, sumptuous halos of energy of different type and form.

Is it really this that we want to see?

Is this what we are going to see?

There is just one more question that I would like to ask. I would like to know who are the people responsible for the design of these figures of energy. What I mean to ask, is, *who* is managing and administrating all these energies, who is building up the real, private and public meaning of all that catalog of energies and

figures of energy: I am asking who is, at the end, building up all the rituals, all the mythologies, all the scales of values; who is designing the good and the not good; who is designing the ever moving languages through which a whole society is able to keep together, to communicate, to send and receive messages, from private to public, from public to private. I am asking who is designing the identity of any super happy society surrounded by a halo of "desarrollo"?

Because to me the real mysterious problem concerns at this point the ways, the methods, the operations used to give form to the white Fathers' big statements on production, economics, management to all those very powerful and obscure events, to the impersonal statements of institutions who at the end set up that emotional ceremony where these decisions become known and are injected into society. Who are the set designers of the ballet around the big decisions, the set designers of the drama where, because of those supernatural decisions, some can go on living and others are prepared to die?

The mysterious problem is that all those very powerful and obscure statements and decisions suddenly, or sometime less suddenly, become visible, readable, audible; they become sources of hopes or desperation, they become something that we want to keep or throw away for ever, something that we want to have Faith in, for ever, or something that we will never believe-they become, at the very end - "the culture" of a group of people in the anthropological sense of the word or, in an other sense (that I like better because I don't trust very much the use of the word "culture"), they become the identity image of a large or small or very, very small group of people.

How does it all happen?

I remember I got very scared the day I read somewhere, or someone told me, that there exist professional people that are taught in schools, universities and such, to give visual touchable, audible form, and even taste to the wills, laws, programs of the big Fathers: someone told me that the Fathers, the people in power, the people that control armies (maximum of energy collected) the people that have big amounts of money, stockyards of energy, or the other people that are able to build up existence of the energy of the unknown, of the magic and supernatural- someone told me that all these people of power ask other different, special people to give a certain "sense of life" to their possessions, decisions, laws; they ask these specially trained people to design the superhuman, supersocial, supercosmic "fresco", the final diagram where all the possessions, decisions, laws, can happily fit together.

The problem of the big Fathers is to make people happy so that the big Fathers can make themselves happy too, more happy; happy forever. The big Fathers, they don't want to have complexes.

The problem of the big Fathers is to distribute a complete, reasonable, usable, nice vision of life so that everybody may happily take part in it; everybody may be respectful, everybody may collaborate. That's the maximum of the general happiness.

So someone told me that there are people dedicated to that operation, as already explained, of putting down clear, complete, integrated - as much as possible - diagrams, fitted with the general superhuman central statement: these people are supposed to put down all the informations, all the explanations, the whole didactics, sometimes to put down even whole philosophical books that insist on the ideological - I mean extra human - aspect of the matter.

And then, there are other people, and they are supposed to put down the explanations, the diagram of spaces, any kind of space : countries, towns, streets and plazas, stadiums and prisons and then architectures, private and monumental architectures an immense quantity of different architectures that show and explain - most of the time - the misery of people and the grandeur of power, the elegance of money. And then, there are people that are supposed to organize fiestas and fairs, and very special areas of magic, like churches, in between, or Crazy-Horse-like places, somewhere, and so on, and then naturally there are other people that are supposed to organize the whole diagram of the production and presence of objects, instruments, gadgets, toys for everybody, for children and grownups, and that's it.

All these people together are supposed to deliver the explanation of what we can do with all these many, many objects and instruments and toys appearing every day on the scene, and then to deliver the explanation of how to relate the new objects to the old, that is what to do with memories, nostalgias, utopias et-cetera; what is new and what is old, what is beautiful enough to be kept and what must be thrown away.

All these people together are supposed to distribute around the real, the good, the prized idea of culture in an anthropological sense : somewhere, somehow, as a sort of permanent alibi, a sort of super-cleaner of (as some say) "the dirtiness of life", meaning the dirtiness of all the illegal and legal-business, assassinations, corruptions, wars, impotence, aggressions, cruelties, desperations that are going on.

These people that I am speaking about, the ones called intellectuals, philosophers, poets, artists and similars, maybe designers, they are supposed to offer to life sometimes, somewhere, a cleaned-up area - kind of a paradise time, a divine break, the feeling that yes, there should be a clean space, there should be a way out, there should be a way over and that is may be, art, poetry, suspended-magic happenings, creativity (as they call it), culture in general and so let's distribute energy in form of culture, art and poetry complete with everything; let's cover the "dirtiness of life" with a sheet of magic, of beauty, let's let on that, in fact what the Fathers really longfor, is nothing else than culture and art, universities, museums, libraries and concerts, and vice-versa : those who follow the trends of culture, art and poetry, those are the ones that live near the Fathers, the ones who participate to the complete building of the social reality. If one doesn't recognize, if one doesn't deal with culture, art and concerts, the way and where the Fathers have put it, then he's not a man of worth, not a one that participates the construction of the social happiness: he is one who "doesn't understand"- as they say-he

is one who belongs to the underdeveloped class, sometimes to the underdeveloped nation . . .

I got very scared when somebody told me about this whole **conditioning** mechanism : mostly because it is very clear, and more and more clear, that this mechanism is controlled and kept in motion by programs that are prepared, discussed, and sent out more or less like metaphysical laws, from very restricted social areas where very, very few can ever enter; areas that are very tight, untouchable that are inhabited by a caste of untouchable people, who keep for themselves the management of the "desarrollo", the knowledge and the management of the cryptic figures of technology, while the peripheral communities, the peripheral classes around it loose, day by day, any possibility of reaction. More the "desarrollo" - that kind of "desarrollo" - turns out to be a winner, more it spreads around and more the peripheral classes loose their identity, abandon their languages, forget their rituals, their ceremonies to assume the figures, the signs, the conditions, the values established day after day the central programs : they loose possession of themselves, their cosmic possession of themselves, they loose awareness of themselves as minor communities, as exploited classes, as distant nations.

And that doesn't mean that I am scared or that I am crying because the minor groups or the exploited classes are loosing the beautiful, folkloristic, soft, ancient forms of identity; I really don't think that there is time now for nostalgia for keeping antiquities of any kind, I think it is always time to see what is next, it is always time to design utopias or figures for the present and the future - that's clear and settled: what scares me, what I am waiting for with suspicion, is the time when the minor communities, the classes without power, the far away nations, in short, the majority of people, will have lost the inner possibility to decide the changement for themselves, to decide their own figure of "desarrollo"; I am waiting for the moment when the balls of all those people without power will be completely, and for ever, cut by that gigantic super-well technologically organized white idea and management of "desarrollo"; I am waiting for the moment when, because of that bloody event, all those people without power will no more be able even to love and make children-the children of their own destiny, the possible children that symbolize the continuity of their own life.

Maybe I am wrong. I hope, I am wrong; I hope the books I read about that kind of processes, the informations somebody gave me about this whole story are all wrong.

But the suspicion remains and my own private life is very much uncertain.

Product Appearance as Communication

C. J. Abend

Appearance plays many roles. R. S. Hunter, in his paper, "Appearance Attributes of Metallic Surfaces," describes one aspect,

in finishing metals, the mill technologist does not think in terms of extinction coefficients, spectrophotometric curves or goniophotometric curves. He thinks in terms of adjustments he must make to the finishing process, the ingredients of the equipment to bring about *the appearance* which customer desires.

It is apparent that, for the technician, the scientist, or the researcher, appearance attributes have different qualities and dimensions. For the designer, these qualities go beyond measurement which relates only to structural or physical properties. To the designer, product appearance holds the key to communication.

In the definition of its scope, ASTM Committee E-18 on Sensory Evaluation of materials in Products states one of its major objectives as being "The promotion of knowledge, stimulation of research, and the development of principles and recommended practice for sensory evaluation (including discrimination and preference) of materials and products" The significant point for designers, researchers, and industry concerns the matter of discrimination and preference. It is this aspect which bears a relationship to appearance as communication. Although a great deal is understood about the technical standards which control appearance, its aesthetic meaning is still illusive and goes beyond physical parameters.

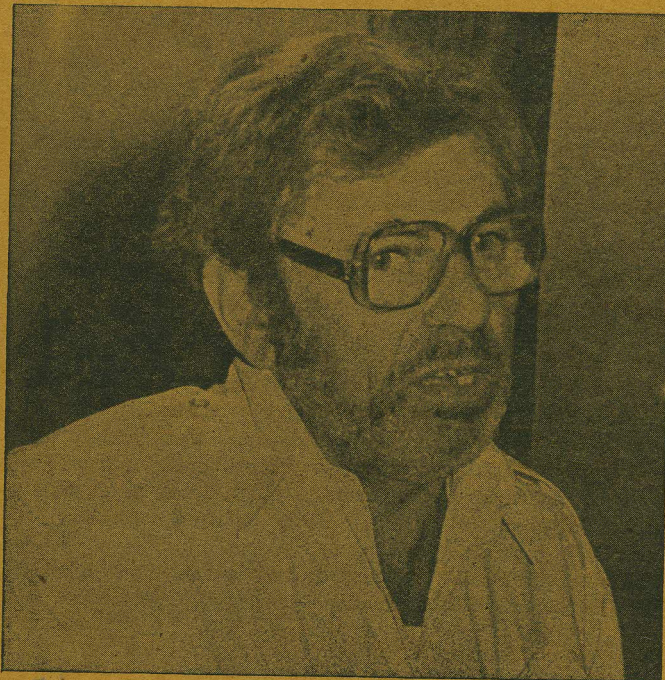
It is my contention that discrimination and preference are regulated by appearance qualities, I concur wholeheartedly with ASTM and Committee E-18 in their interest to consider additional aspects of appearance study, and I recommend focus on industrial design as an area which holds much promise.

As clarification to the reader, where the words "design" or "industrial design" are used, it is meant as the total outcome of a creative and premeditated process of development. Appearance, thus, represents the outer manifestation of configuration, selection of materials, human factors, as well as manufacturing, engineering, and cost considerations.

Product Appearance as Communication

Appearance as communication raises some aspect of novelty by suggesting that man-made objects have the power of "speaking to us" and of transmitting a message. Simplistic as this may seem, it is my contention that this happens when we perceive objects. A message is contained and conveyed through the media of the appearance qualities of the object which are an inseparable part of its design. These elements deliver their particular meanings which seem to be comprehended by specific populations.

Where the word communication is used, it is generally regarded to mean the transmission of written or verbal information. Such communication is sequential in nature; data bits are received and linked in accordance with a learned scheme; written or spoken code represents vicarious values and experiences. The word "pain" for example, stands for a condition which becomes much less abstract through actual sensation. A picture illustrating pain would come closer to communicating this meaning and evoking the expected response. Written and verbal communication have limitations because they use codes that are abstract and must be acquired. A more total presentation of meaning occurs in painting and sculpture in which an idea is communicated without



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verbal intervention. The expressive use of human form such as Rodin's "The Thinker" is so evident that, regardless of the language of the observer, little more has to be said about the experience of pondering and deliberation. The entire story content is delivered to us at once. I believe product design, as a similar kind of configurational expression, is no less capable of delivering meaningful ideas. Design ideas are transferred by relying similarly on premeditated and aesthetic cues.

These aesthetic values are space, volume, proportion, scale and texture, etc. The difference between sculpture and a product is that expectation of expression occurs in the former; communication takes place in both, but in the product it is not intellectualized, and thus thought to be absent. Who could believe that such objects as tables and chairs possess meaning? Nevertheless, we know that a message is received because consensus of discrimination and preference usually exists and can be measured. Insofar as industrial designers try to understand and plan its human consequences, the design of a product is a concern with communication. Design characteristics carry significant cues for human behavior. Most designers intuitively select the conditions for response; what is absent is a rationale for determining the meaning evoked by a specific design.

The process of product communication can be considered ephemeral and can go unrecognized by both designer and his audience. Product designs emerge as a solution-oriented creation, conditioned by both intuitive and rational judgments and governed by physical and economic limitations; yet, in the end, their final form seems to defy explanations. The challenge of "Why did you do it like this?" are often painful questions put to the designer and, similarly, "Tell me *exactly* why you don't like it" is equally perplexing to the observer. The answer, in both cases, may lie in the quality of the message content itself. Upon this is dependent the rapport between form-giver and perceiver.

This visual language is transmitted via appearance and the materials used. Thus, to relate visually perceived attributes to product appearance requires a vocabulary which is not yet defined. The complexity of this task is self-evident; as in any language, there are many ways of saying things. This is dependent upon the skill of the designer. It is within his power to say things more practically, poetically, or more convincingly, than others—or to say them in ways that rankle and produce a negative response.

Product appearance is a general description of the intelligence and sophistication which produced it; it imparts information relative to manual dexterity, comprehension, beliefs, psychological needs and, sometimes, even type of government. R. S. Latham says.

All of these things are read out of objects every day by the unskilled layman. It is the silent language of the senses. It occurs at the unspoken emotional level and judgments are formed, trains of logic instigated, and action taken on the basis of this language. This is the first way a human being accumulates the information necessary to make judgments.

Visual Perception-Key to Communication

To examine the idea of appearance communication we must consider the related nature of visual perception which begins in infancy and is governed by biological human development and experience. Mussen et al report revealing findings.

Work by neuro-physiologists indicates that the visual areas of the cortex are responsive to contoured edges in particular spatial orientation. This suggests that the longer attention to the stimuli with contours (by infants) is not based on learning but is the result of biological characteristics of the nervous system. This tendency to look at contour will leave the infant to focus his attention on his mother's eyes because of their inherent black/white contrast.

The answers to adult response may be found in infancy which may offer clues about reaction to usual stimuli. What is the degree to which inherent biological responses rather than learned responses prevail in their effect on visual perception. Experiments have indicated, for example, that infants look longer at more complex stimuli as they grow older. Additionally, it is reported that contrast and movement are not the *only* governors of the infant's attention. Later on there are other influences, primarily the effect of *meaning* and *familiarity of the stimuli*, and there are attentional preferences for stimuli which supersede infant interest in contrast and movement.

I am prepared to accept the deduction that *attention, discrimination, and aesthetic preference must be compatible to scheme which is biologically conditioned*. This may vary among individuals which might explain individual tastes; nevertheless, there appears to be such a thing as aesthetic consensus. The sensory and communicative attributes of appearance will depend upon further inquiries into its physiological and psychological roots. One such area is research having to do with pleasure centres in the brain. Experiments on laboratory animals suggest new implications. In implanting electrodes into specific areas of the brain, pleasure sensations were reproduced by other than the normal stimuli.

Approaching an Appearance Vocabulary

A simple analysis of visual vocabulary might begin by isolating two related components. One is aesthetic (shape, contour, line proportion, and texture) and the other is associative. Shape and contour are already known to function as information in signs and symbols; similarly, other aesthetic properties also contribute to meanings. These could be derived from the aesthetics of forms in nature, as well as some of the biological preferences previously mentioned. The component of association is developed by social and personal experience with materials. Together, these two factors establish meanings which could be considered as the basis for an appearance vocabulary.

Sensory experience with materials can form associations which may be transferred such as when used in product appearance. An example of appearance association might be the mood of placidity and fluidity created by the observation of a quiet lake; correspondingly, as the texture, turbidity, and color of the same body of water change under a threatening storm, the associative mood also changes. Thus, a material association is established; yet the same material with altered texture or color can convey different information. If we respond to such a context, then it must be on the basis of comprehending some fundamental aspect of appearance vocabulary. Researchers cannot yet offer laboratory data to prove that such a vocabulary becomes psychologically imprinted; nevertheless, empirical observations suggest that associative qualities (such as serenity or threat in the case stated) are transferred ideas along with material appearance when it is reproduced in another context. For example, we are familiar with the warmth and security which the infant attaches to soft

materials like blankets. Is this inclination forgotten or is it still active in adult behavior in the selection of clothing and other goods where there will be tactical contact? Consider stone and the coldness and finality we associate with say a gravestone marker. Both, association and (aesthetics) shape, play a part here. The permanency, solidity, and massiveness of stone, however, can be transferred without conveying finality merely by altering aesthetics. This occurs in architecture wherein the use of stone expresses lastingness. Our impressions of the gravestone can also be further changed if we substitute a different material. If the marker were constructed of plastic, fur, or sponge, it would conflict with the associative component of this object and would likely be rejected.

Our further understanding of appearance vocabulary is helped by inferences defined by its structure. For example, glass has some of the smooth and transparent characteristics as water; is it possible that glass possesses associations with that serene and placid lake we spoke of? Does the popularity of glass as a container for liquids have something to do with the fact that water is clear and liquid (and was once believed to be potable)?

If this sounds too esoteric, it may be because it is. Is there better evidence? I offer the suspicion that basic sensory experiences which occur by contact with materials in nature form a strong scheme for aesthetic and associative values; it is these to which we make subconscious reference even when we encounter them in products. A material which supports this view is wood—a friendly material which no one seems to dislike. To learn why, we might begin by considering man's experience with wood. It was one of the first materials with which he interacted; it lent itself easily to shape and form by his own hand to meet his basic needs. Wood may remind us of a chair, boat, house, or literally thousands of sensory experiences all of which have had agreeable and "warm" associations. For this reason, we frequently see even fake wood being used incongruously as decorative touches in products in order to evoke these very responses.

In order to provoke further thinking along the lines of a possible vocabulary, I offer a simple and unscientific start towards a generic classification of material characteristics (see Table 1). These descriptive words can be used to classify appearance by texture, structure, or state (the full technical parameters of material definition are obviously not met). The purpose of this exercise is to select any combination of texture, structure, or state to see if one can recall a specific material, which can be described by these factors. To start off, let me suggest a porous/homogenous/dense material which might be described as a sponge. Are there aesthetic or associative values that these two materials possess in common? If the sponge lost its flexibility and were hardened into shape, would it resemble concrete? Would it bother you to consider the possibility of using sponges as a building material? Similarly, would it concern you to use a "soft" concrete block to soap down your car?

What is it about these material characteristics which is being communicated? They are all vested with associative values. Can we detect any common visual denominators which suggest an inherent and transferable vocabulary? Are there relationships which evoke similar responses? If so, then we may be able to isolate those aspects which contain universal meanings. There are more sophisticated approaches, but if we can identify a few reproducible qualities, we are on the threshold of establishing an appearance vocabulary.

As to the possibilities of appearance code, I find it interesting that, whereas appearance is visually perceived, it also relies heavily on other sensory experience. In my opinion, kinesthetic and tactile experience plays a special product role; I believe this is so because of the transfer of associations which become visually reinforced. A piece of ice or glowing coal no longer has to be touched to be believed. Hundreds of tactile learning experiences are established in infancy in which the child literally tastes his way through his environment; it is likely that such experiences are not forgotten. When one observes barbed wire, the communication is also inescapable—"Don't touch!" The response here is primarily tactile but is coded as material and shape. Change the material to "barbed spaghetti" and it is not likely to evoke anything but a smile.

The entire area of appearance factors continues present interest because its vocabulary is largely uncharted. This uncharted area offers new ground for research by behavioral scientists,

TABLE 1—*Appearance description of materials*^a

Texture	Structure	State
smooth	loose	pliable
porous	connected	hard
fibrous	compacted	stiff
reflective	opaque	brittle
striated	translucent	flexible
hairy	cellular	viscous
soft	granulated	watery
absorbent	crystalline	dense
rough	homogenous	resilient
textured		powdery

sociologists, and market researchers. The non-verbal language of appearance is capable of definition when deeper inquiries produce agreed-upon and reproducible meanings.

Syntax and Forms of Verbal Communication

If configuration is the handwriting of the designer, then such correspondence must be governed by a non-verbal syntax. We are familiar with non-verbal communication in such forms as symbols and pictographs which are conceivably understood as the visual equivalent of words and slogans; they convey only limited ideas. In products, appearance-syntax employs other components, linear definition, texture, and so forth, are the elements with which the non-verbal product "sentence" is composed. These identify the subject and main idea, as well as display the visual adjectives by which the content of the message is communicated. What is said is the function of syntax structure; how it is said is the quality of individual style.

In many products, it is not too difficult to identify associations with smoothly-contoured surfaces which resemble the female anatomy. The toothy grin of the old Cadillac bumper, as well as the rear-view facial expression of the Volkswagen are both in the category of such borrowings. Similarly, some of the smaller consumer products take on the disguised characteristics of animals which may appear threatening, reassuring, or cute. Such practice is sometimes deliberate, but it points out the

^aThe basic description of materials is shown classified by appearance. There are many possible combinations of appearance qualities which can create a similar subjective response.

pervasiveness of transferred associations. Along with such transference have also come some ideas. Ruesch and Kees take note of the special non-verbal communication of objects.

Object language, because of its time and enduring qualities, plays an enormous role in archeology, and history. Until the discovery of the first written documents to come down to us, the only enduring traces we had of the remote past were those that survived in the form of objects and buildings. Tools and weapons were known as early as the stone age and the fact that material articles almost always carry either implicit or explicit instructions with them, makes it possible to reconstruct events from prehistoric times, even though we lack knowledge of the verbal language of a particular period.

To paraphrase the authors, objects convey information just as the spoken language; objects possess information coded in design and materials which have survived for centuries. In our accumulative knowledge of the evolution of the earth, man and society have been reconstructed from appearance information coded in object language. Ruesch and Kees make another *salient* observation.

In linguistics, the field of syntax is given over to the study of mutual relationships of verbal signs to each other. A corresponding relationship in object language is expressed with a combination of materials, surface, structure, color, and shape to produce an object that embodies the functions of noun, adjective, verb and adverb all in one. Finally, the sequences of sentences leading to the expression of an idea are achieved in object language through the arrangements of several articles (components) in space; the idea that is then expressed might be called a theme.

Object and Information-An Illustrative Example

An object which most exemplifies appearance as communication is the hand ax. I have chosen this object because of its simple form and because it is a well-recognized tool. It represents a configuration which was not "designed" but has evolved slowly and which occurs repeatedly in various civilizations. In referring to the hand ax, I would like to examine those appearance elements which make up its design and, which, create a statement about its use. Let us look at the form of the head.

1. It is sharp at one end indicating it is a blade and can cut or penetrate. The width of the blade infers, not only that it is a working surface, but the size of the work possible; the position of the head, relative to the line of the handle, establishes the direction of work. The naked head and its edge are direct about its function because it is exposed, thus, identifies an aspect of hazard; it does not encourage one to grasp this object by the blade.

2. Another form factor is the pointed shape of the head which is directional and arrow-like in nature; this is a further visual clue with respect to direction of work. The back of the head is blunt which reveals thickness and heft; massiveness, and potential inertia are made visible. The head, composed of metal probably iron or steel, reveals a characteristic metal surface denoting solidity, strength, weight, and denseness. A metal head further suggests that it has the ability to create and withstand impact.

3. Now, look at the handle. To begin with, it is essentially a stick or lever; the inference is that it is to be hand-held and is

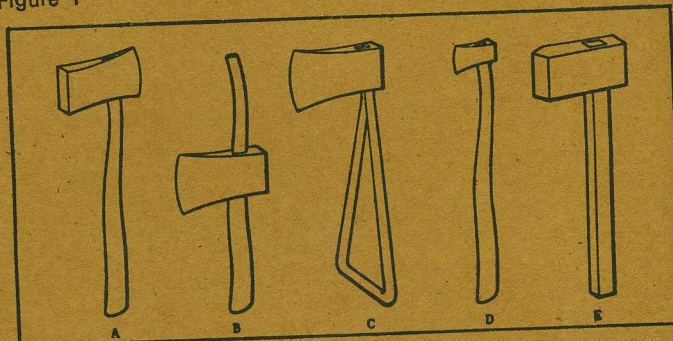
something to beat with, or to wield. The material is wood; this is familiar, and should be agreeable to the touch and inviting the possibility of grasp. The diameter of the handle and the slightly curved section near the bottom, locates an area for grip. This stick, however, can be held anywhere along its surface, and this possibility is shown by its smoothness and length. The fact that it is wood indicates that it may be resilient and perhaps absorb shock. Furthermore, the length of the stick, (about the size of a man's extended arm) suggests that similarly it may be used to swing or strike. Because of the heavy attached head, it is not likely that it should leave the hand; it is evident that it should be restrained.

These are some of the visual clues which I see generated by configuration. Following are further assumptions regarding the combination of the two elements—head and handle. In this respect, they are beautifully articulated in that they compliment the idea of union. The most obvious quality is the apparent tightness of wedge into a split shaft; devised with clear intent, this mating must be contrived for a purpose in which both elements show a permanent relationship to one another. The reasoning is confirmed by the top-heaviness of the blade which suggests that, if lifted, its regulated position is to swing down with respect to gravity. The mass at the end of the stick identifies the advantage of inertia. The ax is its own instruction manual.

This interpretation can be challenged as rationalization after the fact, yet everything about the appearance of the ax seems self-evident. This is because its design is an outgrowth of these very factors. All products possess inherent information, but perhaps not quite as successfully as the ax. This is why I believe that products that communicate well generally survive and those that do not, fail.

A control test we might employ to check appearance communication is to make slight alterations to the ax design and see if this changes the impression of what it communicates to us. Figure 1 is such an experiment in that materials remain unchanged, but only configuration is altered. In Illustration A, the orientation of the head is reversed which strikes most people as odd or frustrating. Illustration B shows the blade position changed to the centre of the lever. This ax can still be used but presents a dilemma. In Illustration C, we employ a split handle at the head which forks out into two distinct grips (perhaps this is an improvement as it suggests a two-handed operation). Illustration D, alters the design by means of a change in scale: the size of the tiny blade now seems to have lost all of its advantage of mass and looks ineffective and peculiar, which it is. (The reason for this is similar to why toys look childish to adults—because their

Figure 1



appearance is exaggerated and out of scale. This causes the idea to be either over-stated or under stated. What is being communicated is the fact that they are not meant to be taken seriously but rather as cartoons of the real world). In the last illustration, E, we have kept proportion and material the same, but changed the shape of the head and handle which is now square. Tactile experience is evoked and one can almost feel the discomfort in this grip: at the same time, the object is no longer an ax. It is something else, perhaps a sludge to be used for breaking rock. With alteration of design, we have altered the information.

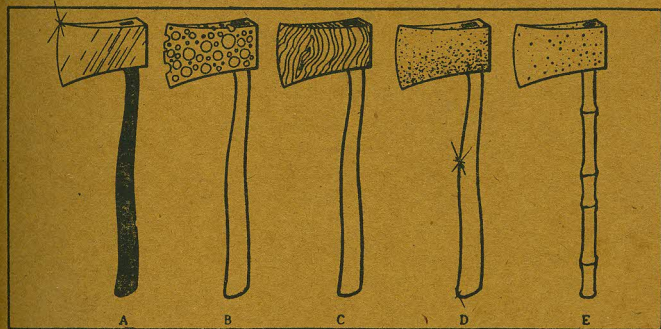
Carrying our experiment one step further, in Fig. 2, we have retained configuration but varied only materials. Some of these get to be ridiculous. How do these designs strike you? (Communicate to you?) Analyze your response and try to identify what it is in the message you receive which makes you tolerant or hostile to the appearance.

Illustration A shows a design composed of a solid rubber handle attached to a clear glass blade. Illustration B shows a design of a clay handle which is apparently driven through a wedge of Swiss cheese. (This is what designers call a delicious solution). Illustration C merely reverses the material; the blade is now made of wood and the handle is made of steel. Illustration D depicts the handle made of plastic (ordinary polystyrene), and the blade made of granulated sugar.

Illustration E depicts the handle made of bamboo and the blade of cast concrete.

With these illustrations, I conclude this experiment aimed at provoking a personal response. By means of design alteration, and even the use of nonsense situations, it has served to illustrate some aspects of appearance communication. Whether objects say clean or dirty, cool or warm, hard or soft, up or down, is dependent upon the qualities displayed by materials and design. The ax is not unique; similar appearance factors are intrinsic in more sophisticated products and they communicate with varying degrees of success.

Figure 2



Appearance—Embroidery, Candor or Confusion

What we generally hope will be transmitted by product appearance is a veracious and desirable message. If that message expresses a promise which the product is seen to fulfill, then it becomes the stimulus for action—usually in the form of acquisition, or purchase. This holds true whether we are dealing with typewriters or tractors. Where appearance communication is garbled, unconvincing, deceptive, or lacks clarity, then the product will be passively ignored or actively

rejected. "I wouldn't own it if they gave it to me", is an example of failure of communication. This can also happen if the visual information is inappropriate or inconsistent with the user's previous expectations. A few examples follow.

The most obvious information coding is color. Bananas are generally accepted when yellow, ignored when green, and rejected if black. Another example would be if the familiar "Coke" bottle were used to merchandise milk—picture the suspicious white substance which would be displayed; it is likely that this inappropriate message would create confusion and perhaps revulsion. In this case, shape and contour as appearance factors conflict with color. Similar effects can be experienced if we exchange the color and textural characteristics between watermelon and bread. White watermelons and red bread are likely to create responses that are not apt to be positive. Such conditions, however, are mainly examples of error, not fabrication.

Deliberate transfer of configuration style has also been made in products wherein stoves come to resemble computers and electric fans resemble jet engines. At times, such myths are successfully accepted when associative or social values bestow superior attributes to them. When appearance is borrowed in this way, it is often accepted if it has a popularized meaning within the specific market. This is not to condone styling that is imitative or gimmicky but merely explains why superficial designs are perpetrated.

Like other forms of communication, appearance can be truthful or imaginative and this depends on the motivation of its user. Pretense, however, must be understood for what it is. It can have disastrous market results. The legend of the Edsel is a case in point; it communicated gaudiness and epitomized conspicuous consumption, gross affluence, and many of the values from which the public was then turning away.

Inappropriate use of materials can cause the same effect. Recently, an attempt to use the waxed-type milk container as a consumer package for non-edible substances such as toiletries, medicinals, and garden chemicals was tried. These packages failed and were forced off the market. The wax container was too well associated with comestibles, besides which its inadvertent use by children was hazardous. Functionally, it was probably an excellent container, however, the appearance statement as conveyed by choice of material was wrong. Communication, in the examples stated, was dependent on visual signals inherent in appearance of the material itself and in its associated values.

The choice of what products are to say is an ethical one. Some products tolerate little license because neither function, tradition, nor historical usage will permit mendacity. Musical instruments, hand tools, and sports equipment are good examples. There are products, however, which are not so restricted and in which veracity is bent 90 deg. Packaging which holds less than it offers, toys that prove fragile and frustrating, appliances that sprout more controls than convenience, furniture which is marginal but "looks like a million"—are all testimony to cost pressures which result in accepted hanky-panky. Design is often caught in the middle as the courier. Appearance factors in themselves, no more than language, are devoid of ethical values but their use in design is not. The objective of industry is to sell goods, which is often linked to something called "eye-appeal". The dichotomy for both the designer and manufacturer is in determining reasonable limits between

minimum competitive attention and visual fogery. For many, the guidelines are still in dispute. For some, misrepresentation is a way of life. For others an occasional counterfeit is permissible. For all, reputation is at stake while both consumer and government wait to detect any contradiction between message and performance.

The person who instruments these implications for better or worse, is the designer and it is upon him that the burden falls heaviest—for it is he who becomes the lonely custodian of communication. Embroidery or candor is a question always in the balance; professional designs have always struggled for the latter, but it is primarily society which will determine the choice.

Significance of Product Communication

Our technological society has forced us into a greater dialogue with the object. Whether we operate a toaster or a space capsule, whether we are purchasers or specifiers, observers or operators, we are dependent upon information, which must be accurate, meaningful, and fast. This applies even to such whimsical and presumably unessential artifacts as toys which can possess the ability to guide safe behavior and express play value. Can we accept less from more serious good? The need is for more penetrating application of appearance factors which has daily and unavoidable significance for millions of people.

I am inclined to believe that such abused words as "good taste" or "good design" have less to do with aesthetic or esoteric considerations than with satisfying communication. Good design is good communication, and good communication is successful design. Whether it be a consumer, scientific, or industrial product, appearance establishes the first rapport with the prospective user. It identifies the function of the object and reflects the symbolic and humanistic attributes needed to evoke an empathic response. Appearance must communicate these relationships in instantaneous, non-verbal ways. In bottomline terms, it must command attention, bespeak believability, support price, and project the reputation of the maker.

In new and innovative products, it is even more essential that communication be understood for it must express ideas which have no precedent. This requires sophistication in appearance syntax; if communication is ambiguous, the product is a step closer to failure.

A method of appearance interpretation and analysis is overdue, and the threshold of such a technique lies ahead. The applications are wide and easily stated. We require the ability to know what we are saying. We must communicate a product's compatibility to its function and its environment. We must satisfy the user's needs and aspirations in a visually self-evident way. We must convey intrinsic appeal in terms of useful social and personal values. We must transmit information and provide redeemable expectations. We must be able to test the rightness of a design by what it communicates. Finally, we depend upon appearance components as a media to explain technology.

When product appearance is successful, it is because it communicates a visually articulated need. Among other things, the design will state that it performs, that it serves a purpose, that it conveys reliability, and, that it reinforces the choice of the user. Altogether, it is a badge of the company's marketing personality expressed in one object—it reveals the craftsmanship and value being held out. Product appearance broadcasts such evidence continuously. Its non-verbal address enhances the desire to use and possess for its intrinsic qualities. Where these conditions are met, product appearance serves industry's objectives, as well as its customers.

Understanding appearance values may lead us to techniques for better product communication. This would be valuable not only to the designer's understanding, but also in better fulfilling user requirements. Such techniques would also be of import to management which seeks quantifiable answers in areas in which it is about to make substantial dollar commitments.

Product appearance now emerges from the experience and intuitive creativity of the form giver. Some employ a methodology. The design personality develops and expresses Communication Value in a way in which others are not trained to do. This capability also depends upon sensitivity to materials, to people, to aesthetics, and to associative meanings. The validity of the designer's approach is only confirmed by market response. Satisfying complex and often conflicting product requirements could be made more manageable as we approach a science of appearance factors.

Home is not a Haven

Arthur J. Pulos, FIDSA

The object of technology is the application of knowledge to practical purposes and design provides the means by which this transformation may be accomplished. In this context designers are charged with developing a technological environment for living that is safe and sane and humane. Yet, despite all of their efforts, there seems to be an increasing disaffection with the quality of domestic living that is evolving in the so-called high technology countries.

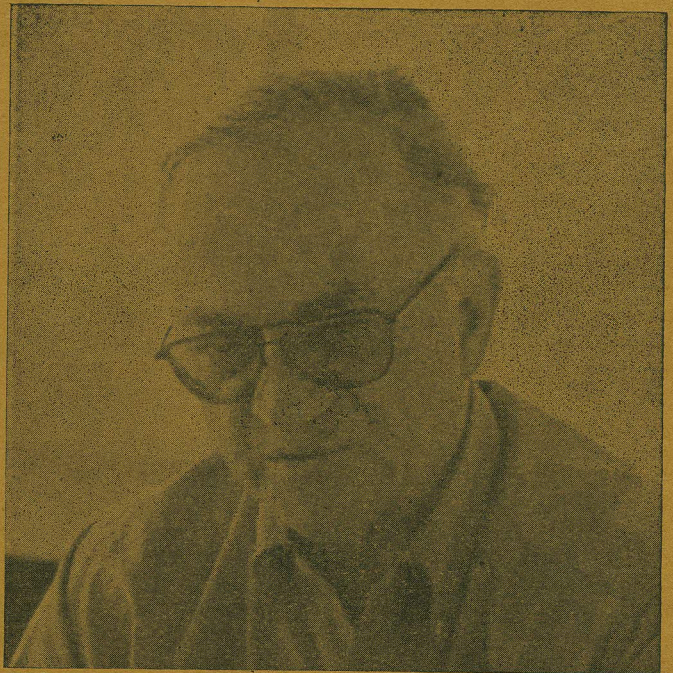
The proponents of technology presume that the ultimate domestic condition will be one in which each individual is suspended in a man-made atmosphere that is insulated against every conceivable threat to survival. This thought conjures an interesting parallel with that of a fetus floating in its sac of amniotic fluid. Yet, it is disturbing to think that high technology must reach its peak only with such insulated cocoons.

It appears already that man's response to the damage that he has inflicted on this planet is to seek a haven that is increasingly with-drawn from it. It is no longer unusual to see people walking around wearing stereophonic headgear equipped with antenna which link them to some distant source of communication and entertainment. They may also purchase womb-like chairs to hide in, if they wish, that are complete with stereophonic speakers and television screens. Buildings and environmental retreats are being designed that include so-called "conversation pits" which enable people to huddle together in a warm and cozy grouping that is insulated from the cold architectural structure that surrounds them. The currently popular modular philosophy for the mass-production of domestic living proposes a sequence of molded shells for such essential needs as nutrition and hygiene, and even for making love.

The home has always been presumed to be a sheltered place because the planet Earth is, after all, a hostile environment whereon man has had to devise such havens in order to assure survival for himself and his kind. Not only are modern homes outfitted with ingenious devices which provide atmospheric control and mechanical appliances which sustain and entertain humans, they are also marked with appropriate symbols which enhance one's sense of security. Such fetishes as a carved or painted emblem over the doorway, a national flag fluttering from a pole outside the entrance or affixed to the window, or a painting of a political or religious leader on an interior wall, all serve as talismans which seem to guarantee security.

Human beings tend to be addicted to many domestic conventions which are as hazardous as they are convenient and comfortable. For example, Americans continue to prefer to live in private homes that are made out of wood, despite the thousands who lose their lives every year when fire ravages such primitive constructions. It also seems to be ingrained in the domestic culture of Americans that a home is not a home unless it includes a fireplace, despite the fact that it may already be equipped with a central automatic heating system. This impulse is strong enough to offset the extravagant consumption of wood from diminishing forests, the unnecessary pollution in smoke and heat that fireplaces put into the air, and the ever-present threat of suffocation and fire.

Despite conventional faith in the home as a haven, the domestic environment is still the most dangerous environment that man has created for himself. More than twice as many persons are injured in the home as are injured away from home. While this may be due to the fact that children as well as the aged and the infirm are more apt to be found in the home than elsewhere, it only serves to emphasize the need for a safer haven. The



Chairman of Pulos Design Associate and has been involved is teaching at 'Department of Design' at University of Syracuse. President of ICSID Chairman of the Board of Industrial Designers Society of America. Member of the Policy Panel of Architecture, planning and Design of the National Endowment of the Arts-America. Visited IDC as co-ordinator of UNESCO/UNDP programe.

tragedies which occur in the home need not be tolerated as the natural reparation to be paid for living in a modern home.

A steadily increasing percentage of dwelling units today are being provided by public agencies. Some are intended for the use of upper- and middle income families but the greater majority is designed to be inhabited by those at lower income levels or by the aged and infirm. All good intentions notwithstanding, the results tend to become specialized ghettos which irreversibly commit the disadvantaged to living in isolation with their own kind. In many cases the insistence of public agencies for structures that are vandal proof and easily maintained can result in living units that are not humane. Furthermore, the housing complexes which result tend to become architectural monuments to satisfy the desire of planners and politicians for recognition.

One of the most invidious results of high technology which affects the home is the tendency to solve problems which may be created by an earlier layer of technology by covering them with a more sophisticated layer. By this process the burden of each successive layer is shouldered by those who inhabit the domestic environment. They do not realize that the extravagant technology is wasteful of energy and natural resources and that it generates pollution which they must compensate for somehow. By way of example, the costs of elaborate packaging developed primarily for the purpose of promoting products in mass media and for serving the need for production, warehousing and distribution convenience tend to be passed along to the consumer who must not only pay for such often excessive packaging at the point of sale but also pay to transport it to his home, then pay to provide storage for it and then pay again to dispose of the package as waste. High technology countries have now found it necessary to develop trash compactors to reduce the bulk of such packaging before it is carted away by complex collection and disposal systems which they have also paid for through taxes.

The concept of the home as a sanctuary implies that it is a place wherein one may expect to be secure from predatory attacks. However, the modern home, while it may afford protection from invasion by beasts and vermin, is more open now to invasion by human predators than were its predecessors. The wonders of high technology have made it possible for one to breach the privacy of even the most formidable physical domestic barriers.

The electronic media of radio and television which may be used to inform and educate citizens in high technology countries in the privacy of their homes are funded in part by public monies in the interest of public service. To a greater extent, however, they serve the interest of mass-merchandisers who are anxious to reach a captive audience with their blandishments. One may, therefore, presume that more attention is paid to shaping the marketing pitch than is devoted to the content of the entertainment that is offered as an inducement to listen. The citizen is lulled into believing that it is all free when, in fact, he has not only purchased the instrument that brings in the programs and their message, but also pays for the energy that they consume. And not enough has been brought into the public conscience yet about the deleterious physical and psychological effect of such instruments on the listener and the viewer.

The communication sciences have spawned vast industries to produce the products that make instant correspondence possible.

However noble these devices are when taken in their purest sense, the price that has been paid for their development and distribution is not nearly as great as that which is exacted at the point of consumption. The human right to privacy may be shattered at any moment by the strident ring of a salesman operating through the medium of the telephone. The fact that one percent of the calls that are made do succeed in selling something to someone ignores the discomfort and inconvenience which is suffered by the remaining ninety-nine percent. Moreover, the public pays for both productive and non-productive calls because the entire concept of telephone marketing was devised to take advantage of the public telephone system.

The most gracious form of communication has always been the hand-written message in which the writer dedicated time and attention to transfer his feelings and ideas to another in a form which could be read and re-read and treasured. Letter writing has been discouraged by the increasing cost of personal or first class communication. The cost of impersonal or promotional literature, addressed to the "occupant" rather than a particular individual, has increased at a much slower rate thus encouraging an abuse of such services by merchandisers. This has resulted in mountains of "Junk mail" which are dumped daily into domestic mailboxes. Such "free" correspondence is ingeniously contrived to induce the householder to pay attention again to a sales message on the premise that a small percentage of positive responses justifies the expense of the effort. What is not brought out is that the real cost of such marketing programs is borne by the householder through public subsidy of the postal system. The waste of resources and energy and the subsequent pollution that is created by unsolicited mail are also paid for by the homeowner.

The following examples are representative of the many instances where established conventions in buildings and furnishings tend to work against the well-being of the inhabitants.

Ever since the so-called built-in kitchen became fashionable in the 1930's cabinetry above the counters has been provided with hinged doors which have caused head injuries to thousands of persons. The simple solution to this problem would be to replace hinged doors with sliding doors. However, the manufacturers of cabinets are so conditioned to hinged doors that they will not change to sliding doors unless they are forced to do so.

The width of doorways and passageways tend to be narrower than they should be as an expression of the economics of building rather than human needs. Only recently have housing agencies begun to force legislation through which would make doors wide enough in public buildings to accommodate an invalid in a wheelchair. This simple concession to convenience and safety has yet to be required of private dwellings.

Of all the rooms in the American home the bathroom may be considered to be the most advanced in design. More than any other room it led the transformation from Nineteenth Century living into the Twentieth Century. Yet the simple concession to safety which would be provided by the automatic installation of grab bars to assist those entering or leaving the wet and slippery bathtub is usually ignored by home builders. Apparently such grab bars are not considered within the province of responsibility of carpenters who put in the walls of the tub enclosure after the tub has been installed by the plumbers. Once again the safety of the inhabitant is lost between the interests of competing trades.

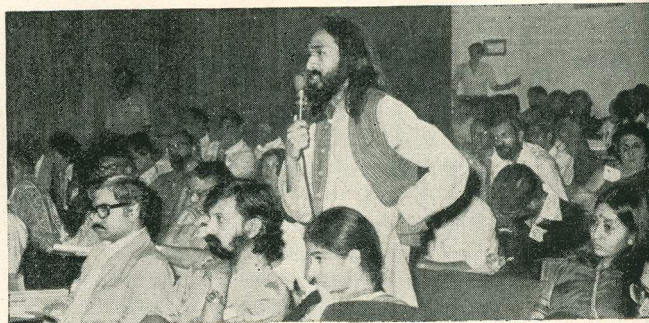
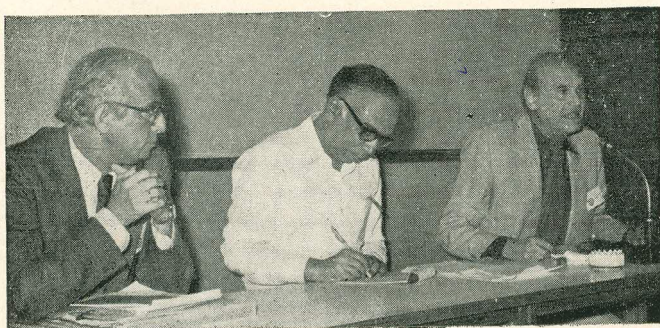
Conventional wisdom holds that safety costs more and that it can be included in a product only by increasing the price that the consumer must pay for it. This leads to what is perhaps unintentional but nevertheless harmful discrimination against the poor. Carpets that will not slip, safety treads on stairs, non-skid surfaces on bathtubs, protected electrical outlets, appliances that are double insulated, ladders that are stable, etc., are all reserved for those who can afford to pay for them. One may speculate that there is some correlation between the level of income and the rate of accidents which occur in the home.

The more durable products which are manufactured for domestic use in a high technology economy are also caught up in the runaway proliferation that seems to be endemic to mass-production and merchandising. In a vallant effort to keep an industrial economy rolling, an endless stream of variations of each product must be thrust at the homeowner year after year. As a result the promotional cacophony serves to put the

homeowner into a state of constant disenchantment with the quality of his technological environment. The burden of the products that he already possesses and the pressure on him to add more or to replace those that are "outmoded" aesthetically if not technically, demands an inordinate amount of the homeowner's energy and attention. In the process the home becomes a troubled arena of conflict rather than a haven of comfort and security.

This paper has been directed primarily at some of the actual and potentially adverse effects of high technology on the domestic environment. It attempts to point out that high technology does not necessarily reduce the hazards of living in a home. It may, in fact, serve to exacerbate them unless it is sympathetically managed. Human beings have a basic right to homes where privacy, convenience and security are assured. High technology should guarantee such a higher quality of living.

1st National Seminar
on Design Education



1st National Seminar on Design Education

The first national seminar on 'Design Education' was held at Industrial Design Centre, IIT Bombay from 15-17th January, 1981, it was co-sponsored by UNESCO and UNDP with the patronage of ICSID (International Council of Societies of Industrial Design.)

The seminar aimed at analysing the relevance of the present design education, to explore new inputs essential for design education and developing means to create greater design awareness among the people.

The seminar was attended by people connected with the education and practice of design (Architects, Visual communicators, industrial designers, art teachers etc.) both from Indian and abroad. Relevant papers were presented and discussed in the first two days and in the last day, four working groups investigated different sets of problems related to future directions in design education.

Prof. S. Nadkarni, Faculty-in-charge, Industrial Design Centre introduced the theme and objectives of the seminar.

Prof. Bedford, Director, IIT Bombay inaugurated the Seminar. Prof. Arthur J. Pulose, President of ICSID and Chairman of Dept. of Design Syracuse University delivered the Key note address, which he felt was more appropriate in naming it as a keyhole address, rather to look through the keyhole at the problems and issues of design education. He presented a string of ideas to think of during the seminar and stated his views on the anonymity of the designers and aesthetic, technical and humanistic dimensions of design.

Summary of Papers

The importance of having appropriate design in improving living conditions in the largest and poorest social strata in the country was stressed. Besides professional designer, one of the suggestions was to have programmes to educate barefoot designers, who become future implementers of a 'people's design'. It was agreed that designers should assume a new role in order to make socially significant contributions.

Speakers from art schools brought realisation on how modern western design trends have shadowed the relevance of tradition and discussed ways to make design in reality, rich and spontaneous, reflecting the identity of the culture and continuity of tradition.

The existing system of design education practised in major schools in India were evaluated and it was suggested to modify the present curriculum, with new inputs and to experiment new methods rather than following the rigid irrelevancies of the past.

A new emerging philosophy of products that is giving rise to a more humanistic designer, who is concerned totally with the concept of design for human service was discussed.

Participants discussed and agreed on the importance of design awareness to be brought among the people and the necessity to introduce design basics at secondary school level. Designers from U.S.A., U.K., Finland, Italy, Mexico and Korea talked on their experience in the international scene.

Summary and Conclusions of Working Groups

Group 1

Dealt with the problems of Education in developing countries. A 'bais' for the design education was voiced by the Group rather than the actual contents of the course.

It was felt that a 'basic sensitivity' to Indian economic and cultural needs should be incorporated in design Education. Study and documentation of Indian Cultural traditions could form back ground material in Design Education. Study and research into local innovations, rural problems, small scale and decentralised industries, waste reuse was recommended. Deeper look into the design problems, to identify correct problems with resolution in mind was felt as the present necessity. Inputs in Behavioural sciences, transaction analysis etc, were suggested to train designers to become successful implementors.

The need for design education at various levels like consumers, school children, business managers, govt. administration through courses and exhibition was stressed by the group.

It was felt that different orientations in education would be necessary to tackle immediate problems of industry and larger problems of the country.

Group 2

The topic of discussion of Group '2' Design Research its meaning and implications for future design education'. The group expressed concern about frequent and loose use of the word 'Research' by designers often for mere academic prestige as it happens in USA. The group concluded that three kinds of 'research activity' are relevant in the Indian context. First to satisfy the peculiar and complex needs of developing economy. -interdisciplinary projects which deal with basic economic issues, research into design approaches for various levels of manufacture-small scale, cottage, craft in addition to mass scale. Second kind covers study and documentation of traditional, cultural heritage as well as current patterns of behaviour. The third kind of research would be to generate new body of knowledge important to designers in areas like aesthetics, perception and design education.

The role of designer in research projects was discussed. The research area being tackled at IDC and NID were reviewed.

Group 3

Discussed about the nature and extent of Design curriculum in Engineering and Management education. The group observed that the Engineering education in the Country is treated in a cut and dry manner, with emphasis on calculations, often ignoring the conceptual level thinking. Lately, importance to drawing and workshops are reduced specially in IITs and students have hardly any exposure to industry. Group felt that emotional identity, visual thinking, aesthetic and human concerns of an engineering act need to be inculcated in engineering education. An elective course on Industrial Design and design project course at the first year level to open up the creative talents of students were recommended.

It was observed that the Management education in the country is more on American model and does not account for Indian realities. Design inputs are needed to develop sensitivity to social and cultural concerns of people and to natural as well as man made environments. The group felt that all managers need to know about the process of product development as well as corporate identity of the organisation. Extension courses of short durations to practising engineers, managers and small scale entrepreneurs were recommended.

Group 4

Concerned itself with the design awareness programmes for secondary schools. The group felt the necessity of fresh

outlook for the present art educational programmes of secondary schools. A re-orientation programme for Art teachers was suggested.

It was agreed by all that children should be made sensitive to the visual, spatial and cultural aspects in their immediate environments and these aspects be discussed analytically by teachers. Schools should have collection of visuals and books on art. Visits to Art galleries and museums need to be arranged for children wherever possible. Art schools like J. J. may help under privileged schools through N.S.S. programmes in this respect.

Visits by artists, designers and other professionals need to be arranged to schools to aid teachers, visits to local craftsmen and learning of skills like pottery, Takli by children were recommended. Learning from Nature and abstract objects needs to be encouraged. Importances of project work where children themselves 'do' things imaginatively was stressed by the group. The group also felt that art courses may be given more time and weightage in school curriculum and evaluations.

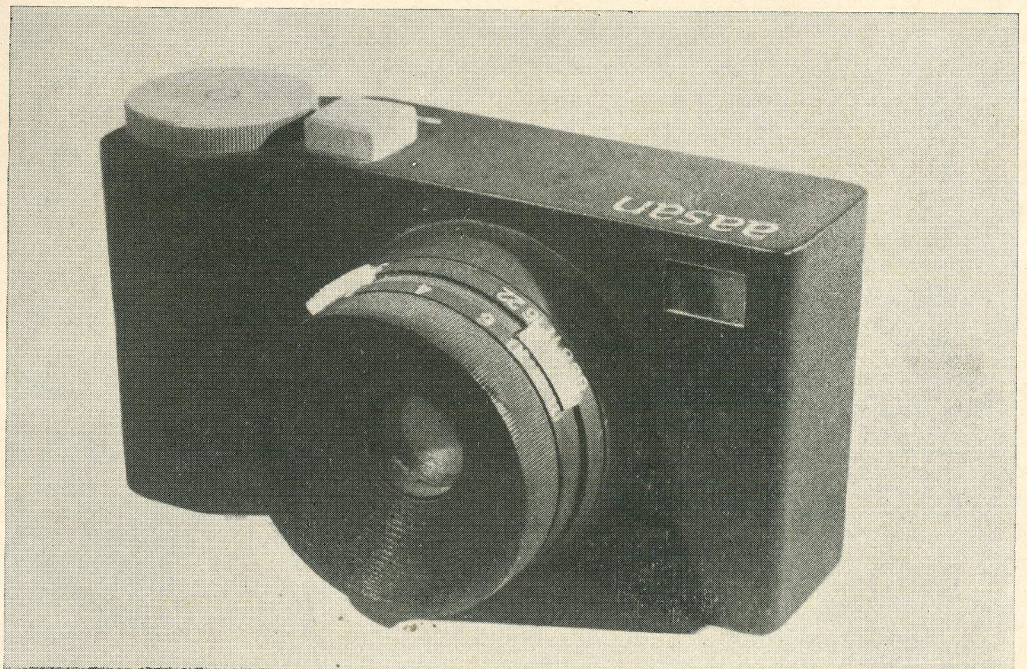
List of Speakers

- | | |
|---------------------------|------------------------------------|
| 1. Alejandro Leso Margain | .. Mexico |
| 2. Antti Murmeaniemi | .. Finland |
| 3. Arthur J. Pulos | .. USA, Chairman ICSID |
| 4. Ashok Chaterjee | .. Chairman, NID, Ahmedabad, India |
| 5. Baburao Sadwelkar | .. Director of Art, Bombay |
| 6. S. Balaram | .. NID, Ahmedabad, India |
| 7. Carla Venosta | .. Italy |
| 8. Dilip Chitre | .. Designer, Bombay |
| 9. Hannon Ezekiel | .. Economist, Bombay |
| 10. H. K. Vyas | .. NID, Ahmedabad, India |
| 11. Harikumar Nair | .. Designer, Trivandrum, India |
| 12. Kumar Kale | .. Bombay |
| 13. Kohei Sugiura | .. Japan |
| 14. Manu Desai | .. Designer Bombay |
| 15. Theo Crosby | .. Pentagam, U. K. |
| 16. Uri Soloviev | .. USSR |
| 17. Yona Friedman | .. France |
| 18. Yeshwant Choudhary | .. Designer, Bombay |

35 mm Camera

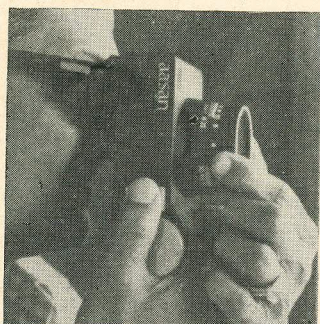
Design : Vilas Malankar

Guide : K. Munshi



The box cameras are manufactured by 2 or 3 companies in India but these are too simple to be of interest to serious beginner and nature photographer. The imported cameras which are very sophisticated and complicated to use are not within the reach of many such photographers. This camera design tries to fulfil the needs of the beginners and amateurs in photography in India by having sufficient adjustments available in aperture (5.6 to 16 f) and shutter speed (1/30 - 1/100 sec. + B) and focusing. It uses 35 mm film which is preferable because of its availability and low cost.

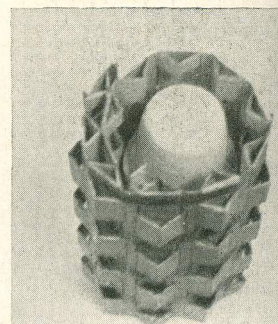
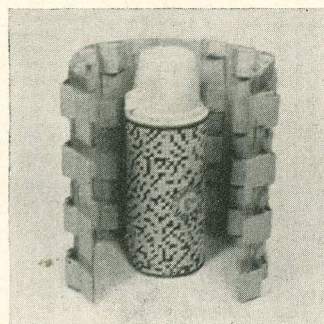
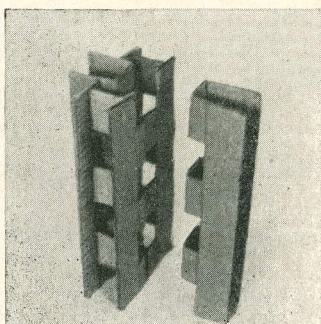
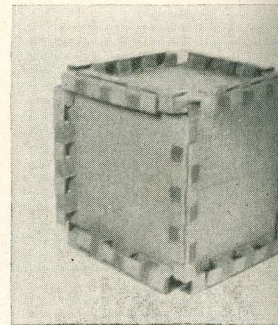
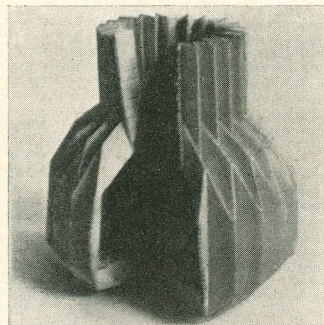
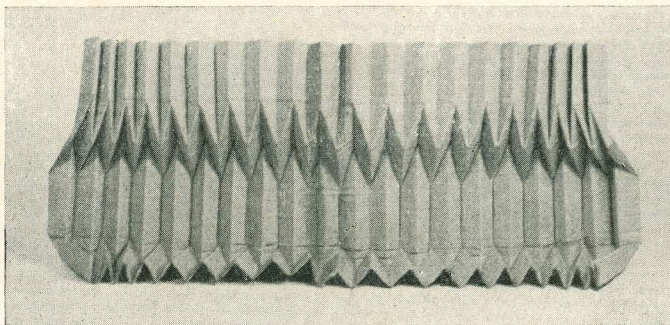
Rewinding of the film after shooting has been eliminated to simplify the mechanism and also to prevent the film from getting scratched while rewinding. Enclosure design has also been made simple to keep the costs low. The shape of the camera has been evolved so that easy it is to grip, focus and shoot. Due emphasis has been given to communication and graphics both for functionality and giving the camera a precision look.



Exploration of the Potentials of Corrugated Board

Design : Siddarth Katrekar

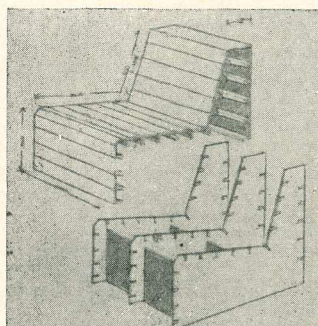
Guide : U. A. Athavankar



Corrugated board, is used very extensively for conventional purposes like packing boxes, cushioning materials etc. The existing ways of working with corrugated board and scope are certainly limited in nature. The aim of this project was to explore the material, its properties and methods of construction so as to widen the range of its usability and also to suggest more efficient and economic solutions to the problems instead of the existing ones.

The accent was on the ways of using the material and suggesting new constructional methods so that the properties like flexibility in plane, shock absorptivity, rigidity, interlocking possibilities were developed and/or enhanced.

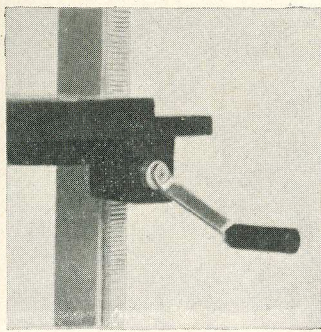
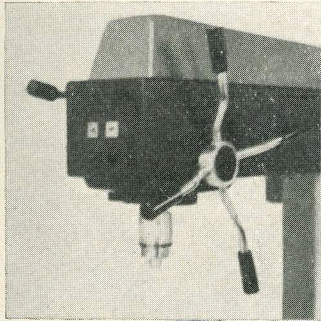
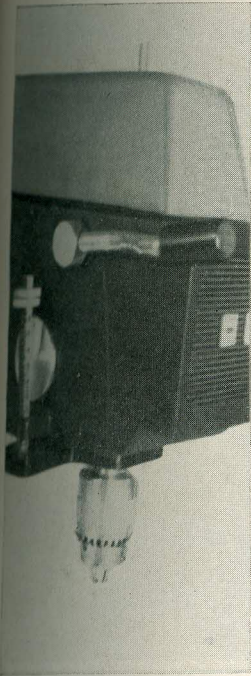
These properties when developed and used either in isolation or in combinations led to interesting and uses end product ideas. Many products were developed to prove the concepts. Some of these are shown here, Most of these products were foldable could be transported in flat form.



Bench Drilling Machine

Design : Ashok Panwalkar

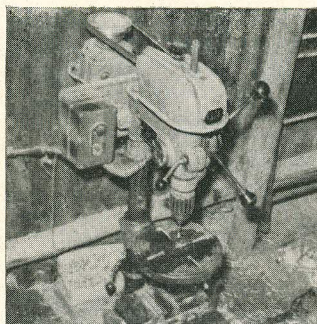
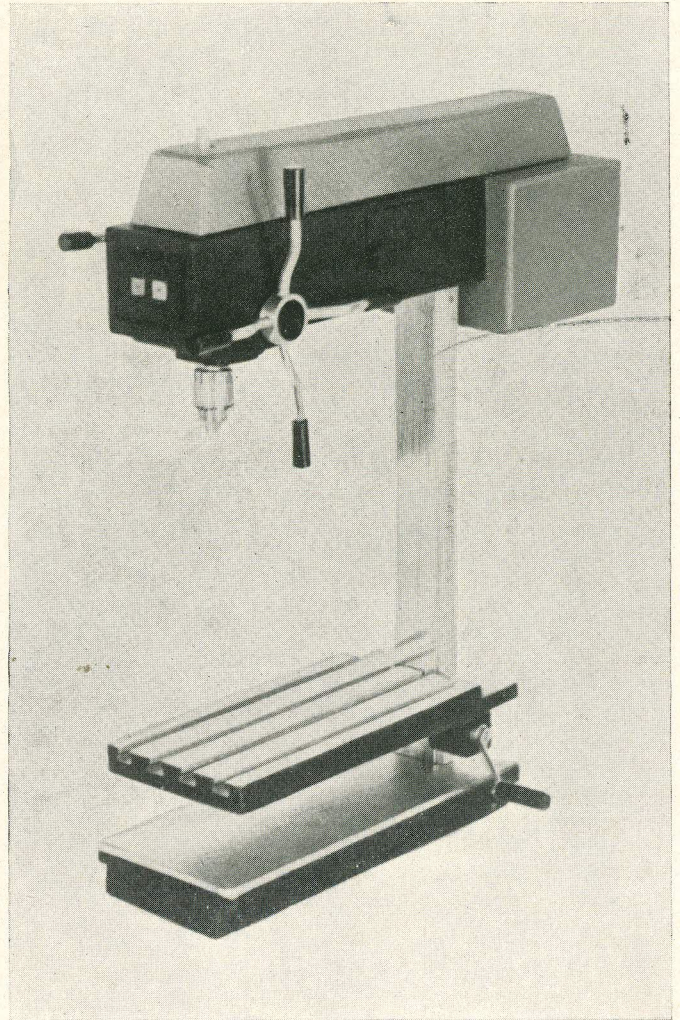
Guide : Prof. S. Nadkarni



Although number of bench drilling machines are available and manufactured by various manufacturers in India, there are very few who have given due consideration to the human factors and aesthetics.

In this project, besides taking care of the asthetical requirements the machine was designed so that it could be used by an operator both in standing and sitting postures. The working table handles, starting switch and on-off switches are so placed and designed that they are within the easy reach of the operator in both these postures. Work-table adjustment as well as the changing of belts for speed change has also been simplified.

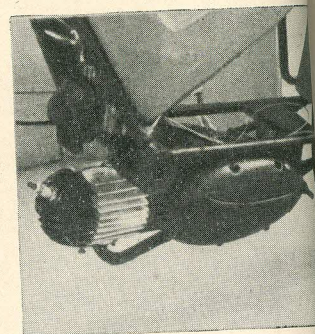
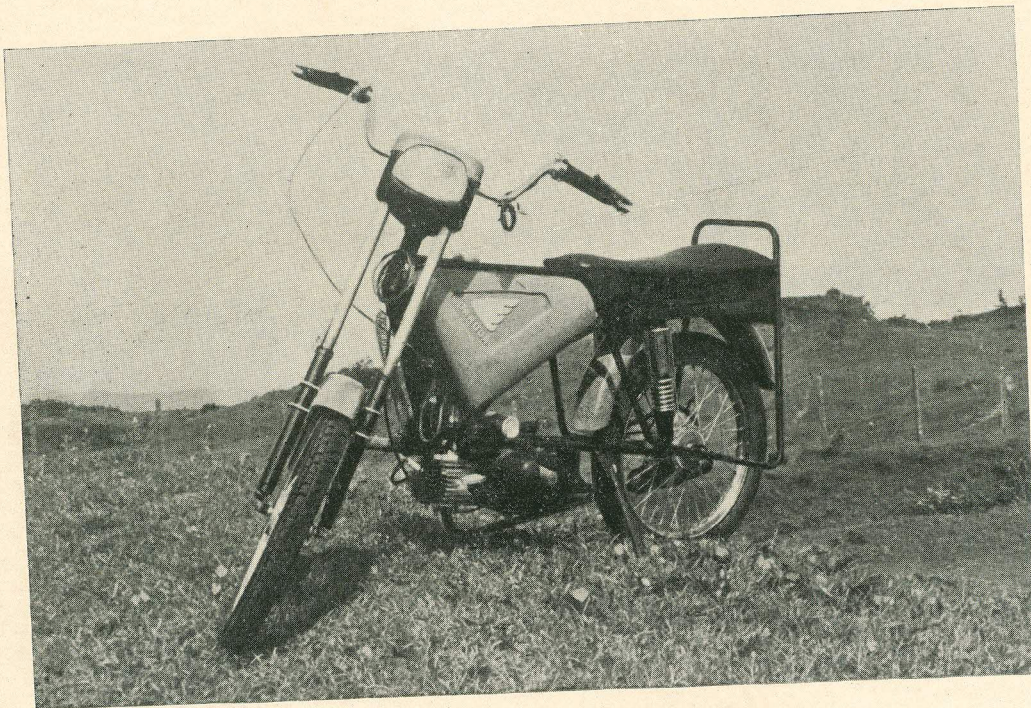
There is also built-in storage for drill bits, chuck nuts, spanners, etc. A simple mechanism for automatic on-off has been provided which is controlled by the upward-downward movement of the spindle. This is a power saving device. Square drilling attachment can be easily attached to the machine wherever required. Lighting is provided so that markings on the work-piece are easily seen.



Redesign of Moped

Design : Suehir Atreya

Guide : K. Munshi

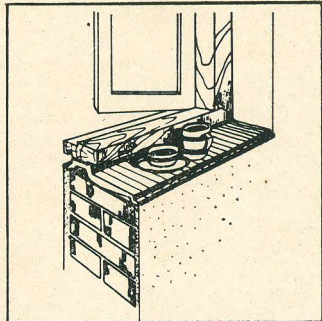
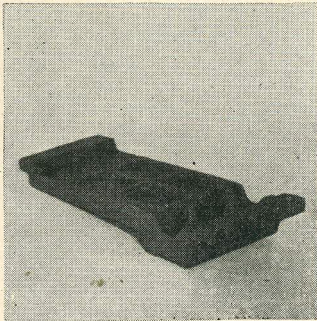
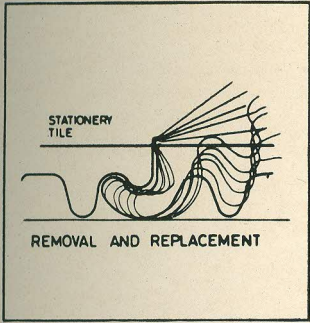
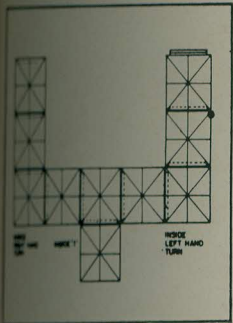
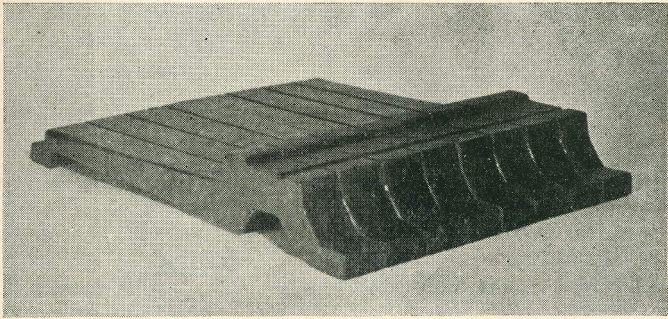
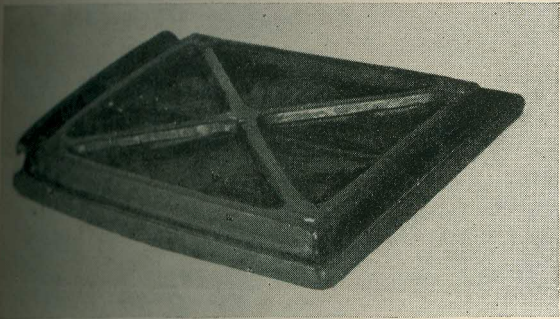


There are number of moped manufacturers in India and inspite of this and their low basic as well as running cost, these are not very popular. One of the strong reason for their low acceptability is the way they look-weak, low powered, low speed, vehicles; kind of motorised version of bicycles. Most of these do not appeal to young rider who buys it both for fun and personal transport. Very little attention has been given to rider comfort and road safety in these vehicles.

In this project an attempt was made to improve the visual aesthetics of the moped so that it appeals to the younger group at whom it is aimed. Human factors has been incorporated into the design from the very initial stages. Seat, steering, pedals-their respective positions and shape has been ergonomically designed. The engine is fitted low for better stability and suspended along with the rear wheel for vibration free ride. Brake light, flasher lights have been incorporated both at the front and rear end for road safety.

Clay Products for Buildings

Design : Gokhale V.
Guide : K. Munshi



Clay has been one of the oldest form of raw material in building industry. Two basic reasons are attributed for such an extensive use of clay products in buildings. One, almost unlimited availability of raw material; second, cheaper and labour oriented processing technology.

The Project presented here is an attempt to achieve new alternative designs which can replace present day use of cement in building products.

Four such products were identified where use of cement is redundant and one has to depend heavily on skilled workmanship.

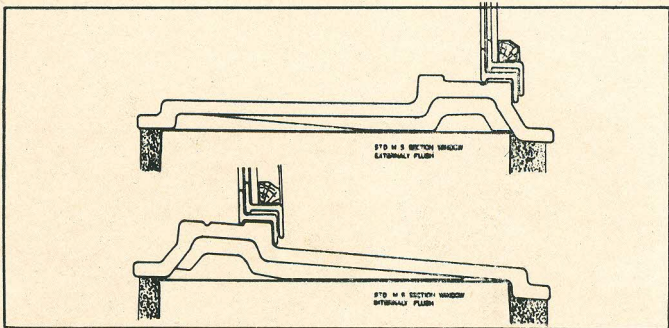
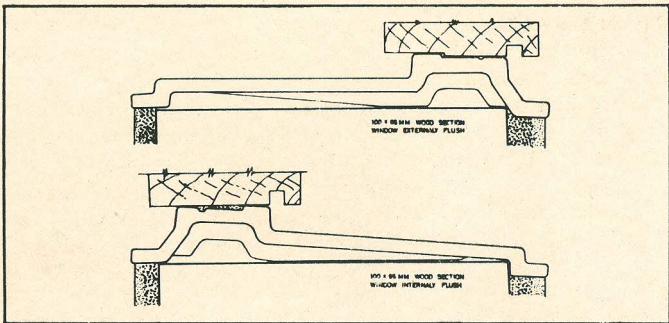
- 1. Parapet copping tile
- 2. Window Sill Tile
- 3. Flashing Block
- 4. Lintel Block

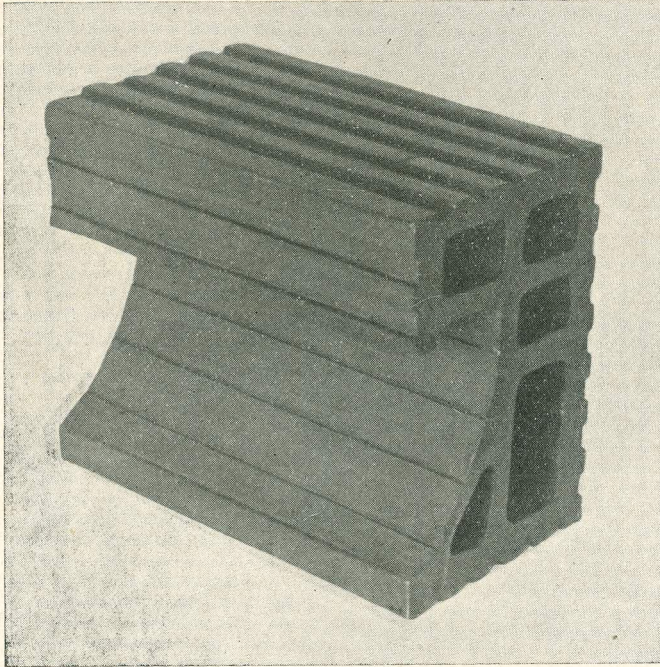
1. Parapet Copping Tile :

The coping tile is pressed tile of clay which provides (a) sufficient protection from rain, (b) can be extended in any direction, (c) gets locked with other adjacent tiles, (d) gives neat and streamlined appearance. Apart from this the cost (per Rmt) also works out to be lower than conventional practice.

2. Window Sill Tile :

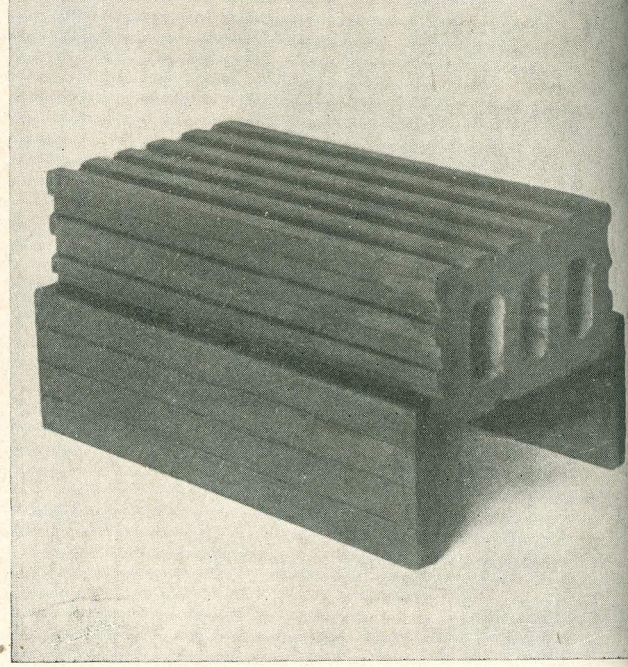
The Window sill tile is also a pressed clay tile, but special attention has been given to its use in the interior. The same tile can be used for steel windows as well as with wooden window frames, it has a built in flexibility in terms of placing of window, flush inside or outside.





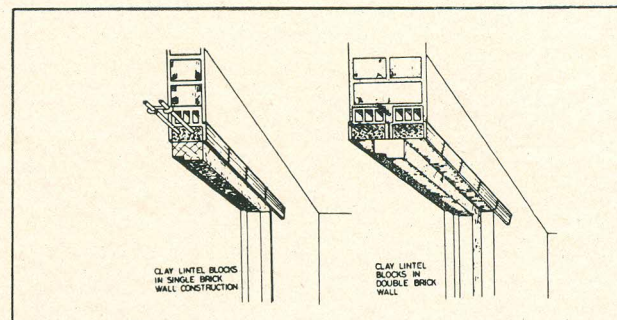
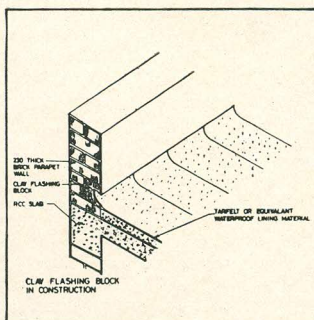
3. Flashing Block :

Present practice is an extremely tedious and time consuming activity. Flashing block is extruded clay block to be inserted in parapet and slab brickwork. The flashing construction is a built-in part of the block i.e. it offers vata (rounding at corner) and drip mould.



4. Lintol Block :

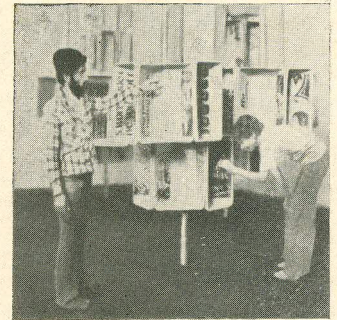
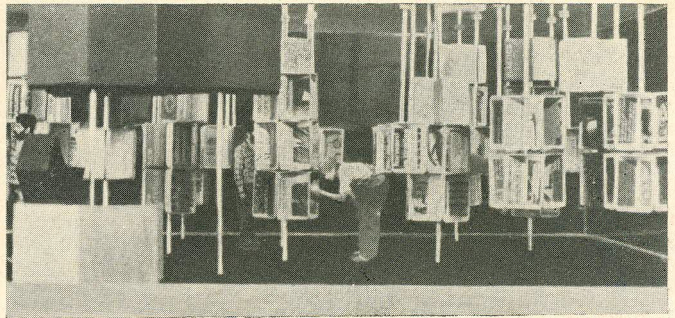
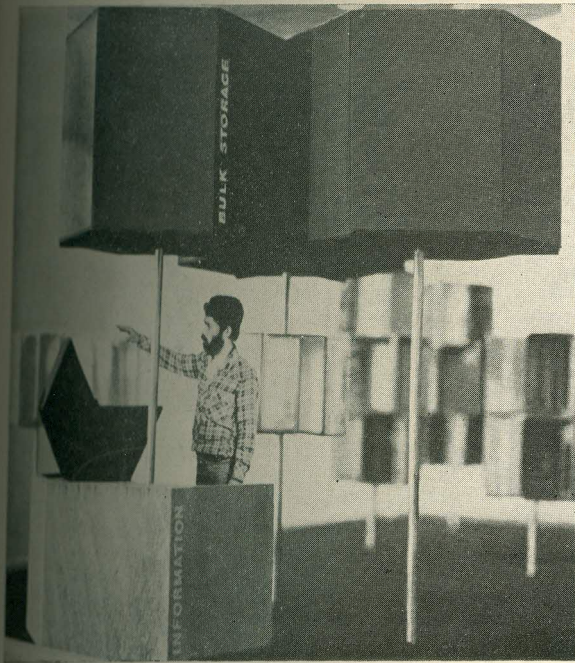
Today the practice is to use R.C.C. Lintols even over small spans of openings. Theoretically design of lintols upto 1.5 m for normal house requirements, will not be more than $2\frac{1}{2}$ ". Since it is not practical to cast a R.C.C. lintol of $2\frac{1}{2}$ " one has accept lintol of at least 4 to 5" thickness. In the proposed Lintol block is an extruded clay block cut into optimum size modules. One open side can accommodate steel bars and minimum concrete for the purpose of cover. When installed the steel comes in the bottom portions and the compression above neutral axis is taken up by hollow clay.



Material Museum

Design : Vinod Gupta

Guide : Kirti Trivedi



For an intelligent judgement on selection of materials for engineering and other products a thorough understanding of all materials and their various properties is required.³

Although all this information is available in detail but the sources are highly scattered and referring to all these properties and other aspects in order to find out the right material becomes a tedious and time consuming task.

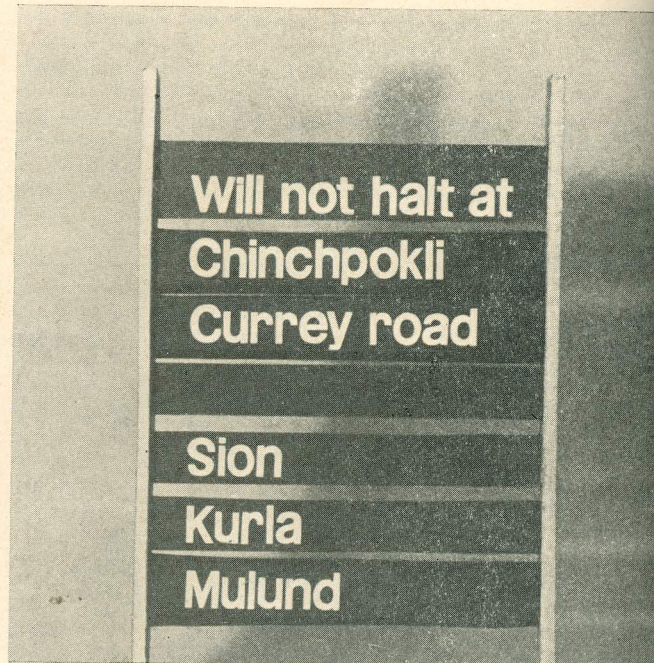
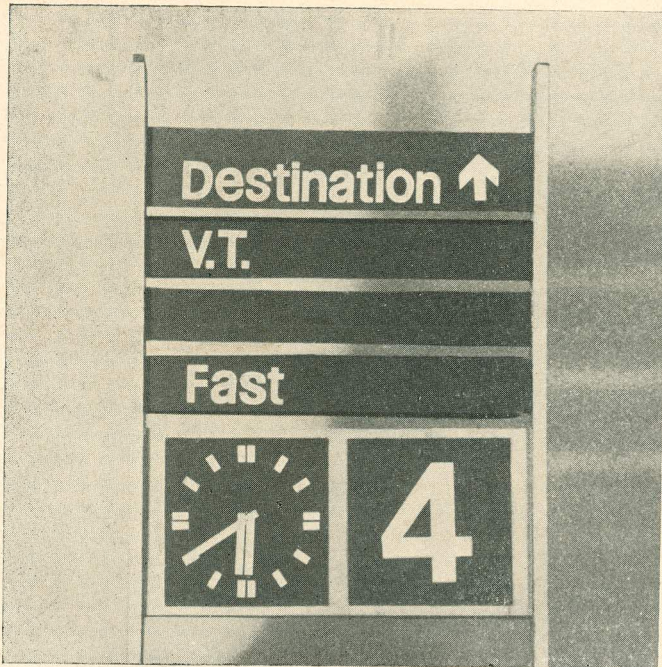
In this museum, the emphasis is on presenting the information in visual form depicting various forms in which a material is available, processes through which it can undergo, fabrication methods, availability and cost break up, application of the material in various fields and various general properties of the material so as to help designer comprehend all these aspects with a greater visualization and without any ambiguity.

To achieve this, the whole system has been designed in two parts : the exhibition units - one for each material or class of materials to display samples representing all the aspects listed above and related information in form of photographs and charts in hexagonal modules arranged at various heights, determined ergonomically; and data storage units for detailed follow up information such as design data, techniques etc. in form of slides, manufacturers catalogues and pamphlets, addresses of wholesale and retail outlets and indices of books, standards etc. on the subject in various libraries.

Indicator System for Suburban Railways

Design : Satish Raut

Guide : Kirti Trivedi



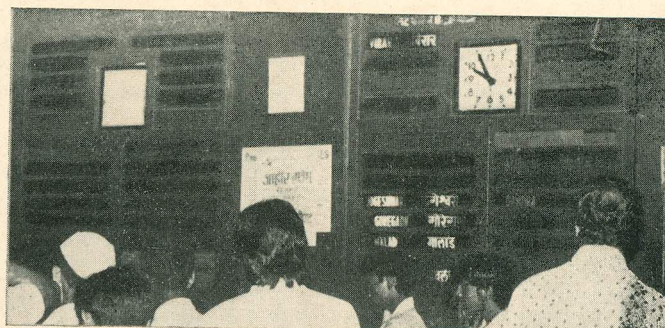
The Suburban trains are the best way of covering large distances in Bombay economically in terms of both time and money. Most of the people use the train facility to go to their place of work and back. Besides this there are occasional users and new comers who also depend on train services for travel.

New comer to Bombay as well as casual travellers find great difficulty in choosing proper trains to their respective destinations.

Before the new design was undertaken, all the existing indicating systems were thoroughly analysed for their effectiveness, reliability and cost. These included manual, electrical and electronic systems. Study was also undertaken as to the proper locations of these indicators with reference to the entrances, platforms and overbridges of Bombay suburban railway system.

In the suggested new design, attempt has been made to solve all the perceptual and communication problems and specification have been evolved regarding the height of the indicator panel, size and graphics of the written material. Its operation has been made easy and can be done from ground level and at the same time it has been made tamper proof.

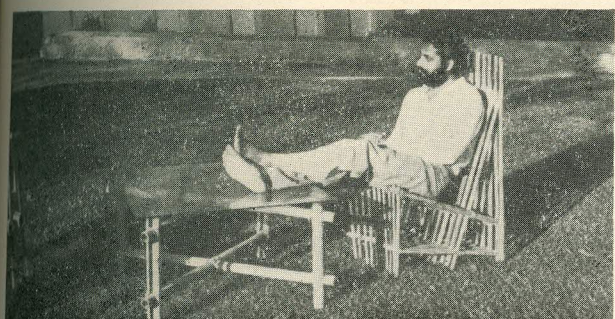
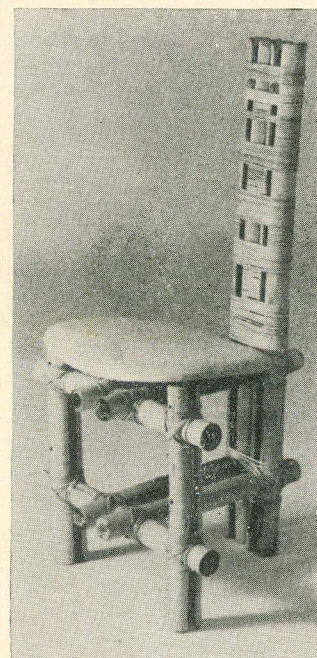
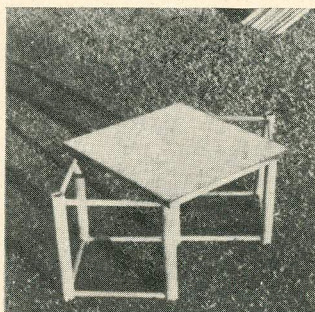
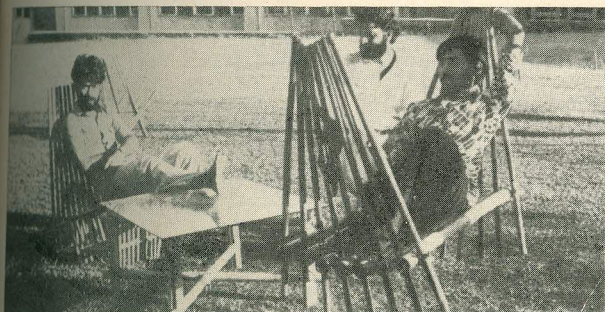
Structural problems have been worked out so that the size of the indicator can be varied depending on the requirement of each station and has possibility of combination with elements like clocks etc.



Design of Bamboo furniture

Design : S. P. Raut

Guide : A. G. Rao

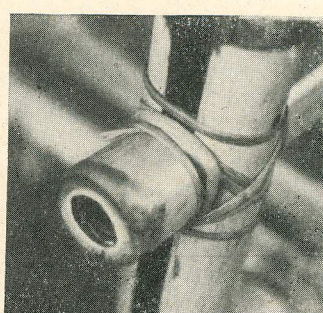
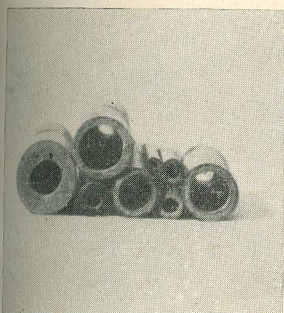


Bamboo is available in large quantities in our country. Since very ancient times it is being used for building construction and for making many products, for house hold and decorative purposes. It is rather extensively used for building temporary structures.

Bamboo has not been used much for furniture making in India though its potential is vast. Only piece of furniture that is traditionally made of Bamboo is charpoy and that too its legs are made of wood.

Making modern furniture out of Bamboo will certainly add value to it, therefore it can be sold at remunerative prices. This in turn will encourage Bamboo artisan, because of economic opportunity it offers.

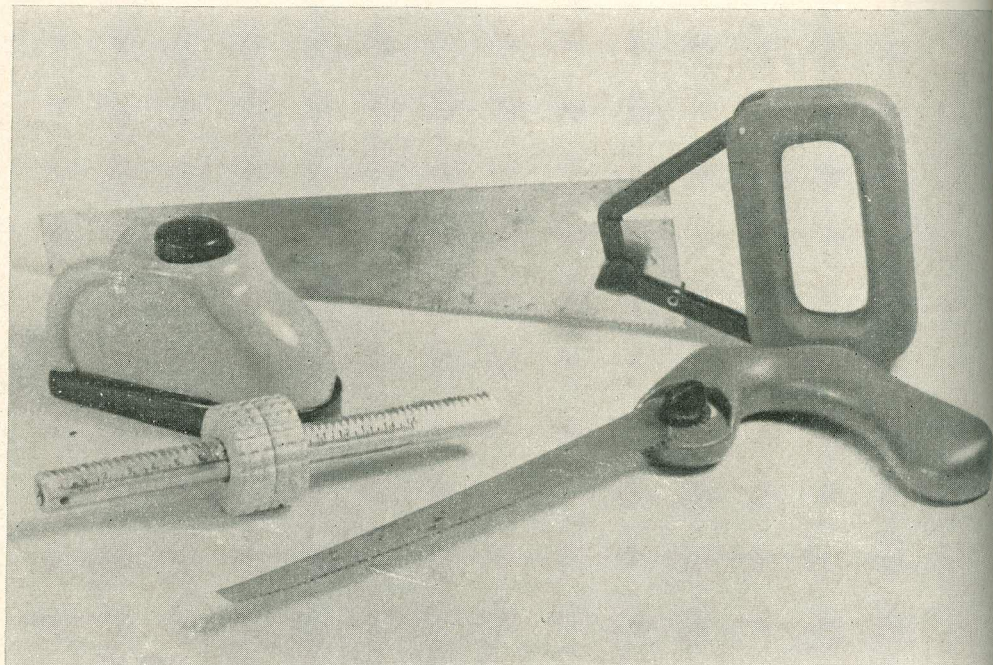
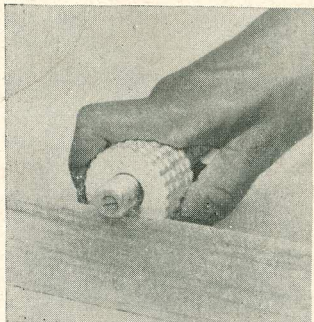
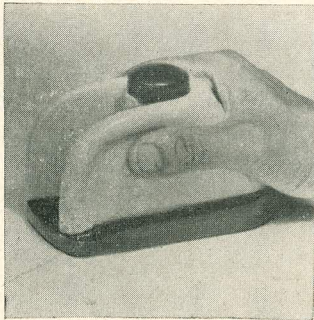
In this project Bamboo as a material was explored and various joining methods were investigated and tested which were then applied to various items of furniture.



Wood working hand Tools

Design : Anil Saxena

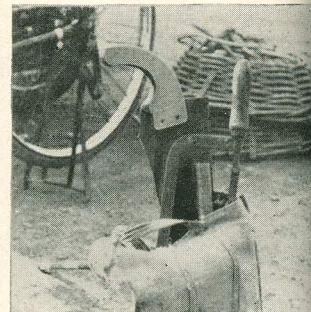
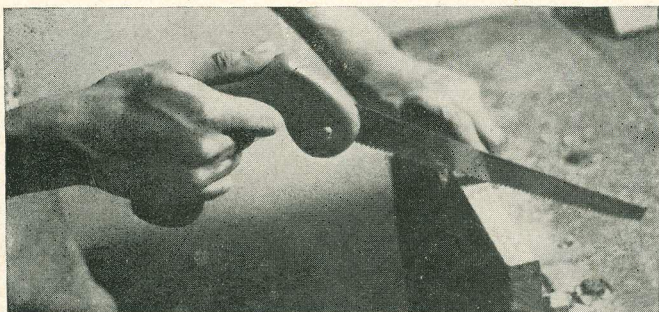
Guide : Kirti Trivedi



Tools being extension of human hands are supposed to improve the capability of hand and increase the efficiency while working. Do the tools used by the carpenters these days in this country offer him the help and increased productivity that could possibly be offered by tools with better designs where the ergonomical or human engineering factors have been given due consideration ?

That is what was tried in this project. Studies and observations were made about how the hand tools are held and operated, how they are maintained, how they are used, how they are stored when not in use, how safe they are in operation and transportation. Keeping in view these observations, block plane, saw, with open handle and closed handle, marking gauge were designed.

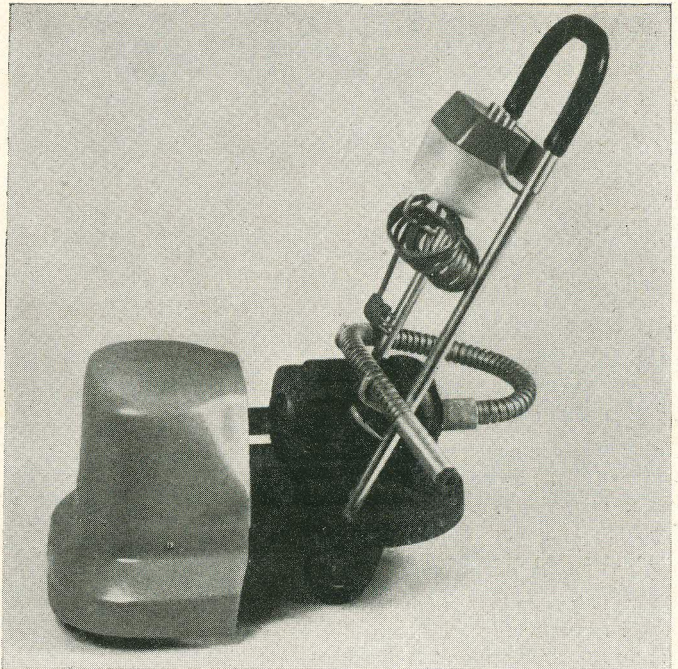
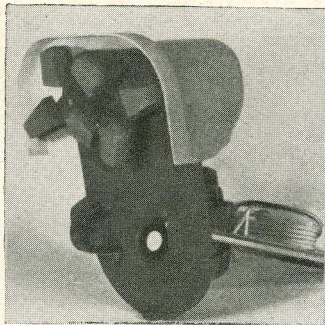
In the new design for "Block Plane" the form for less fatiguing hand grip was evolved after several trials on plaster models. Other advantages are easy tightening of cutter and better chip removal. In the "Open Saw" the handle is so designed that it can be used both by right and left handers with equal dexterity and has a thumb rest for better control. The blade angle can also be adjusted according to the hand posture. In the closed handle emphasis is on safety, while working and transportation, and easy blade replaceability. The marking gauge has been designed for accuracy, easy operation and mass production.



Floor Polisher

Design : Dilip Pathak

Guide : Vijay Bapat



In India the most popular floor is now of the terrazzo type. Terrazzo tiles are nothing but a mix of marble chips in concrete. But after laying these have to be ground and polished to give a really good floor.

Hand-polishing takes very long time and therefore a Machine is a must. The existing machine has several problems e.g. operator inconvenience, noise and there is no arrangement for grinding and polishing the corners.

The Design solution that was finally arrived at has the following features.

- The drive is changed to a worm and worm wheel drive which is more efficient, and less noisy simultaneously eliminating the belt.
- Flexible shaft drive from the other end of the motor is taken for grinding and polishing, of corners and skirting.
- Adjustable handle is provided.
- A lamp has been incorporated along with switchbox both of which are made quite secure on the handle.
- An FRP cover has been designed for ease of washing, and a clear beautiful look.
- The method of fixing the stones has been made simple using the wedge principle and with centrifugal action.
- Arrangement for electric cable winding so that the extra length does not come in the way of movement and operation.

Design of a cycle for typical Indian Rural requirements

Project sponsored by Department of Science & Technology, Govt. of India.

Project investigators

- A. G. Rao
- Dr. B. S. Jagadish
- Dr. S. Suryanarayan
- M. S. G. Rajan
- Vinod Gupta

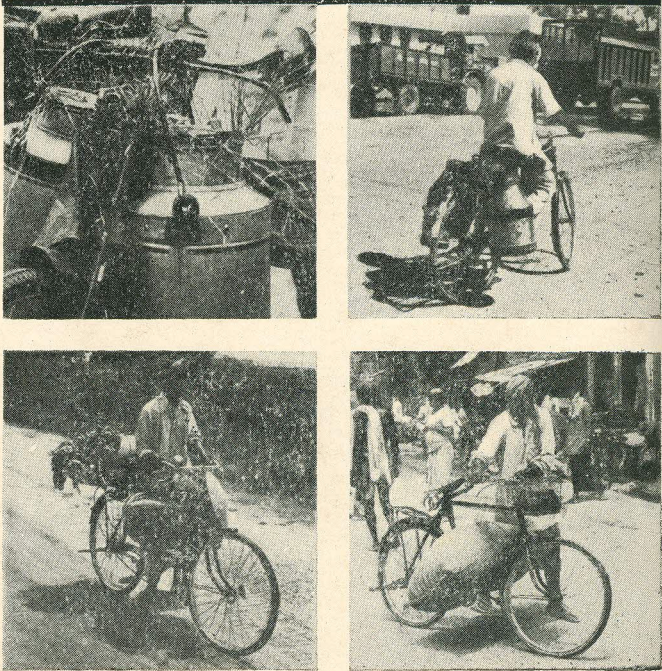
Objective of this project is to design a bicycle for load carrying purposes with rural areas in focus. For achieving this an integrated approach to cover all aspects of bicycle is being attempted in this project. Efforts have been made at to study the problem in depth on technical side and with breadth on the side of human use.

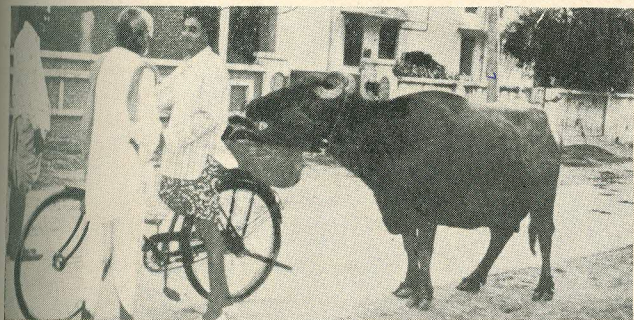
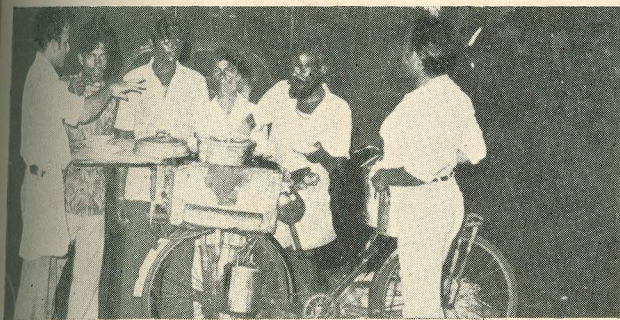
Various problems associated with conventional bicycle used as a load transport system have been identified after making an extensive survey in villages in different parts of the country. Types and magnitudes of loads carried and ways of stacking them have also been studied and documented.

Mathematical and experimental models have been built to study the rider response for various positions and values of load to bring out their effect on the overall stability of the bicycle; and numerical solutions are being sought.

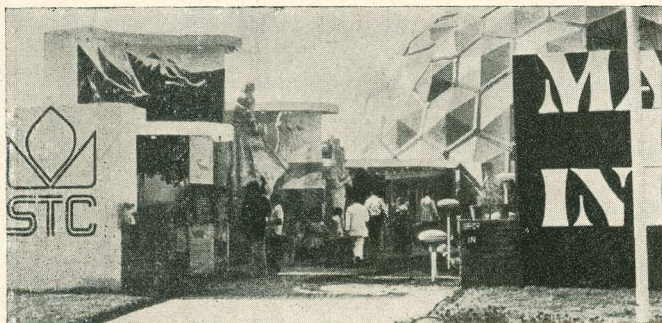
Ergonomical aspects viz. the effort and fatigue of human being in riding a bicycle; human response to steering and manouvering with change in various parameters, optimum pedalling rate, anthropometric relationship of rider with the bicycle geometry; are also being studied for minimal energy consumption and for maximum utilization of rider effort.

	position of load		
	front	middle	rear
rigid containers			
flexible bags			
baskets			
loose bundles			
live load			





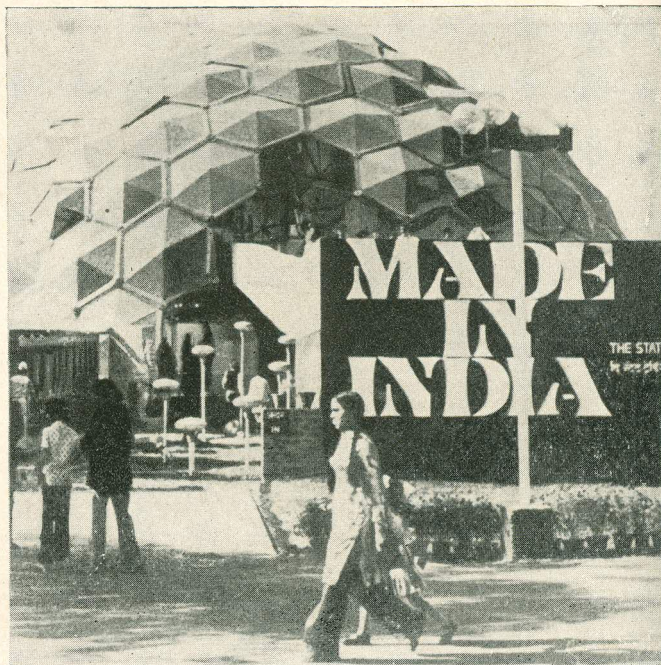
STC Pavilion at Indian International Trade Fair-New Delhi



The purpose of this pavilion was to project the State Trading Corporation as a symbol of India's trading enterprise in the world. The pavilion was a geodesic dome, its Semispheric shape symbolising the world. However, before visitors entered the dome they passed through a sinuous walled display area where scenic settings depicted India's rich trading past and its varied contacts with the ancient world. These preliminary exhibits were designed to startle, surprise and delight the viewer with dramatic presentations of facts not commonly known about ancient India's achievements including major agricultural achievements, manufacture of a variety of export products for markets ranging from Greece and Rome in the West to Borneo in the East.

The main display was within the dome, at two levels. At the ground level the visitor viewed India's vast and diverse agricultural activities which are a strong support to its export trade. At the same time, the viewers get the feel of an India humming with new industrial activity and contemporary technology: light and heavy engineering, chemical and pharmaceuticals, electronic goods, machines and machine tools, cement etc.

At the second level, i.e. on the mezzanine floor viewers get the glimpses of international markets and now STC was taking Indian made good to all these markets and making



'Made in India' a respectable 'Brand' through out the world. The photographs alongside show, some glimpses of the pavilion.

Design

Bapat B. N.
Chatterjee S.
Chaudhary Y. T.
Govindrajan M. S.
Joshi Uday
Panikar J. T.
Trivedi Kirti

Buragohain D. N.
Chitre Dilip
D'Souza Osborn
Guruji C. S.
Nadkarni S.
Pradhan Kishore

Model and Prototype

Dutta A. K.
Kandari D. S.
Wankhede P. D.

Hutke B. J.
Panicker N. S.

Graphics

Agarkar G. R.

Kshirsagar S. J.

Photography

Dalwadi P. M.
Patkar D. V.

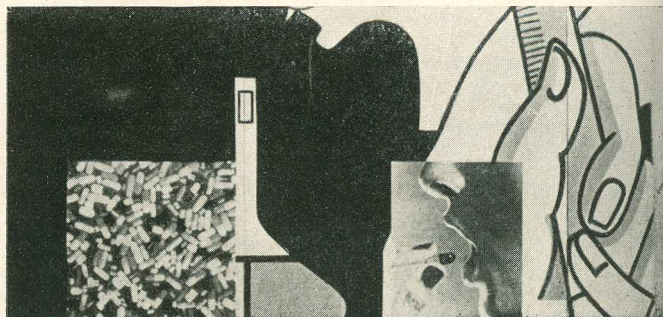
Nagarkar A. K.

Display fabrication

Design organisation

Execution of Structure

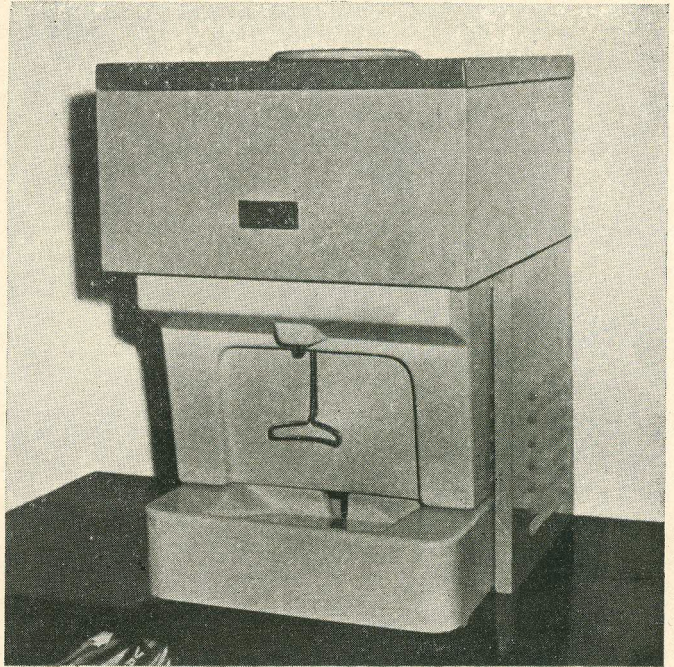
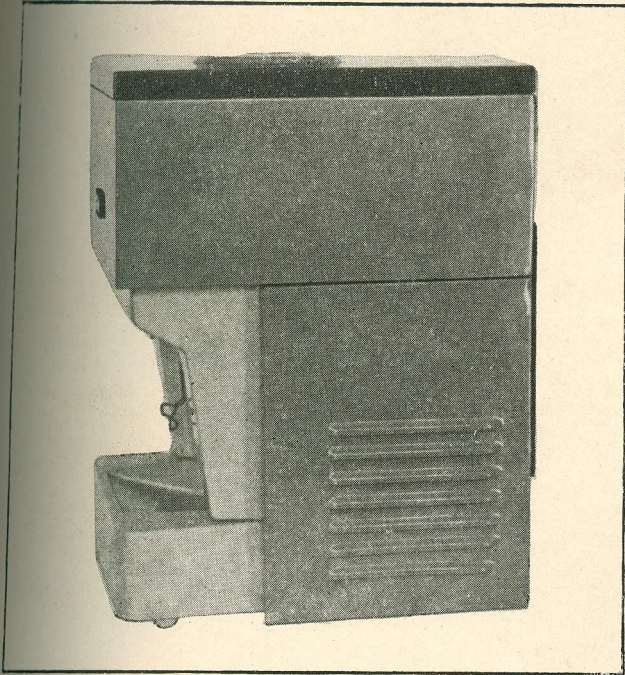
Bhagat Engineering



Desk-Top Water Cooler

Design : K. Munshi

Client : Shriram Refrigeration Industries, Hyderabad



The desk-top water cooler does not require any plumbing and water connections. It is meant for use where cold water requirements are small like shops, small business establishment of private bars. It has a built in water container which needs filling once or twice a day. The original design suffered from the drawback chiefly material duplication, inappropriate vacuum forming design and unacceptable appearance. The design that was suggested has added value to the product at reduced cost. Following points are note-worthy :

- General improvement of appearance. Overall proportion and proportions of different areas was worked out to improve its visual quality.
- Duplication of containers for packing thermocole beads (insulating material) has been avoided by a careful detail of making envelope and container common. This results in substantial cost saving.
- Side panels are directly mounted on the structure. Separate assembly of the envelope and the main structure has been avoided.
- Side panels are also used as service panels and can easily be opened from the back side. This provides greater accessibility to internal components.

- Instead of having a separate louvered panel for ventilation, these are incorporated in the side panels.
- The lid in the original design has been redesigned and its cost reduced to less than half.
- The design of drip tray has been so worked out that it can easily be vacuum formed in one piece. The angles have been so worked out that there will not be any splash in normal drip. There is also place for keeping the tumblers.
- The valve lever and the water spout have been completely exposed to the user, so that there is no confusion as to where from the water comes out. The communication has been made direct. It also looks hegienic.

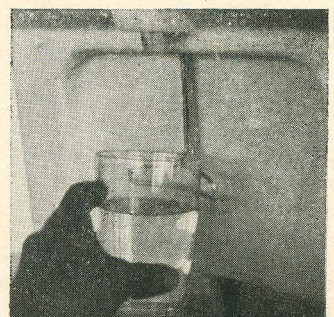
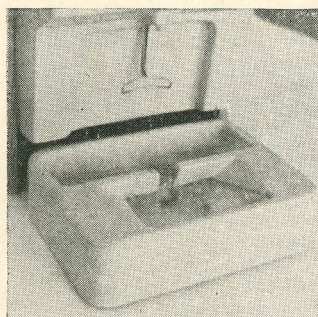
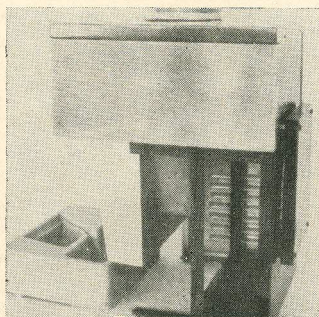
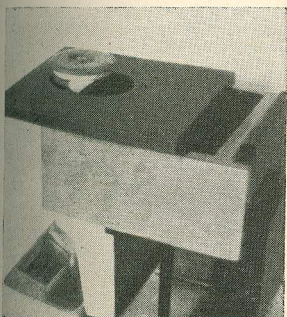
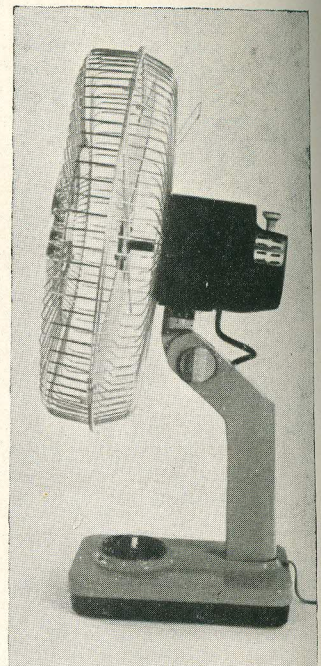
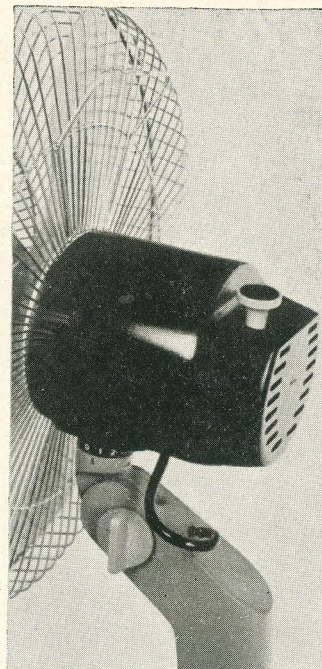
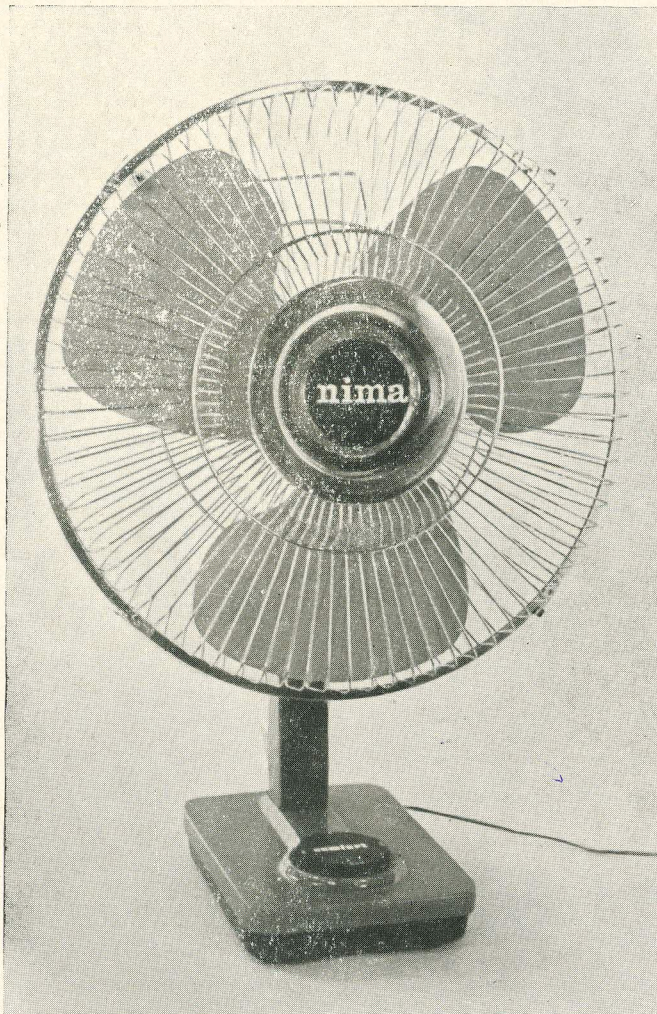


Table Fan

Design : A. G. Rao
Kirti Trivedi

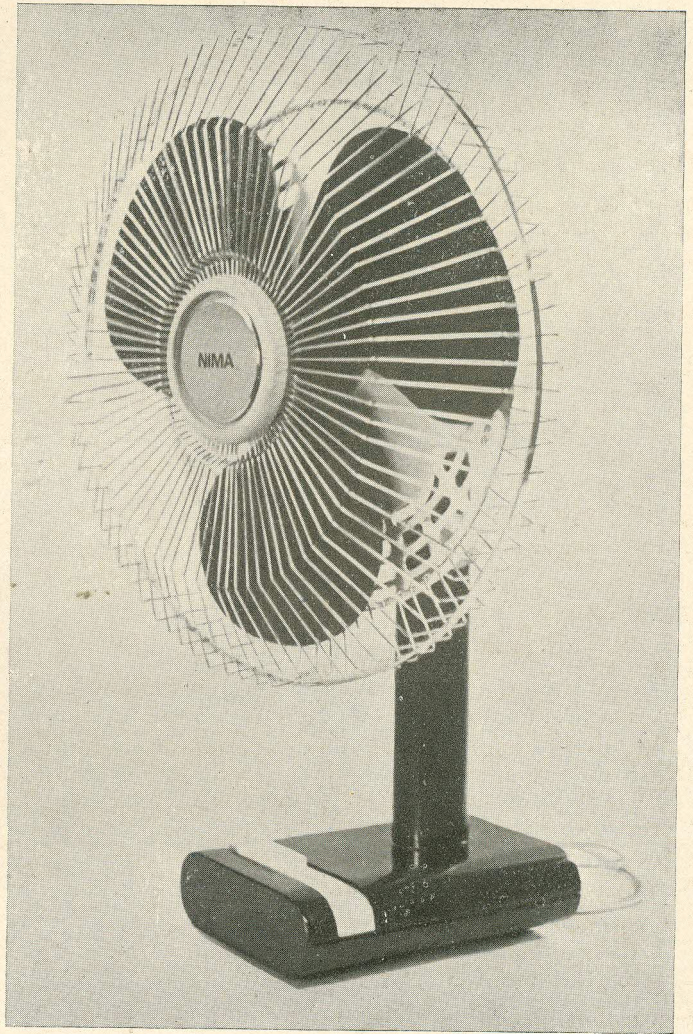
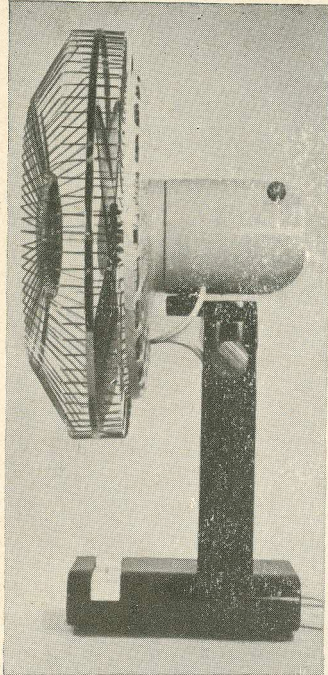
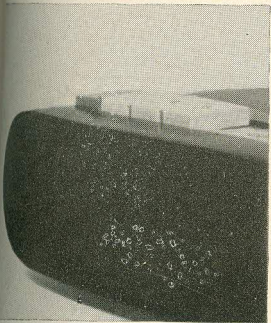
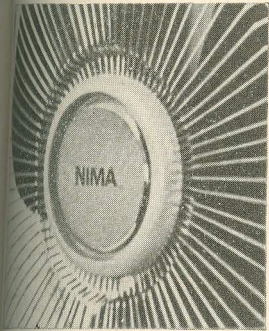
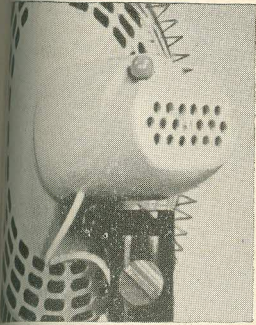
Client : Jyoti Ltd. Baroda



The Centre was assigned the task of redesigning the 'NIMA' table fan by Joyti Ltd. Their existing model was suffering from an out dated appearance and high price-in a highly Competitive table fan market. So, the new design had to be better looking at a lower cost.

Two different design proposals were submitted to the client.

The first design - by A. G. Rao - achieved a fresh new look without major changes in the existing processes of manufacture so that it could be implemented readily. An angled stem and a large rotary control knob on a matching projection in the base - gave the model its distinct visual character. The base cover profile was designed to give the required rigidity with a thinner gauge of sheet metal. Graduations were provided on the motor base for indication of oscillation angle, and the wire guard construction was simplified.



The second design - by Kirti Trivedi - proposed achieving economy through greater use of moulded plastics parts. The fan base, motor housing and the rear guard were to be made in ABS. The number of new dies required was kept down by using the same die for base top and bottom, and by integrating the motor front cover with the rear guard. An extruded aluminium stem was proposed. So that the same design could be adopted for a pedestal model by using a longer stem length.

The use of plastics allowed better integration of various components through precisely matched joints. This gave greater visual sophistication to the product than hitherto possible. The front wire guard fitted snugly into the moulded rear guard giving a rattlefree joint, and eliminated the protruding clips on the rim. A cost reduction of 12-15 Rupees was achieved in both designs through reduction of number of components, reduction in material content, and simplification of assembly procedures.

IDC - In Retrospect

15 month D.I.I.T. programme in industrial design was discontinued from the academic year 1979-80. The programme ran through 10 years from 1969 onwards. The programme started as an experiment to train graduate engineers and architects in the industrial design discipline with specialisation in product design. In all 9 batches of students with an average strength of 9 were trained and 75 of these graduated.

Master of Design (M. Des) - a two year programme was started from the academic year starting July 1979. In the first batch 10 students were admitted and the intake was increased to 15 students in the 2nd batch. The first batch of M. Des students is likely to come out in May 1981.

UNDP assistance programme to IDC commenced from January 1979. Under this programme IDC has received sophisticated equipment for its various studios to update the existing facilities. Equipment was also received for the newly developed Ergonomics Laboratory. Professors A. G. Rao and U. A. Athavankar returned from the USA recently after completing their training programmes. Another batch of faculty members will be going to Europe and Japan for advanced training under UNDP fellowships programme,

Eminent designers from various parts of the world visited the centre. They conducted a number of short term courses and seminars for the students, faculty and the industry. Following experts visited IDC under UNDP Programme.

1. Prof. Arthur J. Pulos
FIDSA
Chairman, Dept. of Design,
Syracuse University
Syracuse, New York 13210
USA.
i) 6- 1-1979 to 13- 1-1979
ii) 30-12-1979 to 19- 1-1980
iii) 4- 1-1981 to 24- 1-1981
2. Mr. C. Jeshua Abend
Innovation Management Expert,
12 E, Genesee Street
Syracuse, New York 13202, USA.
2-11-1979 to 6-12-1979
3. Arch. Ettore Sottsass
Designer and Consultant
Via Borgonueve 9
20121 Milano (Italy)
8- 3- 1980 to 24 4-1980
4. Prof. Rolf A. Faste
Dept. of Design
Syracuse University
Syracuse, New York 13210, USA.
1- 6-1980 to 15- 8-1980

Following special programmes were conducted :

- 6- 9 Nov. 1979 - INNOLAB - A workshop for IIT students on Management of Innovation by C-Joshua Abend.
- 13 Nov. 1979 - A lecture 'Innovation Management - A Missing Link in Technology Transfer' was delivered to IIT Faculty by C-Joshua Abend.
- 30 Nov. 1979 -Innovation Management-One day Seminar Conducted by Mr. Abend at Hotel Taj Mahal for Top Management Personnel for Industry.
- 3-5 Dec. 1979 - INNOLAB-a 3 day course conducted by C Joshua Abend for R and D Managers on 'New Approaches to Product Innovation' at I.D.C.
- 4 Jan. 1980 -State of Art in Hospital Furniture- One day seminar with participation from hospital equipment manufacturers, hospital administration, doctors, nurses, faculty and students of IDC, was conducted by Prof. Arthur Pulos at IDC. Co-ordinator-S. Nadkarni
- 11 Jan. 1980 -Design education in India- One day seminar with faculty from NID Ahmedabad, IDC Bombay and Prof. Arthur Pulos participating, was organised at IDC Bombay. Co-ordinator-S. Nadkarni
- 7-11 Jan. 1980 -Demonstration Design Project was conducted by Prof. Arthur Pulos for the 1st batch of M. Des students.
- 15 Jan. 1980 -Product Planning and Industrial Design, Procedures- An illustrated lecture was given by Prof. Arthur Pulos to the representatives of Industry and Management at ICICI Building, Bombay.
- 14 April 1980 Design for Development- A talk was given by Arch. Ettore Sottsass to the faculty and students of IIT in IDC Bombay. Exhibition of his design work was held in the exhibition hall of IDC Bombay. Co-ordinator - Kirti Trivedi
- 16-28 June 1980 -6 week design project on Hospital Equipment was conducted by Prof. Rolf Faste with the students of IDC.
- 4 - 7 Aug. 1980 -Seeing it Different Ways - A workshop for designers from Industry was conducted by Prof. Rolf Faste and the IDC faculty at IDC. Co-ordinator - V. P. Bapat
- 18-22 Nov. 1980 -Concepts and practice in Industrial Design- A five day course was conducted by IDC faculty for R and D personnel from various units of Bharat Heavy Electricals Ltd. at IDC.

