INDUSTRIAL DESIGN: SOURCES OF PROFESSIONAL IDENTITY

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INTRODUCTION

"There are professions more harmful than Industrial Design, but only a very few of them and possibly only one profession is phonier. Advertising design, in persuading people to buy things they don't need, with money they don't have, in order to impress others who don't care, is probably the phoniest field in existence today. Industrial Design by concocting the tawdry idiocies hawked by advertisers comes a close second."

.....(1)

Industrial Design by its nature is a process tormented, or enhanced, by paradox and wholly conflicting points of view. There are many examples; it is related to both Art and Engineering, yet it is neither; it is a specialist profession, yet it claims knowledge and ability in a variety of other professions; it has a morality conscious of human need, yet it is as commercially responsible as advertising or marketing. It is not surprising then that the identity of the Industrial Design profession is as spurious an amalgam of inter-related factors.

The consequence of this can be beneficial, it allows Industrial Design to explore and develop in new and useful areas. However with respect to the main body of professional activity, the design of mass-produced products, this lack of identity is devisive and ultimately self-defeating. A lack of identity might not be so harmful, if the morality, the humanitarianism of Industrial Design was not unduly affected. But this is not the case. The morality of a profession is meaningless and exploitable if it is not bound clearly to the identity of that profession. If there is no fundamental identity there can be no defensible morality. If like advertising, industrial design has

no desire other than to increase sales and profits then the problem of identity is of no consequence, the industrialised marketing machine will gladly supply a pop-up identity in return for obedience to the sales-curve. But if Industrial Design has other aims, if it does wish to improve the quality of the man-made enviroment, then it must have a clear, recognisable, honest identity. It must have objectives which transcend everyday practice and it must uphold those objectives.

The question arises, what should be the identity and objective of Industrial Design? In order to answer this question this thesis looks at the origin and emphasis of a design education system which has attempted to provide a definable value structure for students and subsequently practising designers. It relates that educational system, through the Modern Movement, to the identity and structure of professional design practice. The thesis examines the problems of professional identity and in exploring the origins of those problems suggests the beginnings of a possible solution.

A HISTORY OF DESIGN EDUCATION

Design Education is, like the practice of design itself, a complex combination of many inter-related practices. These practices are directed toward the satisfaction of a number of objectives which together represent what we have deemed the necessary and defining characteristics of the qualified designer. What constitutes the objectives of design education is a consequence of an evolutionary process which has been taking place in Design and Art Education since the mid 18th Century.

The process of art education before the 1830's was undertaken by private drawing schools, academies or learned societies such as the Royal Dublin Society. Manufacturers however, failed to employ designers, with the exception of a few such as Josiah Wedgewood. In order to improve the quality of design in Britain and increase the number of designers, government schools of design were established in 1837 in which "not only theoretical instruction but also the direct application of the arts to manufacturers should be deemed an essential element". ..... (2)

Branch schools sprang up all over the country during the rest of the 19th Century, but even then there were many disputes about how they should be run. Robert Haydon, instrumental in the setting up of these schools, fought for the inclusion of the study of the human figure, others disagreed. It was an early instance of argument over the relationship between Fine Art and Design, which as we know has been a recurring theme to this day. Excluded for a time, figure drawing reappeared in 1845 and thus the schools became schools of Art as well as Design. After the intense debate stimulated by the Great Exhibition of 1851, (fig. 1)

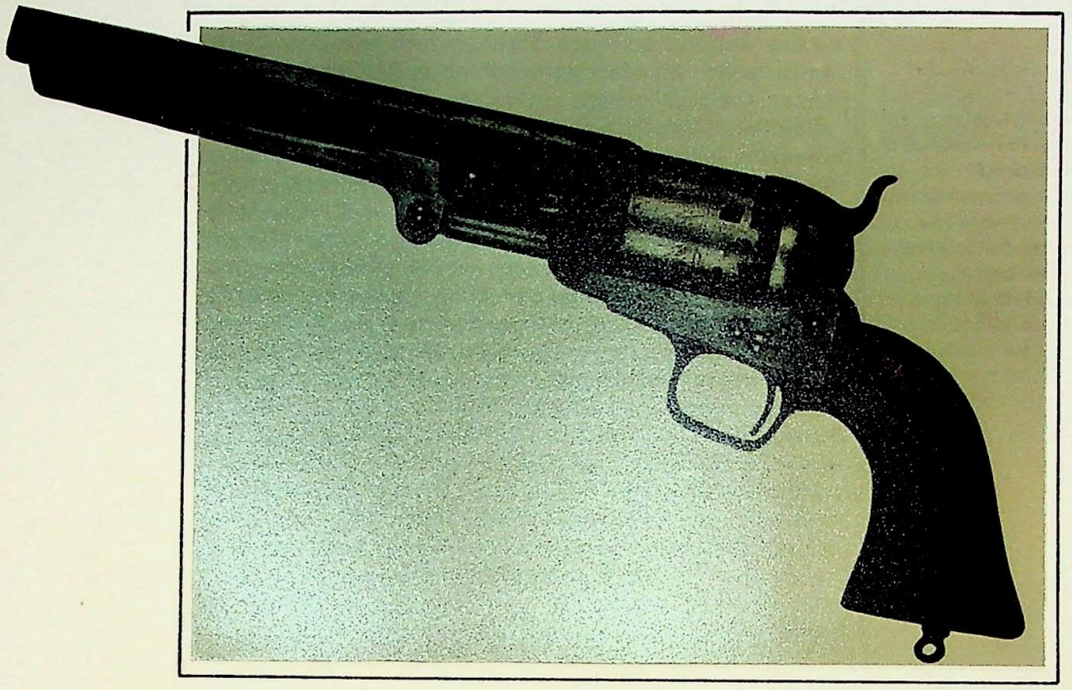

Figure 1. Revolver by Samuel Colt c.1849

At the Great Exhibition of 1851 the design of many American utilitarian objects demonstrated an authenticity which was absent from British design.
Samuel Colts 'Navy' model revolver was designed on a modular system. It maintained a functional elegance and simplicity which had failed to appear in British design.

which made clear the failings of British Design, there emerged a system of centrally controlled Art & Design Education which was to last until the Second World War. This system however was based on the formal 'copying' of artistic excellence and although in time craft based examinations and in-house marking was introduced, the industrial bias for which the design schools were set up failed to appear.

The system was criticised for being inadequate preparation for Industrial Designers. It tended to foster a dull uniformity, a play-it-safe attitude from which only the most determined students could break free.

At this time in Europe a system of design education based on a more fundamental understanding of materials, machine and craft processes was being developed at the Bauhaus. (Fig. 2) The evolution of Bauhaus ideology itself is a colourful mixture of Art, Industry and Socio-political change. The Bauhaus was founded by Walter Grophius in 1919 at Weimar. Grophius had gained his taste for Industrial Design while working for Peter Behrens' design office. Behrens at the time had just undertaken responsibility for the products and image of A.E.G. (Fig. 3) Grophius was also a member of the functionalist group centred on the German Werkbund. The Bauhaus as such was related to the Werkbund not only through Grophius but through a culmination of the emerging Modern Movement. As John Heskett puts it

"The German Werkbund ..... depicted modern design as emerging from a line of development originating in Victorian England through the arts and crafts movement to the culminating point of the so called Modern Movement, the Bauhaus in Germany".

..... (3)

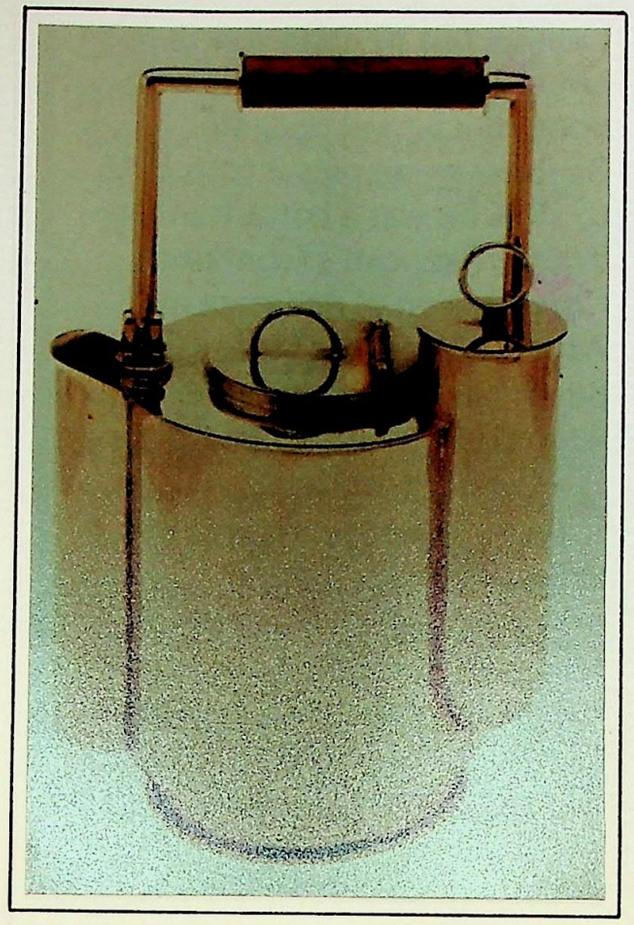

Figure 2. 'Tea-Machine' 1927.

Wolfgang Tumpel's 'Teemaschine' of 1927 is a typical product of the Bauhaus' metal workshops. It is geometric in form and has a strong functional appearance.

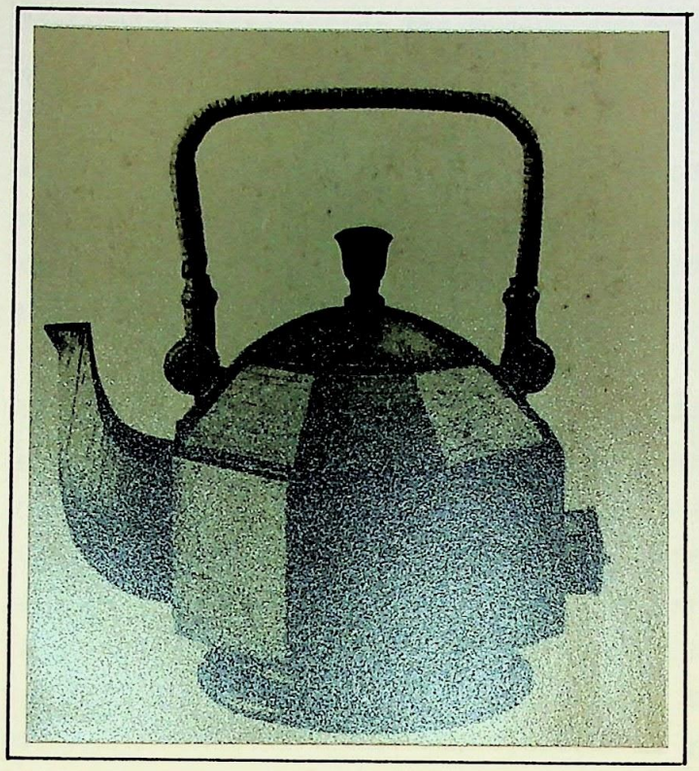

Figure 3. Electric Kettle by Peter Behrens, 1910.

The designers role in industry was realised early in Germany, where Peter Behrens was given complete charge of design for A.E.G. in the first decade of the 20th Century.
Behrens' product designs were adapted to machine production but this did not mean any compromise in elegance.

The Bauhaus was quite a melting pot for artistic and social ideas, Kandinsky, Moholy Nagy and Gerrit Richtveldt representing the modern art movement with the constructivists and De Stijl, all lectured there during the first four years. Educationally the Bauhaus was responsible for the new emphasis on craft methods undertaken in the first year. In a broader sense it was the link point between the Modern Art movement, Design Education and Design Practice.

By 1957 many people in design education and in government in Britain were pressing for reform. The post-war spirit of ecomonic revitalisation, the festival of Britain in 1951 and an increasing awareness that art and design education no longer reflected developments in the outside world put pressure for change upon the Ministry of Education in Britain. Lord Hailsham, The Minister of Education at the time responded by setting up the National Advisory Council on Art Education. This became familiarly known as the Coldstream Council after its enigmatic chairman Sir William Coldstream. The council contained many strong and colourful personalities, among them, Robin Darwin, responsible for the revitalisation of the Royal College of Art in the post-war era, and Sir Misha Black seen by many as one of the most powerful exponants of design education and ideology this century. There is little doubt that Coldstream pressed for a four year course, however this would have set a precedent against those committed to the three year degree courses in Britain, and so that was rejected. However the council did recommend the introduction of a one year pre-diploma course to be taken at an art college. These pre-diploma or foundation courses, were to prove one of the livliest advances in art education. The general entrance requirements were to be similar to those in the Irish System, five passes, two honours and proficiency in English and Mathematics,

only in terms of 'A' levels and 'O' levels. There was to be provision for exception from these requirements in appropriate cases, for instance gifted students who as the council quaintly put it, were 'temperamentally allergic to conventional education'.

However, most significantly it recommended there were to be four broad areas of study; Fine Art, Graphic Design, Textiles/Fashion and Three-dimensional Design. All courses were to include some Fine Art studies, there were to be complementary studies, including some serious study of the history of art. The first Coldstream report appeared in 1960 and was at once recognised as the beginning of a new era in art & design education.

Many changes have of course occured since 1960, the introduction of part-time practising staff, post grad courses at many colleges including the R.C.A. and the assimulation of many Art& Design courses into the polytechnics in the late sixties and early seventies. But in the main this system has become the basis of design education and of course is used here in Ireland at the National College and the regional colleges of art & design.

Finally no introduction to this subject would be complete without an account of the events which took place in May 1968 in the Hornsey College of Art. Due to a minor internal incident, and a dispute between the college and the students union, funds for the union were suspended. The college premises were occupied and discontent which had been brewing for years became at last the focus of public attention. Hornsey in the late 1950's and the 1960's had become a highly successful and much publicised

college. It had attracted a capable staff; it had secured many outside design commissions; indeed its vitality and progressiveness had made it in many peoples eyes a rival of the Royal College of Art itself.

Under the surface however, there were tensions. Many departments were overcrowded and in widely scattered annexes. Some of the older staff had not found it easy to come to terms with new ideas. There were inter-departmental rivalries and favouritism, not least toward painting and sculpture. There were opposing views about how the history of art should be taught, but there were three fundamental problems, the reluctance of differing staff groups to work together, a remoteness of college management, and major differences between the students and the college on what and how subjects should be taught. Governing members were unaware of the intense dissatisfaction of students who with no ordered channel of complaint became increasingly dissaffected. Staff in general studies, studio staff, and technical staff vied for internal superiority. The standard of work suffered.

The disaffection spread, at Guildford, Brighton, Birmingham, Liverpool and Nottingham there were confrontations and a parlimentary select committee was set up to enquire into the unrest. Endless discussion ensued, many ideas were aired, some sound and constructive, others less practical. In general though, it seemed to have been a moment of genuine idealism. Within a few months the unrest had subsided, but out of it had come much good; better channels of communication at all levels, a more participatory system of academic management; a fresh look at the aims and objectives of courses, at what was taught and how it was to be taught.

The select committee proposed few major changes. It recommended the introduction of 'sandwich' courses, to include a period of up to a year spent in industry, and it made one important statement; "The first (Coldstream) report envisaged that students in Diploma courses should all continue to have some kind of fine art training ..... in the meanwhile we believe that art and design education has evolved in such a way as to make that concept not universally appropriate. We now would not regard the study of fine art as necessarily central to all studies in the design field."

..... 4

This was a recognition of a view long held amoung designers; that fine art and design are quite different in attitude, intention and application, design has a dynamic and a discipline of its own, even if in areas such as illustration the distinction is less clear.

THE OBJECTIVES OF DESIGN EDUCATION

Although there may be many factors in common, every profession has its own characteristic mental world, defined in terms of the areas of knowledge and information considered to be relevant, the value systems brought into play and the logical procedures for reaching decisions. Design is no exception and design students are taught to think like designers.

Like the doctor, the designer needs to listen carefully to the clients needs and problems; like the engineer to have a thorough knowledge of technical constraints; like the artist to exercise aesthetic discrimination; and like the salesman to persuade the client that the solution proposed is the best one.

Successful design practice requires the capacity to define and analyse problems, to conceive solutions and to anticipate consequences. The designers thought processes are characterised only singularly by paradox, that is by a complex amalgam of the logical and the speculative, the rational and the imaginative.

Within the context of formal design education, learning to think like a designer can take many different forms. To a certain extent it is reflected in formal lectures on design methodology; the process continues in small group discussion and in collective 'thinking aloud' by students and staff. It is a consequence of time and experience, and years spent in any self-respecting design college that will create a capacity for design awareness. However this process cannot and should not be contained

by the college walls, and if it is effective will follow the student about, at home, on the bus, in the bath, even in sleep and in the operation of the sub-conscious. A well divised course will habituate the student to think and live like a designer, alert to the character of the man-made enviroment and conscious of how it might be improved.

Within the design process that consciousness is encouraged to manifest itself in visualisation in two or three dimensions. Sketching is seen as the bridge between the mental and the physical and encouraged to take place at an early stage.

Dick Powell in his book 'Presentation Techniques' says:
"Drawing is the basic tool of the industrial designers trade ..... without this skill, too many designers are forced to design only what they can draw, rather than draw what they can design".
.....(5)

This quote touches on a fundamental problem in the whole design process ; that is the difference between what can be drawn and what can be thought of. There are very few people indeed whose drawing ability is equal to their mental ability to conceive ideas, and fewer still who are designers. Nevertheless the process of teaching students to convert ideas into drawings or mock-ups represent a vital part of the design process and as such makes up a large part of the techniques which students are taught.

What has been said so far is based on the educational aim of creating an ability to think and an ability to do. But there are other broader aims, to create a value structure for the specific profession and and more importantly for society in general. The

concept of education itself involves the idea of something which is morally good and desirable. A formal system of instruction which lead to demonstrably bad, evil, or destructive consequences would not be referred to as education but as something else, perhaps indoctrination or brain-washing. The concept of education necessarily entails the aquisition of knowledge, values and skills which attract social approval. Professor D.J. O'Connor the educational philosopher in a report to the design council says:
"the educational system of any society is a more or less elaborate social mechanism designed to bring about in the person submitted to it certain skills and attitudes that are judged to be useful and desirable in that society."

..... (6)

However it is clear that much design education as it is practiced today is, if not immoral certainly amoral in character. For example, graphic design students only too quickly learn to deploy imagery which is designed to exploit tender spots in the conscious and sub-conscious. The sexual identity of women in particular is abused in every possible combination in order to arrest attention and convey 'desirable associations'. A visit to any exhibition of graphic design students will demonstrate their expertise and fluency in the lingua-franca of promotional imagery, with its repeated play on sex, violence and racism, of one sort or another. Industrial Design students also become amazingly adept at creating otherwise unnessary needs, at using 'gimmick' to promote a product, and at promoting snobbery by the use of certain materials, imagery and detailing. In many cases, student and professional, fashionable or marketable features will supercede safety or any other more important aspect of the product. (Fig. 4)

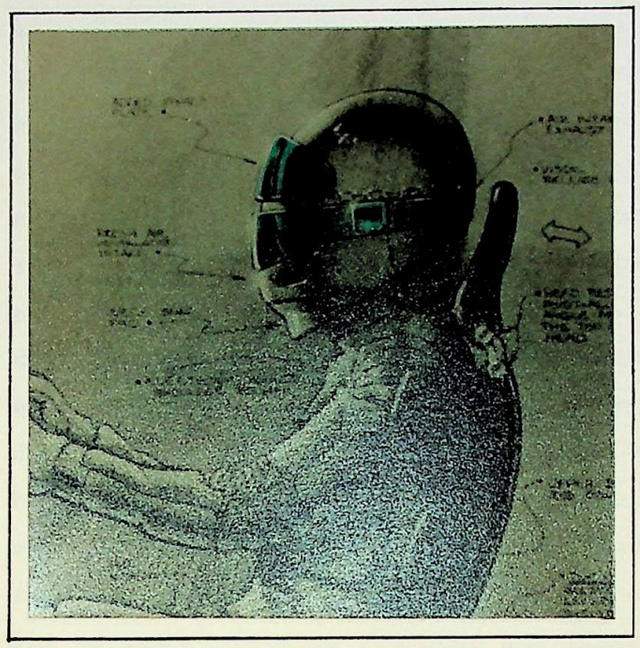

Figure 4. 'Hi Teck' Helmet 1986.

Students may often put visual appearance above function. This helmet by a german student at the Hamburg transportation design course has a band right across the field of vision.
This may add aesthetically to the product but it is ergonomically incorrect and unsafe.

Admittedly the situation is difficult and paradoxical. There is no law against such imagery but a strong case could be made for claiming it is socially exploitative, divisive and destructive. The problem is not isolated, it extends to the whole sphere of design, manufacturing, business and even politics. Many commodities are of little or no social value and represent a squandering of ecomonic and cultural resources. The acquisition and enjoyment of luxury products in the materially advanced cultures is closely linked to, and dependant on a pattern of exploitation of third world labour and materials. Many products are demonstrably bad for health and social welfare but the well-oiled production and promotional machinery of the industrial nations enables them not only to continue selling such products here, but to export them to the less privilaged and less educated members of the world community. Even the most popular products may have features which are harmful or dangerous, for example the Sony Walkman. (Fig. 5) But clever marketing hides these problems and they are left unsolved.

We are enevitably led to reflect upon the consumer society we live in and to ask how far design can reconcile itself to the values of that society without selling out completely. Is design to become a marketing tool used only to fool as many of the people as much of the time as possible, or should it maintain a conscious overiding belief in its responsibility to the environment and the greater good of society.

This and other fundamental uncertainties are carried through to design education and even where a greater social consciousness is actively promoted by the college it is often bombarded by many students and their well meant but often devisive perception of the 'real world'.

Figure 5. Sony Walkman

The Sony Walkman is a product that can be harmful to hearing, and that may cause accidents if worn for example, while crossing the road.
These aspects of the product are tactfully by-passed by the highly effective Sony marketing machine.

Many issues are experienced and discussed in this to and fro atmosphere, but no single issue in design education or design practice encapsulates more the paradoxical and conflicting questions of identity than the relationship between function and symbol, between functionalism and 'styling'.

FORM, FUNCTION AND THE MODERN MOVEMENT

Many of the problems surrounding form, function and symbol have come about as a result of 'rules' set down at the beginning of the Modern Movement. The Modern Movement is best understood as a revolution, with all the characteristics of a political revolution. Essentially it was a revolt against deceitful distinctions; the characteristics of one family of products borrowed and applied to members of another unrelated family. It seemed that designers had so embraced decoration that 'decoration ruled all' and any truth to function, materials or identity began to disappear. Decoration had developed to such an extreme extent that only a change of equal extremity seemed likely to abate its seemingly relentless progress. (Fig. 6)

As a result of this the Modern Movement ruled firmly against decoration, not because of any necessary wrong in decoration but to stem the tide and even to chastise. The Modern Movement adopted the 'adage' form follows function to describe its fundamental belief. This simple phrase has become a sort of icon before which an argument may stand or fall. It has become so enshrined and applied in such a narrow sense that it is generally held that a product which lives up to the 'rule' has in a broad sense the right 'form'. The product is the arbiter of its own design. The instinctive, personal opinion of the designer is over-ruled by a kind of impartial objectivity similar to a sort of 'mathematical' test.

If 'form follows function' has become an icon then the word 'styling' has become of equal consequence in the opposite sense. The word 'styling' it would seem brings

Figure 6. A domestic heating stove by Rudolph Seitz 1877.

In the 19th Century decoration had evolved to such an extent that in many cases it completely subdued the function of the objects involved.
This traditional tiled oven lost many of its ancilliary functions, such as cooking, in the decorative process.

about a vast number of disreputable associations, indeed it has become so misunderstood that to profess any belief in it, is either frowned upon or seen as praiseworthy 'bravery'. It is not difficult to understand the Modern Movement's mistrust of the word 'styling' in view of what it saw about it. In America particularly 'styling' or appearance design had become the mainstay of the Industrial Design profession and in many ways the profession had thoughtlessly abused its position. It had allowed its visual sensibilities to be hopelessly perverted by the marketing machine as Sir Gordon Russell put it in his essay 'Skill' in 1977 "the early American designers were specialists in taste"

..... (7)

It is difficult not to imagine that Russell was referring to Raymond Loewy in particular. Although Loewy was a pioneer of design in the true sense, his faults sadly have had more ramifications, in many ways, than have his virtues. Reading his essays and in particular his address to the R.D.I. (Royal Designers for Industry) in 1979 it is hard not to believe his sense of achievement had come as much from creating more money, better advertising, and more sales, as it had in the visual rationalisation of American products for which he must take a great deal of responsibility. (Fig. 7) These are not undesirable goals but alone they paint a picture of a designer answerable to the businessman first, design second, and the public last. Appearance design based on unreasoned personal 'taste' led to its own demise.

Like all political revolutions the Modern Movement made many decisions based on mistrust, mistrust of styling and regretably of many elements particular to the Industrial Design profession, elements which in many ways define its singularity. As a result many unquantifiable aspects of design were replaced by quantifiable aspects. This

Figure 7. Coca-Cola Dispencer by Raymond Loewy
c.1948

At some time during the forties or fifties an average American could have spent his entire day surrounded by products fashioned by Loewy: a Schick razor Pepsodent toothpaste tube packaging, the Studebaker car, the Lucky Strike cigarette pack, a Coca-Cola dispenser and, at the end of the day, a tin of Carling Black Label beer.
Nevertheless his name has always been associated with the severe commercialization of design and designing in America.

desire to embrace the quantifiable, the mathematic, is a feature which has become prevalent in other professions. The belief that mathematically provable theories are intrinsically superior to more philosophical ideas has become part of our socio-industrial make-up. In ecomonics, psychology and marketing more the graph, pie-chart and statistic have gained credibility far in excess of their usefulness.

The source of this urge to quantify everything is varied. Philosophers since Plato have equated at least one aspect of art and design with formal mathematical qualities which Plato described as;

" ..... straight lines and circles, and the plane or solid figures which are formed out of them by turning lathes and rulers and measures of angles; for these I affirm to be not only relatively beautiful, like other things, but they are externally and absolutely beautiful".

..... (8)

The purity and self evident harmony of geometry was a great source of security in the Modern Movements 'purge'. Proportion was already a well-developed sub-science with many differing but nonetheless mathematical theories of perfection. But the catalyst for the Modern Movement in design was surely the advent of the Modern Art Movement in the second decade of this century. With the work of Mondrian and the De Stijl movement, the work of Kandinsky, and also Constructivism in the Soviet Union all developing during this era. (Fig. 8) Piet Mondrian was the most senior and founder member of the De Stijl Movement which included Richtveldt and others who influenced the Bauhaus. The Bauhaus with its revolutionary attitude to design education, became a centre for the thinking of modern art and its practical application in design, design education, and architecture. Mondrian theories embraced the whole

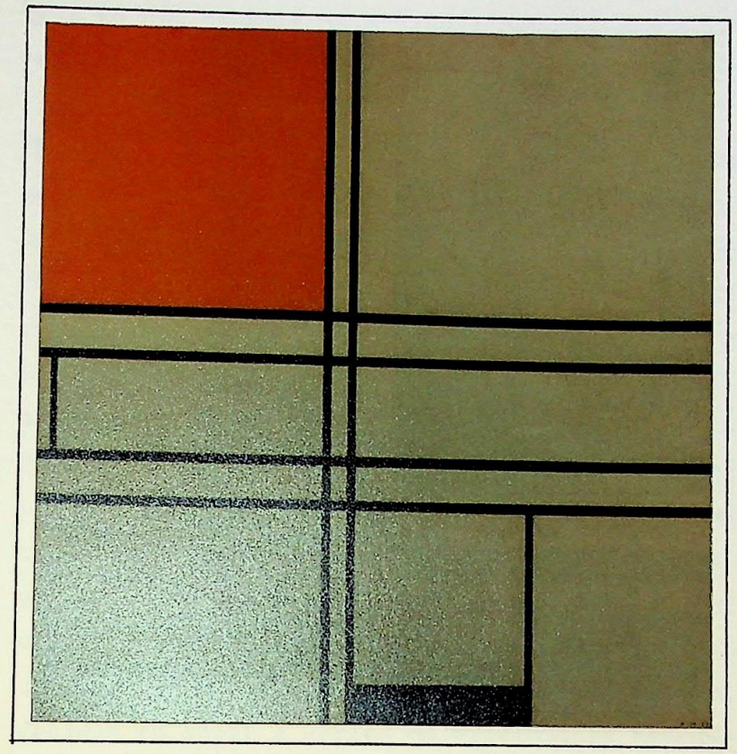

Figure 8. Configuration of Blue and Yellow by Piet Mondrian.

The straight line geometry of this painting is typical of Mondrian's work.

spectrum of the arts having a fundamental belief in visual harmony. Art and thus architecture and design were to him capable of a visual harmony along the same concise and recognisable metered lines as music. (Fig. 9)

The modern art movement, the mathematical and harmonic qualities of geometry and proportion represented for the Modern Movement the artistic ideological reasons for the direction it took. However other more practical reasons existed within the area of Industrial Design particularly. In a business world increasingly dependant on technologically specialist information the Industrial Design profession began to encounter difficulty in promoting its artistic skill. Commerce and manufacturing thrive upon quantifiable methods, methods which can be mathematically equated and therefore more easily understood. Industrial Design instead of choosing to quantify its individual skill, its aesthetic ability, decided to adopt a series of disciplines secondary to the professions fundamental identity, but more easily quantified. Engineering, Ergonomics, Marketing and Management all became part of the service offered by Industrial Design.

Industrial Designers are seen by many clients as problem solving, cost efficiency clever clogs who threw in a bit of something called 'form', or 'aesthetics', or even 'styling'! as an extra. Industry pays for clever mouldings and expect the product to look well for free. This would not be so bad if Industrial Designers believed this to be their true role (regretably some do) but in general this is not the case. Ethically Industrial Design is aware of its socially conscious role even if at times it may become difficult to fulfil this role in practice.

The Modern Movements strict definition of form restricted the use of meaningful imagery. Imagery

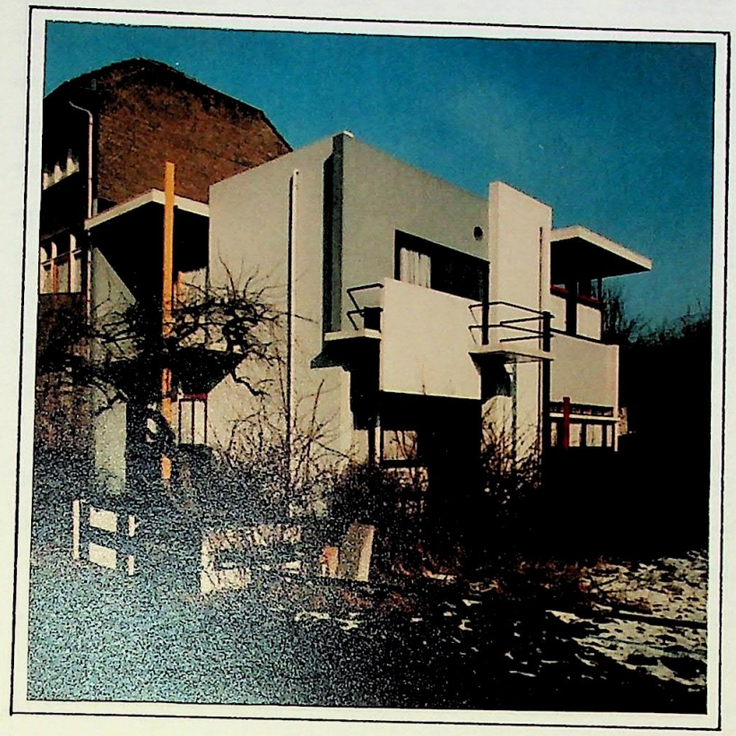

Figure 9. The Schroder House by Gerrit Richtveldt.

The Schroder House, like the Red/Blue chair by Richtveldt, is a three-dimensional expression of the works of Piet Mondrian.
Mondrian's work has been adopted by modern architecture unsuccessful in many instances.

is essential to a product if it to convey any characteristic other than its function. Imagery can be used to suggest many desirable aspects which may not be immediately visible, such as safety, comfort and reliability. By failing to define imagery properly the way has been left open once again for deceitful appearance, conveying characteristics which do not actually exist or are not relavent to the product. The technics 315 stero (Fig. 17) uses 'Hi Teck' imagery purely as decoration with no real relationship to functional necessity.

Modern imagery has developed to fill this vacuum. The two bicycles on the following pages differ immensely in visual appearance. However many features of both are used purely to make each bicycle 'look' futuristic. The 'streamlined' bicycle (Fig. 10) and the 'modern' bicycle (Fig. 11) are equally appearance conscious. In spite of technological 'fact' many forms are decided long before they are submitted to wind-tunnel or stress analysis tests. The Ford Sierra for example, with its futuristic body work developed from a visual concept not aerodynamic testing. Attempting to quantify appearance in terms of function alone has left the way open for a new type of styling, unrestrained and commercially susceptable.

The Modern Movement attempted to quantify what had been previously left to the designers instinctive judgement. It opened the gates to a range of quantifiable extras which have all but completely confused the identity of Industrial Design. The Modern Movement never entirely quantified the criteria for good and bad design, but that was its threat or promise; just analyse the product to discover if its design is good or bad, and worse this suggested that analysis alone would somehow lead to an acceptable design solution.

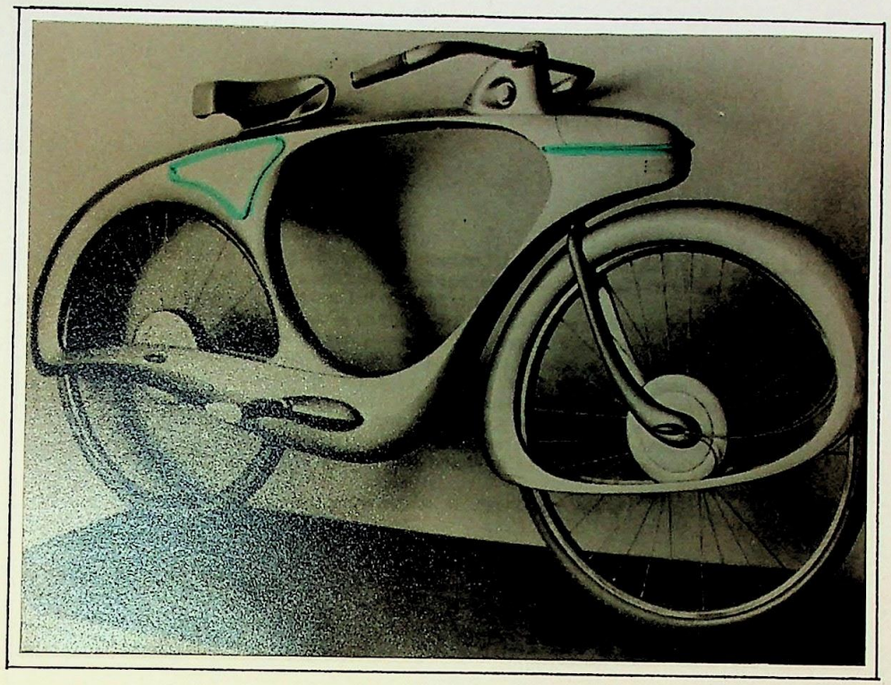

Figure 10. Streamlined bicycle c. 1946

This bicycle was exhibited amoung the 'Designs for the future' at the 'Britain can make it' in 1946. It is supposed to be aerodynamic and battery operated but undoubtedly its form had as much to do with styling as it did any more practical reason.

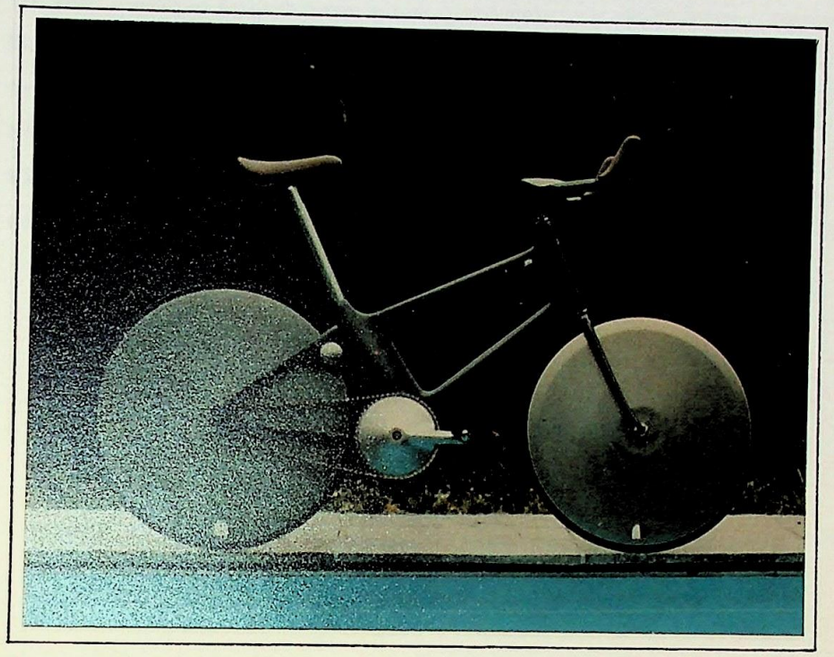

Figure 11. Modern bicycle, Germany 1986

Although this bicycle would seem to be highly materials, mechanics and ergonomics conscious the detailing and in particular the fully covered rear wheel owe their origin to 'modern' styling with its play on geometric form.

It was inevitable that these rules would severly restrict the free play of instinct and imagination and as a result of this came the biggest loss of all to the Industrial Design profession. Because the Modern Movement was so restrictive it was powerless to resolve fully the problems for which it had been brought into play; the problem of product identity with all its complexity and paradox, and the identity of the Industrial Design profession itself.

THE MANY IDENTITIES OF INDUSTRIAL DESIGN

It is really surprising that a full-time money earning, trained activity, complete with title should have survived so long without an agreed definition of its skills responsibilities or even its knowledge. No successful Industrial Designer is going to suffer today or tomorrow just because he or she cannot snap-up a neat definition when asked. Obviously successful Industrial Designers have learnt to get along without a definition; and most actively enjoy the flexibility and indeed excitement of their ill-defined role.

The difficulty only becomes a problem when you talk about the collective development of the profession, and when you consider the legacy which might be left to future generations of Industrial Designers. In as much as Industrial Design does have an identity it is curiously reluctant to acknowledge this identity. As every client, every student and every practicing designer knows, the one thing which is offered by an Industrial Designer, and no other profession is the trained and instinctive handling of form, proportion, symbolic value, and visual elegance. Industrial Designers are trained to make things visually, enviromentally and physically agreeable. Therefore whether it is important or not the problem must lie at the centre of the Industrial Designers role, skills and responsibility.

Nevertheless when cornered Industrial Designers often prefer to identify themselves with other specialists skills. These skills are often placed if not above then on a par with the fundamental skills of visual elegance. They fall into three basic categories, Engineering, Marketing & Management and 'Styling' or visual skills.

The Industrial Designer as an Engineer.

The concept of Industrial Designers as Engineers goes back a long way, all the way back to the Industrial Revolution. This concept was emphasised by the Coldstream report on design education and its assertion that "students specialising in product design may need to acquire a substantial knowledge of engineering".

.....(9)

Even this is an understatement since it is generally accepted that a knowledge of engineering has become essential to the Industrial Designer. There are many instances where only a knowledge of certain engineering principles solve even an aesthetic problem. In his address to the R.D.I. entitled 'Artist or Engineer' in 1962 Sir Barnes N. Wallis took the example of the great airships of the twenties and thirties. (Fig. 12) These massive structures displayed a remarkable elegance and form which was based upon the pure mathematical equation:-

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

where x, y and z represent the three-dimentional geometric plane and a, b and c are defining numeric values.

Of course a computer might have rationalised the problem easily but in the 1920's no such aid was available to the designer. No draughtsman or designer, even with the skill of Michaelangelo or De Vinci could have arbitrarily produced the curve involved, which was over 700 feet long and had a definite rate of change throughout its length.

In the understanding of structures engineering is vital. In solving basic moulding problems, indeed in the whole area of problem solving the logic of mathematics and engineering is an essential part. However an excessive belief in the merits of the engineering is a dillusion.

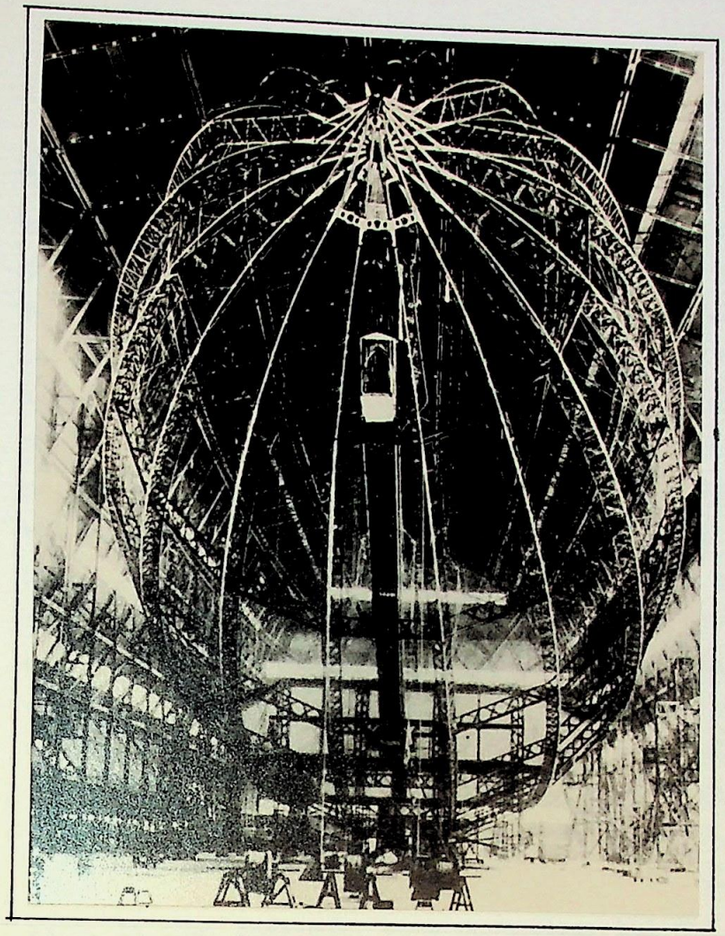

Figure 12. Airship R 100 under construction at Howden, Yorkshire c. 1926.

This excess produces sayings like 'look after the function and the form will take care of itself' or 'look after goodness and truth and beauty will take care of herself'. Form and beauty are not things which happen by accident.

Also the very claim to an engineering ability seems naive and even ignorant. It is true that up until the early sixties, before the micro-chip, the silicon revolution, before the great computer age began, it was possible for designers to claim a knowledge of engineering as it then existed. To comprehend applied mathematics, mechanics and stress analysis even in a basic sense was sufficient to claim that fundamental engineering knowledge. But things have changed so enormously, in the 30 years since, as to make our engineering knowledge as designers almost irrelevant in the contributory sense. The knowledge is useful for understanding and keeping pace, be that possible, with technology but not as a strict engineering tool. No Industrial Designer can solve an engineering problem better than a competant engineer, this as a profession we must fully come to terms with.

The Industrial Designer as a Marketing Manager.

"It is futile to pretend that Industrial Design has any other function than to support marketing".

.....(10)

The range of management, marketing and research skills, with a social awareness and built integrity factor has whittled its way into the Industrial Designers armoury. Although the prospect of a wholly market orientated profession represents a dismal prospect, there may well be some merit in the introduction to some extent of this aspect of design. As far back as 1951 in a report for the Council on Industrial Design in Britain, Sir Misha Black

expressed the belief that Industrial Design should develop managerial and leadership skills in manufacturing in much the same way as architects had done in the construction industry. This is an understandable aspiration especially in view of the respect and power enjoyed by architects. The likening of Industrial Design to architecture is a popular subject of discussion amoung students and practising designers alike. However it is worth remembering that all is far from well with the architectural profession as it exists today. (Fig. 13) Architecture also suffers the malaise of the Modern Movement, it also lacks identity being overtaken by new disciplines which leave it without a well defined position. Not only does it suffer at a professional level but also at a 'product' level in its buildings.

If Industrial Design could maintain its integrity as a profession it would do well to find itself in the position of project manager within manufacturing. Nevertheless as with engineering, Industrial Designers should never believe that they are more capable of managing and marketing a product than the professionals specifically trained for this purpose. The reasons for encouraging this managerial aspect are two-fold. Firstly, the aspirations of design with all its environmental and social awareness far exceed its power to change. Victor Papenek accuses the Industrial Design profession of all manner of depravity; in the use of scarce resources; for designing dangerous and thoughtless products; for littering and polluting the environment on an unbelievable scale. But Industrial Designers had never truly been in a position to control these problems, to implement its values in the broad sense. If we are ever to influence our environment on the scale Papenek would like than we must not retreat into our own private ideological world, instead we should nurture any source of power which might eventually give us that influence.

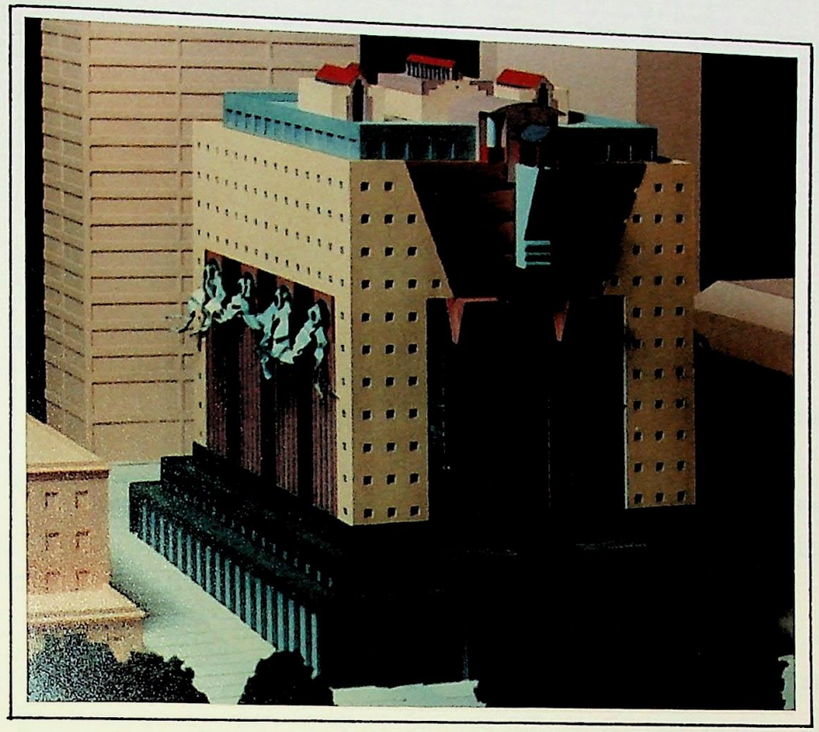

Figure 13. Post-modern public administration building. 1982.

This proposed building for the city of Portland in America was selected over more conventional proposals. The architect, Michael Graves, says of the building "it scores a decisive victory for the notion that public buildings need not be drab and spiritless."

..... (11)

The building is essentially post-modern with Memphis and Kandinsky influences. Unfortunately it was never built due to public expenditure cut-backs.

Secondly, there is an attitude of mind within Industrial Design which might perhaps be suited to the process of management. In terms of motivation, in the way of seeing, in the value of a broad base of knowledge and in the problem solving ability of Industrial Design there is perhaps some resource of managerial ability.

The Industrial Designer as an Artist.

The position of the Fine Arts, Painting and Sculpture in relation to the applied or useful Arts, (in the sense that 'all art is useless' as Wilde put it) has always troubled academics and practitioners alike. Educationally the only visible relationship between these two sections of art students is in the common grounding in drawing and in the history of art. But more importantly the atmosphere of creativity which exists in the art college is seen to be due to a great extent to the existance of the fine art disciplines.

Not everyone would agree however that this atmosphere necessitates the existance of the fine art disciplines under the same roof as the applied arts. It is clear, that in many ways fine art has more in common with the performing arts, music, dance and literature than it has with graphics or Industrial Design. While graphics and Industrial Design have more in common with architecture than with painting or sculpture.

Much of the difficulty develops from the hirearchical position within the art colleges, with fine art isolated at the top of the ladder. This division can be traced to the early days of design education with its artistic 'academy' emphasis. However, in many ways the division had been necessary in order to develop the applied arts in their own right. What has happened though, is that almost all of the benefit which we might gain as designers

from experiencing is denied to us by the very system which was set up to promote the cross-fertilisation of knowledge. Much of the tactile and visual expressivness of sculpture is all but hidden away and painting has developed an attitude akin to secrecy.

A better understanding and a greater experience of painting and sculpture does have a roll to play within practising design. The work of groups like Memphis, and designers like Luigi Colani provide a startling and provocative example of this. (Fig. 14) Memphis is strongly influenced by expressionist painting and abstract art (Fig. 15) while Luigi Colani's influences are organic and sculptural. (Fig. 16) Although much of the work of these designers is unsuitable for mass production some of the principles evolved can be used in the design of mass produced objects. Indeed Etorre Sottsass of Memphis and Luigi Colani are both actively involved in design for mass production.

This is not to suggest that Industrial Designers are artists, it is not reasonable to compare Industrial Design to Fine Art in any direct sense. Particularly if by art what is meant is the quality which created the Sistine Chapel. It would be unreasonable in all humility to begin to compare even the most distinguished Industrial Designer with Michaelangelo, Rembrandt, Beethoven or Cezanne. Art is concerned with epitomising the emotional life of a whole society. Mondrian describes it as

"the creating of a consciousness (in the spectator) of the union of the individual with the universe".

..... (12)

But if Industrial Design is not art what is the driving force for perfection and a solution which excedes the

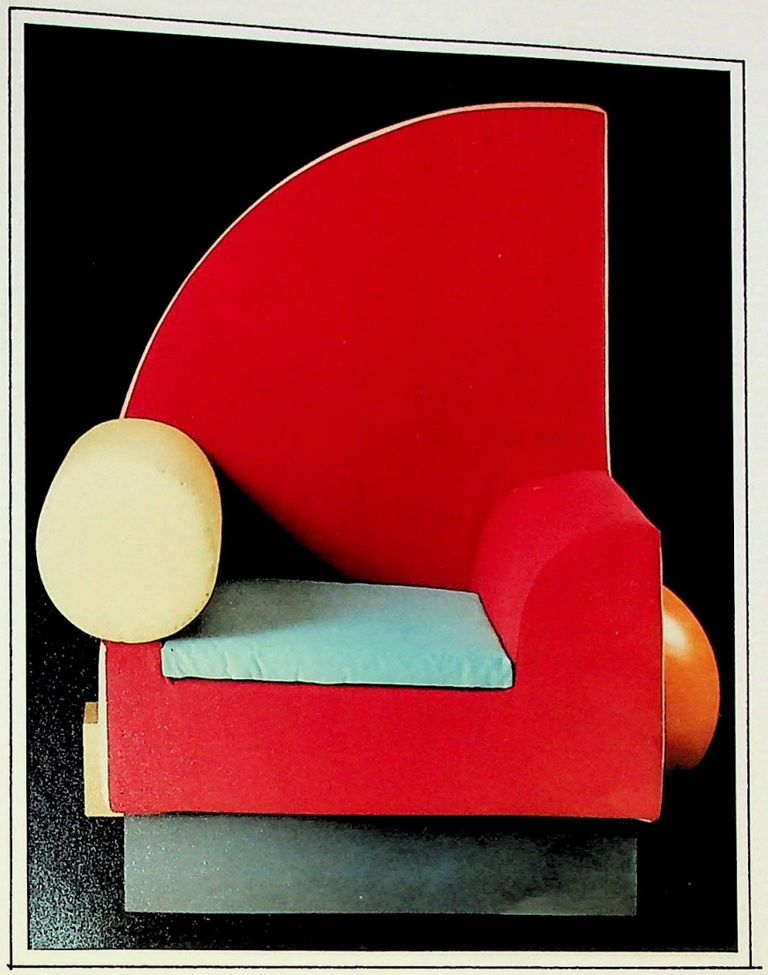

Figure 14. Peter Shire 'Bel Air' armchair, Memphis 1982. Wood and woollen fabric.

The Memphis movement exists on the fringe of Industrial Design. Its colourful, eye-catching and outrageous designs are often more artistic statement than Industrial Design. The 'statement' is often a reaction to the terse form and appearance of 'modern' objects.

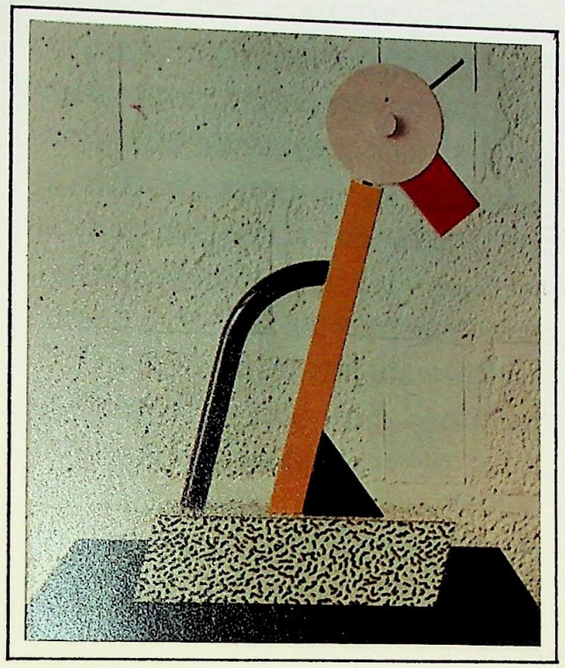

Figure 15. Tahiti Lamp by Etorre Sottsass 1981.

Memphis products are a realisation of ideas Sottsass has been exploring since the end of the Second World War. He uses expressionism and abstract imagery in a free unhindered way. The duck-like features of this lamp are not coincidental and the dynamic distribution of colours and differing forms is reminiscent of Kandinsky.

basic success of the product. The answer may be creativity. In his address to the A.S.I.D. 'bulletin' Philadelphia in 1965 entitled 'Industrial Design: Art or Science?'. Sir Misha Black writes

"we have smelt the sweat, intoxicating, heady, habit forming, irresistable aroma of creativity. We have found that within the bounderies of doing efficiently and ably the jobs set to us there lies the possibility of creative achievement ..... To create is to approach the vision of God: once the capacity to create has been experienced all other activity becomes of secondary importance".

..... (13)

This may be a rather 'expressive' quotation but it touches on the conflict between creativity and art. The two are often confused although they are not necessarily synonomous, and to be creative is not necessarily to be artistic.

Many practising designers fiercely disassociate themselves from art and their artistic origins in order to establish credibility or independance. In denying associations with art Industrial Design denies a large part of its origin and a part of its identity which defines its differance from other professions. Supressing this individuality in order to gain commercial acceptance is an insecurity which must be overcome.

The point to be emphasised here is that regardless of how many quasi-scientific skills Industrial Design may develop it must never use these to disguise its instinctive ability. It must trade principally in form and symbol. Any subterfuge may be well meant. It is easier to communicate in the language of quantifiable method, but methodical analysis can be risky. A designer who sells his solution on the ground that it will save money may be dismayed

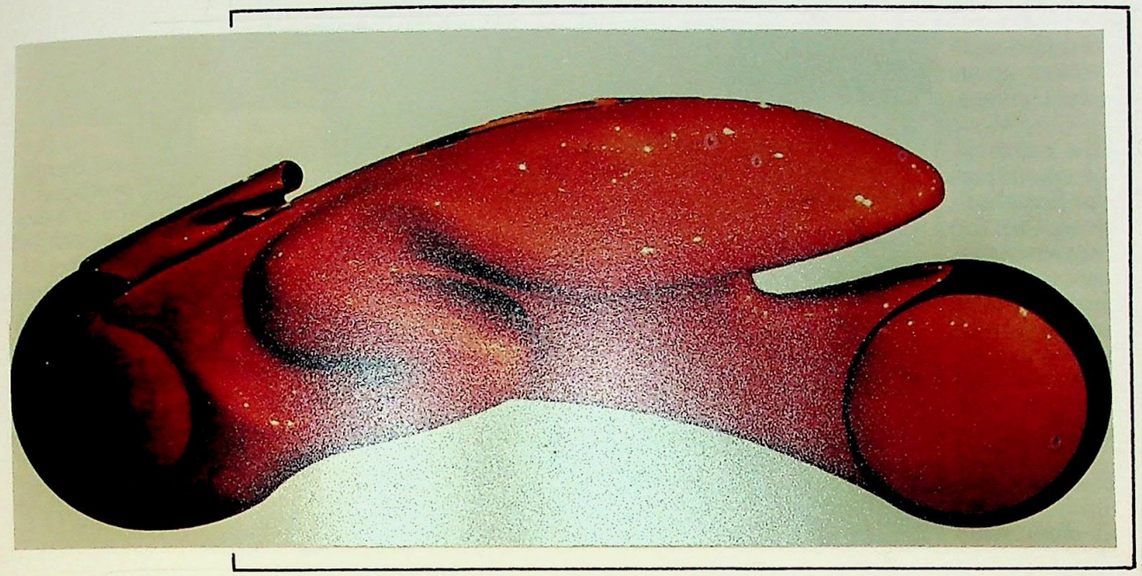

Figure 16. Organic Motor-bike by Luigi Colani.

Colani's work is unrestrained and visionary, however it is also impractical. Nevertheless his understanding of form and sculpture is impressive. He believes that there is no such thing as a straight line in nature, and in reflecting nature his designs are characteristically organic.

when his client points out ways to save even more money. Too late then to step off the analytical plank and start talking about unquantifiable values.

Cost saving, efficiency, value for money, rationalisation, servicability and produceability:- these are all noble and professional concerns but they are secondary. They are not the source of the Industrial Designers identity or his service. It dangerous to let a client, or the world at large believe otherwise. And likewise it is dangerous to build a professional identity around the fragments of other mens analytical skills. In an increasing specialist world, no one is hiring a sort of 'technical generalist with a sense of form' except as some sort of economy package which is useful only for insignificant and technically retarded products. To trade as Renaissance Man in the late twentieth century is dangerous and ultimately self-defeating.

IDENTITY AND THE FUTURE

The future of Industrial Design is likely to be a consequence of societies progress itself. No profession, least of all Industrial Design, wil be in a position to develop in a contrary direction to the flood of technological advance. In the future there will be an increasing variety of products, developed at an increasing rate of evolution, changing and improving constantly. Industrial Design cannot rely on black box imagery to cater for the array of differing products which will arise. Truth to materials or function may prove difficult also. What is truth in terms of new materials such as Teflon, or electro-plastics? What form should a molecular computer have? If Industrial Designers do apply technological imagery or any other imagery in order to develop a theme they should do so selectively and for good reason. The use of 'Hi Teck' imagery in the Technics 315 is a typical example of the blanket, meaningless decoration which many stereos receive. (Fig. 17) The Parola telephone on the other hand uses 'Hi Teck' imagery to improve the tactile qualities, and the visual-tactile relationships of the telephone. (Fig. 18) The Seiko watches also, although overtly 'themed' do not disguise their origin as analogue or digital dials. (Fig. 19) The Technics stereo looks more like a cardiac-arrest unit than a machine that produces music.

To use a visual theme for a product maybe acceptable if the theme enhances the product and does not disguise it. The use of 'theme' to develop desirable associations in a product is likely to become increasingly popular as products become more advanced. There will be fewer and fewer mechanical, understandable functions on which form can be based and new ways of deciding on an appropriate form may have to be applied.

Figure 17. Technics 315 stereo 1984.

Some manufacturers such as the Technics division of the electrical giant Matsushita use technological imagery as a form of Baroque decoration.
The apparantly professional details on this stereo bear no real relationship to functional necessity or appropriate image but are forms of decoration.

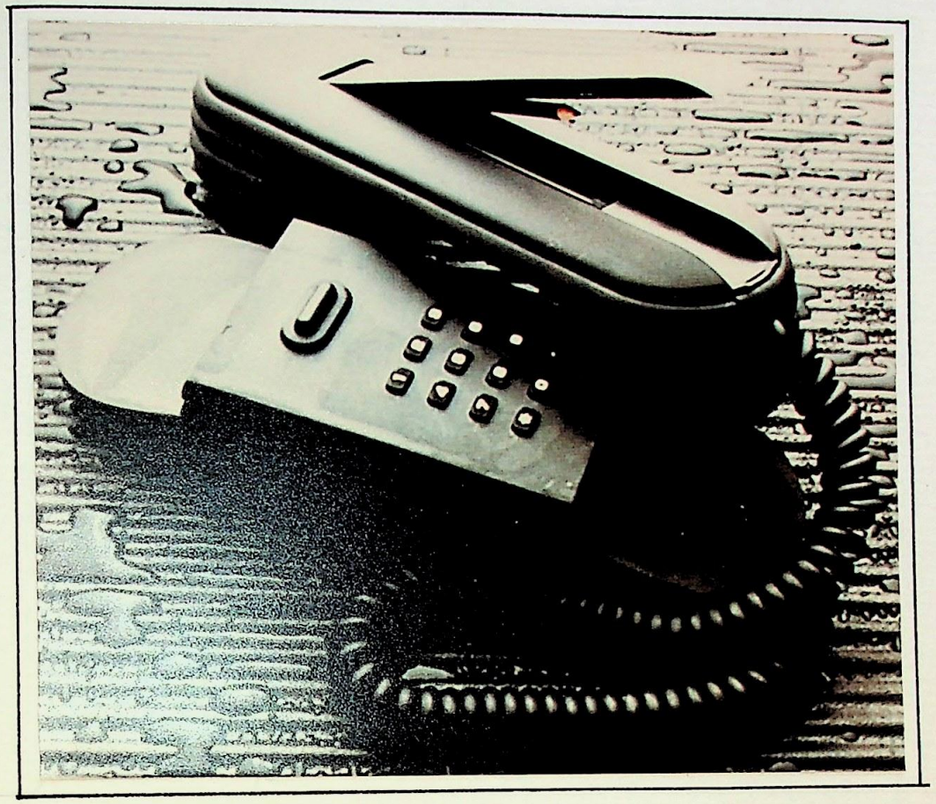

Figure 18. The Parola automatic telephone designed by Fausta Carazza.

This product is an expressive attempt at an enrichment of the visual/tactile relationship of the telephone.

As the electronics revolution gives way to bio-electronics increasingly the attentions of the Industrial Designer will be demanded by these solid state electronic products.

Although mechanical structures may form the fabric of what the man in the street sees to be the 'man-made' environment, this may not always be true. Indeed it may not even be true now. Bridges, roads, the petrol engine, cranes, the wheel, all of which form the 'understandable', mechanical matrix of the enviroment, may one day disappear. Already there are any number of replacements for the load bearing wheel: magnetic levetation, linear induction, air cushions, and although solid state electronic cranes and bridges may be a long way off they are at least feasible and therefore probable. Whether we like it or not the products which will require out attention in the future will be technically advanced. The technology available to the Industrial Design process itself will also be technically advanced, with the ongoing development of Computer Aided Manufacturing (C.A.M.) and more relavantly Computer Aided Design (C.A.D.)

The mystery surrounding computer technology is vast, a combination of fact, myth and marketing. That mystery exists in Industrial Design as much as it does in any other area of application. There are many contradictory opinions about the usefulness of CAD but one thing is certain, before long every consultancy and every design course will use and offer CAD as part of the design process. How this will ultimately affect the Industrial Design profession is difficult to predict, but some things seem already probable; in doing many of the technical tasks with which the designer previously troubled himself more time will be made available for the exploration of the 'unquantifiable' aesthetic aspects of design; non-geometric, free forms which were previously impossible to produce will become possible; and most importantly the mystery of many

Figure 19. Hi Teck Seiko watches, 1986.

The use of Hi Teck imagery is justified in so much as it does not attempt to disguise any function of the watch. In many senses it enhances the technological accuracy which these watches display.

aspects of Industrial Design will be exploded.

With more and more technically advanced products, designed and manufactured in a more advanced way, the ability of the man in the street to understand the new processes which have created the new machines will diminish. It will become increasingly difficult to understand how a product works or how it is made. This lack of understanding is inevitable, and the desire to 'know about' a product, in the sense that a man of today may know about a car, will inevitable diminish. The sense of futility arising out of this lack of understanding is likely to be replaced by the need to 'believe' in the new technically advanced products.

What is meant by belief is the need to accept the product in its surroundings; the need to feel immediately comfortable with the product; and the need to accept as true the promises which the product may make. These promises will not only be given in terms of the actual function; to transport; to make music; to heat etc; but also in terms of many outward functions. These outward functions will include promises of safety, desirability, usefulness, ease of use and many more depending on the social values the product wishes to support.

If Industrial Design is to act upon changing social values and needs; if it is to remain aware and concerned about those needs; if it is to fulfill this role it must as a profession come clean with its true identity. It must honestly trade in its intrinsic ability, the handling of form, proportion, symbolic value and visual elegance. If it must quantify it should do so in these areas using methods of analysis and research (to establish the quantifiable values which ought to be expressed in the form of a given product)

methods of evaluation (to help examine audience response to a given solution). However unquantifiable the values may be, the consequences are highly quantifiable.

An indept knowledge of the history of products and product families would be necessary. Every product ought to be based on a detailed review of its ancestors, the sources of its root stereotypes good or bad, and the starting point for the subtle mixture of likeness and difference which will establish its identity. This archaeological knowledge works even for a product which may have no obvious ancestors. However 'new' it may be its purpose must fit into some continuum of human need. And that need, the need for warmth, the need for transport, or the need for communication must have been associated with certain products.

A new interpretation of form and function may come into play, based on expansionist not reductionist ideas of function. As well as expressing values of size, weight, speed, technology, power, method of manufacture materials price etc., the form should seek to express symbolic values such as the role of a product within a space and amoung other products; the purpose of a product in a persons life and the experience and values which the product will support. The product should express the social consciousness of society in terms of pollution, health, safety, social and environmental welfare. This identity should also be the identity of Industrial Designers.
The value of the other aspects of Industrial Design should not be diminished by this identity. Engineering, cost effectiveness, producibility, marketability etc. are vital, they are fundamental, but of themselves they do not define the profession. As such they are secondary. Of all these secondary skills perhaps one should be more closely linked to the success of the profession than the

others: that being the ability to manage. If Industrial Design is to ensure those aspects of product identity which are necessary to ensure its own identity then it must develop its position within the melee of clients, engineers, marketing men, and production managers. It is not sufficient to become involved in a product only after most of the decisions have been made by these other professionals. It is not sufficient to expect the client to be capable of acting as interpreter between the designer and the originators of these decisions. The designer becomes powerless and of use only as a 'stylist' in the derogatory sense.

The designer may perhaps design fewer products but he should in return be in a position of far greater responsibility, involved in the management of the whole project from its conception to the shelf and onwards as a second and third generation product. The designer may be responsible to the client, but more importantly, by controlling many aspects of the production process the designer may be held truely responsible to society for the products which pervade every corner of civilisation.

It is an enormous challenge but with societies increasing disatisfaction with the way industry dumps more and more thoughtless and destructive products on the market, the responsibility for converting that disatisfaction into action is sure to fall to some professional body. It is not sufficient to say that the process of supply and demand will solve the problem, that safer products will appear if and when the public calls for them. This process only occurs when a situation so drastic develops that the public has to call for action. This is often too late. At that juncture the belief that technology will solve the problems it has created becomes increasingly less credible.

More and more people, conscious of the massive environmental problems they face have begun to believe that only drastic measures will solve anything. Within the manufacturing community many professions have almost lost any sense of social responsibility, they have no ideal higher than sales and profits. Industrial Design as a young profession still posesses an idealism which although it may falter on a day to day basis it is still a desirable feature running through the professional body. In preserving this idealism Industrial Design may maintain its social awareness and humanitarianism.

CONCLUSION

In spite of the effects of the Modern Movement many problems still remain unsolved, in the areas of imagery, product identity and in the identity of the Industrial Design profession. It is clear that the extent to which Industrial Design relates itself to social consciousness and environmental values is a determining factor in the need to solve these problems. Industrial Design cannot seriously expect to be able to maintain this humanitarianism if it is unable to clearly define its own identity.

The process of change however, need not require anything more than the honest acknowledgement of the fundamental elements that define clearly the work of the Industrial Designer and of his profession. These elements are; the instinctive use of form and symbol; the appreciation of aesthetics and the visual impact of a product on its environment; and a human awareness conscious of the physical and psychological experiences which a product may give to people.

Engineering, Marketing, and Management may be of great importance but they are secondary. They define the identity of other well established competant professionals. They do not of themselves define the identity of Industrial Design.

If there is to be a change then the training of future Industrial Designers must also change. Engineering etc should be taught in such a way as to support not disguise the identity of Industrial Design. There should be an increased awareness of other art disciplines, and an honest appreciation of the knowledge to be gained from art. New or fringe movements, post-modern, Memphis, sculptural or organic should be encouraged in education and within the mainstream of Industrial Design.

In the establishment of a clearer definition of Industrial Design the supportive context of Engineering, Marketing, Management and any other secondary feature should be stressed.

The Industrial Designer should be a professional who manipulates the quantifiable technologies of Engineering etc. to support the process of designing for industry products which are symbolically, visually, socially and environmentally desirable.

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