One Hundred Great Product Designs

Jay Doblin
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Preface

100 Great Product Designs is an undertaking of the Institute of Design of the Illinois Institute of Technology. The idea for making the collection was suggested in 1957 in a faculty session, and the initial research was conducted by a small group of the faculty. The original intention was to find out which products were considered "great" so that the design teaching program would have guidelines for evaluation. After 10 years of effort the text that evolved seems to have general as well as specific interest. Those who read it begin counting the "classics" they have owned or used.

I would like to express my appreciation to the firms and designers whose products are represented for their assistance in supplying background material as well as additions and corrections to completed essays; to England's Design magazine for permission to use excerpts from Richard Carr's article on the Moulton bicycle, which appeared in the August 1963 issue; to Warren Fitzgerald for his help; to the Museum of Modern Art for permission to use the photograph of the Necchi sewing machine.

A great debt of gratitude is owed Harry Boiler, who designed the book.

Mary Camille Mocro was responsible for editing. Secretary for the project was Margaret Bielenberg. To these individuals, and all the others who offered time and talent to the book's preparation, my sincere thanks.

Jay Doblin
Introduction

We know of three stages in mankind’s progress. The agricultural stage saw him climb down from the trees and learn to feed and protect himself. The second stage, technological, began in the eighteenth century and is now ending. During the last two centuries, man has learned to reproduce mechanisms to take care of his needs and comforts. Products have become the basis of our economy, our aspirations, and our way of life. Our world is engrossed in making, selling, possessing, and consuming them.

100 Great Product Designs celebrates this accomplishment by selecting the best from the literally thousands of different products made between the beginnings of technology and our current state of refinement—or more accurately, crudeness, as exemplified by the ancient and inefficient internal-combustion engine and the profusion of electric cords.

The third stage, systems, which began in the 1950's, stresses total utility and will replace the myriad of poorly coordinated products with invisible and efficient services. Process must become more important than product. In the future, pride of ownership and concern for the status support of products will give way to human values—education, intelligence, contributions to society, creativity—and the type or number of products owned will diminish in importance.

Future designers will not create a new product for every imaginable task; one major appliance manufacturer already offers 165 electrical devices for the home. The task now is to achieve control, not greater production.

Undoubtedly, the products selected for inclusion in this book will be the dinosaurs in a future museum. They are not featured in an Academy Awards attitude. Their short life and variety are sufficient testimony to man’s incapacity to think a product through. His use of the largest tool available—the factory—has been ingenious at times, but regretfully we are both benefited and victimized by its enormous output and by the accumulation of its by-products.

Before the selection was made, it was necessary to define “product.” There is a three-part hierarchy of utilities: at the lowest level are parts and components, which although manufactured and traded are not utilitarian items because they cannot perform a service. A car must have a motor, yet a person cannot ride on a motor without all the other essential elements. For this reason parts and components—springs, lamp bulbs, zippers, movable type, transistors, screws, etc.—were eliminated from consideration.

The second level is the utilitarian product, which toasts bread, takes pictures, gets sat upon, or transports people. A product can be one part—a bowling ball, a paper clip or an eraser—but most are assemblies of parts and components. A product is a tangible, material and discrete entity, which can be photographed—we it a chair, an automobile, or an air carrier.

The system, the third level, is a collection of products organized to perform a service. Systems are represented by a diagram or the schedule of an operation; photographs can show only some of the products involved. For this reason, systems, like airlines or factories, were also eliminated.

This text concentrates on the product—the primary level of utility. One-of-a-kind products were eliminated; only mass-produced items designed, toolcd, manufactured, and distributed in anticipation of sale were considered. Thus, such items as the Brooklyn Bridge, Boulder Dam, the Queen Mary, and the Saturn I rocket were excluded. Software items, such as clothing, books, foods, and posters, were also eliminated.

Evaluating a product’s excellence is difficult since it involves personal bias as well as facts. There are two major criteria in evaluation: The first—utility—is objective, and is measurable through performance specifications concerning speed, durability, efficiency, weight, size, etc. The second is subjective, with symbolic and aesthetic connotations such as high-class/low-class, expensive/cheap, masculine/feminine, young/old, and beautiful/ugly. Some subjective factors are decided by society, and some are based on personal likes and dislikes.

The proportion of utility, social symbolism and aesthetic considerations in a product can be evaluated. For example, the Jeep automobile, Pontiac pon, Raleigh bicycle, and Douglas DC-3 airliner are primarily utilitarian; the Rolls-Royce and Mustang automobiles, Barcelona chair, and Parker 51 pen symbolize high levels of social status; while the Olivetti typewriter, Strandy chair, Nelson ball clock and Gio Ponti toilet are largely aesthetic contributions.

"Engineering," as we shall use the term, is the concentration of design on a product’s utility and this often culminates in invention, mechanical innovation, or, at the very least, improved performance. When a product is principally utilitarian, it is called "vernacular"—basically an engineering model put into production. Such products are usually a mess of wires, bolts, and plumbing, but they often have a classical appearance that results from the designer’s deep involvement in their creation. Ford’s Model T automobile, Siemens’s Leica camera, Borchardt’s Luger pistol, and the Luxo lamp are examples.

Conversely, the word "styling" is applied when design activity concentrates on
managing a product's visual aspects—its social symbols or aesthetic forms—usually a conscious act by designers with professional art backgrounds. Vernacular products in mass production have diminished. Today's new products, even those based on utopian innovations, are styled as a matter of course before introduction on the market. "Design," then, is the combination of engineering and styling when the utilitarian, social, and aesthetic factors of a product are all carefully managed.

"Commercial design" results when the professional caterers to a predetermined segment of consumers (often called "Oh, them!"). The larger the segment, the more generalized the design and the less representative of the designer's own tastes. Often a commercial designer will not own the products he designs. This "Chevrolet attitude" occurs in the design of products to be manufactured in large volume that cannot afford, even to a small degree, to lose any share of the market. "Chevrolet attitude" describes a totally generalized product, designed in an attempt to appeal to the largest possible market. Within the trade, the Chevrolet is known as the "yates" car. When groups of consumers are asked if the Chevrolet is a small car, the answer is yes. Is it a large car? Yes. Is it powerful? Yes. Is it low-powered? No. Is it a cheap car? Yes. Is it an expensive car? Yes. And so on.

TopFlight commercial designers can achieve excellent results, as demonstrated by the few products in this study that have managed to combine credibility and clean design with mass acceptance. But the vast majority of today's design is commercial and vulgar, resulting in the corruption of whole product types. Today, in the overt attempt to generate sales, modern television consoles become "Hu-garitan provincial," wall clocks look like giant gold pizzas, and air conditioners as if a Buick had smashed through the wall.

One element is shared by all the products in this survey—behind each was an individual's will to succeed, which often overcame extreme resistance. Some wanted to invent, some to beautify, and others to sell merchandise. All had the strong drive that leads to experience. Neoclassicism is usually a committee effort; it is impossible to order aclassic. Telling a styling department to "create another Continental" is futile, because a classic is the result of fortuitous circumstances.

Inventions predominated in the early years; the Franklin stove, the Singer sewing machine, the Yale lock, Gillette razor and Edison's devices are examples. In recent decades there have been fewer inventions and more style innovations updating or upgrading old mechanisms; Polaroid and Xerox are exceptions. Until the 1960's, the products were vernacular, but after this the Bauhaus showed its impact as Breuer, Miles, Gretsch, Versen and Aalto experimented with the style of technology, its geometric forms and its simplicity. By 1955, the first depression-bred commercial styling efforts had appeared—the LaSalle automobile, Toastmaster toaster, Parker 51 pen, and Coldspot refrigerator. Post-war commercial design is exemplified by the Schick shaver, General Electric television, Mustang automobile, Lightolier lamp, and Studebaker automobile. The post-war years brought contemporary design with Eames, Saarinen, Wegner, Gugelot, Nelson, and Nizzoli. A concentration of items come from the 1950's, which was a boom time for retooling and design.

All the products included in this survey are either "vernacular" or "modern" in design. There is no "traditional"—no Chippendale or Wedgewood. Thus, these are probably not the items that Mr. or Mrs. Average Citizen would select. However, it is our hope that this survey will promote a better understanding of the elements comprising exceptional products. Perhaps by spotlighting examples of past excellence, we can promote the use and acceptance of good design.
The exact date of invention of the Franklin stove, or Pennsylvania fireplace, as Benjamin Franklin named it, is somewhat vague. In his autobiography, Franklin lists it as 1742, which is substantiated in an ad for the stove that appeared in the Pennsylvania Gazette on December 3 of that year. In the brochure he wrote promoting its sale in 1744, however, he said his family had enjoyed their stove for the past four winters.

The Franklin stove, the first example of a manufactured product and an invention which offered a technical improvement that could be understood by every homeowner, is based on a scientific principle employed in France 30 years earlier by Nicholas Gauger. Gauger had designed a much more complicated unit based on the theory of convection, the creation of an air current that is then heated and circulated into the room.

Cast iron was the basic material of the Franklin stove, except for the movable registers and shutters, which were fashioned of wrought iron. The stove was installed in a conventional fireplace after a false back had been built. The front of the stove opened into the room, like a miniature fireplace, and its plate was cast in an elaborate pattern of classical foliage around a beaming sun.

An "Air-Box" contained within the stove had no openings into either the stove or chimney, but a passageway at its base lead into the room. Cold air was drawn into the box to be heated, rose as it grew warmer, passed around a series of iron baffles in the sides of the box to heat it further, and finally was forced out into the room again through openings on both sides at the top. Air from the room also circulated around the stove to be warmed by heat radiating from the surface.

By reducing to a minimum the heat lost up the chimney, Franklin's design was considerably more efficient than a conventional fireplace or stove, and it used less fuel. The chimney was much smaller, greatly reducing the amount of draft. Franklin the businessman was careful to note in his promotional material that most ailments in Pennsylvania could be attributed to the prevalence of drafts.

The first stoves were sold by Franklin, then Postmaster at the Philadelphia Post Office. As demand increased, he wrote the brochure, which not only explained the advantage of the stove as compared to previous heating methods, but explained the principles of operation, diagrammed their parts, described the method of installation, and finished with a poem in praise of the product, which Franklin celebrated as superior to the sun, whose image it bore. The Governor of Pennsylvania was so pleased with the pamphlet that he
1965
Bell Trimline Telephone

Because the telephone system sells service, not merchandise, telephone design provides a rare example of a consumer product not subject to the usual market pressures of fashion and price competition.

In 1967, over 100 million telephones in American homes and offices transmitted more than 130 billion calls over the Bell System’s 500 million miles of wire. The company is the largest private firm in the United States, employing over 700,000 people. Yet, it manages to provide superb service and, at the same time, continually lower its rates.

By 1896, all important components of the phone had been invented including the rotary dial and combination handset. New models are introduced only after sufficient progress has been achieved to justify changes. In almost 70 years of the twentieth century there have been only seven new models of the desk telephone.

Until the late 1930’s, there was no separation between technical design and styling in the telephone. In 1930, the Bell Laboratories hired Henry Dreyfuss as consultant designer, and the results of this collaboration first appeared in the 1937 handset. At the end of World War II Bell asked Dreyfuss to work with its engineers on a completely new phone. Dreyfuss’s staff designer, Robert H. Hose, left the firm and joined the Dreyfuss organization, where he assumed primary responsibility for the project.

The basic measurements of the new 500 handset introduced in 1951 were derived from the same data on facial measurements used for the 1937 model. After all components had been agreed upon, Dreyfuss made a complete model of the phone, which was subsequently approved by the Bell System. The 500 was not beautiful or fancy, but clean, straightforward, and efficient.

Work on the Trimline began in 1959 after American Telephone and Telegraph surveys indicated a potential market for a telephone that the user could dial in his hand. In 1959 Western Electric (the manufacturing subsidiary of AT&T) began manufacturing a handset for use by telephone linemen. This handset had a small-monitor switch in the handle and a small dial mounted behind the receiver. The whole set could be held in one hand. That phone was reviewed for a test, and a few hundred were made and placed in homes of customers in New York, Ohio, and California. It had many shortcomings: the finger holes in the dial were too small, and it was ugly. But the concept was deemed encouraging and worth continuing. Bell asked Dreyfuss to undertake the design program, which was begun in 1960. The effort was carried through five successive models before the final form was achieved.
Human-factors studies showed the advantage of placing the dial and recall button in the handset and components designers made the convenience a reality by developing smaller and lighter versions of the standard receiver, dial, and speech circuit. Although the Trimline handset contains many additional components, it is no heavier than the original handset of the 500.

Now the Trimline moved into the final stages. Flexible printed circuits were used for much of the wiring. The model shop made up 2,600 sets, which tested successfully. In field trials in 1963 customers in Michigan and Wisconsin preferred the Trimline set over the 500 design by a ratio of about 9 to 1. This set was redesigned slightly and production tooling began.

Western Electric manufactured over 400,000 Trimline telephones during 1965, and in 1966 about one and a half million more were produced. Current planning is based on production capacity of one million sets a year. The Trimline phone is also equipped with a pushbutton dialing system as an option.

Until the Trimline, the telephone had regressed in visual interest from the original and fantastic French phone. The phones designed by Croyfuss before Trimline were intentionally restrained so that they would fit into any setting from an office to a boudoir, enlivened only by color. The Trimline, a handsomely sculptured instrument chosen for permanent display at the Museum of Modern Art, is a radical conceptual change from no-nonsense efficiency to the self-conscious styling applied, as a matter of course, to most other consumer products.
Conclusion

There is a massive ongoing design effort to improve or render obsolete and replace the 57 products mentioned here that are still in production. The rest are gone or have been considerably redesigned. In 40 years the design profession has grown from an informal backroom activity to a line operation in most major manufacturing organizations. For example, the three top automobile manufacturers in the United States have large design staffs headed by a vice-president. The styling division at General Motors, probably the largest corporate group in the world, has 1,700 people.

But product design is still eneamed of the primitive notion that we must have a product to solve every problem. This has led to massive overproduction that is responsible for increased comfort, leisure and health and ... a high standard of living. The pernicious effects of technology are easy to see. The methods of emotion are more difficult to visualize. C. P. Snow in his book The Two Cultures stated the problem well: "For, of course, one truth is straightforward. Industrialization is the only hope of the poor. ... It is all very well for us, sitting pretty, to think that material standards of living don’t matter all that much. It is all very well for one, as a personal choice, to reject industrialization—do a modern Warden, if you will, and if you go without much food, see most of your children die in infancy, despite the comforts of literacy, accept 30 years off your life, then I respect you for the strength of your aesthetic revolution.”

Only massive doses of rationality through the formal channels of education and the informal media of mass communication can sanitize the final stages of the technological era.

For modern nation technology is past the peak of prime interest. The recent moon trips are evidence of man’s technological playtime stage. It would be dramatic to say that technology is dead, but this is too strong. Agriculture moved from the center of life in the United States nearly a century ago, but today we grow more food than ever. Only five per cent of the present-day work force is on the farm. Similarly, our technology will continue to produce more and more with fewer and fewer man hours. Already enrollment in engineering schools has fallen off.

The marriage of what might be called intellectronics with technology has given us automation: the capacity to produce abundant supplies, comfort and health without the necessity of anyone putting in much time or doing much physical labor. There are those who question the human values of total automation, yet this is clearly where we are headed. Production of goods will be banished to giant windowless boxes along the railroad tracks with a few autos in the parking lot. There is visual and statistical evidence that the shift to intellectronics is on. As early as 1962 the number of white collar workers passed the number of blue collar workers. The fast-growing city complexes—New York, Washington, Chicago, Los Angeles, etc.—are centers of information handling, not manufacturing.

Automation is more than replacing workers with electronic controls. In production it means a shift in concept from the Victorian “repetition” machines that perform highly specific tasks to a new breed of cybernetic machines that have sensory-response capacities. These machines can sense the need for a particular product, respond, by making enough of them to satisfy the demand, and vary each product to suit the demands of individual customers. The computer, the exemplification of the new breed of machines, is rapidly becoming the largest industry. IBM’s current rate of growth (nearly a billion dollars each year) may soon enable it to replace GM as the world’s largest manufacturer. In consumer equipment the first sensory-response machine was the home-heating thermostat that controls temperature automatically by sensing the need and responding to it. It is curious that the first product died in the “100” is the Franklin stove; the first of the SR machines is the thermostat. Keeping warm must be near the top of the list of human needs.

In addition to a bounty of new products and manufacturing techniques, the new intellectronic capacities will boost design possibilities. Rather than dealing piece-meal with products—autos, chains, packages, advertisements, or buildings—new design methodologies, assisted by computers can operate from the general to the particular rather than from the parts to the whole. The computer will help man to model and control these systems, the complexity of which defy unassisted thought.

Probably the most important index of the progress from technology to intellectronics is that knowledge has replaced property and products as the prime indices of power. The scramble for farmable-grazable land became a drive for technological products—sophisticated armaments, production facilities and natural resources and now the search for knowledge is on. Power based on knowledge makes the education of the entire population essential. Intellectronics will back up the giant education structure and the vast research effort.

If these indices are correct it could result in a brighter, more rational world where cooperation replaces competition. A fitting comment for the transitional stage between technology with its mechanical culture that produced the 100 Great Designs and the forthcoming era of intellectronics are the words of Bertrand Russell: “It may be that God made the world but that is no reason why we should not make it over.”