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SWP 24/89 THE INDUSTRIAL DESIGNER

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by

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Introduction

Ask any manager to name a successful industrial designer, and the chances are that he will come up not with a contemporary figure, but with one from the 1930s or 1940s: Raymond Loewy, perhaps, Henry Dreyfuss, or Ferdinand Porsche. Ask about these designers' work, and it is their styling that is remembered. Loewy's Coca Cola bottle and streamlined locomotive bodies, Dreyfuss's Bell telephone handsets and Porsche's Volkswagen car are all memorable because of their distinctive and enduring shapes. Ask an industrial designer the same questions, however, and you will get very different answers. He will talk first of all of contemporaries such as Kenneth Grange (Kenwood food mixers), Dieter Rams (Braun appliances) or Ettore Sotsass (Olivetti computers). And even in the context of historical figures he will talk of the designer as an integrator, bringing together engineering, marketing and aesthetic considerations in the detailed design of a whole product. He will not deny that styling is important, but he will argue that it is, and always has been, only one part of a good designer's work.

This contrast in responses is significant, because it underlies what is probably the most commonly perceived problem in the management of industrial design, the problem of how designers should be incorporated into the structure of the organization. Should a firm have its own product design studio, or should it use outside consultants? To whom should the design manager or consultant report, and where should responsibility for the product design process lie? In seeking an answer to these questions it is obviously important to have a clear conception of the role of the designers. If, as is often the case, there is a conflict between the designers' self-perceptions (the designer as integrator) and the way in which they are perceived either by related functions or by top management (the designer as stylist), this must be resolved.

In seeking such a resolution, moreover, another problem arises. Industrial design is

in fashion. Its value is affirmed daily, both by industrial commentators and by countless firms anxious to publicize their commitment to it. But this commitment is closely tied up with the concept of the designer as stylist, and it is far from clear that the designer as integrator, though inherently perhaps more valuable, will find anything like the same level of support. This is partly, of course, because he poses a political threat to others seeking control of the product design process. But it may also be asked quite reasonably whether the designer as integrator is actually necessary in the modern technological and managerial environment. In the days of bulky electrical and mechanical components and primitive design engineering facilities it may have been necessary for engineers and designers to collaborate closely if a marketable product was to be created. But with the increasingly sophisticated facilities of computer aided design packages, and an ever-growing range of ever-smaller off-the-shelf electronic subassemblies, it can be argued that the requirements of engineering and style no longer conflict as they used to. Again, in the days of strongly independent functional divisions, the designer may have been a necessary mediator between the requirements of engineering and sales, or more recently marketing. But with modern cross-functional organizational structures, such as venture groups and project teams, it can be argued that this type of collaboration is no longer so problematic.

These arguments do not, in our view, invalidate the case for using designers as integrators. But they do point to the need for a very clear understanding of the relationship between the different roles the designer can play in the organization, and of the relationship between the design process and its technical and organizational context. Only by understanding these relationships can we hope to resolve the conflict of perceptions existing between designers and non-designers, and so answer the basic question as to how the design process should be organized.

Stylists and integrators: the designer in history

Consciously or unconsciously, most people's perceptions of the designer's role are rooted in history, in the images of classical product designs. But they rarely go beyond these images. In seeking to understand the role of the designer in today's corporations it is instructive to begin by looking more closely at the nature of the achievements of the great industrial designers of the past, and especially at the relationships between these designers and the firms for which they worked.

Although industrial design entered the American consciousness in the 1930s, the person generally regarded as the founder of modern industrial design is Peter Behrens, who worked for the German electrical firm AEG in the early years of this century. Before turning to industrial design Behrens was already a well established architect, and he continued to practise in that capacity. Indeed three of the most famous architects of the twentieth century, Gropius, Mies van der Rohe and le Corbusier, all trained in his offices. He was hired by AEG as a consultant for the design of consumer electrical appliances such as kettles and fans, and he was hired, in the first instance, as a stylist. But although he undertook the aesthetic styling of the products, his most notable contribution was the introduction of standardized components. This innovation, which was developed in conjunction with the firm's engineers, allowed AEG to introduce a broad product range giving the customer a choice of styles and finishes unmatched by any of their competitors.

As an industrial designer Behrens combined the role of stylist, which was crucial to his commission from AEG, with that of integrator, which was crucial to his success in that commission and to the profits derived from it by the firm. And we can say much the same about the first of the great American designers, Raymond Loewy. Loewy was an artist. Before he established himself as an industrial

designer he worked as a graphic illustrator and display designer, and his industrial design reputation was built upon his achievements as a visual stylist. His designs for streamlined locomotive bodies gave visual expression to the excitement of the golden age of the express railway steam engine, but bore little relation otherwise to the engineering underneath the bodies. His Greyhound coach design transferred this excitement to the highway, but was again only an outer skin for an existing basic product. His "Coke" bottle, which again captured something of the same excitement, was a purely visual triumph. But his consultancy was not restricted to such work. He also designed duplicating machines for Gestetner and refrigerators for Sears Roebuck, and in both these cases he became deeply involved with the engineering efficiency of the products as well as with their appearance, directing the work of the firms' engineers and integrating their developments with an aesthetic appeal to the customer.

This combination of the stylist and integrator is even more apparent in the work of Loewy's contemporary Henry Dreyfuss. Dreyfuss established his reputation as a stage designer, and when Bell Telephones sought his services in the 1930s they sought the services of a visual stylist. Dreyfuss accepted the commission, however, only on the condition that he be allowed to work directly with the Bell engineers on the total design of their products. To Bell, the idea of having a scientifically unqualified designer interfering in the work of their hallowed research laboratories must have been almost frightening, and they agreed to the condition only reluctantly. But it was a condition that provided the basis for three decades of immensely successful collaboration. Dreyfuss also became one of the founders of design ergonomics, and many of his most successful commissions, such as those for Lockheed on aircraft seating, for Hyster on fork lift trucks and for John Deere on tractors, were concerned with ergonomic engineering as much as with styling.



The most famous designer of the generation following Loewy and Dreyfuss (and of the last generation upon which we can look back historically) is probably Dieter Rams, and in his work too we find the same juxtaposition of roles. Rams's most notable achievement was the design of the highly distinctive range of small electrical appliances introduced by the Braun company in the 1960s and 1970s. These appliances undoubtedly had style, but their tremendous success and the consequent growth of the company depended on far more than that. The neat, compact designs depended crucially on engineering developments, and it was the integration of engineering and style which gave them their strong market appeal, and which was above all characteristic of the distinctive Braun style.

The examples of Behrens, Loewy, Dreyfuss and Rams illustrate vividly the contributions that can be made by the designer as integrator. But it is striking that in all four cases the role of integrator arose out of a prior relationship in which the designer was retained primarily as a stylist. And in the end, as in the beginning, it was the designer's abilities as a stylist that were most valued by his clients, and that provided the basis of his reputation. The integrating roles which the designers took upon themselves may have been crucial to the design process, but they were regarded by the clients either as means to an end, the end being style, or as peculiar to the individual designers concerned. Just as some engineers, such as the car designers Ferdinand Porsche or Alec Issigonis, were blessed with a flair for style, so these designers were blessed with a flair for engineering. But that flair was perceived as a bonus, not as a normal part of the designer's role.

When we look beyond the great designers to the history of industrial design as a whole, we do indeed find that the number of designers who have filled an active integrating role is small. Whatever their ideals or ambitions, most have been employed as stylists, and have moved relatively little beyond that role. And there are moreover some indications that

this situation has been accentuated by the development of technology. While Dieter Rams was working in Europe, the most prominent American industrial designer of the 1960s and early 1970s was Eliot Noyes, an architect and interior designer commissioned by IBM to design its new ranges of computers and other business machines. Noyes's job was, in effect, to create an IBM product image that captured both the traditional corporate strengths of user appeal, reliability and service, and the technological excitement of the new computer age. Conceptually, his success depended strongly on an integrative approach. But given the sophistication, complexity and sheer difficulty of the technology, there was no way he could have more than a small influence on the engineering design of the products. In practical terms, he was a stylist.

If there are lessons to be drawn from the history of industrial design they are, first, that the role of the designer as integrator has been a very rare one, and one that has depended both on the peculiar talents of individuals and on an appropriate technological context; but secondly, that some of the very best design work has depended on the designer taking an integrative role. Even if you cannot call on a Loewy or Dreyfuss, there may still be a very strong case for attempting to replicate artificially the processes by which they worked.

Black boxes and venture groups: who needs an integrator?

Taken at its face value, this last point seems to suggest the need for some kind of integrating force within the product development process. In functional terms, the need is to synthesize the requirements of marketing, engineering, production and design, in the sense of styling, within a total product design process. Historically this synthesis has been achieved by outstanding individuals, whether designers or engineers. In the context of the large modern corporation, a coordinating group or department might provide an alternative and more appropriate model. But it may

also be questioned, within this context, whether such a coordinating mechanism is needed at all. In electronics-based products especially, the availability of a wide range of sophisticated components, and the progressive miniaturization of components, have placed the design engineer in a position in which he can adapt his design to almost any spacial restrictions the stylist might impose. The availability of sophisticated computer aided design packages has also improved dramatically the flexibility of engineering design. Whereas in the past the matching of engineering capabilities to marketing specifications may have been a matter of trial and error requiring very careful coordination if it was to be achieved within reasonable time and cost, the requirements may now be simply fed into a computer.

Management practices have also changed. Whereas in the past the engineering and marketing functions tended to occupy quite separate worlds, in the modern corporation they are more closely linked. In the large corporation, in particular, it is likely that any significant new product development will entail the setting up of a cross-functional project or venture group, in which representatives from the different functions will work directly with each other, and in which a separate coordinator would appear to be superfluous.

Appearances can be deceptive, however. All the evidence suggests that in the great majority of American and European firms the relationships between the technology-based functions and the marketing function remain problematical.¹ The conflict between the two groups may be countered by the cohesive effects of a strong corporate culture and small highly-motivated project groups, but it is rarely eliminated. If a project group is small enough to overcome the problems of interfunctional conflict in itself, it is unlikely to be large enough to carry out the product development without heavy reliance on the rest of the organization. While it may itself operate as a coordinating body, it will not escape the effects of the conflict.

Such conflict is clearly a hindrance to the total product design process, and it also affects directly the role of the designer. If we look at the firm as a political structure composed of negotiating interest groups, we find that the groups with the greatest power are those which control the boundary between the firm and its environment. In particular, the marketing function, which takes its authority from a knowledge of the firm's customers, tends to be one of the most powerful.² In most firms, the marketing department is also responsible for industrial design, whether this is carried out inside or outside the firm. The designers' primary role, as stylists, is to provide visual shape to the product concepts emanating from marketing, and the other activities of a design studio, such as the design of packaging or publications, are also closely linked to the marketing process. In the absence of any conflict between marketing and engineering this would make sound sense. As it is, however, the designers are often caught in a trap. On one hand they are a part of the marketing function. On the other hand, because of their wish to collaborate with the engineers, they are also a political threat to that function. Not only is active collaboration between the functions minimized, but far from acting as integrators the designers themselves are more isolated than anyone. They have no political power base of their own, no share in that of their host department, and, because of the power of that department, no way of appealing to a wider constituency.

Meanwhile the engineers, though they might also resent the marketing function's dominance, are unlikely to bemoan the lack of collaboration. For with the advances in components and engineering design aids we have mentioned it is actually possible to design a product with a minimum of collaboration, and in a politicized context this corresponds to a minimum of hassle. The question is, though, whether it is possible to achieve a good design in this way, and whether you can achieve it efficiently. Can you tell the difference between a product which is

conceived as a whole, through the active collaboration between engineers and designers, and one which is designed piecemeal, with an engineering design being adapted to a stylistic concept or vice versa? Can you distinguish between the efficiencies of the two processes?

The answer to this question must lie in the practices of those firms whose commercial success is built upon their design strengths, or who are able to charge a premium for their product designs. And what we find in such firms is that there are integrating mechanisms, and that these mechanisms are often linked closely to the role of the designer. If we look Sony, for example, which is one of the most successful of all firms at turning design into profit, we find not only a belief in active collaboration but also a system for implementing such collaboration which effectively reproduces artificially the traditional role of the designer as integrator. Since 1985, Sony's organization for new product development has been based on a Consumer Systems Products and Design division which is in effect an autonomous industrial design department, but one augmented by marketing and development engineering skills. It is independent of the marketing, new product development, and product divisions, centralized at headquarters, and 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 other divisions but which for one reason or another are not developed there. If black box and computer aided design technology or modern management practices did in fact eliminate the need for design process coordinators, then Sony is precisely the sort of firm in which one would expect to find this demonstrated. Instead we find one of the strongest statements of this need in any organization.

Organizations for design effectiveness

There are three key features of the Sony organization. The design department is

autonomous: it has its own board level representation, and does not report through another department such as marketing. It is central to the product design process, explicitly responsible for integrating and coordinating that process. And it is invested with authority: it is an important power base in its own right.

In other organizations where the design process is a demonstrable source of added value, other organizational structures are used, but these three features remain constant.

In Olivetti, widely recognized as one of the world's most successful firms in design terms, the designers occupy a position half in and half out of the organization. In organizational terms the design studio (actually two studios, in part competition with each other) operates as an autonomous functional division within the firm. But the designers are employed as consultants. Their offices and studios are part of the Olivetti corporation and they are fully resourced from within that corporation, but they are free and indeed expected to work for other clients from their Olivetti base. The justification for this practice is that it has enabled Olivetti to recruit and retain a series of outstanding designers, including Marcello Nizzoli, Mario Bellini and Ettore Sottsass, without sacrificing the advantages of an in-house department. In organizational terms the design department is not central to the product design process in the way that Sony's is. It does not have its own marketing or engineering resources, and it is actually physically removed from the centre of the organization. What it does have is a tremendous authority, derived from the status and reputation of its designers (and enhanced by the tremendous respect for design characteristic of the Italian culture generally) which ensures that it cannot be treated as other than central to the overall product design process.

Another example is the Dutch company, Philips, which employs an organization similar to that of Sony. The Philips Industrial Design Centre is, like its Sony counterpart, a headquarters organization enjoying top management support and

independent of marketing and engineering development. It does not incorporate its own marketing and engineering teams as at Sony, and it is not central to the design process in the sense of being responsible automatically for the coordination of the process. Philips like to visualise their design, engineering and marketing activities as the three equal vertices of a development process triangle, and in practice the designers often play a subsidiary role, coming into a project at a relatively late stage to negotiate and compromise between the very powerful engineering and marketing constituencies. But for any project viewed by top management as a priority, this position can be reversed, and when targets can only be met by a close collaboration between marketing and engineering, it is, as at Sony, the design department that takes on the integrative role and makes such collaboration possible.

The Philips example also demonstrates another important facet of the design process. For while this process is central to the firm's success it is not reflected in any price premium. For Philips the problem faced when they set up their design organization was not so much to design better products than anyone else, but to match the combination of the general design standards and new product lead times of their emerging Japanese competitors. And it was the lead time problem that was crucial. In Philips as in many other companies, the designers used to be brought in only at the end of the engineering development process to style the finished product. In a strong technology-led culture, the technology itself was often developed over very long periods to unnecessarily high specifications, and ill-suited to the market-based needs of the designers. There consequently followed a long process of adapting the engineering design to marketing and stylistic requirements. The introduction of a strong marketing function helped force the pace of the initial engineering development process, and make it more relevant to general market needs by providing broad performance specifications. But the detailed product design process,

which still followed the main engineering development, remained long and drawn out, even with modern engineering design aids. It was only when the designers were given a central coordinating role, and began working with the engineers from the beginning of a project, that product development cycles were reduced to within sight of those of the firm's Japanese competitors.

The lead time improvements achieved by Philips were dramatic, of the order of 50% or more, and the lesson to be learnt from their experience is an important one. Even if we view designers as stylists, that does not mean that their work is independent of the engineers' or that the two contributions can be organized sequentially. For if the styling requires just one change in the engineering design that will almost inevitably lead to other changes, which may not themselves fit in with the stylistic requirements. So there will then have to be more changes and so on. If the designers and stylists do not work hand in hand from the beginning the problem of reconciling their differences, however small, is apt to be large and very time consuming.

If, on the other hand, the designer is brought in at the beginning of a project, he almost inevitably becomes an integrator. Engineers can work on their own. So can marketers. But a designer simply cannot work without both a product to design and a marketing concept or image to design to. Unlike any of the other participants in the total product design process the nature of his role as stylist forces him to collaborate closely with the other functions. In a purely technical sense, he has to integrate their work into his own.

This does not mean, of course, that every designer will be an integrator, in the sense that he will have the ability to direct or dominate the total product design process. On the contrary, as we have already noted, it may be only a few designers who have this sort of ability. But it does mean that the design department is a natural focus of coordination and collaboration. And it suggests

strongly that if coordination and collaboration are to be effective, the design department should itself be effective.

How this can be achieved in practice depends on the context. In some organizations the marketing function itself is able to fulfill an integrating role. In many Japanese corporations, for example, marketing executives are trained engineers who know as much about their firms' internal research and development expertise as they do about their external markets. Collaboration between marketing and engineering is less of a problem than in most Western firms, and the designers may operate quite effectively either within the marketing division or responsible to it. Conversely, in some strongly technology-led firms, such as component manufacturers or specialist industrial engineers, it may be appropriate to incorporate design as a part of engineering development. For most firms, however, the best results are likely to come from a high profile, authoritative and autonomous design department, with its own board level representation. Experience shows that if the design department is not autonomous, if it is responsible as in most firms to marketing, or if it does not have a champion on the board, it is almost inevitably marginalized by more powerful interest groups and cannot perform effectively.³

To be effective, designers must also be good at their work and command the respect not only of their peers but of others in the organization, and it is here that the choice between internal departments and external consultants becomes a factor. In principle, either arrangement can be successful, as can a variety of combinations between the two. Three of the four most often quoted models for design management, Sony, Philips and Ford, all use internal design departments. The fourth, Olivetti, uses a hybrid model. And many of the most highly regarded individual designs are the work of consultants, such as Kenneth Grange of Pentagram whose credits include Wilkinson Sword razors, Kenwood food

mixers, Maruzen sewing machines and Kodak Instamatic cameras. Many large corporations have their own internal departments but bring in external consultants for specific projects. But not all arrangements will work for all firms.

For a small firm, the problem of recruiting a strong internal department will often be insuperable. The design culture is a strongly individualistic one, and most designers feel more comfortable as consultants than as employees. They can also get a far greater variety of work in a consultancy than in a small firm. On the firm's side, the skills with which to choose a designer are unlikely to be at hand, and the risks to a small firm of making a bad choice are considerable. It is generally much better to go to an established design consultancy whose design skills and mode of operation you know and like. An outside consultancy is also likely to carry much greater authority within the organization than a fledgling internal department. Its strengths are proven and demonstrable, and the very role of consultant carries with it a status of authority. It also carries a freedom to move across internal boundaries, and in establishing a fruitful collaboration within the product design process this freedom can be crucial.

As a firm grows, so do the advantages of bringing design in-house. Once the role of the designer is accepted and understood throughout the organization, and a process of coordination established, there may well be gains to be derived from having a team of designers wholly committed to the organization, immersed in its corporate culture, and in constant interaction with its other members. Recruitment may be no easier, however. The firm will probably have a much clearer idea of what it wants. It will have an established commitment to design, and may well be able to offer a broader range of work, both of which will appeal to prospective employees. But the prospect of employment in a large corporation is likely to even more repellant to designers than that of working in a small one. Moreover the consultant will still have the advantage in terms of

authority. In a country like Italy, where designers enjoy a high social status, authority is not so much of a problem, but the very fact that they do enjoy a high status allows them to retain their independence from industry by working through consultancy relationships. In America, where designers have a relatively low status, they may be more ready to work in industry, but the firm's need for an authoritative design group will place a greater premium on the use of consultants.

In this context a firm's strategy should perhaps be opportunist. If the opportunity arises to recruit an established team of respected designers who have already acquired authority through their consultancy for the firm, this should probably be taken. Whether employed full time or in some Olivetti-like relationship, such a team stands a good chance of establishing its position in the firm, and can form the nucleus of a department which can then be built up as required by recruitment in the normal way. But if such an opportunity does not arise, it is probably wiser to stick to consultants.

Finally, the use of consultants need not preclude the setting up of an internal department, or vice versa. If the design operation grows large enough it may be possible to build a team of junior designers employed by the firm but responsible to the consultants, and from this a design department may in time evolve. And even with a fully-fledged internal design department there is still a role for external consultants. A design team that is closely in tune with the corporate image can also be restricted by that image. In design, as in all creative activities, the freshness and critical insight that can be contributed by an outsider is always of value.

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