1926-1950

1928

Henry Ford, “Machinery, The New Messiah”

The American automobile manufacturer Henry Ford (1863–1947) was something of a messiah figure himself; he was undoubtedly one of the most powerful and influential persons of his time. He founded the Ford Motor Company in 1902, and, in 1908, began production of the Model T, nearly 17,000,000 of which were sold worldwide over the next nineteen years. (In 1927 the Model T was replaced, due to lagging sales, with the more stylish Model A.) The organization, appearance, and management of the Ford factories, where the modern assembly line was born in 1913, was the subject of sustained public interest. Ford's introduction of an eight-hour, $5.00 workday in 1914—in an industry in which the standard shift was nine hours and the average daily pay $2.34[1]— was the kind of innovative business practice for which Ford was renowned. (The $5.00 workday was fairly clearly an implementation of Frederick Winslow Taylor's theories of compensation for “good” employees; only those workers whose workplace performance and home lives were deemed acceptable by Ford's Sociological Department qualified for the higher wage.)[2] In these excerpts from a rather wide-ranging 1928 essay in the magazine *The Forum*, Ford discusses machinery in American society, the maintenance of the human body, and the relation of home life to industry.

Excerpted from Henry Ford, “Machinery, the New Messiah,” *The Forum* (March 1928): 359–364.

[…]

The great problem in the home to-day is that there is too much drudgery there. Although a man's actual working hours a week have decreased, hardly anything has been done to eliminate the fundamental drudgery of housekeeping; there has been no decrease in the hours of wives. Well, the modern young woman who maintains a household and brings up several children is going to change this. She is refusing the drudgery. What you call “the indifference of the young” in this respect is simply a coming event casting its shadow before. They have refused household drudgery, and as a consequence it will disappear.

There is some machinery to use in the kitchen to-day. We have the vacuum cleaner, the various electric appliances, the electric washing machine, the electric ice boxes; but most of it is still too expensive. We must find some way to reduce the cost and some way to lighten the other labors of women. […]

[…]

Food is one of the most important commodities with which we have to deal. I am becoming more convinced every day that we should spend more time in the study of food and how to eat it. Most of us eat too much. We eat the wrong kind of food at the wrong time and ultimately suffer for it. We must find a better way to feed ourselves and provide our bodies with what they need for replenishment and growth. Hitherto, we have spent more time in studying methods of repairing machinery and of renewing mechanisms than we have in studying this fundamental problem of human life. Of course, much has been done by our dietetists, but they have only scratched the surface. One does not have to be a food faddist to be interested in the subject.

Although the normal average life of human beings has been almost doubled in the last fifty years, I feel sure that we shall find means of renewing the human body so that men will retain their health, vitality, and mental keenness for many years longer. Take Edison, for example; today he is just as keen mentally as he ever was. There is every reason to believe that we should be able to renew our human bodies in the same manner as we renew a defect in a boiler. Not so long ago we found that our boilers were being discarded because in one or two spots corrosion had set in and weakened the surface.

We had some research work done on the problem and soon found a way to renew this metal at the point of expected failure, so that it was just as good as new. The boiler was put back into operation stronger, if anything, than when it was first installed. […]

The point is, if there is enough thinking done along this line, there is no reason why we could not do the same with the human body.

[…]

Anything that interferes with our ability to think clearly, lead healthy, normal lives, and do our work well will ultimately be discarded, either as an economic handicap or from a desire for better personal health. Tobacco is a narcotic which is exacting a heavy toll from our present generation. No one smokes in the Ford industries. Tobacco is not a good thing for industry nor for the individual.

The coming of prohibition has put more of the workman's money into savings banks and into his wife's pocketbook. He has more leisure to spend with his family. The family life is healthier. Workmen go out of doors, go on picnics, have time to see their children and play with them. They have more time to see more, do more—and, incidentally, they buy more. This stimulates business and *increases prosperity*, and in the general economic circle the money passes through industry again and back into the workman's pocket. It is a truism that what benefits one is bound to benefit all, and labor is coming to see the truth of this more every day.

Human demands are increasing every day and the needs for their gratification are increasing also. This is as it should be. Gradually, under the benign influence of American industry, wives are released from work, little children are no longer exploited; and, given more time, they both become free to go out and find new products, new merchants and manufacturers who are supplying them. Thus business grows. Thus we see the close relation which home life bears to industry. The prosperity of one is the prosperity of the other. In reality, all problems may be resolved into one great one. The parts are all interrelated one with another. The solution of one helps in the solution of another, and so on.

Machinery is accomplishing in the world what man has failed to do by preaching, propaganda, or the written word. The airplane and radio know no boundary. They pass over the dotted lines on the map without heed or hindrance. They are binding the world together in a way no other systems can. The motion picture with its universal language, the airplane with its speed, and the radio with its coming international programme—these will soon bring the whole world to a complete understanding. Thus may we vision a United States of the World. Ultimately, it will surely come!

[…]

NOTES

1. "Ford, Henry," *Encyclopædia Britannica*, < http://www.britannica.com/eb/article?_eu=117255>, (accessed 22 December 2002).
2. Terry Smith, *Making the Modern: Industry, Art, and Design in America* (Chicago: University of Chicago Press, 1993): 47.

1930

Fortune, "Color in Industry"

Fortune magazine was founded by the American Henry Luce (1898–1967), who also published *Time* and *Life* magazines. *Fortune* was a business publication aimed at sophisticated leaders of industry; its $1.00-per-copy price tag, a hefty sum during the lean years of the Great Depression, kept its readership exclusive and helped to defray the expense of the numerous full-color illustrations that graced its pages. *Fortune* prided itself on providing well-written and well-researched reports—accompanied by exceptional photography and artwork—on the latest developments in industry. This anonymous essay from the very first issue of *Fortune* discusses the importance of color in product design.

Excerpted from "Color in Industry," *Fortune* (February 1930): 85–86. Reprinted by permission of *Fortune*.

Consider, for a moment, a red bed. Red is a common color and a bed is a fundamental article of furniture. Yet the combination of the two had, until very recently, almost a startling effect. Grandmother, perhaps, would have thought a red bed immoral. Mother would have considered it at least peculiar. Nearly anyone in, say, 1920, would have expected to find only a Red in a red bed.

Yet, within the past five or six years, thousands of red beds have blossomed in corresponding thousands of American bedrooms. Also have arrived blue beds, green beds, yellow beds, purple beds, mauve beds, and blue, green, yellow, purple and mauve bedspreads to cover them. There is now nothing startling about color in the bedroom—although architecture remains drably monotone. For during the past few years a great pail has up-ended itself over the American scene, has splashed our household goods and gods with a rich, warm stream of flat, bright color.

Remember, for contrast's sake, the home of 1920 and of 1925. Here there were chiefly natural colors. Kitchen and bathroom were a porcelain and surgical white. Furniture was in natural wood tints, surfaced with colorless finish. The stove was black. Faucets were metallic. Things were, so to speak, as God made them—each object deriving its color from the material of which it was fashioned. Even the family car was black, or some dull, dark color allied to blackness. In the nursery, perhaps, Junior possessed and treasured a blue horse. Only in the nursery, however, was such a contradiction of nature permissible.

Turn now to the thoroughly painted home of 1928. Here so utilitarian an object as a sink was purchased from a color range of T'äng Red, Orchid of Vincennes, Royal Copenhagen Blue, Ivoire de Medici, St. Porchaire Brown, Rose du Barry, Ionian Black, Clair de Lune Blue, Ming Green and Meissen White. In the cellar stood a Redflash Boiler, more crimson than

the flames in the adjacent furnace. On the door of the orange refrigerator was perched a bright green parrot. Not only the dishes, but the pots and pans were decked in bright gay tints and tones. A green-tiled bathroom was set off with green tub, green towels and, monstrously enough, green toilet paper. For afternoon tea there were blue glasses and a yellow cloth. A yellow alarm clock—a cherry garbage can—a scarlet typewriter—surfaces had turned suddenly into palettes. Nor had such staples as chairs, desks and tables missed submergence in color's rising tide. As for automobiles—the autumn woods showed no more varied or more brilliant plumage.

The aesthetic value of all this decoration was, in many instances, open to question and, in its more extreme vagaries, color suffered from the fevered and fleeting qualities of a fad. Yet in a country so long committed to the proposition that where there is beauty there is decadence, the acceptance of color was undoubtedly significant from the standpoint of old traditions being abandoned and old suppressions being released.

[…]

1930

Sigmund Freud,Civilization and Its Discontents

The Austrian Sigmund Freud (1856–1939), the founder of the field of psychoanalysis, wrote as provocatively about human society as he did about the human mind. In his 1930 book, *Civilization and Its Discontents*, he compared the cultural development of civilizations to the psychic development of individuals. Freud's comments about the roles of technology and hygiene in human societies are particularly fascinating, given the dramatic increases in the levels of both during his lifetime. (The theory of antisepsis, for example, which was developed during Freud's childhood, became universally accepted in the early twentieth century.)

[…]

During the last few generations mankind has made an extraordinary advance in the natural sciences and in their technical application and has established his control over nature in a way never before imagined. The single steps of this advance are common knowledge and it is unnecessary to enumerate them. Men are proud of those achievements, and have a right to be. But they seem to have observed that this newly-won power over space and time, this subjugation of the forces of nature, which is the fulfilment of a longing that goes back thousands of years, has not increased the amount of pleasurable satisfaction which they may expect from life and has not made them feel happier. From the recognition of this fact we ought to be content to conclude that power over nature is not the *only* precondition of human happiness,

just as it is not the *only* goal of cultural endeavour; we ought not to infer from it that technical progress is without value for the economics of our happiness. One would like to ask: is there, then, no positive gain in pleasure, no unequivocal increase in my feeling of happiness, if I can, as often as I please, hear the voice of a child of mine who is living hundreds of miles away or if I can learn in the shortest possible time after a friend has reached his destination that he has come through the long and difficult voyage unharmed? Does it mean nothing that medicine has succeeded in enormously reducing infant mortality and the danger of infection for women in childbirth, and, indeed, in considerably lengthening the average life of a civilized man? And there is a long list that might be added to benefits of this kind which we owe to the much-despised era of scientific and technical advances. But here the voice of pessimistic criticism makes itself heard and warns us that most of these satisfactions follow the model of the 'cheap enjoyment' extolled in the anecdote—the enjoyment obtained by putting a bare leg from under the bed-clothes on a cold winter night and drawing it in again. If there had been no railway to conquer distances, my child would never have left his native town and I should need no telephone to hear his voice; if travelling across the ocean by ship had not been introduced, my friend would not have embarked on his sea-voyage and I should not need a cable to relieve my anxiety about him. What is the use of reducing infantile mortality when it is precisely that reduction which imposes the greatest restraint on us in the begetting of children, so that, taken all round, we nevertheless rear no more children than in the days before the reign of hygiene, while at the same time we have created difficult conditions for our sexual life in marriage, and have probably worked against the beneficial effects of natural selection? And, finally, what good to us is a long life if it is difficult and barren of joys, and if it is so full of misery that we can only welcome death as a deliverer?

It seems certain that we do not feel comfortable in our present-day civilization, but it is very difficult to form an opinion whether and in what degree men of an earlier age felt happier and what part their cultural conditions played in the matter. […]

It is time for us to turn our attention to the nature of this civilization on whose value as a means to happiness doubts have been thrown. We shall not look for a formula in which to express that nature in a few words, until we have learned something by examining it. We shall therefore content ourselves with saying once more that the word 'civilization' describes the whole sum of the achievements and the regulations which distinguish our lives from those of our animal ancestors and which serve two purposes—namely to protect men against nature and to adjust their mutual relations. […]

[…] We recognize as cultural all activities and resources which are useful to men for making the earth serviceable to them, for protecting them against the violence of the forces of nature, and so on. As regards this side of civilization, there can be scarcely any doubt. If we go back far enough, we find that the first acts of civilization were the use of tools, the gaining of control over fire and the construction of dwellings. Among these, the control over fire stands out as a quite extraordinary and unexampled achievement, while the others opened up paths which man has followed ever since, and the stimulus to which is easily guessed. With every tool man is perfecting his own organs, whether motor or sensory, or is removing the limits to their functioning. Motor power places gigantic forces at his disposal, which, like his muscles, he can employ in any direction; thanks to ships and aircraft neither water nor air can hinder his

movements; by means of spectacles he corrects defects in the lens of his own eye; by means of the telescope he sees into the far distance; and by means of the microscope he overcomes the limits of visibility set by the structure of his retina. In the photographic camera he has created an instrument which retains the fleeting visual impressions, just as a gramophone disc retains the equally fleeting auditory ones; both are at bottom materializations of the power he possesses of recollection, his memory. With the help of the telephone he can hear at distances which would be respected as unattainable even in a fairy tale. Writing was in its origin the voice of an absent person; and the dwelling-house was a substitute for the mother's womb, the first lodging, for which in all likelihood man still longs, and in which he was safe and felt at ease.

[…] Man has, as it were, become a kind of prosthetic God. When he puts on all his auxiliary organs he is truly magnificent; but those organs have not grown on to him and they still give him much trouble at times. Nevertheless, he is entitled to console himself with the thought that this development will not come to an end precisely with the year 1930 **A.D**. Future ages will bring with them new and probably unimaginably great advances in this field of civilization and will increase man's likeness to God still more. But in the interests of our investigations, we will not forget that present-day man does not feel happy in his Godlike character.

We recognize, then, that countries have attained a high level of civilization if we find that in them everything which can assist in the exploitation of the earth by man and in his protection against the forces of nature—everything, in short, which is of use to him—is attended to and effectively carried out. […] We [also] require civilized man to reverence beauty wherever he sees it in nature and to create it in the objects of his handiwork so far as he is able. But this is far from exhausting our demands on civilization. We expect besides to see the signs of cleanliness and order. We do not think highly of the cultural level of an English country town in Shakespeare's time when we read that there was a big dung-heap in front of his father's house in Stratford; we are indignant and call it ‘barbarous’ (which is the opposite of civilized) when we find the paths in the Wiener Wald[1] littered with paper. Dirtiness of any kind seems to us incompatible with civilization. We extend our demand for cleanliness to the human body too. We are astonished to learn of the objectionable smell which emanated from the *Roi Soleil*;[2] and we shake our heads on the Isola Bella[3] when we are shown the tiny wash-basin in which Napoleon made his morning toilet. Indeed, we are not surprised by the idea of setting up the use of soap as an actual yardstick of civilization. The same is true of order. It, like cleanliness, applies solely to the works of man. But whereas cleanliness is not to be expected in nature, order, on the contrary, has been imitated from her. […]

Beauty, cleanliness and order obviously occupy a special position among the requirements of civilization. No one will maintain that they are as important for life as control over the forces of nature or as some other factors with which we shall become acquainted. And yet no one would care to put them in the background as trivialities. That civilization is not exclusively taken up with what is useful is already shown by the example of beauty, which we decline to omit from among the interests of civilization. The usefulness of order is quite evident. With regard to cleanliness, we must bear in mind that it is demanded of us by hygiene as well, and

we may suspect that even before the days of scientific prophylaxis the connection between the two was not altogether strange to man. Yet utility does not entirely explain these efforts; something else must be at work besides.

[…]

[…] The development of civilization appears to us as a peculiar process which mankind undergoes, and in which several things strike us as familiar. We may characterize this process with reference to the changes which it brings about in the familiar instinctual dispositions of human beings, to satisfy which is, after all, the economic task of our lives. A few of these instincts are used up in such a manner that something appears in their place which, in an individual, we describe as a character-trait. The most remarkable example of such a process is found in the anal erotism of young human beings. Their original interest in the excretory function, its organs and products, is changed in the course of their growth into a group of traits which are familiar to us as parsimony, a sense of order and cleanliness—qualities which, though valuable and welcome in themselves, may be intensified till they become markedly dominant and produce what is called the anal character. How this happens we do not know, but there is no doubt about the correctness of the finding. Now we have seen that order and cleanliness are important requirements of civilization, although their vital necessity is not very apparent, any more than their suitability as sources of enjoyment. At this point we cannot fail to be struck by the similarity between the process of civilization and the libidinal development of the individual. Other instincts [besides anal erotism] are induced to displace the conditions for their satisfaction, to lead them into other paths. In most cases this process coincides with that of the *sublimation* (of instinctual aims) with which we are familiar, but in some it can be differentiated from it. Sublimation of instinct is an especially conspicuous feature of cultural development; it is what makes it possible for higher psychical activities, scientific, artistic or ideological, to play such an important part in civilized life. If one were to yield to a first impression, one would say that sublimation is a vicissitude which has been forced upon the instincts entirely by civilization. But it would be wiser to reflect upon this a little longer. In the third place, finally, and this seems the most important of all, it is impossible to overlook the extent to which civilization is built up upon a renunciation of instinct, how much it presupposes precisely the non-satisfaction (by suppression, repression or some other means?) of powerful instincts. This ‘cultural frustration’ dominates the large field of social relationships between human beings. As we already know, it is the cause of the hostility against which all civilizations have to struggle. It will also make severe demands on our scientific work, and we shall have much to explain here. It is not easy to understand how it can become possible to deprive an instinct of satisfaction. Nor is doing so without danger. If the loss is not compensated for economically, one can be certain that serious disorders will ensue.

[…]

NOTES

1. The woods around Vienna.
2. The “Sun King,” Louis XIV of France (1643–1715), who was reputed to have bathed only twice in his life, both times on doctor's orders.
3. An island in Lake Maggiore, Italy.

1932

Earnest Elmo Calkins, "What Consumer Engineering Really Is"

Earnest Elmo Calkins (1868–1964), head of the New York advertising firm Calkins and Holden, was probably the single most prominent American advertiser of the 1920s and 1930s. He and his partner Ralph Holden billed their firm as a "modern" ad agency, emphasizing the importance of good design in print advertisements, packaging, and promotional materials. Calkins wrote extensively about advertising and product design, and promoted "artificial obsolescence" as an answer both to the economic woes of the Great Depression and to the question of how to increase Americans' standard of living (artificial obsolescence, of course, was a strategy that came under fire in subsequent years for being wasteful and environmentally irresponsible). In these excerpts from the introduction to *Consumer Engineering*, a book written by industrial designers Roy Sheldon and Egmont Arens, Calkins argues in favor of this "new business science," whose task was to ensure that Americans consumed as many products as the factories could make.

The newest business tool to receive a definite name is what has come to be known as consumer engineering. Briefly it is shaping a product to fit more exactly consumers' needs or tastes, but in its widest sense it includes any plan which stimulates the consumption of goods.

[…]

This was the situation in 1929. The making and selling of goods had reached a maximum pitch of efficiency. We were riding on a high wave of prosperity. Suddenly the nation received a shock. The collapse of the stock market stunned everybody. It paralyzed the spirit of free spending that had prevailed for several years.

Many stopped buying while still able financially to continue, and many are still able but restrained by fear and misplaced thrift. The sudden cessation of buying slowed up the entire industrial machine. Retail storekeepers curtailed orders to factories. Factories cut down production, reduced wages, laid off men, still further reducing the number of customers for goods. In a comparatively short time, with all the resources of the country still intact, we had depression. There were no longer enough buyers for the large quantities of goods we had learned to make and distribute so abundantly.

[…]

Strange as it may seem, a definite program for adapting goods to the needs and desires of the people who buy them is a comparatively new thing. In the early days the manufacturer decided what he would make, what color or design, how large the unit of quantity, every detail. There it was. The consumer could take it or leave it. Goods were not intelligently adapted to their markets even in those days, and certainly have not been coordinated with the changing habits of the people. The revolution in everyday living in the years since the war has been

amazing. The manufacturers of some goods have kept pace with it, but the majority have ignored it. Take so simple a matter as the hunger for color and design in old familiar standardized articles that has arisen no one knows how. Note how successfully a few manufacturers have catered to this budding sense of beauty and made their products newly acceptable. It is going on all around you. Heaters, bathtubs, linoleums, kitchen ware, fountain pens, and typewriters. If you could put them beside the ugly counterparts of yesterday you would be astonished at the improvement. Sensing this growing demand for better taste in machine-made products is one of the earlier and simpler forms of consumer engineering.

[…]

Obsoletism is another device for stimulating consumption. The element of style is a consideration in buying many things. Clothes go out of style and are replaced long before they are worn out. That principle extends to other products—motor-cars, bathrooms, radios, foods, refrigerators, furniture. People are persuaded to abandon the old and buy the new to be up-to-date, to have the right and correct thing. Does there seem to be a sad waste in the process? Not at all. Wearing things out does not produce prosperity, but buying things does. Thrift in the industrial society in which we now live consists of keeping all the factories busy. Any plan which increases the consumption of goods is justifiable if we believe that prosperity is a desirable thing. If we do not, we can turn back the page to earlier and more primitive times when people got along with little and made everything last as long as possible. We have built up a complicated industrial machine and we must go on with it, or throw it into reverse and go backward.

"In the light of all the facts, which seem inescapable," says Robert P. Scripps, editorial director of the Scripps-Howard newspapers, "this conclusion seems inevitable: that unless we are going to break up the machines, put the scientists in jail, and generally try to make our clocks run in reverse, the only balance to increase potential per-capita production can be increased per-capital spending, or leisure, or a combination of both."

[…]

We have seen in a comparatively short time a complete reversal of much of the garnered economic wisdom of the centuries. Many of the old copy-book maxims have been scrapped. We have learned that prosperity lies in spending, not in saving. For years we thought that low-cost labor increased the profits of manufacture. Now we know that highly paid labor produces greater profits, and the highly paid laborers furnish the customers. The increased profits come from increased production made possible by increased consumption. With his wages and his dividends the workman buys more goods, products of his own and other factories, a cooperative arrangement of the highest potential significance. *Any interruption of this perfect balance is the concern of the whole industry, for it means that the supply of consumers is threatened.* We engineered an adequate supply of goods. We can engineer an adequate supply of customers. Unemployment means underconsumption, and underconsumption means the consumer is not buying. The cause may be that the goods are obsolete, or merely that the consumer has no money, but it is the duty of the consumer engineer to find the cause and remedy it. "Overproduction," says Henry Ford, "means something out of date."

[…]

Consumer engineering is the new business science. Some would call it Direction of Distribution, but that does not go far enough. I prefer the term that suggests the scientific approach. Distribution once meant merely getting the goods stocked in the retail store. Today our thinking has advanced to that point where by distribution we mean actually in the hands of the consumers. But even that is too static for this rapid-paced age. Are the consumers consuming them fast enough? Goods fall into two classes, those we use, such as motor-cars or safety razors, and those we use *up*, such as toothpaste or soda biscuit. Consumer engineering must see to it that we use *up* the kind of goods we now merely use. Would any change in the goods or the habits of people speed up their consumption? Can they be displaced by newer models? Can artificial obsolescence be created? Consumer engineering does not end until we can consume all we can make.

[…]

1934

Alfred H. Barr, Jr. and Philip Johnson,Machine Art

The American art historian Alfred H. Barr, Jr. (1902–1981) was the director of the Museum of Modern Art, New York, from its founding in 1929 to his retirement in 1967. Few other curators have had so profound an influence on—or so powerful a hand in shaping the direction of—the history of art. In the groundbreaking 1934 show, *Machine Art*, Philip Johnson (1906–), the curator of the Department of Architecture, exhibited functional industrial products such as ball bearings, springs, and propellers alongside "machine age" decorative arts. The purpose of the exhibition was apparently to foster what Barr called in the foreword an "appreciation of their beauty in the platonic sense."

Technical and Material Beauty.

In addition to perfection of shape and rhythm, beauty of surface is an important aesthetic quality of machine art at its best. Perfection of surface is, of course, made possible by the refinement of modern materials and the precision of machine manufacture. A watch spring is beautiful not only for its spiral shape but also for its bright steel surface and its delicately exact execution.

Machine art, devoid as it should be of surface ornament, must depend upon the sensuous beauty of porcelain, enamel, celluloid, glass of all colors, copper, aluminum, brass and steel. The circles and spheres of a ball bearing (No. 50) are greatly enhanced by the contrasting surfaces of brushed steel races, shining polished steel balls, and brass carriers.

Visual Complexity.

The beauty in machine art as in all art varies in relation but not in proportion to its complexity. A watch crystal, perfect though it may be, is too simple a form to hold our visual interest for

long. A printing press, on the other hand, is too complicated an arrangement of shapes for the human eye to enjoy aesthetically. Moderately simple machine compositions such as the door of a wall safe (No. 91) or the microscope (No. 314) or our classical example, the ball bearing (No. 50) prove more satisfactory.

Function.

A knowledge of function may be of considerable importance in the visual enjoyment of machine art, though Plato might have considered such knowledge an impurity. Mechanical function and utilitarian function—"how it works" and "what it does"—are distinct problems, the former requiring in many cases a certain understanding of mechanics, the latter, of practical use. Whoever understands the dynamics of pitch in propeller blades (No. 41) or the distribution of forces in a ball bearing (No. 50) so that he can participate imaginatively in the action of mechanical functions is likely to find that this knowledge enhances the beauty of the objects. In the same way, using or understanding the use of, the calipers (No. 294), the retort (No. 394), or the rotary floor polisher (No. 71) is likely to increase their aesthetic value.

Fortunately the functional beauty of most of the objects is not obscure and in any case, so far as this exhibition is concerned, appreciation of their beauty in the platonic sense is more important.

[…]

A. H. B., Jr.

[…]

The Scope of the Exhibition

The Exhibition contains machines, machine parts, scientific instruments and objects useful in ordinary life. There are no purely ornamental objects; the useful objects were, however, chosen for their aesthetic quality. Some will claim that usefulness is more important than beauty, or that usefulness makes an object beautiful. This Exhibition has been assembled from the point of view that though usefulness is an essential, appearance has at least as great a value.

The Exhibition cannot be exhaustive. The very number of useful objects and machines made it impossible even to cover the whole field in making the choices. Exigencies of space prohibited many large items. Inaccessibility prevented choosing items locally distributed in the Far and Middle West. Yet the Exhibition tries to be representative. Some fields, the kitchen and the laboratory, for example, are more fully present than others. This is because the nineteenth century did not consider these objects worthy of decorative treatment.

For the convenience of the reader and the visitor to the Exhibition, the list of objects is divided according to use into six categories.

1. **Industrial units:** Machines and machine parts: springs, insulators, cable sections, propeller blades, etc.
2. **Household and office equipment:** Sink, furnace, bathroom cabinets, dishwasher, carpet

sweeper and business machines.

3. **Kitchenware**
4. **House furnishings and accessories:** Objects used in daily life: tableware, vases and bowls, smoking accessories, lighting fixtures, and furniture.
5. **Scientific instruments:** Precision, optical, drafting and surveying instruments.
6. **Laboratory glass and porcelain:** Beakers, hydrometer jars, petri dishes and boiling flasks.

[P. J.]

1934

Norman Bel Geddes, "Streamlining"

The American Norman Bel Geddes's (1893–1958) first claim to fame was as a designer of innovative stage sets; however, he also worked in the fields of illustration, interior design, exhibition design, and, most notably, industrial design. Like Buckminster Fuller, in the 1930s, Bel Geddes produced many plans and predictions for future products, transportation forms, and technologies, a number of which have been—albeit in slightly altered form—realized over the course of the twentieth century. In the 1930s, Bel Geddes was a major proponent of streamlining, and in these excerpts from his 1934 *Atlantic Monthly* article on that subject, he examined its origins, applications, and possibilities.

Excerpted from Norman Bel Geddes, "Streamlining," *Atlantic Monthly* (November 1934): 553, 556–8. Reprinted by permission of the Estate of Edith Luytens Bel Geddes.

Originally, the word 'streamline' was a term of hydrodynamics. About the year 1909 the science of aerodynamics borrowed it to describe smooth flow of air as well as the form of a body which would move through air with a minimum of resistance. For some years 'streamline' in its aerodynamic sense enjoyed honorable obscurity in the physics laboratory and the shop talk of engineers. Last year, however, advertising copy writers seized upon it as a handy synonym for the word 'new,' using it indiscriminately and often inexactly to describe automobiles and women's dresses, railroad trains and men's shoes. Into such general use has the word come that it is, perhaps, time to examine its meaning and its implications.

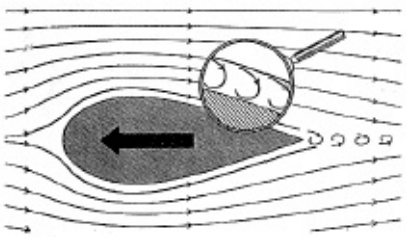

Fig. 1 — The boundary layer follows the form of a streamlined body

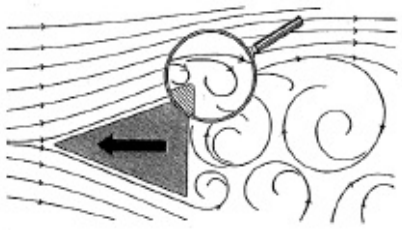

Fig. 2 — The boundary layer breaks away from a non-streamlined body

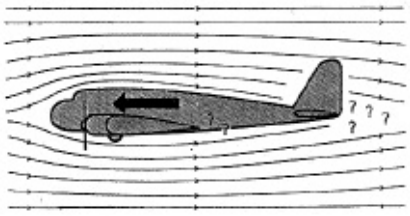

Fig. 3 — Airplane streamlining is very effective. There are few places where the flow pattern is uncertain

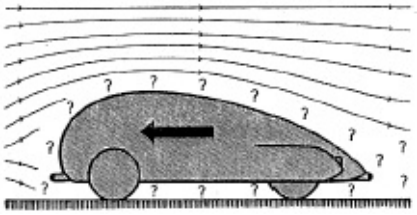

Fig. 4 — The ground effect makes the flow pattern around a motor car a matter of conjecture at best

The truth of the matter is that very little is known about streamlining. Most of the popular explanations have treated it as though the facts were established and accepted, and in this respect some technical treatises have not been without fault. Streamlining as a science has not yet really been born. Its practical development in aeronautics has been highly effective, but not understood. In other fields, both in theory and in practice, it is still in embryo.

[…]

In spite of the hiatus here and there in the theory, parasite drag in the airplane has been eliminated to an amazing degree by the empirical method, and airplane streamlining can be considered to be approaching practical perfection. In 1918 a 400-horsepower motor drove a plane at 125 miles per hour. To-day the equivalent power in a comparable plane would produce a speed of perhaps 200 miles per hour.

In the scientific sense, streamlining, so highly developed in the airplane, has made but little progress in the motor car, the railroad train, and the steamship, all of which stand to gain in efficiency, riding comfort, and economy when drag is reduced. Though streamline attempts have been made in several trains and motor cars, their influence on drag is open to question. In the American mass-production automotive fields, only the Chrysler and De Soto can be considered as pointing toward authentic streamline form. Nevertheless the significance of these two cars lies not in their streamline efficiency but in the foresight and courage shown by Walter P. Chrysler in departing abruptly from traditional attitudes of appearance. What the

scientifically streamlined automobile will look like can merely be assumed within fairly broad limits, but it will certainly bear little resemblance to the car of to-day. The weaning of public taste from its illogical prejudices in the matter of appearance is paving the way for whatever form will best meet the automobile's requirements.

It has become fashionable of late to predict what streamlining will do for the motor car and the train. Unusually high speeds have been foreseen and practically no fuel consumption at all. While it is perfectly reasonable to expect a great deal from streamlining, the fact remains that its possibilities in the automobile and the train have been viewed through glasses made rose-color by the experience of aeronautics. Because of two factors not encountered in the free flight of an airplane, present knowledge does not assure us that the airplane's great success in overcoming parasite drag will be easily repeated in a vehicle moving in contact with the ground. […]

[…]

From the technical point of view, then, streamlining of the motor car must reduce resistance to the air, both head-on and from the side, and must maintain present stability or improve it. The first and simplest step, and the one which is now under way, is the elimination of protuberances—headlights, fenders, door hinges, spare tires. Clean continuous lines from front to rear would aid in reaching all the objectives. The second and certainly equally important step is the development of the form. It is probable that this form will be a compromise, for it is extremely unlikely that any single solution can ideally satisfy all requirements. More than that cannot intelligently be said at the present time, nor can the form be foretold until the advent of sound data specific to the motor car, or until theory becomes more complete.

The technical requirements are not the only ones, however, and it is to be expected that further compromises will be necessary to provide convenience and comfort—two factors that are becoming increasingly important as the car ceases to be an article of sporting equipment and takes its place with the stove and the toothbrush as a normal commodity. […]

[…]

1935

Marcy Babbitt, “As a Woman Sees Design: An Interview with Belle Kogan”

Little is known about Marcy Babbitt—she seems not to have published extensively in the 1930s—but the subject of her article, the Russian-born American Belle Kogan (1902–2000), was one of the first women to adopt the new title of “industrial designer.”[1] After designing metalwork for the Quaker Silver Company in the 1920s, she opened her own design firm in 1931 in New York City; her clients included Red Wing Pottery, Bausch and Lomb, Boonton Molding, Libbey Glass, and Dow Chemical.[2] In this interview, Kogan outlines some of the design possibilities of plastics, and comments on the roles and responsibilities of the industrial designer.

Excerpted from Marcy Babbitt, “As a Woman Sees Design: An Interview with Belle Kogan,” *Modern Plastics*, vol. 13, no. 4 (December 1935): 16–17, 49, 51. Reprinted by permission of *Modern Plastics*, a publication of Chemical Week

"In plastics the manufacturer has a material with tremendous possibilities," says Miss Kogan. "It is still in the active process of growth and development, but is rapidly gaining its stride. It is a material which no manufacturer, if he be alert and watchful of his competition, can afford to overlook. Radios, clocks, dishes, jewelry—all being developed in plastics today—have an enormous significance.

"Laboratory staffs and engineers are working toward a greater perfection of materials and compositions; for a finer classification of types of plastics; for a more practical and workable substance for molding and shaping larger sizes. It is inevitable that in the near future the world of manufacture will engage in a huge business of plastics—a business unconceived ten or even five years ago.

"But the thing which needs most to be understood by the manufacturer—particularly at this stage of our commercial development—is that the sale of any product is greatly determined by the reaction of the feminine consumer."

In considering the marketing and merchandising of any commodity, the modern manufacturer is confronted with the problem of pleasing the American housewife. Thirty million women—all potential customers—constituting practically the entire buying structure of the nation—comprise a force which cannot or should not be disregarded. The tastes of the American woman, her reaction to color and form, are of vital importance to the manufacturer.

And to those manufacturers who are using or who are planning to use plastics in the production of commodities, the feminine viewpoint is one to be studied closely, to be understood, to be coddled. Objects are being produced now in plastics which demand improved design before they can enjoy a wider consumer acceptance. Other things cry out for creation, which have not yet been conceived by any manufacturer.

No matter what the object is—whether an article already in manufacture or one soon to be produced—it must be styled for its appeal to women if the manufacturer wants a sales success. Articles manufactured in mass production for a popular priced market demand a knowledge of feminine buying psychology.

Today there is probably no one group more keenly alive to the caprices and demands of the buying public as industrial designers[.] The designer's viewpoint, therefore, is a valuable one from the basis of manufacture as well as from the basis of merchandising and selling. It is a broad conception of consumer[s'] desire.

"The women of today," says Miss Kogan, "those who belong to the middle classes (and these are the women who comprise the greatest group of consumers) want attractive things, things which are smart and things which are new. They are still interested in keeping up with the "Joneses." Items, to be readily acceptable[,] cannot, however, be too extreme in design. Such items do not fit into the average home, decorated as it is, with objects which are not too modern or severe in color or form.

"In designing for mass production, the designer must be aware of two things. First, he or she must know who the ultimate consumer is likely to be. Secondly, in designing for a popular priced market, there must be a realization of the limit to what can be done with color and form,

and the designer must confine his designs within these limitations. Designs must be practical, not only for satisfactory manufacture, but practical from the standpoint of their utilitarian appeal to the public."

In questioning Miss Kogan as to her definition of the word "practical," she said: "Any device which will help a manufacturer to sell more goods can be defined as 'practical'."

[…]

As an artist, Miss Kogan is naturally sensitive to color and form. She deplores each error of design where plastics are misused. "It is most unfortunate, indeed, that manufacturers fail to take full advantage of plastic materials in creating new designs. There is too strong a tendency to imitate the materials used previously or at least to imitate their form and design. It should be realized that with new materials which can be so cleverly molded and machined, new forms are not only possible but are to be desired, and we must try to discover these new applications," she declares.

[…]

In spite of an occasional impatience with what she considers "lost opportunities" in plastic design, Miss Kogan believes the plastic field has gone through a relatively short period of bad design. There has been very little static acceptance of the material, both from a design and a manufacturing viewpoint. In general, both designer and manufacturer have felt that with a new material they must do new and interesting things. The host of articles on the market today, which employ plastics in an ingenious and clever manner, are witness to the excellent treatment given to the material.

[…]

NOTES

1. No entries appear under the name Marcy Babbitt in the *Industrial Arts Index*, the *Art Index*, or the *Reader's Guide to Periodical Literature* during the 1930s.
2. Ella Howard and Eric Setliff, "In a Man's World: Women Industrial Designers," in *Women Designers in the USA, 1900–2000: Diversity and Difference*, edited by Pat Kirkham (New Haven: Yale University Press/Bard Graduate Center, 2000): 271–3.

1936

Fortune, "What Man Has Joined Together …"

This anonymous essay from the American magazine *Fortune* (see the introduction to "Color in Industry," 1930) challenged the widespread notion that the "Plastic Age" had arrived. Its writer explored the reasons for the popularity of plastics in some industries and their lack of impact in others, claiming—somewhat surprisingly—that ultimately plastics had failed to live up to their promise.

Excerpted from "What Man Has Joined Together …," *Fortune* (March 1936): 69, 149–150. Reprinted by permission of *Fortune*.

Only God can make a tree—and for that matter, until half a century ago, the divine monopoly on primary substances was almost universal. Man had learned how to make a great number of *things*, but for his solid materials he was mostly dependent on such natural products as stone, wood, and the metals. One outstanding exception to this rule was glass, a material of primary character altogether different in kind and function from the materials that went into it. And there were a few other such. But, by and large, industry was tied to the earth's apron strings and had never dreamed of creating a material world of its own.

[…]

The synthetic plastic, therefore, is a glamorous substance and a tribute to the powers of man. In the light of it the layman has been taught to believe that an age of plastics is at hand. There is a widespread impression that plastics have been making phenomenal industrial progress; that they are about to supersede glass, wood, porcelain, rubber, and even metal; that, in short, instead of being conditioned by the demands of industry, they have reached a point where they themselves can condition those demands. […]

[…]

Now in spite of their remarkable depression record, plastics, as we have already said, have fallen far short of the future that was predicted for them by the prophets of the Plastic Age. Perhaps the prophets were too sanguine, or perhaps the manufacturers have not made the most of their opportunities; no one knows because an appraisal has never been made. Why, for instance, is a lamp globe or a scale housing made of a plastic while a typewriter chassis and most doorknobs are not? Why are gears for machinery only *sometimes* made of plastic? Are plastics, in their various branches, universal materials capable of displacing all others?

One cannot hope to answer these questions while the industry is so young. One can, however, lay down some generalities. When a plastic is substituted for some other material it is always for one of three reasons: (1) it may possess physical properties, other than color, that make it practically indispensable almost regardless of relative cost, as with most of the electrical applications of the phenolics; (2) it may be cheaper than the material it replaces, as with the Celluloid toilet sets in the place of ivory or amber; (3) it may have some desirable qualities, such as color, lightness, finish, nonconductivity of electricity, or, as with dentures, [non]conductivity of heat that make it preferable even at a fractionally higher cost but not beyond a certain differential.

When, on the other hand, an article which obviously *might* be made of plastics is not, there are also three broad reasons: (1) greater cost without countervailing advantages over the traditional material, as with a filing cabinet or a desk; (2) mechanical limitations which may be absolute, as is the present impossibility of molding a turret top for an automobile, or relative, as in the case of the typewriter frame, which could be made of a plastic if the advantages in so doing justified reëngineering the typewriter so that its frame would be sufficiently simple to be a moldable piece; and (3) the remoteness of most of the manufacturers of plastic materials from the ultimate user of plastic objects, which inhibits promotion and sales. An ideal article for plastics is the doorknob, but the hardware and lock industries have such big investments in machinery for metal doorknobs that they will not change, and there is little that the plastics manufacturer can do about it.

Among the properties of plastics that make them preferable to other materials but not indispensable, color comes first. But no industrial revolution is going to be based on color alone. The reason that the future looks bright for cellulose acetate is because it not only takes color but it also has wide fabricating possibilities. Its invasion of the automotive field illustrates the substitution of a plastic for another material even though it costs more, mainly because it looks better. […]

Styling, next to color, is another quality that opens up markets to plastics even though at higher cost. And here even the serious-minded molded phenolics get their share of benefit. For example, during the depression manufacturers of toilet goods and cosmetics turned to dressing up their packaging for greater sales appeal, with plastic bottle tops to take the place of tin and cork. Drug manufacturers started the ball rolling by using molded phenolics for their closures, although Durez and Bakelite bottle tops then cost four times as much as metal.

Finally there are those applications in which plastics, once perhaps only better than something else, have become indispensable or irreplaceably superior. They include, for example, automobile distributor heads, radio parts, telephone receivers, and the like. Eliminate molded phenolics, bring back hard rubber in their place, and you would have a regression in automotive and electrical technology. In the same way urea, which is today simply a desirable material for scale housings, may be irreplaceable tomorrow in the scale industry.

Plastics are not even potentially a universal material, and a Plastic Age, in the sense that we have had a Steel Age, is more or less of a myth. Given a little time, however, the semblance of it may come about.

1940

Harold Van Doren, "The Designer's Place in Industry"

Harold Van Doren (1895–1957), an American, was profiled in a February, 1934 *Fortune* magazine article—along with luminaries such as Walter Dorwin Teague, Raymond Loewy, and Henry Dreyfuss—as a promising member of the "new" profession of industrial design. In 1940, Van Doren published what was probably the first textbook on industrial design *per se*. In these excerpts from the beginning pages of that book, Van Doren outlines some of the qualities he believed to be characteristic of a good industrial designer.

Excerpted from Harold Van Doren, *Industrial Design: A Practical Guide* (New York: McGraw-Hill, 1940): 16–17, 22, 26–7. Reprinted by permission of McGraw-Hill.

If appearance design is really important to the scheme of things industrial, just where does the designer fit into that scheme and what is his relative importance? What should be his precise relationship to the various departments of the business he is serving? And how will he function within the existing framework of industry?

Art, even combined with mechanical ingenuity and merchandising spark, is still suspect

with some hard-boiled businessmen. It smacks of afternoon tea and Greenwich Village. Unfortunately there has been just enough slapdash superficiality masquerading as industrial design to give credence to their patently unjust conclusion that the entire brotherhood is a pack of incompetents.

It may be a matter of years before the designer will find his proper level in the kingdom of commerce. To picture him as the savior of industry, the fair-haired boy with the magic wand who can always make sales curves hit the ceiling, is just as false as the opposite extreme. Somewhere between the two he will find his eventual place.

Once the industrial designer had made a dent on industry, it was perhaps only natural for him to exaggerate his own importance in the scheme of things. Indeed, one might almost say that he would not be a good designer unless he had that sort of excited enthusiasm that makes salesmen sell and designers create. But in sober moments he must have realized that, important as his contribution might seem to him, its relative importance might not be so great. As a rule the artist is, and should be, only one of the gears in the train that includes management, sales promotion, advertising, engineering, research—all those departments making up the complex mechanism of modern commerce.

[…]

A designer with the multiple gifts of artistic ability, mechanical sense, and merchandising wits may become indispensable to his client if these talents are permitted full scope. He should be careful, however, not to overestimate his importance by taking the attitude that appearance and appearance alone is of value. The best designed product in the world cannot be sold without clever promotion, nor will it make a profit for its sponsor if it lacks sound engineering and has been made by uneconomical factory methods.

[…]

At his best, the designer is an animator, a builder of enthusiasm in others. He is prodigal of ideas and if one proves too costly or impractical he has another on the tip of his tongue or the point of his pencil. He is resourceful; he is familiar with the standard processes of manufacture and can always see ways of improving a product within the framework of merchandising necessity, present equipment, and reasonable cost. He is creative without being crackbrained. He is practical without being timid. He knows how to work with others, meeting executives on an equal footing and still gaining the confidence of the man on the bench.

He brings to his client a broader design point of view than a man can have when burdened with the responsibilities of everyday operation. He fully acknowledges the superior technical knowledge of the men in the client's organization. He cannot and does not presume, of course, to tell them how to do things which they have learned through years of research and experience. But, through his varied contacts, he may contribute a helpful knowledge of materials and methods gained in the plants of other clients.

Although the best industrial designer must have a genuine flair for the mechanical, he is and should be primarily an artist. The belief, however, that all artists are temperamental is pure myth. They are no more so, and probably no less, than men and women in any other walk of life. Business executives are sometimes as touchy, inconsistent, and emotionally unstable as any opera singer. Crack salesmen, too, are notoriously mercurial—up one day and down the

next. I know a brilliant engineer who resigns about once a week because of some fancied slight, then has to be cajoled out of his fit of sulks and coaxed back to his desk.

Industrial designers who take their work seriously cannot afford to play the prima donna. The successful ones work ten hours a day and throw in holidays for good measure. A few years ago our organization designed a line of machine tools to be presented at a trade show, working on a schedule figured almost to the hour. Every step of the way we kept abreast of the engineers, and twice we had to wait for them to catch up.

The designer who neither overestimates nor undervalues his importance is the one who will best serve industry. And the business man who realizes the importance of design and knows how to get the best value for his design expenditure is, other things being equal, the man who sells the most products.

1941

Eliot Noyes, *Organic Design in Home Furnishings*

The American architect, designer, curator, and critic Eliot Noyes (1910–1977) was, at various times in his life, a member of the Cambridge, Massachusetts architectural firm of Walter Gropius and Marcel Breuer; an employee of the design office of Norman Bel Geddes; the first curator of the Department of Industrial Design at the Museum of Modern Art, New York (1939–1946); and the head of his own design firm (established 1947).[1] Noyes and the graphic designer Paul Rand were largely responsible in the 1950s and 1960s for creating IBM's distinctive corporate style in architecture, products, and graphics; Noyes's ubiquitous "Selectric" typewriter of 1961 is one of the iconic designs of its era. While design curator at the MoMA, Noyes organized a furniture design competition that traveled to locations such as Kaufmann's Department Store in Pittsburgh (see introduction to Edgar Kaufmann, jr., "What is Modern Design?"). The winners of the competition, who included Charles and Ray Eames and Eero Saarinen, had their works exhibited in the 1941 MoMA show, "Organic Design in Home Furnishings." These excerpts are from Noyes's introduction to its catalog.

Excerpted from Eliot Noyes, "A Note on the Competition," reprinted by permission from *Organic Design in Home Furnishings* (©1941 The Museum of Modern Art, New York): 4.

The wonders of modern mechanism, we all know, have wrought much more than a change in our habits of life. Economics and politics and the fate of nations in war and peace are all affected by the vast recent changes in the equipment of man.

In some respects, however, we foolishly flatter ourselves. We are not as modern as we think. In private, at home, most of us still live in the clutter of inheritance from the nineteenth century. Much of this out-of-date and rigidified furniture is no longer in tune with today's esthetic requirements, and is certainly far from suitable to our needs. Through design inertia, modern mass manufacture has simply seized upon and lifelessly repeated many weary old styles that are often neither beautiful nor practical.

Obviously the forms of our furniture should be determined by our way of life. Instead, for the most part, we have had to adapt ourselves uncomfortably and unreasonably to what has happened to be manufactured. For several years the Museum of Modern Art has been studying

this problem in order to foster a collaboration between designer, manufacturer, and merchant, to fill this strange gap in the conveniences for modern existence.

On the first of October, 1940, the Museum's Department of Industrial Design inaugurated an inter-American competition for the design of furniture, fabrics, and lamps. The purpose of the contest was to discover good designers and engage them in the task of creating a better environment for today's living. Twelve important stores in major cities throughout the United States sponsored the competition and offered contracts with manufacturers as prizes to the winners, whose names appear at the beginning of the book.

A separate division of the competition was established for entrants from the other American republics […].

Under the supervision of the Museum, contracts with manufacturers were arranged for all of the first prize winners and for some of those who had received honorable mention. During the process of manufacture, the original drawings were used as the basis for larger groups of furniture, and a number of the competition winners were asked to design additional pieces to fill out these groups. And as the purpose of the competition was to select designers rather than individual pieces, arrangements were made in some cases for a winner to develop designs for production in a category other than the one in which he had received an award. All pieces were produced as closely as possible in accordance with the original designs, and modified only when necessitated by the process of manufacture.

A significant innovation was that, in the case of chairs by Saarinen and Eames, a manufacturing method never previously applied to furniture was employed to make a light structural shell consisting of layers of plastic glue and wood veneer molded in three-dimensional forms. It should be born[e] in mind, however, that the theoretical or experimental aspects of design were necessarily limited by the existing facilities of the collaborating manufacturers.

Most of the designs in production are illustrated on the following pages. As this exhibition opens at the Museum of Modern Art, the furniture which has been produced through this project is being offered for sale by the sponsoring stores, some of which have arranged special displays designed by competition winners. It is expected that other distributors will join the project at a later date.

NOTES

1. Walter Smith, “Noyes, Eliot,” *The Grove Dictionary of Art Online*, ed. L. Macy, < http://www.groveart.com>, (accessed 23 December 2002).

1950

Edgar Kaufmann, jr., *What Is Modern Design?*

The American architectural historian, curator, and critic Edgar Kaufmann, jr. (1910–1989; he preferred the “jr.” uncapitalized) was a scion of the family that owned Kaufmann's Department Store in Pittsburgh, Pennsylvania. Kaufmann's

father, Edgar Sr., commissioned Frank Lloyd Wright to design the Bear Run, Pennsylvania, house called "Fallingwater" (1934–39), probably at the urging of his son (who was briefly a member Wright's Taliesin Fellowship in 1934–35). In 1940 Kaufmann became a curator in the industrial design department at the Museum of Modern Art, New York, and directed the department from 1946 to 1948, at which time it merged with the architecture department under the leadership of Philip Johnson.[1] Kaufmann was the force behind the MoMA's influential "Good Design" exhibitions of 1950–55, which were co-sponsored by the Merchandise Mart in Chicago. Their aim was to promote good design—and good consumer taste—in everyday household objects and furnishings.

Excerpted from Edgar Kaufmann, jr., *What is Modern Design?* Reprinted by permission from *What is Modern Design?* (©1950 The Museum of Modern Art, New York): 5–9.

What Is Design?

Who can resist looking into a lighted window at night?—a glimpse of a strange room, someone's home, a way of life grasped in a flash. That glance is intensely revealing precisely because a way of life is seen in the things people live with and the way they assemble them. Through the things we choose, design becomes the expression of ourselves.

But the things we choose are already designed, and often we pick them because of their design. For the time being, let us disregard design's other aspects. *Here design will mean conceiving and giving form to objects used in everyday life.*

Design Is Expressive

Design in this sense is related to many other human activities, engineering and art in particular. Politics, economics, philosophy and science affect design and the way we look at it. That is to say, design is a central human activity, inter-locked with everything people do. Hence its exceptional capacity to epitomize the character of an age and of the people who create it.

Design Can Be Beautiful

Today, as always, people take pride in making and owning the best design of their times; not merely because design will carry the story of today into the future—their pride is one aspect of a deep, abiding pleasure which people derive from design. For design can do more than reveal the character of an age, it can be beautiful.

Design Is Different from Art and Engineering

Art, of course, can soar higher, it is able to explore and express freely man's spirit. Engineering, in its single-minded devotion to efficiency, may reach a perfection incidentally so beautiful that design and even art are influenced. These are two special kinds of achievement, and each has its devotees.

[…]

How Modern Design Developed

Modern design is the planning and making of objects suited to our way of life, our abilities, our ideals. It began a century ago when creative and perceptive people reacted to the vast

problems posed by technological change and mass production. Modern design, in a steady development since then, has taken on a number of outward forms. Along with examples of current products some of the less familiar forms are pictured here, whenever these older works have present-day significance.

Twelve Precepts of Modern Design

Out of a hundred years of development certain precepts have emerged and endured. They are generally conceded to be:

1. Modern design should fulfill the practical needs of modern life.
2. Modern design should express the spirit of our times.
3. Modern design should benefit by contemporary advances in the fine arts and pure sciences.
4. Modern design should take advantage of new materials and techniques and develop familiar ones.
5. Modern design should develop the forms, textures and colors that spring from the direct fulfillment of requirements in appropriate materials and techniques.
6. Modern design should express the purpose of an object, never making it seem to be what it is not.
7. Modern design should express the qualities and beauties of the materials used, never making the materials seem to be what they are not.
8. Modern design should express the methods used to make an object, not disguising mass production as handicraft or simulating a technique not used.
9. Modern design should blend the expression of utility, materials and process into a visually satisfactory whole.
10. Modern design should be simple, its structure, evident in its appearance, avoiding extraneous enrichment.
11. Modern design should master the machine for the service of man.
12. Modern design should serve as wide a public as possible, considering modest needs and limited costs no less challenging than the requirements of pomp and luxury.

Modern Design Is a Necessity

Modern design has become a broad, powerful movement which includes work from all over the world, wherever men try to find the appropriate constructions and character for the things required in life today.

In this highly industrialized world where democratic societies are engaged in a formidable struggle to survive, life clearly has less and less resemblance to earlier times. Designs made now in mimicry of past periods or remote ways of life (‘authentic Chippendale reproductions,’ or ‘Chinese modern’), cannot be considered as anything more than embarrassing indications of a lack of faith in our own values.

A well-established home in this country today has many requirements which were never envisaged in the designs of the past or of other civilizations. Our requirements cannot be fitted into their designs without inconvenience to ourselves and disregard for the fine

accomplishments of other peoples. Modern life demands modern design. Not because it is cheaper to acquire or less work for housekeepers than 'period styles' (though sometimes these advantages are found), but because modern design is made to suit our own special needs and expresses our own spirit.

Modern Design Makes Use of Good Ideas out of the Past

Now, as in the past, mere novelty is no key to good design. We use certain articles constantly whose forms have scarcely changed for two hundred years. Most of them have to do with eating—flatware, china and glass. Until modern designers develop fundamental improvements on them we shall pay tribute to the competence of the past in this field.

Artificial Changes of Style

In contrast to this conservative area of modern design, there exists in commerce an organized procedure to make some things appear 'out-of-date' after a season or a year. This may well stimulate trade; but in design it affects only superficial details and is more likely to confuse or distort basic values than to forward them.

Handicraft and Modern Design

There is another special condition which affects modern design. Handicraft and made-to-order design both have dwindled with the development of mass production. They have acquired the value of rarity and are prized for qualities that machine products cannot show: individuality and a warm human touch. As a means of experiment and of making preliminary models for the machine, handicraft has also proven its value in a whole new area of work.

Modern Design Is Part of a Democratic Life

But the biggest problems of modern design lie in satisfying the wants of a new kind of public. The average person now has needs and tastes molded by his status as a free individual in an industrialized world. Despite elaborate specialization our technologies have a uniform direction: our activities focus increasingly on individuals and their daily lives. *Modern design is intended to implement the lives of free individuals*.

Such an ideal leaves no room for total standardization in the furnishings of a home. Fragments of the past, for instance, are often used to accent and enrich modern rooms. Modern design for the home is more appropriately used to create an atmosphere of 'the good life' than of 'a brave new world.'

Streamlining Is Not Good Design

An exception to this may seem to be the widespread and superficial kind of design known as streamlining used to style nearly any object from automobiles to toasters. Its theme is the magic of speed, expressed in teardrop shapes, fairings and a curious ornament of parallel lines—sometimes called *speed whiskers*. The continued misuse of these devices has spoiled them for

most designers, though naturally engineers use teardrop shapes and fairings where they are efficient, on high-velocity objects.

The Future of Modern Design

Exceptions aside, there is a constantly growing public for modern design which is responsive to the world's changing requirements. The vanguard of modern design, prophetic and exploratory, will tend to shock many people and inspire a few. Daring or conservative, modern design embodies the values of our age, based on democracy and industrialization; designers seek to express these values through that direct blend of efficiency and beauty which in any age characterizes good design.

Good design in any period is simply: *the best its designers produce*. How can good design be found today among the many things available? First, it would be sensible to look for the characteristics already mentioned, a thorough merging of form and function, and an awareness of human values expressed in relation to industrial production for a democratic society. This search is not as difficult as it sounds; like any perception, it is sharpened by practice.

Form and Function in a Dining Room Table

How does one know if form and function are merged? Try looking at a wooden dining table—how is the edge of the top treated? Is it merely a practical rounding, colored to match the top surface, or an elaborate inlay and band of veneer to hide the real edge grain? Or is the natural strength of plywood (most table tops would be too heavy and expensive in solid wood, now that our techniques give good plywood) expressed by showing its neat striping? The rounded edge is functional, but does not express the beauty of the material. The veneering needlessly hides a respectable material behind the costly skill of an old handi-craft technique. *The simple declaration of the real form of the material succeeds in revealing a practical, uncomplicated, sensible beauty*. Cheaper plywoods have less regular stripings at the edge, so a good clear striping along the ends and sides of a table top would also be proof of a superior material.

How are the legs joined to the top? A good design will make a beautiful feature of the process. A poor one will depend on behind the scene strengtheners, sturdy, but ignored in the appearance of the table. How are the legs spaced? A good design will allow people to sit at the table comfortably and at the same time it will be a beautifully proportioned structure. When looking at this aspect, take into account the stretchers or other elements used to stiffen the legs and keep the table steady. How do they contribute to the whole design? Any household object, from pressure cooker to drapery fabric, can be examined in this same sense.

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The Requirements of Beauty

Besides these two stringent tests [is it sensible and attractive? Does it enhance your life?], good design may well be asked to live up to the three qualities which Thomas Aquinas listed

as requisite to beauty: integrity, clarity, harmony.

Integrity is most surely expressed in the oneness of form and function already mentioned.

Clarity is forwarded by a maxim of modern design: let all functional parts be visible and all visible parts, functional (another way of stating the unity of form and function).

Harmony may well be thought of as inward and outward. Inward harmony will be found where there is an agreeable relationship between the components of an object. Outward harmony will be found where the object is able to take its place graciously in a larger ensemble.

These rules of thumb, or similar ones, can guide the successful hunt for good design.

NOTES

1. Western Pennsylvania Conservancy, "WPC-Fallingwater," <*http://www.wpconline.org/fallingwater/family/edgar_jr.htm*>, (accessed 24 December 2002).