SWP 25/89 WHAT DO YOU DO WITH AN INDUSTRIAL DESIGNER?

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On the face of it, the prospects for industrial design have never been healthier. Design consultancies are flourishing as never before. A large proportion of firms now have formally constituted design departments, and these are increasingly supported by board level representation and a public commitment to design. Industrial designers are in fashion. But how should you use them? Our consulting experience suggests that most senior executives are very uncertain about the role industrial designers can play in their organizations, and a recent survey of design practice and attitudes to design in British and American firms confirms this impression.

The survey revealed that even in those firms with a formal design organization, accountability for design decisions was spread across a wide range of functional divisions. In many cases the designers, though they might perceive themselves as having an integrating role, were actually treated as peripheral to the product design process. The problems of industrial design, and in particular the need for lengthy, iterative and integrated design processes if complex products are to be really well designed, were rarely appreciated by non-designers, with the result that the company's design resources were rarely put to good use. The marketing function in particular, within which the design function was often organizationally located, tended to think in terms of simple product concepts and to expect designers to operate in those same terms. That design might actually be quite a complex process, or that simple changes to an integral design concept might have complicated consequences if the integrity of the design was to be maintained, did not occur to them. They often tended, as a result, to hold on to new product specifications far too long, and to allow insufficient time for the design process to be properly carried out before a product launch deadline. Similarly, R&D or new product development departments tended to assume that the designers could be brought in only at the last minute to package the product up.

The new product design process is in fact a complex and sophisticated one. It needs time. And above all it needs a close collaboration between marketing, engineering and design experts throughout the development and realization of the product concept. This collaboration in turn needs an understanding on the part of non-designers of what industrial designers do, and how they do it. And it needs an understanding on the part of top management of how industrial design can be fitted in organizationally to the overall new product development process.

Unfortunately, there is virtually nothing written on the industrial design process to which people can turn for help. Industrial designers themselves, like designers in general, tend to eschew words and to communicate to the outside world only in visual images, which themselves reflect the completed design rather than the design as process. This is indeed one major reason why outsiders see their work in terms of "simple creativity": by keeping the process hidden in a shroud of mystique, they positively encourage such a view. As for the organization of industrial design and the new product development process, the few guides that are available are in the form of selected examples, many of which differ radically from each other, and most of which do not in fact work out in practice in the manner in which they are portrayed.

So what are industrial designers, how do they fit into today's corporations, and how can you get the most out of what they have to offer?

The industrial design tradition

If you were to ask anyone to name a successful industrial designer (excluding, for the moment, car designers), then providing that they were not totally confounded the chances are that they would come up with one of just a handful of names: Peter Behrens, who designed the domestic electrical products of the German firm AEG in the early part of the century,

and is often thought of as the first modern industrial designer; Raymond Loewy, designer of streamlined American locomotives and Greyhound coaches of the 1930s; or Henry Dreyfuss, designer of Bell telephones from the 1930s through to the 1960s. Some people might also recall Eliot Noyes, who created the successful IBM office machinery designs of the 1960s and 1970s, or Dieter Rams, who designed the distinctive Braun range of small electrical appliances in the same period.

None of these designers are active today, and we shall look shortly at whether and in what way there is still a role for the individual creative designer within the complex technical and multifunctional process that characterizes new product development in the modern firm. They were, however, acknowledged masters of their craft. And they made massive contributions to the growth and profits of the firms for whom they worked. So it is worth spending a few moments reflecting on what they achieved, and by what kinds of process they achieved it.

Apart from Rams, none of these great names began their careers in industry. Behrens was already a famous architect before working for AEG, and indeed several of the leading architects of the twentieth century, including Gropius, Mies van der Rohe and le Corbusier trained in his offices. Noyes was also an architect. Loewy was an illustrator and display designer. And Dreyfuss, like his famously unsuccessful contemporary Norman Bel Geddes, was a stage designer.

Despite these backgrounds, however, none was a mere stylist. Although he contributed to the aesthetic design of AEG products (such as kettles and fans), Behrens's main achievement lay in the introduction of standardization of components, allowing the introduction of a broad product range to give the customer a choice of design finishes. Loewy was more of a visual designer (his credits include the 'Coke' bottle), but he was also concerned with the engineering efficiency of products such as duplicating machines and refrigerators, which he designed for Gestetner and Sears Roebuck respectively. Dreyfuss agreed to work for Bell only when they agreed, at first reluctantly, to let him work directly with their engineers on the total design of their products. He was also the founder of design ergonomics and much of his work, on aircraft seating for Lockheed, tractors for John Deere & Co, and fork lift trucks for Hyster, for example, was concerned with ergonomic engineering. The success of Noyes and Rams came predominantly through the strong corporate identities they generated for IBM and Braun products respectively, but both worked closely with their firms' engineers and marketing experts, and could not have achieved their success without doing so.

This integrative quality of industrial design is important, for it has always the quality which, more than any other, has distinguished the most notable and lasting achievements of design from the rest. Designers have always been engaged to add a bit of style to an otherwise undistinguished product, and will continue to be so. But the best designers have always insisted on being in at the birth of a product concept and working closely with both the engineers and the many other specialists involved in its development. A powerful brand image such as that generated by IBM and Braun cannot be created simply by styling whatever the engineers come up with. Nor can the fusion of engineering elegance, aesthetic appeal and user satisfaction that characterizes a really well designed product be created piecemeal. If the designers are brought in only at a late stage of the development programme, then the only way that en effective design can be created is by a laborious and painstaking process of changing things one at a time until, if you are lucky, the elements begin to cohere.

A second characteristic of the great designers is that they tended not only to participate in but to actually dominate the development process, and to take on themselves the main coordinating role, and the reasons for this are very similar. Even if the designers are brought in at

the beginning of a project, the development process can still be lengthy and repetitive. For every time there is a proposed change in some component part, or in some aspect of the product specification, the consequences of that change for the overall design have to be worked through. Because a good design has a holistic quality it is often not possible to change one part without making corresponding changes throughout the whole, and if some authority other than the designer is able to dictate the changes the resulting process differs little from that which results when the designer is brought in only at the end. To some extent the great designers were able to claim authority on account of their greatness. But it would also be true, and far more to the point, to say that they achieved greatness, both for themselves and for their firms, through being granted such authority.

Employees versus consultants

Another striking characteristic of our famous designers is that, again with the exception of Rams, all worked as consultants, not as employees. Moreover Dreyfuss and Loewy in particular ran substantial industrial design practices with very wide ranges of clients.

In recent times the trend, especially in America, has been towards the use of in-house designers rather than consultants, and there are some obvious and very good reasons for this. Given the prevailing fashion for strong corporate cultures encouraging a strong sense of corporate pride and community, the granting of key roles to outsiders is in many cases quite inappropriate. Moreover. not all designers are prima donnas like Loewy and Dreyfuss, and as industrial design has developed as a profession it has become far easier to recruit good industrial designers into the firm. This gives the firm much greater control over its design resources, eliminates the security problem of having key figures in the new product development process working for competitors, and ensures that the designers are on hand throughout this process. The two world firms with the best reputations for their design processes, Sony and Philips, both use internal design departments, and these provide models for the practices in other firms.

It would be a mistake to think, however, that reliance on consultants was not feasible in today's world. The credits of one contemporary designer, Kenneth Grange of the Pentagram consultancy should alone be sufficient to make this point: Wilkinson Sword razors, Kenwood food mixers, Maruzen sewing machines and Kodak Instamatic cameras, not to mention the British High-Speed Train. Another interesting example is provided by Olivetti, widely recognised as one of the world's most successful firms in design terms. Olivetti provides its designers with corporate offices and treats them in other ways as an ordinary functional division of the company. But they are employed as consultants, and are not only free but positively expected to work for other clients, from their Olivetti base. This practice has enabled Olivetti to recruit and retain a series of outstanding designers, including Marcello Nizzoli, Mario Bellini and Ettore Sottsass, without sacrificing many of the advantages of an in-house department.

For many designers, the prospect of employment in a large corporation is instinctively repellant. This is not to say that they are unable to work in a corporate environment, but rather that their training emphasizes individualist values and freedoms. In most cases they can work in a corporate team as effectively as anyone, but they are psychologically resistant to giving up their perceived freedom. They are, in effect, natural consultants rather than natural employees, and by preserving that status Olivetti and other firms are able to attract a much higher calibre of designers than they could otherwise.

There is moreover one other strong advantage of employing consultants, and that is that they get taken seriously. As we shall see, one of the biggest problems facing design departments is that of

recognition. Unless their role is genuinely recognised by the other functions, they tend to get squeezed out of the decision making process. Far from being in a position of authority, access to research and marketing specifications is actively denied them. But the role of consultant carries both a cachet and a freedom of action. The design consultant is visible, and of visible importance. Freed to some extent from the corporate hierarchy he can also cut across organizational barriers, ensuring that design is not squeezed out by other interests and in the process fulfilling an essential coordinating role between these interests. These advantages are again apparent in Olivetti, and wherever, in our experience, a well chosen consultant is used.

Although the advantages of using an outside design consultant are considerable, they are not, of course, absolute. Nor does the use of an outside consultant preclude the use of an in-house department. Indeed many large firms combine the two, either providing in-house support to an external designer or using external consultants to supplement the work of fully-fledged internal departments. The best arrangement is simply that which will work best in the context of the firm, and that depends both on how the firm works and on what its design aims are.

Design and the new product development process

Whether they be employees or consultants, a firm's industrial designers fulfill a variety of organizational roles. Most visibly, perhaps, they are the custodians of the corporate image and identity. From the design studios emanate not only new product designs but also corporate logos and other graphics, publication layouts, and workspace environments. As product designers they are participants in an interfunctional process the aim of which is to achieve good product design, consistent with the firm's image. But they are also at the same time participants in a process that must be measured by its efficiency: by the speed with which new products are brought to market, and by the human resources consumed in the process.

Combining these roles is not always straightforward. Many firms, for example, are happy to entrust the non-product aspects of their design work to outside consultants. They recognize the need for creative design flair, and find it easier to go to an established design consultancy than to try recruiting directly in what is often an alien field. And although the creation and especially the maintenance of an appropriate and consistent identity naturally calls for an intimate collaboration between the designers and the marketing function this collaboration, having just a single aspect, can be relatively easily managed. The responsibility can be delegated to the marketing department, who themselves retain and liaise with the design consultants. When it comes to product development, however, which requires more complex coordination patterns and is perceived as more central to their core activities, these same firms are often reluctant to allow outsiders to get involved. Either their products are developed without professional design assistance, or this assistance, routed as before through the marketing department, is limited to surface style and packaging.

Even when a firm has a strong internal design department, or is prepared to entrust its design consultants with full participation in the product development process, the requirements of good design outcomes and efficient development processes can be difficult to reconcile. Good design takes time, and it takes extensive time-consuming collaboration which may in the end prove to be efficient, but which often doesn't look it at the time, or to the non-designers involved.

Three models often cited as paradigms for good design processes are those of Ford, Sony and Philips, all of which have internal design departments. The motor industry is in fact in a different category from most others in respect of industrial design, and it was for this reason that we left out such famous names as Harley Earl of General Motors, Ferdinand Porsche, who

designed the VW beetle, and Alec Issigonis, the engineer designer of the BMC mini, from our list of great designers. In a firm such as Ford, spending hundreds of millions of dollars on the development of a single product line which will stand or fall on its design appeal, there is no danger of the designer not being taken seriously, or not being involved from the inception of a product. This is not to take anything away from Ford's achievement. It was the first of the multinational motor corporations to allow its designers to play the lead role in product development and to have a major directing influence on its engineering and marketing functions. But the problems with which it was faced are scarcely typical of industry in general.

Sony and Philips, though unusually large, are both far more typical, and provide good illustrations of how the product design process works. Sony's organization for design has evolved through several stages over the last ten years, but since 1985 it has been based on a Consumer Systems Products and Design division. This is in effect an autonomous industrial design department, augmented by marketing and development engineering skills. It is independent of marketing, new product development or product divisions, centralised at headquarters, with a strong corporate visibility. And it acts not only as the corporation's design resource but as a source of new product ideas in its own right and a nurturer of ideas which arise in the divisions but which for one reason or another are not developed there. Like its organizational predecessor, the oddly named PP Center, it has its own development funds for such purposes.

In Philips, the comparable organization is the Concern (i.e. Philips) Industrial Design Center. Like its Sony counterpart this is a central organization enjoying active top management support and independent of marketing or engineering development. It does not formally incorporate its own marketing and engineering teams as at Sony, but its designers are encouraged to develop their own skills in these areas.

In some respects the organizations developed at Sony and Philips reflect problems peculiar to large multi-divisional technology-based companies. In both cases they have been instrumental in weeding out parallel developments in the different divisions, in combining and developing complementary innovations from the divisions, and in introducing a measure of standardization, both in engineering terms and in terms of a coherent design philosophy. They are also responses, however, to the much more general problem of coordinating product development across functions, and have served both to enhance the design qualities of the end products (Sony in particular are able to charge a premium price for their designs) and to speed up their development. In Philips as in many other companies the designers used to be brought in only at the last minute to add a bit of external styling to what in its case were usually technology-push products, developed over excessive periods to unnecessarily high specifications. The institution of a strong marketing function helped to bring the development process under control, but it was the coordinating activity of the designers, working closely with the engineers rather than attempting to dictate specifications to them, that made collaboration between marketing and engineering possible, dramatically reducing product development cycles to within sight of those of the firm's Japanese competitors.

These are considerable achievements, but the impression gained from our own observations is that, in the case of Philips at least, they are often overstated. There is no doubt that Philips' design organization is more efficient than that of many other firms, but it is still far from perfect. Despite the rhetoric of equal collaboration (the Concern Industrial Design Center themselves like to portray the development process as a triangle with marketing, engineering and design at its apexes and arrows going in all directions), the designers are not always involved at the birth of a project. The balance of power may now lie with marketing whereas before it lay with the engineers, but apart

from flagship projects watched over closely by top management the designers are still kept out until the last moment. When they are eventually brought in, at the end of a far from perfect collaboration between the rival marketing and engineering functions, the debugging and problem-solving required before a product can be safely brought to market in today's competitive environment are such that overall development times can be as long as ever.

Whither the designer?

In encountering problems of interfunctional collaboration Philips is in our experience typical of most firms with design departments, and this is scarcely surprising. It is generally accepted that the effective management of the marketing/R&D interface is one of the most difficult and persistent problems encountered in the management of technology-based firms. And in a situation that is more often than not characterised by conflict rather than collaboration the additional presence of a design department is apt to be either an irrelevance, ignored by both sides, or a complication. In less technologically oriented firms the design function is apt either to be ignored, or to take the place of R&D in the conflict.

As Philips and other firms recognize, design need not be either a complication or an irrelevance. It can provide a valuable coordinating mechanism. But the question remains, how. The answer, in our view, is that design must be afforded a dominant role in the organization, with no half measures. This applies, moreover, even if design is not a central plank in the marketing strategy - far more so if it is. For all their oddities, designers do have the ability to communicate both with marketing experts, with creative scientists and with development and production engineers. Their role in the product development process is a transcendent one, embracing everything from market concepts to component specifications. Properly used, they are a powerful integrating force.

But the designers must have authority, or else they will simply be ignored. And if this was true in the days of Dreyfuss and Loewy it is even more so now. With the increasingly sophisticated facilities of computer aided design packages and an ever growing range of ever smaller off-the-shelf electronic subassemblies, development engineers can now get a long way without the designers' assistance. They are easily tempted into thinking they can go the whole way, and escape the interference of designers altogether. Meanwhile the marketing experts, who nowadays occupy a powerful and dominant position in most corporations, increasingly see themselves as the sole legitimate creators of new product concepts. If the design department falls within their empire they will dictate terms to it. If not they will avoid it, and try like the engineers to do the design work themselves.

In fact, little has changed. Whatever the tools at their disposal, most engineers will still be engineers and not designers. They will think like engineers, they will approach the development process like engineers, and if they do design products they will design them like engineers. The marketing function has changed a lot in the last 15 years, but not nearly as much as its self-image. Most marketing executives still come through the ranks of Sales and think in terms of their experience. Even the best marketing departments still tend to be dominated by market research. And while this is important in its own right, taken too far it is a limiting force diametrically opposed to the liberating force of design.

All that has really happened is that the growing public recognition of the need for industrial designers has been accompanied by an enhanced self-image on the part of non-designers, and whereas before firms saw no need of an industrial design department they now recognise the need to have it, but not to make use of it. It is one thing to organize around the principle of close collaboration, quite another to ensure that collaboration occurs in practice.

The real need for design, and for individual creative designers, is however as strong as ever, and the problem facing executives today is to ensure that that need is met in their firms. Not all industrial firms want or need a strongly integrated design presence. Some markets are dictated by engineering performance, others fashion and surface styling. Across an increasing range of product sectors, however, integral design is becoming an essential competitive weapon.

How you go about it depends on how your own firm operates. In firms with a strong tradition of genuine collaboration it will probably prove beneficial to focus on internal design departments. If there is a strong feeling of community and corporate belonging it would seem sensible to capitalize on this rare and valuable resource, and foolish to risk upsetting it by bringing in outsiders. And as leading American firms have developed their senses of community and corporate culture "in search of excellence", many have indeed moved over from external to internal design functions. If on the other hand collaboration is a serious problem, the design authority may well have to come from outside, and will certainly need what will seem to the other functions excessive powers and prestige if it is to make progress. Between these two extremes, each firm must find its own solution- bust it must be one in which the industrial designer has a clear and authoritative role.