



A peculiarly American phenomenon, industrial designers have influenced our living habits by improving the appearance and function of mass-produced products. One of the foremost designers gives his philosophy on

## Adapting Products to People

During a career that has spanned nearly 40 years, Henry Dreyfuss has helped change the shape, color, and performance of countless products. As a consultant to Bell Telephone Laboratories since 1930, he has had a hand in the design of almost every Bell telephone as well as related products. From his drawing board have also come designs for television sets, airplane interiors, cameras, bathroom fixtures, gasoline service stations—even bowling alleys and flyswatters.

One of the original “big three” of industrial design (Raymond Loewy and the late Walter Dorwin Teague were the other pioneers in the field), Mr. Dreyfuss helped translate Louis Sullivan’s principle that “form follows function” from architecture into industrial design. What he and other designers did was to demonstrate to American manufacturers that good design could be a “silent salesman” extolling a product’s utility and other values.

Mr. Dreyfuss, who was once referred to as an apostle of human engineering, built his reputation on the belief that people are the most important consideration in designing a product. Displayed on the walls of his New York and California offices are line drawings of human figures (dubbed “Joe” and “Josephine”) that describe in infinite detail the physical dimensions of “Mr. and Mrs. Average American.” These anthropometrical studies have helped determine the height

and shape of a chair, the length of a vacuum cleaner handle, and the size of a telephone handset.

Mr. Dreyfuss, whose list of clients is limited to 15 at a time, is also a firm believer in personal research. In the course of his work he has done everything from running a diesel locomotive to operating a telephone switchboard.

A seemingly tireless man whose solemn appearance belies a lively wit, a long-abiding interest in the theater, and a passion for unusual gadgets, Henry Dreyfuss can look back on a career filled with honors and awards. He is more concerned, however, with looking to the future. Where industrial designers were once concerned mainly with a better looking or better acting product, they are now deeply involved in long-term planning, sometimes working on products for use 10 to 20 years from now.

It was while enjoying a brief vacation in Mexico that the request to do an article for Bell Telephone Magazine reached Mr. Dreyfuss. “My first impulse,” he said, “was to put off your request until I returned to civilization—but on consideration, I realized how seldom I have an opportunity for uninterrupted thought. This holiday gave me a chance to ruminate and put down ideas about design that continually run around in the back of my head but are normally crowded out by more immediate problems.”

On the following pages are the ideas—some new, some elaborations on old ones—as Mr. Dreyfuss expressed them.

*With silent partners, “Joe” and “Josephine,” in the background, Henry Dreyfuss talks about designing for people.*



# Adapting Products to People

by Henry Dreyfuss

How do you start a product design? First, we take a look at those men, women, and children who will be using the product. In every way, we try to put ourselves in the place and environment of the user. We interest ourselves not only with dry anatomical dimensions, but also with matters concerning the senses — what colors, textures, sounds, and smells either please and attract or annoy and repel. In the words of our office creed:

"We bear in mind that the object we are working on is going to be ridden in, sat upon, looked at, talked into, activated, operated, or in some other way used by people."

Anyone who has worked with us knows that our every line is dictated by two anthropometrical silent partners, "Joe" and "Josephine." They have physical dimensions determined by a physician, sight characteristics supplied by an ophthalmologist, hearing capabilities furnished by an otologist. We also know a good deal from psychologists and psychiatrists about how Joe and Josephine will act in periods of relaxation or strain.

To what Joe and Josephine tell us about the design of the product we add our knowledge of materials, manufacturing, marketing, and what we know about proportion, line, color, and texture. Many forms and functions are integrated into what we trust will be a pleasing and acceptable whole.

If we have worked closely with our client's engineers and been constantly guided by our technical knowledge, the product should be capable of being manufactured within budget and sold for profit.

Perhaps we could say the industrial designer acts as the product's conscience.

## Life with engineers

Our best friend and sincerest critics are engineers. It is inconceivable that an industrial designer could develop a product without the closest cooperation of the client's engineers. They are the wings on which



*During a visit to Bell Telephone Laboratories, Mr. Dreyfuss checks on the progress of a new telephone design.*

an idea can be borne into reality.

We have had the rare privilege of working with great engineers. Our experience has been that the greatest seldom say "No"; invariably they are stimulated by the seemingly impossible and say, "Let's try."

There was a time, however — and it wasn't too long ago — when an engineer resented an industrial designer's appearance on the scene. "What can he do that I can't do?" the engineer asked. "What's he got that I haven't got?" As a consequence, the industrial designer found himself struggling mightily to convince the well-established engineering groups that he had a valuable point of view to contribute. Unlike many engineers, the industrial designer did not readily accept the restrictions of material and machine. Or at least he accepted the restrictions as a challenge, and stimulated the engineers to do handstands to



develop superior means of fabrication, use new materials, and find new uses for old materials.

For example, the swift and great advances made in plastics — as well as their universal acceptance — may be attributed to the teamwork of engineers and industrial designers. We demanded a stronger material that was stable and durable, and the supplier rose to the occasion and delivered it. With a magical capacity to produce nearly anything demanded of them, plastics have liberated the form and shape of things. In turn, they have forced on the supplier new and improved means of fabricating older, competitive materials. So all have profited.

### How do you know you are right?

Certainly industrial designers do not have any special clairvoyance. But we do have past experience and past performance, which adds up to something we have dubbed an “educated hunch.”

Objectively and vigilantly, the industrial designer studies the consumer for whom the product or service is being designed. What is the man in the street reading? What artist is he currently admiring? To what rhythms is he tapping his foot? Is his imagination being stirred by the promise of a bat-winged supersonic plane, or are the wonders of the deep sea awakening his soul? Is there a new movie queen on the horizon? Has the primitive African culture invaded our intellect? Answers to all these questions — and much more—will help the industrial designer discipline his thinking on the shapes of things to come.

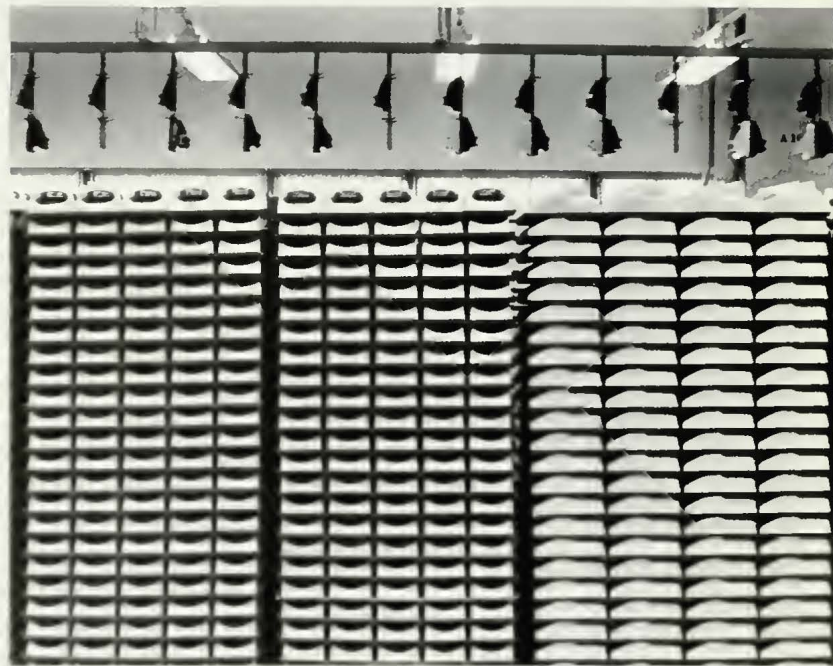
So many things in science and industry are measurable. But there are no known formulas for taste; it cannot be proven by numbers. Taste is nebulous, indefinable, nondetectable. It is probably an ectoplasm that experience alone can satisfactorily gather together.

Unlike science and engineering, you cannot prove the excellence of a good design. No equation has been written for good taste.

### Multiplication of error

A designer for mass-produced merchandise is forever terrorized by the fact that any mistake will be produced and reproduced by the thousands or millions once the drawings are released, the tools made, the unrelenting machines started. Before the first advertisement appears, distribution pipelines must be filled. And by the time the stocking of warehouses has been completed, there is no chance for correction. The point of no return has been long passed.

On the other hand, there can be no greater reward than to have those same machines turn out millions of an acceptable product. A well-designed product inevitably raises the level of consumer taste. This in turn conditions the consumer to exercise his improved taste the next time he goes shopping. Thus, by raising the level of public taste, the industrial designer has acquitted himself of a major responsibility.



*Each year, millions of telephones are turned out by Western Electric. The mass production of a well-designed product, Mr. Dreyfuss says, is a designer's greatest reward.*



## Designer for the future

When a painter, sculptor, writer, or musician completes his concept, it is immediately ready for presentation to the public. Often it becomes a timeless contribution to our heritage.

With the industrial designer, it's different. Given the task of having to make a particular contribution to industry, we have to discipline ourselves to produce for the future. Depending on its magnitude, it generally takes a product from two to seven years to move from drawing board to marketplace. First comes the call for a new product; then comes the incubation period for inventors, the engineering, the industrial designing, the prototypes, the market testing, the tools, the retesting, the production and the distribution. And, of course, all along there are time-consuming trials and errors, occasional disappointments, and a few headaches.

In our presentation to clients, we must direct their attention to the future. We must demonstrate that, if the design being presented were acceptable today, it would be out of date two to seven years hence. We have to convince them that the seemingly "way-out" model we are showing them will not be way-out by the time it meets the consumer in the marketplace.

## The computer and the industrial designer

It is hard to think of one single thing that has not been affected by the advent of the computer. Certainly the industrial designer has felt the quickening impact of that magic brain. It used to take weeks, even months, to answer technical questions, prove strength analysis of materials, translate market research. The computer does it instantly.

A part of the computer input of the future would be up-to-the-second vital statistics — or perhaps a government standard on anatomical information. It will become common for computers to verify the dimensions on drawings of all things used by people.

Computers should also help architects and industrial designers solve the thorny problem of selecting the right materials and components from the many available. Sweet's Catalog, the bible of our profession, grows more ponderous with the addition of every wonder. Eventually a similar catalog will be committed to computer tapes, with new data added on the hour. A phone call will give us a selection to meet our specifications.

But I question that a mechanical device can ever be truly creative. Granted that all combinations of all musical notes may be put on tape, who will call the opening chords of the Fifth Symphony into being? Even with all the curves and angles recorded, who is going to summon up the sweep of a staircase or the proportions of a fine chair? It will take a man with taste and perception, not a machine. However, if the computer will not make us better composers, architects, or designers, at least it will make us faster ones. We must learn to use it as a tool and with absolute discretion. It can be a great servant, but we must protest its being a runaway master.

For the most part, people seem to resent change. Although the younger generation goes in for "mod" clothing and a new tune every day, most of us are reluctant to shift gears. We are afraid to rock a smooth-sailing boat.

Often when a new design is presented, everyone comes to the defense of the current model. Yet when it was first shown, the current model was ridiculed in favor of the product then being manufactured. It seems we breed purple cows and are reluctant to topple these successful idols from their pedestals.

But although industrial designers are in the business of change, we resent planned obsolescence. A change in technology, improved efficiency, additional safety or comfort, a new utility development, an improved method of fabrication, the introduction of a new material — these warrant a new physical expression. But to put a "new look" on an existing

piece of merchandise — this, to us, constitutes the duping of an unsuspecting public.

We say that a design expresses the excellence of its engineering and reflects the integrity of its manufacturer. That hardly suggests a seasonal change. We are not in the profession of style or fashion. Ours is a basic approach; our designing must be generic by nature. If the most contemporary of design can be called "classic," then call us classicists.

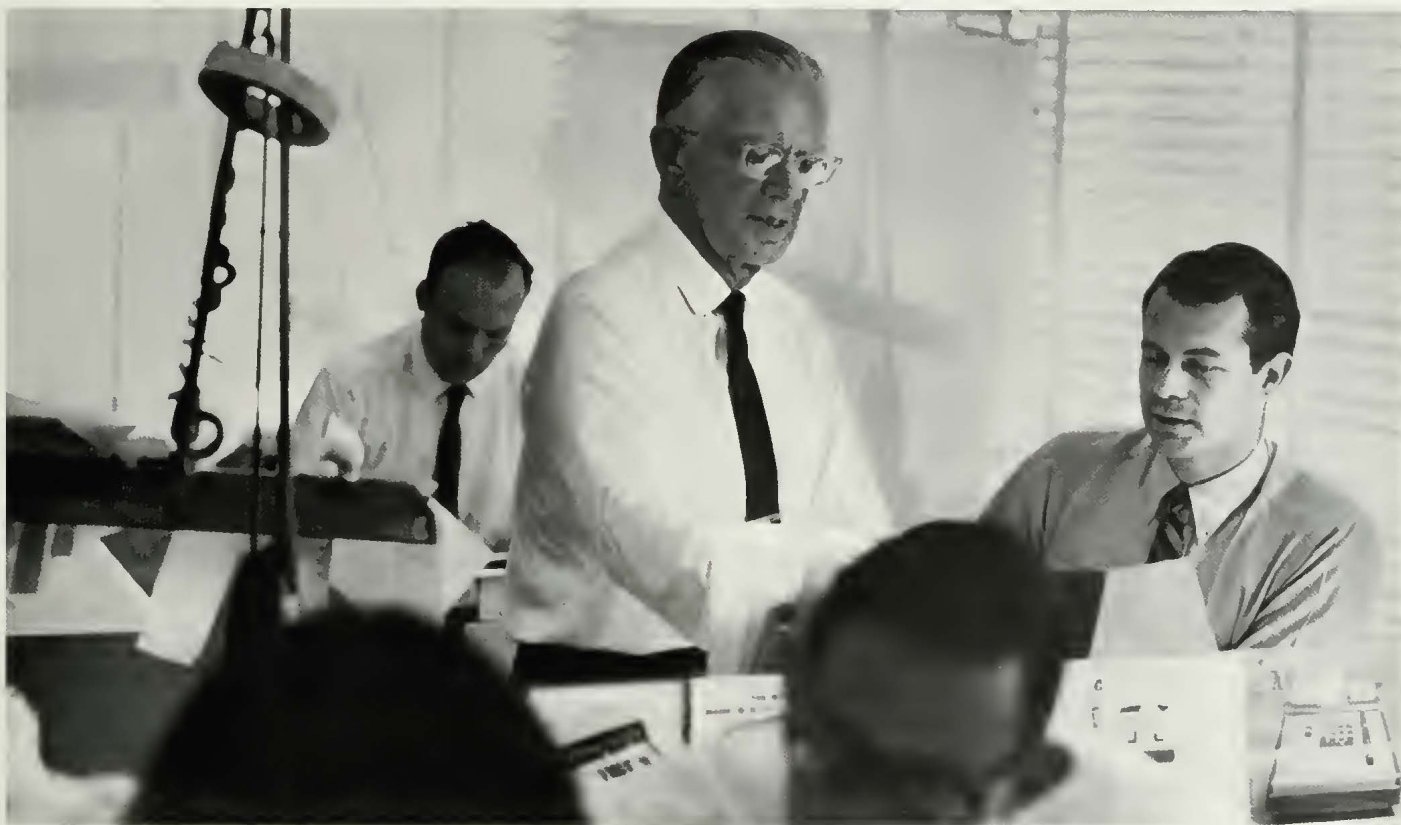
### On creativity

One of the best stories I know on creativity has to do with Edwin Land. While in Santa Fe on vacation, Land was taking snapshots of his family with a stand-

ard camera. His little daughter wanted to know why she couldn't see the pictures right then and there. Walking around town, Land kept thinking: "That's a good question. Why can't you?"

As he recalls it now, "Within an hour, the camera, the film, and the physical chemistry became so clear to me that — with a great sense of excitement — I hurried over to the place where our patent attorney was staying (in Santa Fe by coincidence). I was able to describe to him in great detail a dry camera, a camera that would give you the picture immediately after you snapped the shutter."

This ties in with a theory I have developed. Within each of us is a memory tube in which everything we



Working with a young staff member in his New York office, Mr. Dreyfuss suggests some design changes. "The public today," he

once said, "is getting better designed goods than the wealthy got forty years ago in made-to-order products."





see, hear, feel, taste or smell is recorded on its interior walls and stashed away for future reference. The tube may be compared to our grandfather's rolltop desk in which information was neatly pigeonholed or to a modern computer in which all the input is ready to be called out.

Clinging to the walls of the memory tube are billions of little "experience blips" — the first sensation of pain, the smile of a teacher, the whistle of a train, the lights of Times Square, the taste of peanuts or caviar, the harmonics of a Brahms' symphony, 20 giraffes galloping in front of an oversized moon. What does it matter? It's all there, all of these experiences, many of them unknowingly absorbed. How many of these blips there are and how vivid they are depends on how astute our observations have been.

Let's say that suddenly we have an inspired thought and that it has a dire need for enlargement. We drop this request for aid into our tube. Down it spins, extending antennae which attract idea particles (the experience blips). If the particles are pertinent to the need, their contribution is accepted and then the blip is put back for use another time. By the time the idea has spun the length of the tube, all of our past experiences, our remembrances, good and bad, have offered their contribution. Our real creativity relies on how well we have stored the knowledge, on our perception in retrieving it, once we need it, and on our ability to synthesize it for use in the proper proportion. With a little bit of luck, good ideas may thus be born.

No one has proven what makes for creativity. But fortunate is the creator whose experience and knowledge can substantiate his dreams. Particularly fortunate is the creator who can direct his far-flung thoughts into a productive channel. □

*The evolution of a product design requires close cooperation with the client. Here, Mr. Dreyfuss reviews future plans with members of Bell Laboratories' customer equipment development group at Holmdel, New Jersey.*