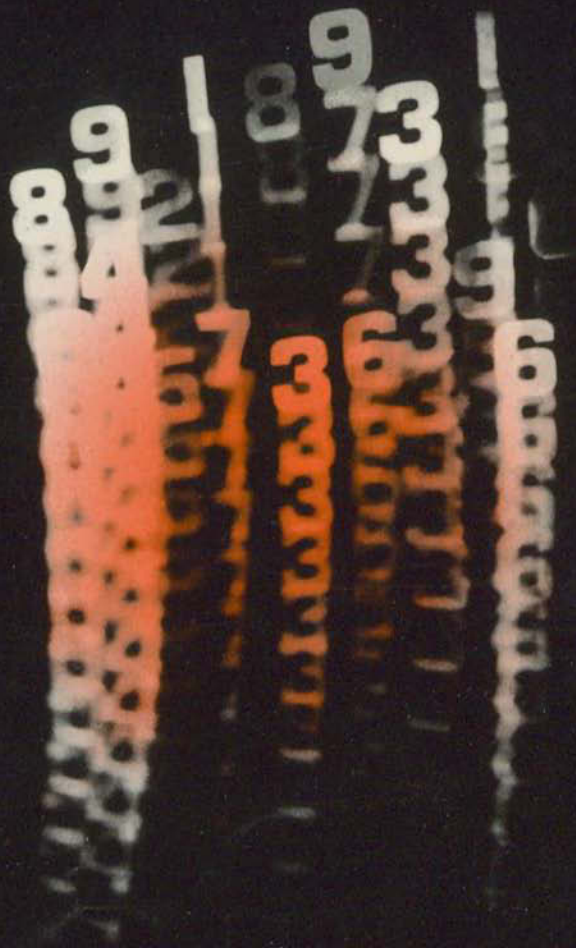
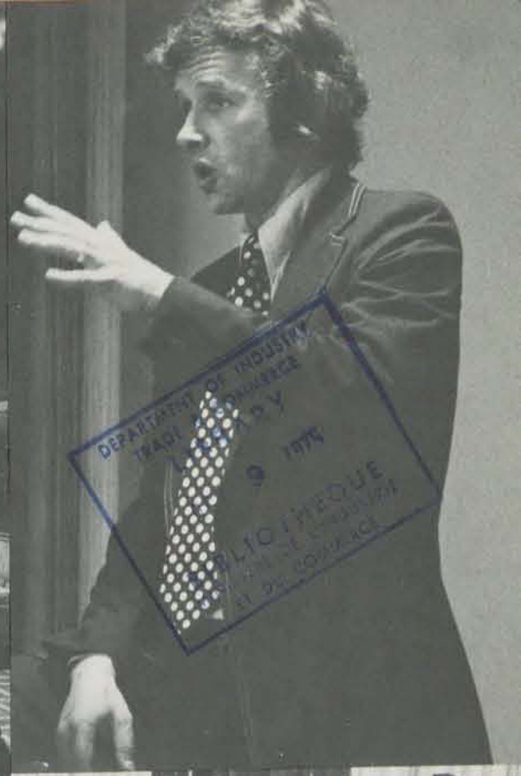
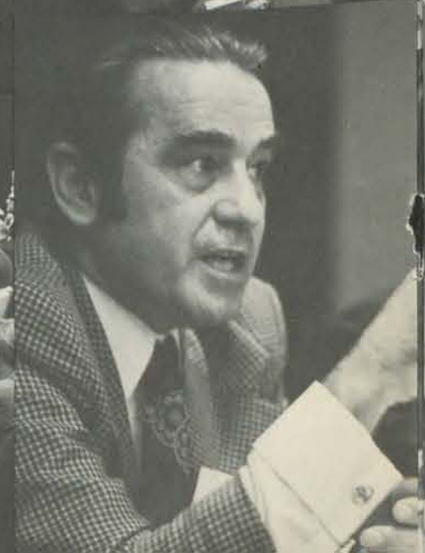
Profit by Design

Eight business views of the role of design in marketing and corporate policy







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National Design Council
Canada
1974

Introduction

Sonja Bata

Mrs. Sonja Bata is chairman of the National Design Council, a director of Bata Limited, a director of the Ontario Transportation Development Corporation, an international trustee of the World Wildlife Fund and a trustee of the Art Gallery of Ontario.

The National Design Council is an advisory body to the federal government, reporting through the Minister of Industry, Trade, and Commerce. Its primary responsibility is to recommend policies and programs with the object of advancing design activity and capability in Canada. In pursuit of this objective the council often acts as a catalyst in bringing together various interests in our economy and society which should be involved in the formulation, development, and implementation of policies and programs affecting design. This is done in a variety of ways: by holding seminars, conferences, and workshops, by organizing co-operative efforts with industry, business, professional, and other groups, and by supporting the work of governmental and non-governmental bodies in the implementation of design activity.

In studying the impediments to design innovation in Canada the council found that a large part of the high failure rate of new products was due either to an inadequate assessment of market needs or a lack of marketing know-how.

The council therefore decided to sponsor the seminar, 'Profit by Design,' to focus attention on the relationship of design and marketing and how a design-oriented marketing structure can insure that design and marketing are closely integrated in the management policies of a company.

The council considers good design management of such importance that its highest annual award—the Chairman's Award—is given to an enterprise which in the council's view applies effective design management throughout its total operation.

When we in the National Design Council speak about design we refer to the total design process. So frequently one comes across the mistaken idea that design deals purely with the esthetic shape of things. Good design, to bring satisfaction to the user, needs to be much more than the styling of a product. The designer is concerned with the complete relationship of shapes, materials, processes, functions, environment, and social conditions. In the past when the individual himself, or the craftsman, created a design he had a close relationship with the end product, he understood the materials he worked with, he knew the needs of his customers and markets. Today the complexity of technology, the mass market, fast communications, and the competitive market have changed this relationship. To create a good design, be it a product, a system, or a corporate identity program, the designer needs to be knowledgeable in many fields. He needs to know the actual needs of the market, the precise function of the product, the production process, the channels of distribution, and so on. In many cases today because of the rising awareness of pollution problems he must also concern himself with what happens to the product after the consumer has used it. Obviously he will not be able to find the answers to all these problems by himself. Therefore he must be a member of a team—if at all possible, a member of the top management team.

Why is good design so important? First, most of you are in business to make profit. Profitability is the measuring stick of your success. Design and design innovation can be one of the most powerful tools to increase your profits. If a product is new, if it is different in some significant way from other products, if it gives better service, if it is more convenient to use, if it is easier to maintain, it will be less price-sensitive in a highly competitive market. Increased volume, possibly higher margins, should result in better profitability.

For Canada design innovation is particularly important. We live in a country with a higher wage level, and trade based on cost advantage is difficult to maintain in the domestic or the export market. Canada will never be able to compete with countries like Taiwan or South Korea as far as labor cost is concerned. The only way we can be competitive on the world market is by product differentiation or by an innovative design approach to the production, marketing, or packaging process.

Besides higher profitability, design is important for other reasons. Many successful firms spend a lot of time and money on designing their total visual image. Such an image reflects a healthy total design policy in the company. Through this policy, linked with effective design management, they have succeeded in conferring on their corporation a universal visual image in the eyes of their public, their customers, their shareholders, and their employees. This image includes the design of their products, the packaging, the buildings they operate in, their corporate identity program, their advertising. It reflects what the company stands for, it gives it an identity and creates an acceptance of the company and its products.

Our seminar concentrated on the subject 'Profit by Design'—design in business. But the impact of good design goes much further than that. Design applies to everything made by man, from the simplest, smallest, everyday item to complex urban planning. In fact our whole man-made environment reflects the design input of our times. To many of us this input has not been well managed and needs to be improved. Growth has been so rapid, particularly in urban areas, that not enough thought has been given to design solutions. The result is often ugliness, visual and noise pollution, traffic jams, and so on. There is no doubt that we could enhance our environment through good design, through the creative actions of our planners, scientists, and political and industrial leaders.

Design can directly help your business to profitability. And through your action it can also help directly and indirectly to improve our quality of life.

The managerial dilemma—designing for markets or marketing design

Simon Majaro

Simon Majaro is the director of Strategic Management Learning of London, England, which organizes management development programs. He was formerly managing director of one of the Unilever companies.

I am not a designer but I have worked for many companies involved in design over the years and I have made most of them generate fewer designs rather than more. I believe there is a substantial amount of waste in many companies due to unsatisfactory design. Now my mission in life is to try to improve the communication between marketing and design, between marketing and finance, between marketing and production. I think we've entered into a phase of our economies where these interfaces are essential for success.

Statistics generated a few years ago—and I've recently conducted a similar study in Europe and I'm sorry to say things have not improved much—show that forty percent of all products introduced are discontinued soon after launch; seventy percent lose money after one year; fifty-six percent lose money after two years; thirty percent lose money after four years. Many products never earn an adequate return on investment. The question is, what is success?

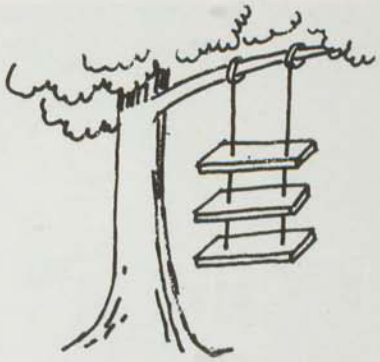
What is a successful product? You have a product. You launch it, and possibly it makes profit for a year or two or three. Is that a successful product?

What is successful marketing? What, in fact, is corporate success? Is it profits? Is it growth? Is it return on investment? Is it return on assets managed? Is it effective use of resources? Things have changed dramatically in the last few years. When we talk about success we no longer talk only of profits, though profit is an ingredient of success, of course. But this is not the ultimate for which we work.

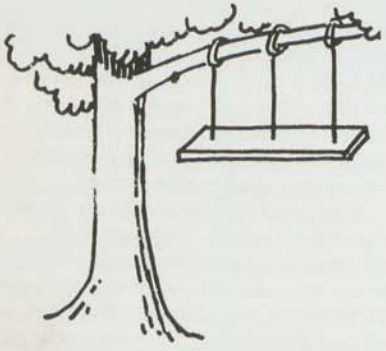
I believe that in 1974 success means meeting the expectations of the stakeholders. I use the word *stakeholders* rather than *shareholders*. Who are the stakeholders? Shareholders, of course—we have to satisfy the shareholders because if we don't they withdraw their money from our business and that can bring trouble to the company. Other investors, bankers—we have to look after their interests. They are stakeholders in the business. Employees—are we ignoring the employees? They are stakeholders in our business. The unions—yes, the British disease is infecting you, and I can assure you it will infect you even more in the future. Why? Because many organizations have failed to identify the unions as stakeholders in the business. Governments—many companies in Britain have overlooked the pressures that governments can place on a business, and are in some difficulties now. The community at large—a few companies are beginning to spend money to rectify some of the pollution they have perpetrated in the rivers, in the lakes, and in the sea. Suppliers—yes, they also are stakeholders. Those of you who have looked after your suppliers over the years have good and loyal suppliers, those of you who have not are in some difficulties now. And finally, the starting point, customers and consumers. We look after customers, we look after consumers. If we don't we are not going to achieve the profit which is the tool through which we are going to satisfy all the others. This is what marketing is all about.

Design is part of marketing. Every designer is a manager, and every manager is a designer. A designer who

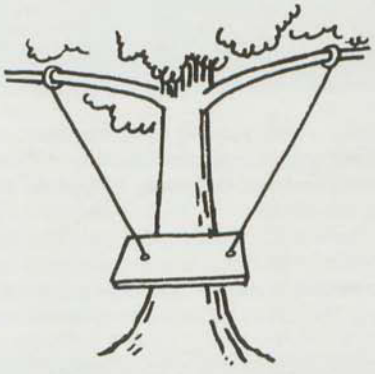
The new product



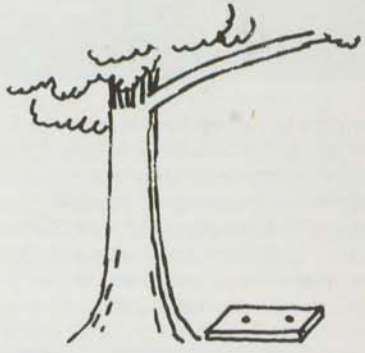
As marketing requested it



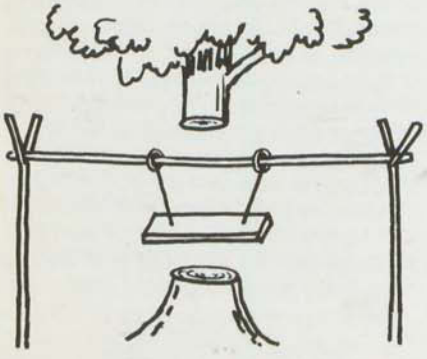
As sales ordered it



As manufacturing built it

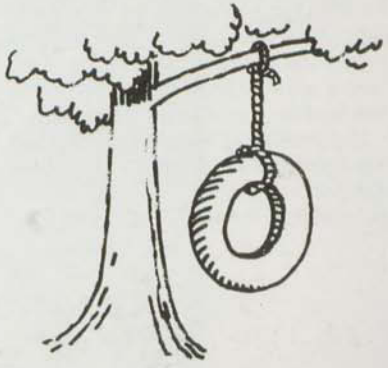


As supply delivered it



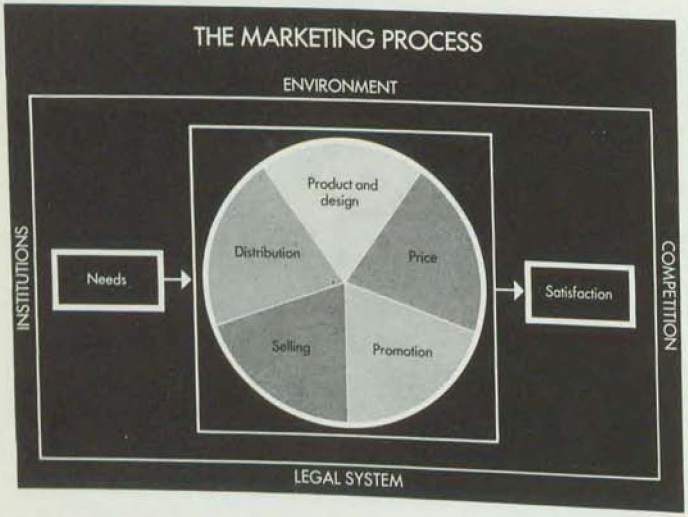
As plant installed it

As advertising sold it



What the customer wanted

"In 1974 success means meeting the expectations of the stakeholders"



Marketing mix and environmental factors in context of the marketing process.

does not understand the marketing process is bound to fail, just as a marketing manager who does not understand the design process is unlikely to succeed. Let us look at the marketing process in its simplest form. The needs of the consumer are the starting point, the satisfaction of those needs is the end of the process, and we have to control the process and meet the consumer's needs by developing the right marketing mix. Since we often start with a wrong concept of what the needs are, and thus satisfy the wrong needs, we also have to have a continuous feedback process.

The marketing mix has two kinds of ingredients, external and internal. The external ones—the environment, the competition, the legal system, institutions—are largely out of your control. But the marketing man and the designer must make sure they know all about them.

Now the internal ingredients. The first one is the product and the design. The product consists of packaging, branding, literature, instructions, guarantees. If you have a product with a five-year guarantee, it is a totally different product from a product that has only a one-year guarantee. And so on.

Next is the price. To satisfy the consumer, the price and the product have to be in harmony.

Next, promotion. Product, price, and promotion must be in a state of harmony. If the product is wrong you cannot rectify it by clever advertising. You can never improve the product by improving the promotion.

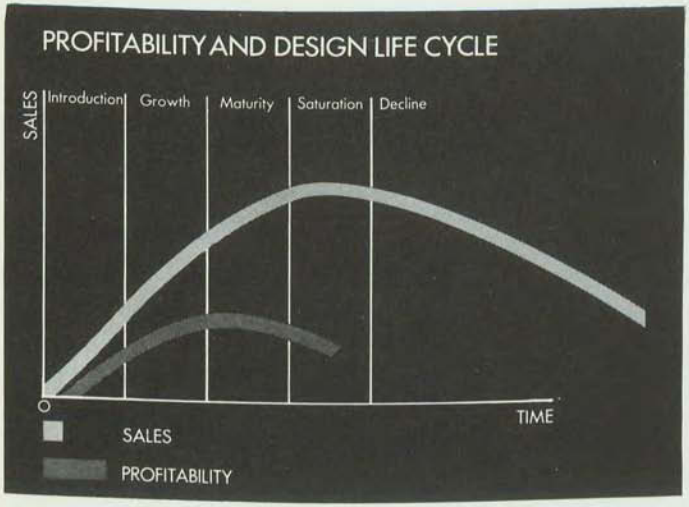
Selling is the fourth ingredient we have to determine. If we've done the first three right, the salesman's job is relatively easy.

Finally, distribution. The place where I can get the product must be right, must provide me with the satisfaction I seek.

In some companies the ingredients may be slightly different. But essentially they cover most cases. These ingredients must be in a state of balance. If any one is out of phase the whole marketing mix is wrong, in which case the marketing task has not been fulfilled and the designer will be left sitting there helplessly in the midst of this complicated, subtle activity.

To summarize my perception of the marketing process, there are the outside ingredients—the environment, where the consumer lives, his attitudes, his behavior, his culture, his religion, and, let's not forget, his purchasing power; if he hasn't got purchasing power it will be difficult to satisfy his needs. Then competition, legal systems, and institutions. Within this outside uncontrollable environment we have to identify and anticipate the needs of society or more specifically our segment or target group and satisfy those needs through a process which is within our jurisdiction. If we have a good grasp of the external environment we can determine the inside process quite easily and effectively.

"Generally peak profitability is reached a long time before peak sales "

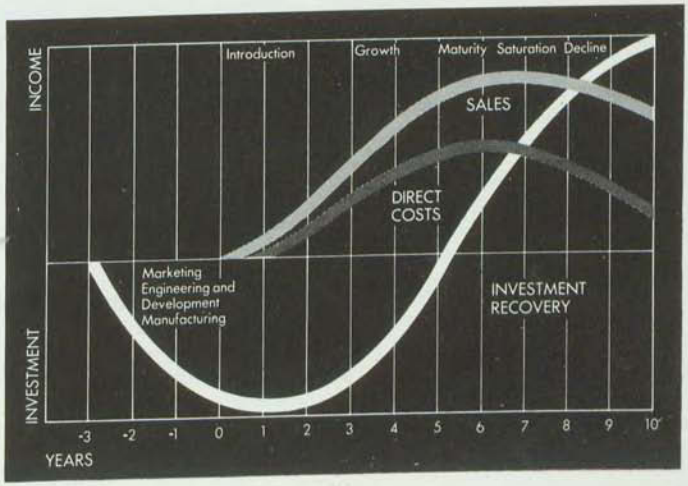


The profit curve is shorter than the sales curve, and peaks earlier.

Too often a designer forgets that a product has a life cycle. It can be divided into five stages, an introduction stage, growth stage, maturity, saturation, and decline. The life of a product is very difficult to determine in advance although we're becoming much more clever at it.

We know, however, that generally peak profitability is reached a long time before peak sales. So don't lull yourselves into thinking that just because you have a product that is continuing to grow, it is still a profitable product. You may have a catastrophe on your hands without realizing it.

What does the life cycle mean to us? It means that we have to try to maximize or optimize profits while the product is still growing. But that depends on how much money we have spent on the product. A product like the hula-hoop cost little to introduce, little to produce, and little to maintain, so it doesn't really matter if the life of the product is six weeks or eight weeks. On the other hand a new car might involve a fifty million pound investment, and the question has to be asked, 'Am I likely to recover my fifty million pounds during the life of the product?' The fact that the product is profitable in Year One and Year Two is quite irrelevant if in Year Three it is not profitable. You must try to estimate the cost the company incurs before Year Zero, the year when the product is launched. Before we launch such a product we spend a lot of money on marketing, engineering, development, and manufacturing. We have got to build an inventory to make sure that we can satisfy the distribution needs. By Year One [see below] we have reached the summit of our expenditure and it's only at that point that we start recovering our investment. We recover our investment as a result of the difference between sales and costs, and we finally reach a point where our investment has been recovered. It's only from that point onward that a company can ask itself, 'Have we made a profit on the product?' Those of you who manage companies with a high design content should demand this type of analysis from the designing and marketing managers jointly. The danger is that if you have not recovered your investment by the time you've reached the saturation point you never will. Those of you who are in this quandary would have been better off to take the money and put it in mortgages.



The product life cycle in relation to the recovery of investment.

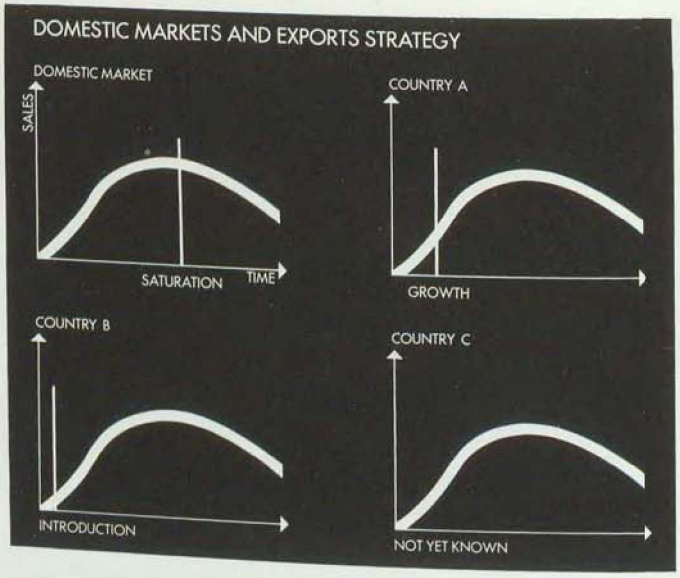
"We have to try to maximize or optimize profits while the product is still growing"

Here is another tip for designers and managers. For every company there is a certain relation between the market it serves and the product it supplies. Say I make margarine and market it through the supermarket to the housewife. If I take the same margarine and repack it slightly to sell to hotel groups and catering establishments I have developed a new market for the same product. This is known as market development. If I decide to introduce orange squash to satisfy the same market, the housewife who buys at the supermarket, I've introduced another product. This is known as product development. Finally, if I introduce a new product for a new market this is diversification. IBM sells computers to the business world. When they introduce a typewriter or photocopying machine to the same market, the businessman, that's product development. If IBM decided to take their product, the computer, and modify it to meet the needs of the housewife, that would be market development. But if IBM decided to introduce margarine through the supermarket, that would be diversification.

Now this is not only a matter of terminology, it's a matter of strategy. A company ought to ask itself, 'Where are we strong and where are we weak? Are we strong in our marketing capability or are we strong in technology?' If they are strong in marketing ability they should pursue market development. If they are strong in technology they should pursue product development. A company should not diversify unless it sees so many threats on the horizon that they feel diversification is the only way to escape from the trap they are in. Remember, diversification is a new product and a new market, and the likelihood is that no manager inside the company knows anything about the new market and the new product, therefore the risk is enormous. The message for designers, marketing people, and chief executives and strategists is: Go the way that your strengths lead you and avoid the weaknesses; and look at diversification very, very carefully.

I would like to spend a few minutes on the question of international marketing. This, I would stress, means trying to satisfy the needs of world markets. The company that makes products in Canada and as an afterthought decides to export them is not doing international marketing, all it's doing is selling abroad. International marketing is identifying those segments of the world market that we are going to satisfy and designing the product accordingly.

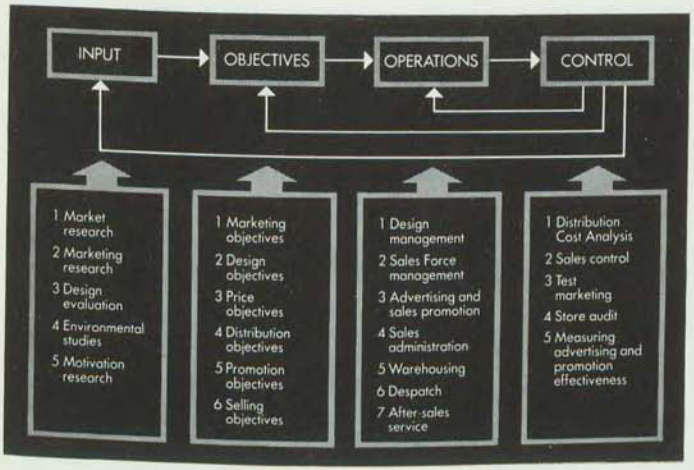
Originally, a company built its fortunes on the domestic market and when the product started to look as if it had reached saturation point some-



The product is introduced at different times in different export markets.

The time between introduction dates in various markets is getting shorter.

"If you don't know why you are promoting, you won't know if you have achieved your objectives "



The four activity stages in the marketing process.

body would say, 'Well, let's go abroad.' And so we go abroad. In Country A the product is growing very nicely while in the home market it is now past the saturation peak. In Country B the product is at the very beginning, just being introduced. In Country C the product is totally unknown.

What that meant in the past was that there was a gap between the most advanced market, which in most instances would have been the domestic market, and the country that had only become aware of the product at a later stage. This gap provided the big opportunity for exports.

Now, unfortunately, this gap has narrowed, partly as a result of the communication revolution we're going through, partly as a result of extensive world travel. Today a product that is launched in Canada will, I guarantee you, become fairly well known throughout the world within a matter of six months. And in time the gap will become almost zero.

As a summary I would like to look at the managerial process and translate that into what the marketing man has to do. We have to collect information, as 'input'. With that we can determine our objectives, and only then can we operate. Finally we have to control the process. This is the function of budgetary control procedures: once you have control, that's the input for the next cycle. The control asks, 'Have we achieved our objective?' and 'Have we operated effectively?'

What comprises marketing *input*? Market research, marketing research, product evaluation, environmental studies, motivation research—just to give an idea of various methodologies that can be used. Market research is measuring the size of the market, who is in the market, how much money have they got. Marketing research asks, 'How are we going to reach that market?' Each ingredient of the mix can be researched.

Marketing, design, price, distribution, promotion, selling—each one of these needs a set of *objectives*, otherwise it will not be possible to measure effectiveness. If you don't know why you are promoting you won't know if you have achieved your objectives. If you don't know why you distribute you won't know how to test or control your process.

Under the heading *operations* fall design management, sales force management, advertising and sales promotion, sales administration, warehousing, despatch, and after-sales service.

And finally *control*. This includes distribution cost analysis, sales control ('Have we achieved the volume per salesman?'), store audit, and measuring advertising and promotion effectiveness.

A marketing profile analysis is a useful tool for any design manager to fill out together with the marketing people, in fact I refuse to operate without it. It is a matrix in which the five internal elements of the marketing mix are checked against the four external elements. Use it to establish all the external elements—environment, competition, institution, and legal system—that affect the design. If I design something for Japan I know that white has to be used with great care because though it is the colour of

"The needs of the consumer are the starting point, the satisfaction of those needs is the end of the process "

	Design	Price	Distribution	Selling	Promotion
ENVIRONMENT Economic development Culture Consumer habits Consumer attitudes					
COMPETITION					
INSTITUTIONS					
LEGAL SYSTEM					

Estimating the effect of each environment factor on each marketing ingredient.

happiness in western countries, in the Far East it is often associated with mourning. That goes into the profile analysis. How do people use the product? What do they use it for? That has to come through the investigation. What design have my competitors got and how successful have they been? That needs thorough research. Every square in the matrix is a subject for research. Design and institutions, for instance: are there any institutions which determine the quality of my design, for instance the standards institute? What about the legal system? In some countries cigarette manufacturers have to display a warning that the product could be harmful to one's health, in others they do not. Price and environment: what is an acceptable price, what is a price that will satisfy my consumer? Promotion and the institution: you advertise on television in Canada, but if you go to South Africa you discover there is no television and therefore you have to use a different institution for promoting your product, perhaps the potent Radio Lourenço Marques, which is located in Mozambique. If you don't know of such institutions you may be unable to promote the product you have designed.

Here is a simple methodology for designers and managers alike, an algorithm or flowchart. It helps to spell out marketing problems through yes/no questions. The chart asks first, 'Is the design idea compatible with company and marketing objectives?' and proceeds through various objectives: profit, sales volume, sales growth, and company image. In each case if the answer is *No*, we drop the idea. If *Yes*, we go on to the next question. Then, 'Is the design idea compatible with company resources?' What resources are we talking about? Capital, know-how, facilities. Are they obtainable? Only if we can answer *Yes* to all questions do we proceed with the design.

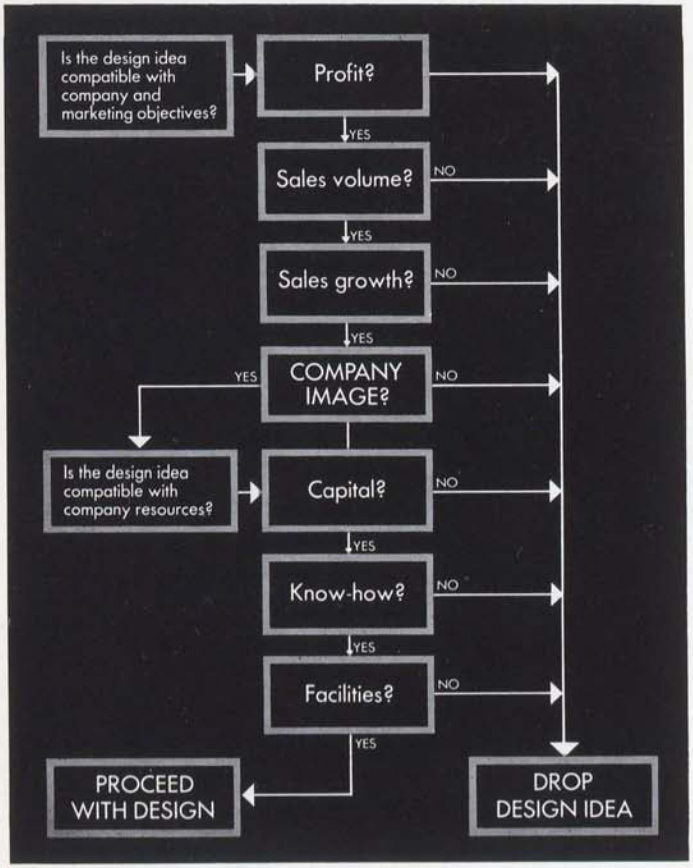
I would like to finish with an example of how design and marketing can work together. A London-based firm of designers, Michael Peters and Partners, were approached by a company called Winsor & Newton to look at the market and design a new ink bottle to increase sales and market share.

A very thorough, though not very expensive, marketing research study was done and it revealed a number of problems. First was anonymity of brand: instead of the fairly familiar

"A design award should be given only to companies whose designs prove successful in the marketplace "

The new Winsor & Newton bottle and package (right) contrast with the old design.

"Design is part of marketing. Every designer is a manager, and every manager is a designer "



Simplified decision model used to assess the viability of a new design.

Winsor & Newton the brand name was W&N which meant nothing to anybody. Another problem, a threat, was increasing competition from abroad. Another problem: bad value for money compared with a competitive product. Finally, there was no point of sale value. What were their solutions? First they redesigned the bottle, creating a shape which is much easier to handle and less likely to overturn. Secondly they included the words *Winsor & Newton* and where possible gave each color a distinctive and easily recallable name such as 'canary yellow' and 'apple green.' If you have used Winsor & Newton ink you will know how much more attractive and functional the new design is. The result was a sixty percent increase in sales. To me this is what design success means. If I had my way I would make the design councils of all countries change their attitudes. I think a design award should be given only to companies whose designs prove successful in the marketplace.

Four Case Studies

1 X-ray equipment

2 Furniture for the home

3 Electronic switching machine

4 Corporate identity program

1

X-ray Equipment

John W. Eckart

John W. Eckart is manager of engineering at Picker X-Ray Manufacturing Limited, where he heads a staff of 60 carrying out research, design, and development. He joined the company in 1969.

Picker X-ray Manufacturing Limited is one of ten divisions of the Picker Corporation. We have the rather unusual distinction of having complete autonomy within our designated product lines and we are totally responsible for the design and development of products to suit our market needs and to meet competition. We manufacture medical diagnostic machines for the radiologist, and a number of our machines lead the world, in some cases with a three or four year lead on our competition.

At Picker design means creative activity leading to the development of new products. This activity requires interaction between the industrial designer and the engineer. You have to have this mix. In our earlier practice of design the prototype was designed by engineers and mechanical people. It was often an extremely reliable and correctly functioning machine, but usually it grew like Topsy, with many afterthoughts. It took the industrial designer to translate that into an esthetically functional, marketable product.

By far the most difficult and hazardous portion of the process of designing new products is identifying precisely what the market needs. When you have done this it is relatively easy for any well-managed engineering department to develop the product. At Picker we do not have any magic formula for this process of product identification, but rather we rely on ideas from our own engineers, the corporate marketing group, the corporate product management group, and the customer himself, with whom we consult as often as possible. We send our project engineers to all major conventions, we put them into hospitals working with the equipment, we send them out into the field as often as we can. When radiologists or customers visit the plant our engineers meet with them to bounce ideas and concepts back and forth.

The corporate product management group is supposed to identify the need for new products. However in our experience these people are not necessarily innovative types, and it has been the designers and engineers who have originated some of our most successful products. We have sometimes proceeded initially without corporate approval and on occasion in the face of initial opposition.

Once the concept has been generated we set up a project engineer who with his team will be responsible from the very beginning of the design process right on through production and even beyond that. They follow the early units into the hospital, into the customer environment, check the installation, and see for themselves the reaction of the customer. Depending on the product we encourage the project engineer to conduct as much market research, along with the corporate marketing group, as will enable him to understand the market's needs.

To sum it up, at Picker we normally work through three major phases.

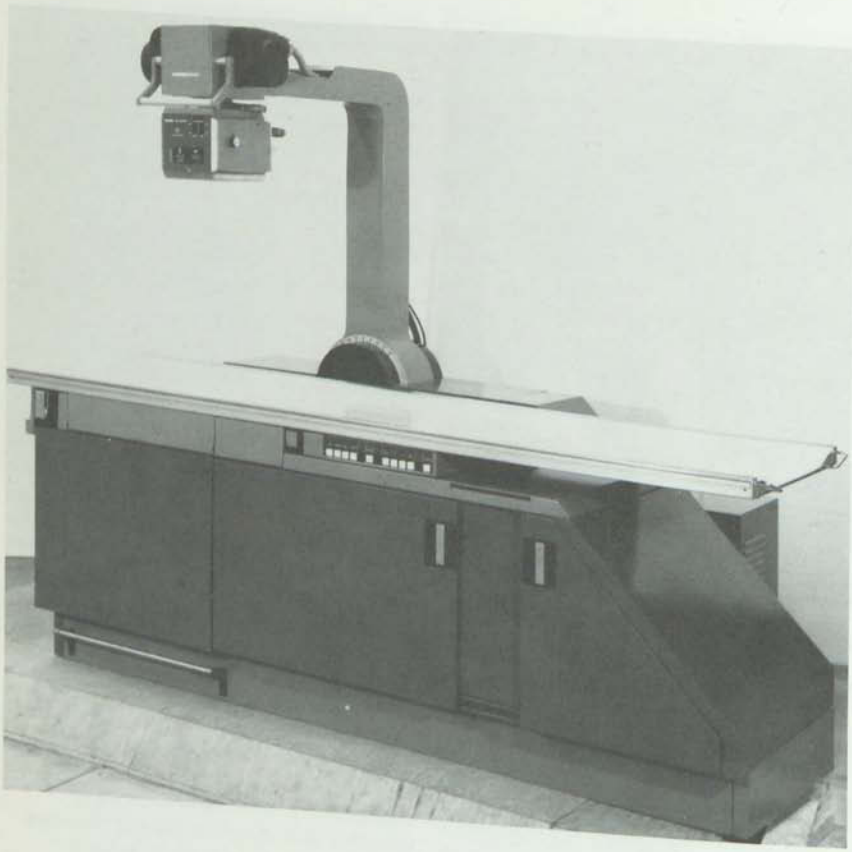
One: we try to make absolutely sure the project engineer really understands the market needs and what he has to produce before embarking on the costly venture that is engineering.

Two: we try to develop and prove the design as far as possible by model making. It is not expensive to make full-size models in cardboard and wood. You do not need an expensive engineering team to do it, you need a good model maker or carpenter.

Three: we identify the need, expose our solution to the customer, to our corporate marketing people, to the sales people, and when we believe we've got something we can go out and sell and make a profit with, only then do we engineer it, not before.

'Our product management group had identified the need for a new line of X-ray tables in modular form. About eighteen months ago the project engineer produced a small two-dimensional cardboard model which illustrated how he could put together a series of different product configurations by using common modules or elements. ...'

'Within a month we had developed the concept further and made a quarter-scale wooden model to better demonstrate the concept. At about this point we brought our industrial designer into the project. He began to rebuild the model, this time to develop the esthetics, the ergonomics, the human interfaces, and so forth. When we were satisfied with the results we proceeded from the conceptual phase to hard engineering.'



'As a result of hard discussions and inputs from the product management and marketing groups and certain selected customers who were shown these models we were able to firm up specifications and freeze the design. Then we proceeded with the engineering, built our first hard prototype, and after in-house tests installed the unit in the local hospital to verify customer acceptance under clinical conditions. Since that time we have shown the unit at the Canadian Association of Radiologists' convention in Vancouver, which was its first exposure to the market. The field trial and the first showing at a convention revealed the need for minor modifications, which were made during the preparation of the production drawings.'

2

Furniture for the home

Russell A. Warren

R.A. Warren is president of Simmons Limited of Montreal. A University of Western Ontario graduate, he was an RCAF pilot in World War II and spent several years with the Bank of Montreal before joining Simmons.

We've been known mainly as a mattress company, but in 1966 we thought we would try and change our image by diversifying and offering all categories of furniture in the home furnishing business.

At that time fashions were starting to change, people were starting to dress differently, and after they started to dress differently they couldn't come home to the same traditional surroundings. We realized if we could get something in the contemporary field that would meet the aspirations and hopes of the consumers we'd probably have something good going. The result was the Century 2 collection.

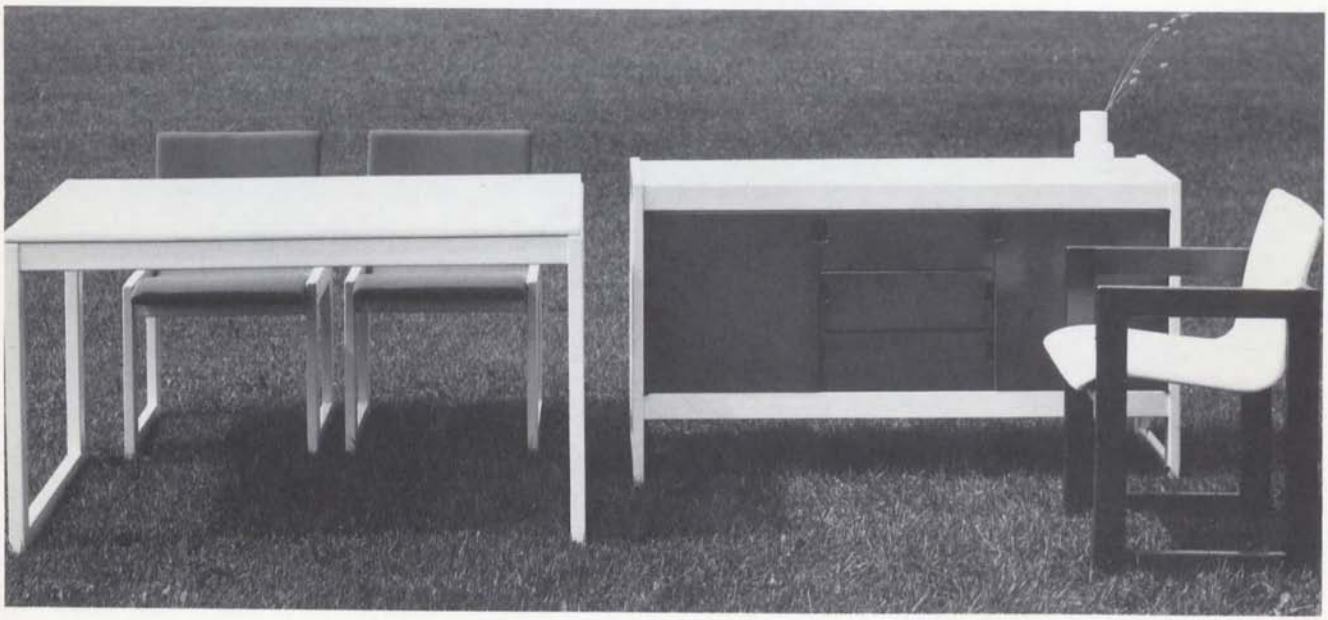
While this experiment in design was quite expensive in dollars and management time, it did result in a line of exceptional furniture that is selling well today, with about sixty percent of the sales volume in the American market and the balance in Canada. But there have been a number of other important benefits to our company. Century 2 has taken us in a lot of new directions. It gave Simmons an image I don't think we could have obtained by any other method.

With Century 2 we managed to come in a bit ahead of the change in the market. You can't do that by copying.

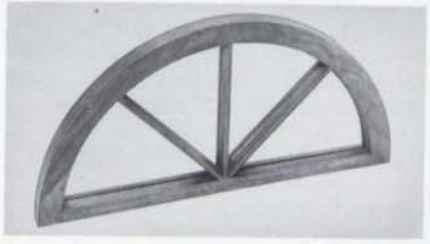
Bloomingdale's in New York is one of our largest customers, it's the largest single line of home furniture they sell in their contemporary group. We seem to be about two years ahead of our market as far as the style consciousness of the consumer is concerned. They said to me originally they thought this line might have a seven-year life—well, the way it's going I don't think the seven years has started yet.

We believe new product design has not only been important to the sales volume of the new product itself, but in the influence it has had on our other products, our people, our customers, and the awakening desires of the consumer.

'The Century 2 collection which we introduced in January 1970 was completely different from anything that had been supplied in home furnishings and totally Canadian in concept, design, and production. ... The company doubled its sales volumes in the nine years 1961 to 1969 but after Century 2 we doubled again in the next four. And our mattress business, which was sixty percent of our business when we started, is still sixty percent of our business. So it isn't just the new item that does something for a company, it's a combination of the excitement it creates throughout your whole organization, through your retailers, and through to the consumer.'



'Our Early Canadiana collection of furniture uses solid pine, tongue and groove construction, wood pegs, chamfered edges, woven seagrass seats, antique nails, hinges, and door pulls, and a hand-rubbed finish. We decided to ally ourselves with the Wellington County Museum in Elora to reproduce pieces of early Ontario furniture of the 1830 period as catalogued by them, for which we would pay a royalty. We also wanted to reproduce furniture of French Canada of the same period and the authority for this was Mr. Jean Palardy who wrote the book *Early Furniture of French Canada.* We employed him on a royalty basis as our designer for the French Canadian collection, the Seigneurie line.'



3

SP-1 TOPS
Electronic Switching Machine

Donald A. Chisholm

Dr. Donald A. Chisholm worked on the Telstar and Apollo projects in the U.S. before returning to Canada in 1969 to take charge of R&D for Northern Electric. He is president of Bell-Northern Research now.

We designed this machine in an attempt to solve a major human factor problem that we have encountered. The problem is the traditional toll operator's office. The girls you talk to when you try to get a long-distance call through are lined up in rows and there's a supervisor who walks up and down carrying something reminiscent of a whip. (Actually it's her plug-in earphone.) The girl sits there, she stares straight ahead at a black board, and she plugs plugs. The older machines in service today are primarily mechanical: electro-mechanical relays take the dial pulses you send in and convert them to some form of action. What we have done is introduce a family of electronic switching machines in which the intelligence is in a computer, though it is still a mechanical matrix that actually makes the call. The SP-1 TOPS switching machine is one member of this family of machines, the one that handles toll calls. I will describe not the computer or the software but the part where the operator sits. The operator needs, first, access to the computer, second, access to the customer, third, the information she requires to help the customer, and fourth, controls that will let her meet that customer's needs.

We are selling this machine in the United States—by the way reversing the situation that held up to the mid-'50s when we imported all this kind of technology. In the U.S. and Europe they are now introducing a version of that operator position in which they have gone away from the black board and the plugs to control via switches; but it is still something that looks like it was designed by an engineer, square, lined up, factory-looking. It could be controlling a steel rolling mill.

We look at the problem, start with basics, and work up from function. The function is pretty well defined by the requirements of the national network, but the next step is the equipment she (or he for that matter) uses to meet that function. We decide that we have a computer-controlled machine so we're going to input via computer-like terminals, a cathode-ray tube to give the girl information and a keyboard to give the computer information. She has to have a chair and a work surface to carry out those parts of the work that require either writing or accessing files.

We always research what other people are doing: if you can steal ideas it's usually cheaper. Unfortunately in this field there are few that are worth stealing. One of the things that's happening is that nearly every supplier of equipment is quietly breaking the terminal into two pieces, or more usually into three—the cathode ray tube, quite often a box of electronics hidden under the table, and a keyboard. But they never seem to think about who's using it. On some you have to practically break your neck to see the face of the tube. On others, in spite of the fact that they look as if you might be able to adjust the screen to get rid of glare and reflections, they're actually completely fixed. Good machines for the type of work they're designed for, but not for somebody who's going to be using them all day long.

This is where just about everybody has stopped. We went one step further, to the work station, studying the behavioral aspects. We started, as you might expect, with the pieces. We went to models, trying first to get the ergonomic solution. From there to full-scale models. At that point we brought in all kinds of people who had worked in toll offices and decided that there was more to this than just a simple support area. We tried out various kinds of side panels. We thought the operators were asking for side panels as a reaction to having stared at a blank wall with nothing between them and the next girl, but when we tried it with computer operators, engineers, nurses, it seemed that everybody likes to have something in their peripheral vision which defines their own work space. 'I've got a desire to have my own work space but not too private, I don't want to be staring into a cupboard.' And basically these are all the ingredients required to make this work. Now we began to put them together. And what we found was that the classic telephone office was exactly wrong. People like panels on either side of them and nothing in front of them. They like to be able to see ahead, rest their eyes by taking them off what they are looking at and looking beyond, but they don't want people too close. We also found that people tend to form little groups, and after some research we found that people like groups of four and that is also an efficient way of clustering work stations, in fact using space just as effectively as the old design.

It used to be that an operator was quite somebody in the community, but that's no longer true; it's a production-line job. What we attempted to do was to give the operator the feeling that this is *her* work station and that somebody's thinking about her, while at the same time meeting all the efficiency requirements, calls per hour, and so on.

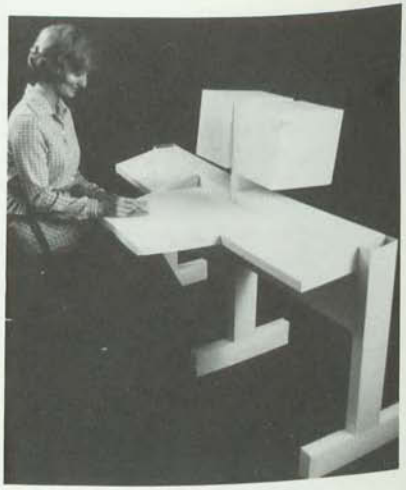
In effect what we've come up with is something that's really more than just a toll operator position. The same thing can be applied essentially to any terminal at which people are going to spend a long time.

I'd like to have gone on to the work community and the job, but one of the requirements if we are to do innovation like this in Canada is to sell to at least one other major market—in our case, the U.S. We have competitors there who have a perfectly good piece of technology; we have a slight cost advantage, but we'd like a real margin. So while I'd have liked to try to meet the requirement of the job itself, since we wanted to sell to literally several dozen different customers, each of whom has a union problem, that was beyond us at this point. I think we could still get back to it, though.

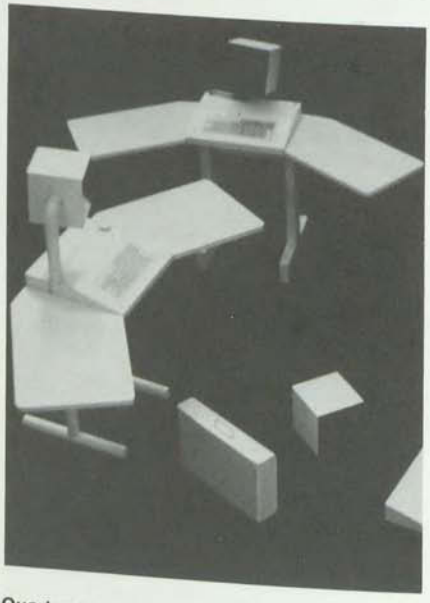
By taking what is traditionally an engineering product and adding to it some human factors, we can take a product that is very prosaic in many ways and give ourselves a competitive edge in a market that has traditionally been purely hardware oriented. We have now penetrated the U.S. market, the first of these has been sold to Juneau, Alaska. We found that we could anticipate problems the customer is going to have and in effect extend the life of the product. Clearly anybody who continues to try to build the uninspired type of terminal is going to have union problems in another three or four years, in fact they're starting in some parts of North America now. Another thing: traditionally these devices are sold to the engineers of telephone companies, they're sold on cost of ownership, which involves economic analysis, and there are difficult communications problems. By introducing quite different concepts we have found a way of communicating with the rest of the people in the telephone companies, who are usually quite important in the selling of equipment. We've been able to communicate with them in a way we've never been able to talk to them about pure technology. The whole basis of this game of marketing and selling is promotion. By enclosing pure technology in what is basically a wrapping of design that solves real problems we've found a very good way to get somebody listening.

The old-style toll operator's office has a long history but still survives in telephone exchanges across the continent.

A cardboard mockup was used to establish the size and scale of the basic components. Here two units are seen side by side.



Ergonomic studies with full-size wooden models established correct heights for keyboard, writing area, how much privacy was needed, etc.

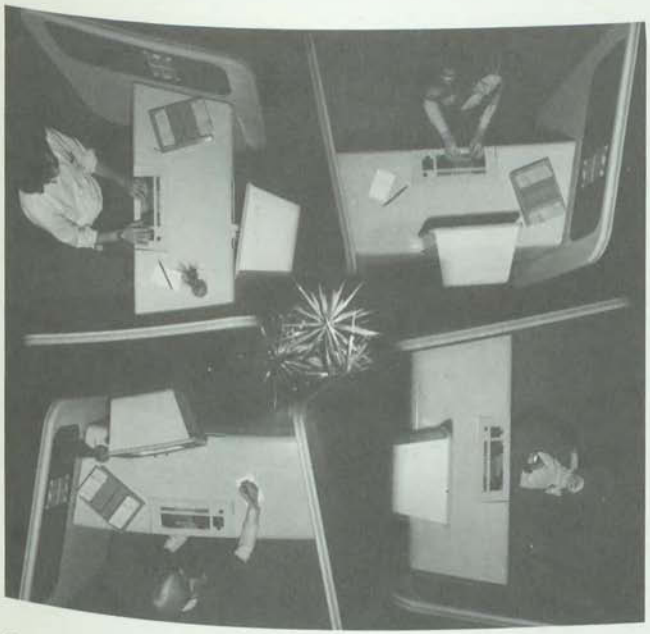


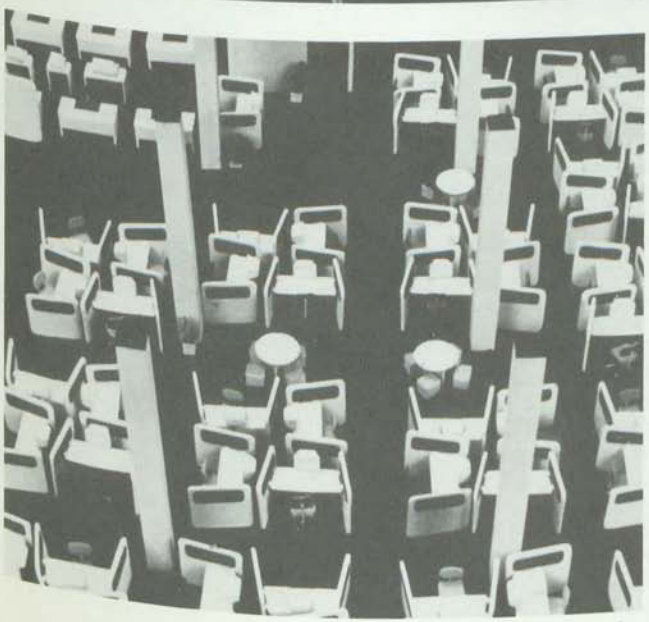
Quarter-scale mockups in wood show different ways of putting together three basic elements shown in front—keyboard, monitor, control box.

A technically viable unit emerged from these studies; it was efficient but too impersonal for an operator to relate to, however.

The two illustrations below show how units in clusters of four use space economically, in fact take no more room than the old office.

The two illustrations below show the final TOPS unit—not only functional but a friendly, personal environment for the operator.





4

Corporate identity program

A. Rolph Huband

A. Rolph Huband, a University of Manitoba graduate in commerce and law, ran Hudson's Bay Company's corporate identity program in 1964-1966 and is its public relations manager as well as its Secretary.

Let me give you my definitions of two overworked and misunderstood terms—**corporate image** and **corporate identity.**

Corporate image is the broader of the two, being the sum of all the impressions made on the public by a company. These include impressions made by the layout of its advertising, the cleanliness of its buildings, the feel or smell of its products, the prices of its products, the friendliness or surliness of its sales people, the noise of its trucks. Many of these elements are not totally controlled by the company itself.

Corporate identity I define more narrowly as the system by which a company identifies itself to the public; in other words, the design of its corporate name and the way it is used.

The corporate identity system, which is one element of the corporate image that can be totally controlled by a company, has an important effect on the total corporate image. Companies that pay attention to their corporate identity systems quickly realize the importance of design not only in corporate identification but also in all the other elements that go to make up a total corporate image. In other words a corporate identity program establishes a favorable climate for the introduction of good design into a broad spectrum of corporate activity.

Based on our experience at The Bay, my advice would be to have a close critical examination of your present corporate identification system, to determine whether it is presenting a corporate look which is clear, forceful, unique, and appropriate. If it is, the odds are that the design function is playing a key role in your entire corporate communications program. If it's not, I recommend it as the place to start.

'Hudson's Bay Company went through the trauma of a full-scale corporate identity program almost ten years ago. Here are some of the results. The letters *HBC* are very well known in the Canadian North, where they are taken to mean 'Here Before Christ.' Our problem in 1964 was that our corporate identifiers looked as if we *had* been there before Christ.'

the Bay

la Baie D'HUDSON

Original logotype

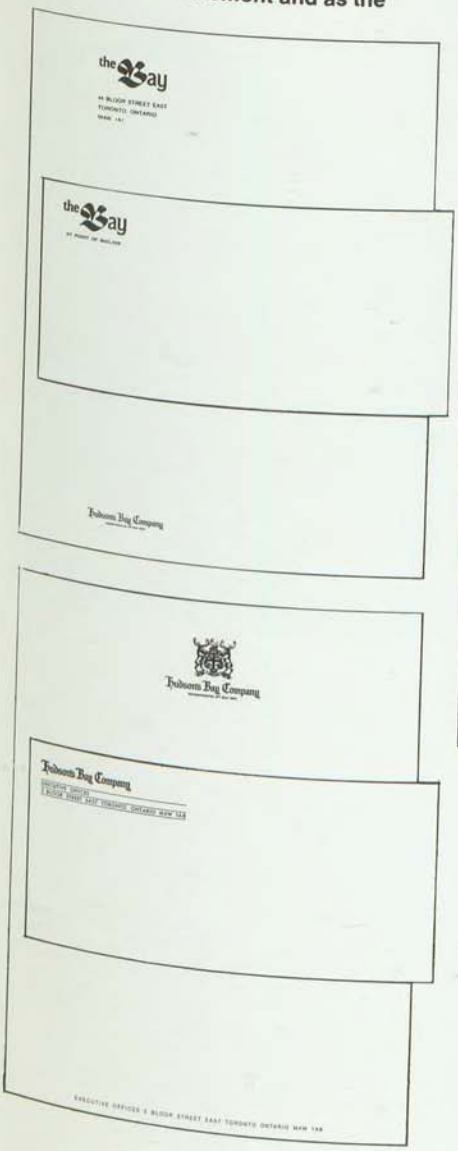
Hudson's Bay Company.

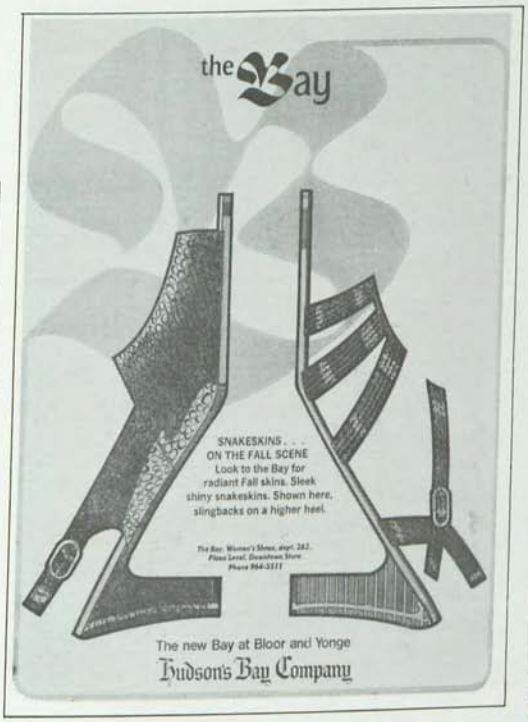
Updated version

Hudson's Bay Company

INCORPORATED 2ND MAY 1670

'So we engaged a prominent marketing and industrial design firm to help straighten us out. These were their specific recommendations: The colloquial name *The Bay (La Baie* in French) should be employed as the primary store identifier, and we should develop a new design for it; we should retain the Old English nameplate as a secondary endorsement and as the principal identifier for our corporate activities; we should develop a system graphically relating the two. For *The Bay* logo we wanted something that would be fashion-right, modern, something that would suggest dependability, quality, and friendliness. With the Old English logo, essentially the designers simplified the letter form and knocked some of the corners off.'

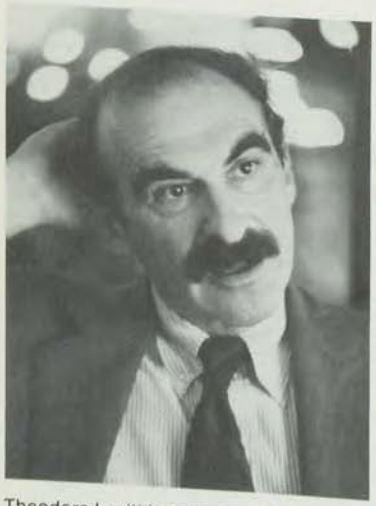




'Having designed this package we had the problem of implementing it—in print advertising, on wrapping material, on shopping bags, on our exterior signs, our vehicles, and on all our various forms and stationery. All this occurred in 1965. The program permitted us to do other things more easily and encouraged greater emphasis on design throughout the range of our activities.'

The marketing approach to business success

Theodore Levitt



Theodore Levitt is professor of business administration at Harvard Business School and the author of nearly 100 articles and five books, including the best-selling *Innovation in Marketing*.

Do you know who poor Mr. Chester Woolworth was, God rest his tormented soul? Chester Woolworth was president of the Animal Trap Corporation of America of Lititz, Pa., the company that made a larger variety of traps for animals than any other company in the world.

Every time Mr. Woolworth went to the country club to have lunch someone would come up and say, 'Hello, Chester. How's business?'

And Chester would say, 'It could be better.'

And as surely as the sun rises each morning somebody would say. 'Well, Chester, make a better mousetrap and the world will beat a path to your door.'

Finally, he decided to do just that.

He was a marketing-inspired manager, and so he hired designers and market researchers and people with great academic credentials who had won all kinds of prizes, telling them, 'We want a better mousetrap so I can answer these guys at the country club.' They went through quite a carefully disciplined business of researching consumers, researching mice of course (the ultimate consumer), their crawling habits, their stalking habits, and they came up with a series of designs for a better mousetrap which were researched and in-house tested and consumer tested, and they finally decided on one that was right. It was a beautiful little design, in plastic, with a little hole at the end for the mouse to stick its neck through, not too big, not too small, just right for the modal mouse. It could be loaded without risk of injury to your finger. The spring, instead of snapping down in the old-fashioned way, snapped up, causing instant death by strangulation. And it could be made and sold at enormous profit for a dime. The old one sold only for a nickel. Now you might say, 'That's a hundred percent increase,' but it was beautiful: it had beautifully sculptured lines, it was safe, the mouse loved it, and it was humane.

Chester Woolworth stayed away from the country club. He got the factory started, he got sales promotion people, got the advertising agency started, got the jobbers who handle distribution to the hardware stores and the major retailers started. Then he sat back eagerly rubbing his hands for the awaited results to take to the country club. He waited and he waited and he waited, and nothing happened. Except that he lost money.

Finally, furious, he asked, 'What happened? Whoever gave that advice—'build a better mousetrap and the world will beat a path to your door'?'

The answer, it turned out, was Ralph Waldo Emerson.

'Well,' said Mr. Woolworth, 'As a great transcendentalist he certainly was a lousy marketing consultant.'

What happened? Why didn't it sell? It was better, it was more attractive, it had a nicer margin for the trade, and the price was reasonable. What happened was very interesting.

Come with me to the home, out there where the real people are. George comes home at the end of the day and instead of the usual cheerful greeting from his lovely wife, she's spastic. She sputters: 'George, George, George, there's a mouse, a mouse in the house.' She's very excited, very tortured, very animated. George gets her quieted and finally after supper he goes to the hardware department in the local discount store and brings home that new, contemporary, beautiful mousetrap.

'Mary,' he says, 'look at this—at last somebody's made a mousetrap that's

"A product is not something you make in a factory, it is something people buy"

new; it's beautiful, nicely sculptured, so different. I'm glad somebody finally. . . .'

After they get the kids to bed, George sets the trap. (After all the man is the traditional hunter in the primeval family.) The next morning, after the hectic drill of getting the children off to school and George off to work, Mary gets a fresh cup of coffee. As she gets the cup to her mouth she thinks, 'Oh God.' She goes to look and there's a mouse—trapped and dead.

Now in the olden days she'd go into a kitchen cabinet and get a paper bag, shut her eyes, pick trap-cum-mouse up by the edge. deposit the whole thing in the paper bag, and then into the garbage can. What does she do now? George made such a fuss about that fancy mousetrap and his great discovery of it that if she throws the thing out there'll be hell to pay. So what happens is that she waits.

George finally comes home. He empties the mouse into the disposall, grinds it into oblivion, takes the trap to the kitchen sink, brushes it clean, towels it dry. Lovely trap, beautiful, really worked. He goes to the closet and puts it up with the bedspreads and the pillow cases.

And every time poor Mary goes to the closet there she sees this awful monstrosity, reminding her of the possibility of the presence in the house of another mouse. At last she throws the thing out.

'George,' she says, 'don't you dare ever bring a machine like that home again.'

And poor Mr. Chester Woolworth, he can't return to the country club.

The conclusion of this story is: a product is not something you make in a factory , it is something people buy. If they don't buy, it's not a product.

What is the condition that has to be fulfilled for people to buy? What they buy is not just functionality, as we know. You take two packages of after-bath dusting powder, put one in a beautifully designed paisley box and the other in a sardine tin, put them on the shelf with the same brand name on them, the paisley box priced at two dollars, the sardine can at a dollar fifty, and underneath it says, 'These two are certified to be the same by the Ralph Nader Institute of International Standards,' and which one is Mary going to buy? Two bucks, it must be worth more.

OK, we'll make it two bucks for the sardine can and a dollar and a half for the paisley. Which one will she buy? She'll still buy the paisley.

What's the product? The product is a communication between what's in there and what's in your mind, with all kinds of complex associations.

We all make some decisions on the basis of externals. It's a way we minimize risk. It's a way we maximize our sense of achievement, our sense of worth. A product is not just what's made in the factory, it's something people buy, and what they buy and what they see is a transaction between them and it. Where does this lead us? We're saying the product is a transaction. It has a lot to do with functionality, to be sure. We had great functionality in the mousetrap, but it didn't work. We had identical functionality in the dusting powder but differences in the packaging. People are funny. They follow the Harvard Law of Animal Behavior, according to which, under perfectly controlled laboratory conditions organisms will do as they damn well please.

What's the product? Take IBM, the symbol of contemporary technology. The week that General Electric opened its appliance park in Louisville, Kentucky, which was the first factory that was controlled by a computer (Univac), IBM executives in Armonk, New York, had a big report in front of them which asked the question whether IBM should get into the computer business. That's how far behind IBM was, and how the biblical injunction has come to pass, 'The last shall be first and the first shall be last.'

How did they get to be first when they were so late? Do they make a better product? The Univac salesmen, bright, cheerful, the wave of the future, used to go in to see the treasurer of a big oil company and they'd point to a huge room full of people adding and subtracting, making out the payroll, keeping personnel records—the white collar proletariat—and they'd say, 'Mr. Treasurer, you see that? We've going to get rid of all that. No more mistakes, no more personnel problems, no more masses of people to manage. The computer will do it. Fast. Accurate. Reliable. That's what it will do. The future is here.'

The treasurer would say, 'Yes, yes, very interesting.'

What was the salesman offering? He was offering liberation. But what did the treasurer hear? He heard the salesman calling him obsolete. He heard himself being called old and behind the times.

When the boss called the treasurer and said, 'Harry, I've been reading *Fortune* magazine about computers, what do you think?' Harry replied, 'We've been studying it very carefully, we've got a task force operating, and just as soon as we're sure all the bugs are out you can be sure that this company will be among the first to have it.'

And what was 'soon' to him? Some time after retirement. It had taken him

"Can we ruin something in the field that we create in the factory? Obviously "

all those years of mastery of present tasks to reach his present job. He wanted to go out in a blaze of glory, not to be shot down in flames. He'd heard the problems people were having with computers, and he was not going to let some apple-cheeked young technocrat stampede him into oblivion.

The IBM salesman offered a different product, not obsolescence but an opportunity for a man to learn something. He didn't talk about getting rid of people; he offered training services, reassurance, programs. Not that Univac didn't offer them too, but it talked about heroic possibilities which frightened the poor treasurer.

What's the product? Is it still a transaction? Can we ruin something in the field that we create in the factory? Obviously. If you communicate something about the product through its design, its external cosmetic appearance, then the salesman also communicates something through how he presents it.

Or take a different kind of situation. Take McDonald's hamburgers—America's contribution to the culinary arts. What is it that works there? I talked about a product being something that's a transaction that people experience, more than the design itself. McDonald's success is the industrialization of the service business. They've designed the store not as a store but as a factory. And like all good factories there is no option given to the counter man. He can't make chopped steak, he can't make chopped liver, he can't put a square pickle on because they don't give him square pickles, he can't shape the patty the way he wants to because he only gets it one way. He's got to make the french fried potatoes in a certain way because they won't work any other way. That place is a factory: the factory in the field. The place is designed in such a way it's always clean, it's always fresh, and the clerks are never harrassed. What's the product? The product is consistency, cleanliness, reliability, friendliness, and speed. A lot of that corporation's success comes from automating a factory out there that gives speed and reliability at a modest price.

What is a credit card but the substitution of a capital-intensive device for a labor-intensive procedure? It used to be that when you wanted to buy something you had to tell people, 'I'm honest, I have a job, I have a mortgage,' every time you had to go through a credit check, or you had a charge account at Simpson Sears and they checked on the charge account. There was a lot of personality destruction involved, making people get down on their hands and knees every time they needed some money or wanted to buy something. The credit card eliminates that. It's a factory device, it's the industrialization of that process. What's the product? Speed. Convenience. Reduction of variation.

There are a lot of things that can be talked about in connection with the design of a system. Life insurance companies' biggest problem is the default rate, that is, the proportion of people who at the end of one year or two years drop their insurance. It generally takes a long time to sell a person insurance. The salesman works hard on the prospect. It's a long pursuit. His hidden strategy is to try to create posthumous guilt in the prospect. Finally he buys it. He writes out a check. And when is the next time that poor man hears from the insurance company? A year later when they say, 'Send money.' By then he's lost the original rationale for having bought. 'What did I buy anyway? Term? What's term?' He doesn't remember what he bought and he can't read the language. If they just wrote him a letter and thanked him for the policy, half a year later, and said, 'Your insurance is doing fine, it's building up, remember it's term,' and explained what *term* meant. ...What's the product? He doesn't feel he has a product at the end of the year; no benefit any more. He drops it.

Design can be easily contaminated by all kinds of things and that's why it's very important to have some kind of sense of what the world is about. In Minneapolis some years ago people looked at the charts of per-capita flour consumption. They were plunging.

People were baking cakes less often. Why? Calories. Why else?

They went East to an 'authority'. He told them, 'The reason flour consumption is declining has nothing to do with people's weight consciousness, nothing to do with heart disease. Just stop to think. What is a cake? Dessert? Cake is not a dessert. A cake is a celebration. An anniversary, wedding, graduation, promotion—and it's also a reward. The woman feels warm and loving toward her family, so she decides to bake a cake. She has to find and figure out the recipe, she fusses around, and finally puts it in the oven. 350 degrees for 25 minutes, only she puts it in 250 degrees for 35 minutes. She's full of anxiety. Finally after supper they clean the table, get out the nice plates, extra forks. She goes into the kitchen and brings it out. Ooohs and aahs. Father's got to cut it. She sits there full of apprehension. After all there was a little crack in it which she covered up with icing, and she wonders if the thing is now going to disintegrate at the first slicing. She's enormously relieved when it comes out well.'

"Selling tries to get rid of what you have. Marketing tries to have what you can get rid of "

Our imported authority summarizes: 'That's the contemporary housewife. In the olden days as a growing child she hung around the kitchen all the time with her mother and learned how to make cake without a recipe. Children were acculturated in the simple routines of the culinary arts; they developed self-assurance. The contemporary mother doesn't. And if that cake is so symbolically important, she doesn't want to risk failure. So instead of cake, she makes jello.'

The flour people say, 'Herr Professor, what a brilliant insight. What shall we do?'

He says, 'Fix the cake so she can't ruin it.'

So they went down to the University of Minnesota and got themselves three chemical engineers. Months later, they had the result. They could make the whole cake, mix all the egg, milk, sugar, put it in a package, sell it in the store, and all she has to do is add water, put it in the oven for 35 minutes at 250 degrees, or, if she makes a mistake and puts it in the oven for 25 minutes at 350 degrees, they've got a range of idiot-proof flexibility built in so that she can't ruin it. Brilliant.

They got the advertising cranked up, sat back and waited, and as with Mr. Chester Woolworth, nothing happened. It was a bomb. They said, 'What happened? Call the professor!'

And he said 'You did the wrong thing.'

'What do you mean, we did the wrong thing? We did exactly what you said.'

He said, 'You did not do . . . Didn't I tell you it was a celebration? Didn't I tell you it was her love offering? You didn't give her a chance to offer anything of herself. When her family or her bridge companions say, 'The cake was great,' what's she going to say? 'Yeah, I got it from a factory in Minneapolis'? It's not her's. Give her a chance to do something, to contribute something.'

'What should we do?'

'Look, take the eggs out. Let her add the egg. What is more feminine? And just to be sure, let her add the milk, too.'

They did all this and then advertised: 'Just add milk and eggs.' And that's when it finally took off.

What's the product? The product is a cluster of value satisfactions. Engineering is important at the factory but only so far as it responds to the customer's needs and problems, and a lot of it can be researched. But a lot of it you already know. You just need to think about those interactions. And that's where marketing comes in. The difference between marketing and selling is very obvious. Selling tries to get rid of what you have. Marketing tries to have what you can get rid of. And that's not casuistry. Selling is internally oriented: 'What can we do to get rid of things, how can we get rid of what we've got?' Marketing is externally oriented: 'What should we make that we can get rid of?'

So when we say *design* we mean the whole package of customer-satisfying benefits, and it raises the question very often as to who the consumer is, who the customer is. In 1961 the building controls and components group at Honeywell did something very dramatic. They make heating and air conditioning thermostats, and they do a major part of their business in replacement controls, which were sold to heating and air conditioning distributors who then supplied plumbers and other installation repair specialists. At that time Honeywell's product line consisted of nearly eighteen thousand separate catalogue parts and pieces. The company had four thousand distributors, but the distributors couldn't afford to carry that big an inventory—and if they didn't have your parts, distributors would sell somebody else's. So Honeywell had one hundred warehouses around the country. If a plumber came in and wanted a particular part and the distributor didn't have it, he would sell it to the plumber anyway and then run over to the warehouse for it. So the company, Honeywell, was maintaining the inventory for the distributor in a hundred places at tremendous carrying costs, and the distributor was carrying very low inventory. In 1961 Honeywell made a daring move. They announced what they called a trade-line policy. They decided to close up all one hundred warehouses; all parts would have to be stocked by the distributors. The original equipment, however, they had first redesigned into three hundred standard parts, interchangeable not only between the various items in their thermostatic control line but with their competitors' parts. They knew that their distributors were carrying competitors' products anyhow, that's the nature of that business. Each new package was carefully labelled, not only what the part was but the competitors' part it would replace or would fit. The people at head office had absolute fits: 'You're going to mention competitors' parts on our package?' By closing its warehouses Honeywell obviously shifted the inventory carrying costs to its distributors, but instead of putting new burdens on them, the new product line with its interchangeability actually enabled the distributors to carry substantially lower inventories. Not all distributors were persuaded that this would work, and a lot of them dropped

"How do we get customers and how do we keep them? We don't sell products, we buy customers "

the line, but in a very short time Honeywell's replacement market share almost doubled, its original equipment share rose by nearly fifty percent, and whereas it had four thousand distributors before it now had nine hundred, and those nine hundred carried almost all of its distributor product line. The inventory carrying cost for Honeywell was cut to zero, sales for the distributor were vastly increased, the amount of inventory space they needed was substantially lessened.

What was done there was that the product was designed to solve the problems not of the consumer out there but of the customer in the trade, to help him with his business problems: reduce inventory, speed his delivery, give him a greater range of ways a given set of products could be used. So that's another example of how, if you think in terms of the total mix, some extraordinary things can happen.

The purpose of a business is not to make money; that's trivial. You wouldn't say the purpose of life is to eat. Eating is a requisite of life, and making money is a requisite of business. If you don't make money you're dead and gone. So what is the purpose of a business? The operational, functional definition is: to get a customer and to keep a customer. Then you've got to ask, 'What gets them and what keeps them?', which forces you to think of a business as a process of satisfying the people out there. It forces you to think, whether you are a designer or a marketing person, of what the decision-making process out there is. How do we get customers and how do we keep them? How do they behave? What are they like? What are their lives like? What are their business problems? In that view we don't sell products, we buy customers. We buy them with what we offer them. We try to organize the strategy and the structure of the organization and the way in which the organization operates for that specific task of getting and keeping customers. And that emphasizes the profound difference between marketing and selling that I have spoken of. Selling tries to get rid of what you have, marketing tries to have what you can get rid of, to get people to want to do business with you.

We can go after different segments. We can go after the Volkswagen market, we can go after the Rolls Royce market; knowing what you want to do becomes critical when there are different ways. If you don't know where you're going, any road will take you there. And the marketing view demands an active recognition that in a world where so much is alike—computers are alike in many respects, wheat's alike, flour's alike, table cloths are alike, microphones are alike, speakers are alike—somehow you have to differentiate yourself. In a world where so much is alike, how do you get competitive edges? By tapping into different segments, by finding the psychological hook, by providing benefits that are pegged to specific human problems and needs, whether you're selling banking services or whether you're selling construction or cold rolled steel or hot cross buns or whatever you're selling. The generic product, like the computer or the dusting powder or the hamburger, can be surrounded with numerous possible benefits designed to tap into people's needs, problems, aspirations, fears, anxieties, hopes, frustrations, and wish-dreams.

In the discussion after lunch Mr. Weiss made an interesting and important distinction. In design, he said, we talk about process and function. There are design decisions which are process decisions, where we're deciding what we are trying to accomplish, what we're trying to project, what kind of customers we want to talk to, what kind of functionality we want to build in, what kind of costs, what kind of packaging, what kind of storage, what kind of retail help we want to put into the package. These are questions which have to go into the design decision-making process. And lots of people have something to contribute and they shouldn't all contribute the same thing. Everybody has different functions. That's what the process is about—to get all that into the cauldron and stir it in some sort of creative, reasonably responsible fashion, with the presumption that we're going to get and keep customers at some acceptable level of risk. The execution of what has been decided in the design process, if you want to limit it to that, is a design function. It has nothing to do with process, it's a technological thing, like debits and credits. That's function. I think the distinction is a profound one. The only way the distinction can really operate in the ferment of creative, responsible business is to create a sense among everybody in the organization of what we're trying to do; create a sense of the external, think about people at various different levels of distribution, think through what's going on. As designer, don't simply ask, 'What's a good design?' Ask instead, 'What does the consumer want?' Get involved! Bring yourself into it, think what satisfies people, so that when you talk about design you talk about things that are likely, ultimately, to get and keep customers.

Reconciling 'freedom' and 'authority' in design project management

Wilson Southam

Wilson Southam worked in newspapers and television and taught at Ottawa's Carleton University before becoming president of Cox Systems, a company specializing in design for dental health services.

Design is a process. For me the idea that somebody is a 'designer' should be laid to rest.

There was a time when the craftsman who knew his materials and his customers would tentatively experiment with, say, changing the angle on the front wheels of a wagon and this sort of mutation met the needs of the community very well.

Later on we moved to another phase, having discovered that the business of modelling a variey of options in hard materials was endlessly time-consuming—if you have ten products or components and ten possible changes you've got ten thousand million (10^{10}) options to examine—and it was realized that you could perhaps see the thing whole in outline and flip through a bunch of alternatives a great deal faster than the craftsman could.

That phase was dominated by drawing. Out of it came the mystique of the designer—the architect or industrial designer who understood this mysterious process. Many of us are still suffering from the idea that designers are long-haired people who are difficult, who can't explain what it is they think they are going to try to do, and who are given to over-running the budget and the time schedule. And I think it's for this reason that many of us approach the suggestion of the Design Council that there's a new miracle in industrial design with a good deal of skepticism.

I would like to take you through a couple of specific models we use ourselves and show how we try to identify areas of need before the consumer does because the lead time is now such that if you wait for your customers to tell you what they need, somebody who's a lot sharper than you will probably be there already.

We try to get through the three very different—and difficult—phases of the design process by adjusting our life style to each of them.

There is the first stage, which J. Christopher Jones has called divergence. This is where you might search the available literature, to find out what other people are doing. It's the stage where you might stretch your imagination by using techniques like brainstorming or synectics. You might try to establish theoretical boundaries or limits to the problem and then work back in. You're exploring the size of the field, taking as fast and effective a look around as you can to find out what might cancel out what you are doing. You are trying to reduce the cost of not noticing a harmful side-effect or some insuperable problem in what you are about to do.

The next stage is to try to get a definition or a shape to the problem that you are going to be working on. You're still not drawing it in detail, you're talking about properties that might be in the solution. Jones calls this the transformation stage. When the consumer and other users see it will they perceive it as having a fresh utility, an honest but fresh esthetic? Will they be able to live with it? Will it augment the best side of their character? I accept the concept that to design is to initiate changes in man-made things. We look at some future change in human behavior or human satisfaction and we work back from that need, exploring all the options widely in the first stage and then in the second stage considering properties we might want in the solution.

The third stage, which has a totally different life style, is a hard-nosed, ruthless, logical, driving stage where you create the new product or service. Jones calls this convergence.

" . . . long-haired people who can't explain what it is they think they are going to try to do "

In Cox Systems there are only about fifteen of us involved in the design process. If you have a common set of goals that you have really all participated in making and you're infused every day with some sense of mission and if you are absolutely clear that you are serving those goals and not authority figures in other people, you can get on with what matters, you can decentralize a whole lot, and the stress levels will go down and the output will probably go up.

Apart from the ability to model things abstractly in time ahead, it seems to me that the design team will have to be a multi-discipline team within your organization, so that marketing doesn't have to stand aside and watch fifty, a hundred, or two hundred thousand dollars get spent without being able to say 'Hey, that won't work because. . . .' There has to be a finance input, or general management input, and a marketing input and a production input and a sales input, staying in touch, channeling the expertise of the group, at appropriate points asking for the exposure of ideas to wider groups so that we do not follow false trails that we could have been steered off by a simple observation or piece of knowledge from inside our group. And if you want to remedy the elitist tendencies of the designer, a great way to do it is to put the design people and engineers on the marketing team, as we do. They go out and install the product. They cope with the reality that what you are making has no value unless the customer can perceive it, and they learn something about the communication problem. That means less design time, but it means a lot less arrogance when they get into the design process, a lot more real understanding based on personal experience.

Four Goals of the Cox Systems Group

To develop the finest health services delivery systems company in the world

To develop our group to support personal satisfaction 'living' and 'growing' at work

To increase autonomy and leverage by using resources wisely

To contribute to long term public interest in a 'good' way

It was Charles Eames who suggested that the designer does not need to compromise but he must recognize constraints. If your firm's doing five million dollars a year and it's in a particular technology it may not be able to fund some glorious solution in a new technology, or not for a few years. So list the constraints, note the boundary conditions of the problem.

Here is a summary of our four main goals. They help us ask ourselves daily what we are doing with the moment.

To develop the finest health-services delivery systems company in the world. If you hand that abstractly to somebody it's just a collection of words, but if you have lived with it in some detail and you've discussed it long enough to know that you have a shared perception, then the number of times a member of the team would have to ask a question are greatly reduced, the number of times you would have to push or create distance trying to drive that team somewhere are reduced.

To develop our group to support personal satisfaction, living and growing at work. Not only your designer needs a climate of trust, a climate in which people really do their best to be appreciative and understanding. We all came together for a reason. Why destroy it by playing interpersonal games?

To increase autonomy and leverage by using resources wisely. Of course you get to that one, but I think we've got to stop writing our goals just in terms of profit. We're going to have to go back to saying that the margins and cash-flows we require, the return on investment we'd like to have, are going to be a by-product of doing one hell of a job for all the human beings who are going to be involved in our activity. OK, we recognize that making a profit is a necessary condition of doing the job but the essence of our activity has to to

"What you are making has no value unless the customer can perceive it"

with the human interests involved with what we are doing in business. It has to do with values. It has to do with mission.

To contribute to the long-term public interest in a good way—and in a changing world that generates long checklists of things you really can't morally do to other people even if they're prepared to pay you for it.

Design is not any longer just mutating—although there is an aspect of that. Design is no longer a mystical thing that is the property of elites who can draw.

Despite the fact that we can't get money from the PAIT and IDAP programs at all until we can tell them exactly what the product is, design does not start by naming a product. It starts by understanding a set of variable factors in a future situation, identifying something that is both moral and likely to be wanted by human beings, and then working back to whatever mix of software, hardware, paper, human services, and so on will cause that to come into being. And all that is part of the design process. Taking our case, we say, look, there's someone out there, he's called a dentist, he's going to be the client, and he's part of a health service delivery system that's in a mess. He's burdened by change, he can't even read the literature any more, the attitudes of his staff are changing, he's interrupted over half the time he's consciously trying to work, he has the highest death and suicide rate of any professional, and fifty-five percent of dentists report they are doing more than they'd like to to try to meet the shortage of dentists. What we like to do is meet him: the right dentist in the right place at the right cost. But how are we going to get in touch with that man?

Area Team Approach to Marketing

An area team reviews changing needs of dentist at each step of the trip.

Dentist

- **Complex Roles**
- **Change**
- **Interruption**
- **Stress**
- **Overloaded**
- **Health**

Designed series of interfaces each step

- **Invite**
- **Question**
- **Confirm**
- **Help**
- **Follow up.**

Dentist

Staff/Dealer
Patients/Public
Family/Friends

- **Satisfaction**
- **Happiness**
- **Health**
- **Energy**

Filtering: the careful process by which you attempt to avoid 'selling' anyone on the systems approach if there is reason to believe the result will be less than deep satisfaction.

Tracking: Keeping and using relevant data on dentist and dealers, dentistry and Cox status.

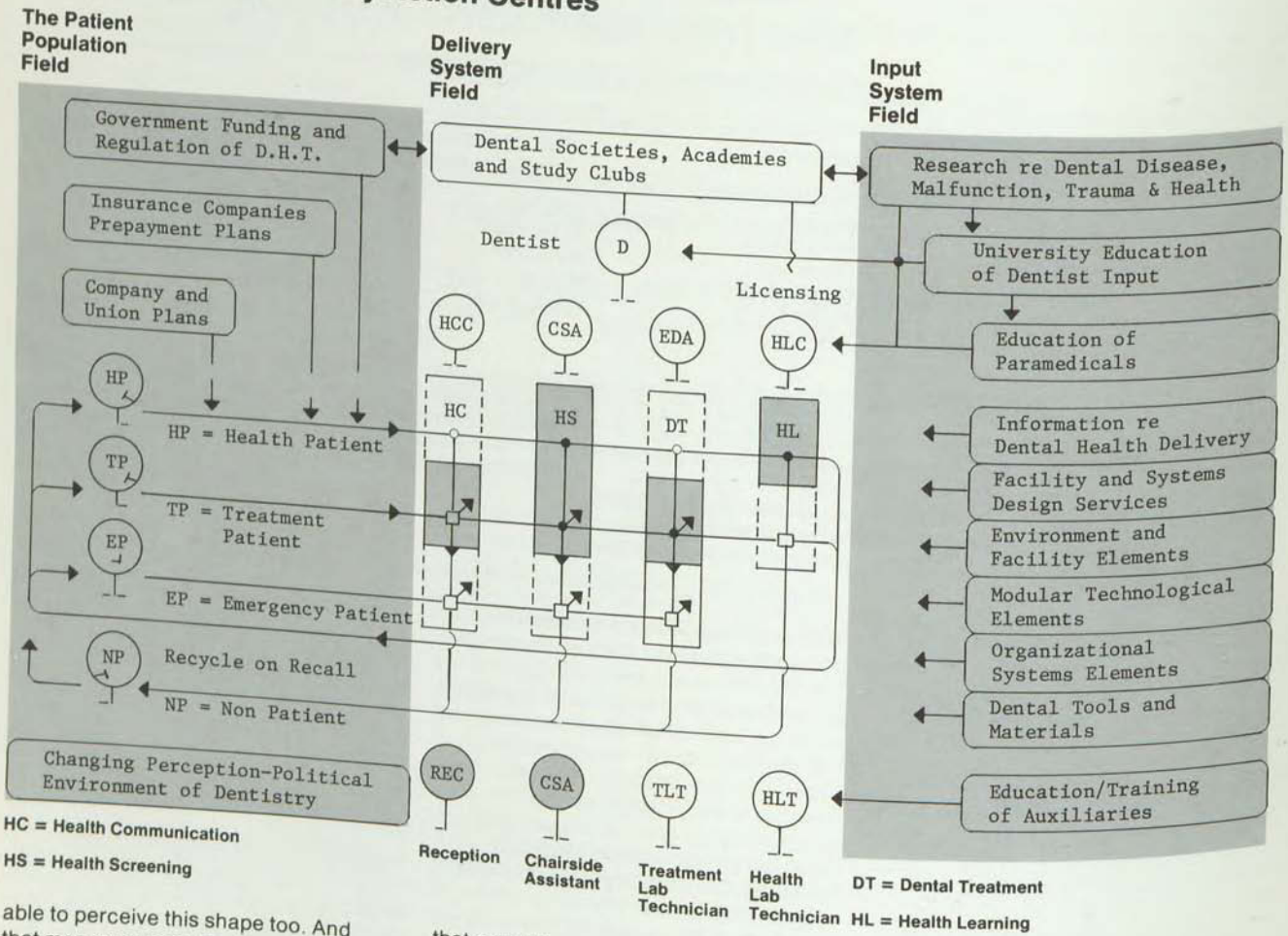
Marketing: All those interface activities designed to produce lasting satisfaction of customer needs; whether consciously or unconsciously felt.

That's a design problem—a marketing and design problem. We try to be sure that that dentist has some sort of perception of us. If he does, he's going to have a whole lot of little interfaces with our reputation—maybe a piece of paper, maybe a meeting where one of our team is using design graphics, maybe a radical-space open-plan dental office. Marketing is all those interface activities designed to produce lasting satisfaction of customer needs whether consciously or unconsciously felt. And I don't think a self-centred marketing approach that's centred on profitability is going to lead you to that. I think you start with some very carefully considered people-oriented attitudes and then see how you can arrange matters so that it gives you that twenty percent return on investment after expenses.

If we can get a group of people with the appropriate abilities together and if we can think calmly enough and learn how to communicate without turning each other off, we may in fact be able to model a future in which there is some pressing need on the part of a group of clients or consumers that we already know are well able to pay properly for this sort of work.

If all that was happening mystically in my head there could be no group activity. In the design-by-drawing stage, you didn't know what was in the designer's head, you waited for the output. Nowadays as well as modelling there are a number of methodologies—Critical Path, PERT, and so on—to see if you're looking at time and resource frameworks from a common viewpoint. Unless you want to be pinning down that designer all the time, he has to be

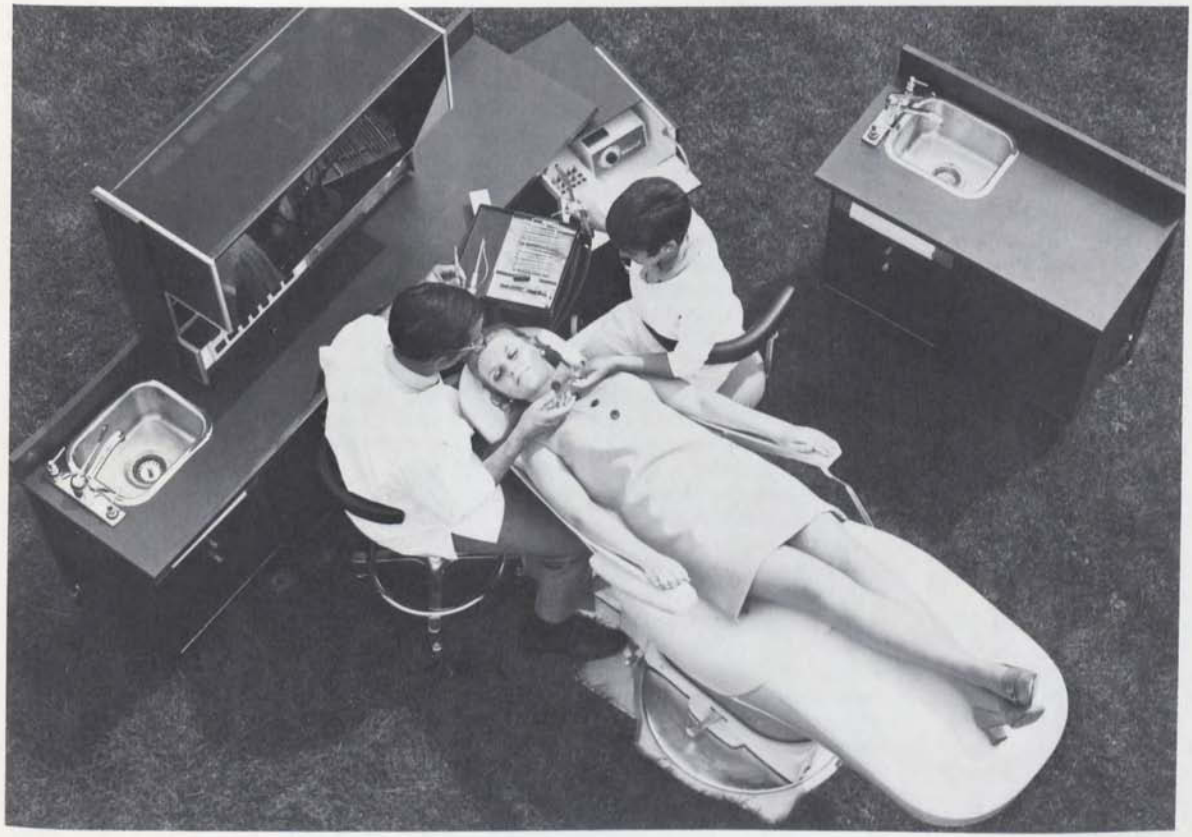
Goals Defined As Priority Action Centres



able to perceive this shape too. And that means you and he are going to do some giving and taking to get a common shape. This creates a direct, logical approach to spinning off product definitions and properties, accomplishing the work to be performed, finishing the design.

Now for historical reasons, some of which have led to a system that isn't all that good, there are people licensed to be dentists, they are expensive, there aren't enough of them, and now we have delegation to para-dental people. There's a growing awareness of the opportunity of full health instead of 'I'll go when I'm sick.' There's a growing conviction that health services are the right of all citizens. There's the entry of government, insurance companies, and unions on the prepayment side of the field. You can go through the different areas and make a much longer list of change than that. There's a general treatment orientation on the part of a professional group. But we're saying the dental environment of tomorrow not only will be but must be a

The design team's aim was to create an environment for the 'reclining patient' form of dental surgery that would permit use of auxiliary teams in support of the dentist, so that many more patients could receive treatment and care at a constant or reduced cost. The resulting modular elements will fit any office.



centre of health communications. They will not assume that we know the benefits of endodontics and health learning and other things. They will sit down with us, as every businessman knows you must do where you don't have a monopoly, and they will communicate with us so that we can perceive what it is they have to offer. We say there will be more screening in the dental offices of tomorrow, and we also say health learning has got to grow. There's still a lot we need to know, but what I'm saying is that the whole activity of modelling this hypothetically is design.

The essence of design, as I see it, is self-disciplined utilization, characterized by acceptance of constraints and toughness on the part of the design teams, developed through common perceptions of how the activity will benefit the users, the people who work making the products, the people throughout the system. We are tired of the idea that we are just economic machines. We're not stupid, we know we must be economical in the use of resources. We are looking for as much meaning and dignity in our activities as possible. If you can get a shared perception of that then trust can rise and a lot of the friction and game-playing that has characterized the relationship between design elites and the rest of the human beings in enterprises in the past becomes somewhat easier to handle.

Highlights of the Conference

'Design is part of marketing. Every designer is a manager, and every manager is a designer,' says Simon Majaro. 'A designer who does not understand the marketing process is bound to fail. ...'

'To design is to initiate changes in man-made things,' says Wilson Southam. 'We look at some future change in human behavior or human satisfaction and we work back from that need.'

'Design decisions,' says Theodore Levitt, 'are process decisions where we're deciding what we are trying to accomplish, what we're trying to project, what kind of customers we want to talk to, what kind of functionality we want to build in, what kind of costs, what kind of packaging, what kind of storage, what kind of retail help we want to put into the package. These are questions which have to go into the design decision-making process.'

These comments are a long way from the view that 'design' means no more than wrapping a pretty package round what is coming off the end of the assembly line. The designer is now central to management's main functions; the people in these pages, from their various standpoints, explain why.

Where does design start?

'The needs of the consumer are the starting point,' Majaro says; 'the satisfaction of those needs is the end of the process.' To Southam, 'it starts by understanding a set of variable factors in a future situation, identifying something that is both moral and likely to be wanted by human beings, and then working back to whatever . . . will cause that to come into being.'

Levitt argues that 'a product is not something you make in a factory, it is something people buy. If they don't buy, it's not a product.' The same idea is conveyed by Southam: 'What you are making has no value unless the customer can perceive it.'

It is not only the customer who has to benefit. Majaro says, 'I believe that . . . success means meeting the expectations of the stakeholders,' whom he defines as the financiers, the employees, the government and community, and the suppliers, as well as the customers. 'The essence of design,' Southam says, includes the perception of 'how the activity will benefit the users, the people who work making the products, the people throughout the system.' Most of the speakers give examples of designing to meet the needs of others than the final consumer: the wholesale and retail trade are mentioned most often.

There is considerable discussion of the actual performance of design. Southam describes three stages: 'divergence' (exploring all possibilities), 'transformation' (defining the general shape of the problem and solution), and 'convergence' (creating the product). Majaro defines something wider, the managerial process: it too starts with research and proceeds through the setting of objectives to operation and control. Levitt distinguishes between the design process, which is deciding what is to be produced, and the design function: 'The execution of what has been decided in the design process . . . is a design function. ...It's a technological thing.' In two of the case studies the speakers describe preliminary explorations, literature searches, the use of small or rough cardboard models, then full-size models in wood and other materials, and inside and outside functional tests before the construction of the first fully engineered (usually hand-made) prototypes.

A number of speakers emphasize the importance of being first. 'With Century 2 [a line of furniture] we managed to come in a bit ahead of the change in the market,' Russell Warren says. 'You can't do that by copying.' He says retailers told him the furniture might have a seven-year life. John Eckart describes his company's line of X-ray equipment as having 'in some cases a three or four year lead on our competition.' Southam says his company tries 'to identify areas of need before the consumer does because the lead time is now such that if you wait for your customers to tell you what they need, somebody who's a lot sharper than you will probably be there already.' Donald Chisholm describes how in designing a new telephone switchboard, 'we found that we could anticipate problems the customer is going to have and in effect extend the life of the product.' And Majaro analyses the life cycle of a typical product, from introduction through

growth, maturity, and saturation to decline. 'What does the life cycle mean to us? It means that we have to try to maximize or optimize profits while the product is still growing.'

A number of speakers make the point that the design of a product communicates something about the company as well. 'A corporate identity program,' Rolph Huband notes, 'establishes a favorable climate for the introduction of good design into a broad spectrum of corporate activity. ... Corporate image is . . . the sum of all the impressions made on the public by a company.' Warren says: '[Century 2] gave Simmons an image I don't think we could have obtained by any other method. ...We believe new product design has not only been important to the sales volume of the new product itself, but in the influence it has had on our other products, our people, our customers. ...'

Eckart is only one of the speakers who describes how his company has taken designers and engineers out of their ivory towers: 'We put [our project engineers] into hospitals working with the equipment, we send them out into the field as often as we can. ...They follow the early units into the hospital, into the customer environment, check the installation, and see for themselves the reaction of the customer.' Southam says: '. . . Put the design people and engineers on the marketing team. ... That means less design time, but it means . . . a lot more real understanding based on personal experience.'

Majaro implies the same thing with his comment: 'I think a design award should be given only to companies whose designs prove successful in the market place.'

There is near-consensus on the final purpose of designers and the rest of management. 'I don't think a . . . marketing approach that's centred on profitability is going to lead you to [lasting satisfaction of customer needs],' says Southam. 'I think you start with some very carefully considered people-oriented attitudes and then see how you can arrange matters so that it gives you that twenty percent return on investment after expenses.' Majaro describes the redesign of a product to make it 'more attractive and functional' and adds, 'The result sixty percent increase in sales. this is what design success means. And Levitt: 'The purpose of a business is not to make money: that's trivial. ... [But] if you don't make money you're dead and gone. So what is the purpose of business? The operational, functional definition is: to get a customer and keep a customer. ... Think of a business as a process of satisfying the people out there.'

This is what design success means.