8 automobiles: an exhibition concerned with the esthetics of motorcar design, at the Museum of Modern Art, New York, autumn 1951
An exhibition concerned with the esthetics of motorcar design, at the Museum of Modern Art, New York, autumn 1951

This exhibition is made possible through the generosity of the Ford Motor Company, The Studebaker Corporation, Willys-Overland Motors, Inc., and the individuals who have lent automobiles.
The eight automobiles in this exhibition were chosen primarily for their excellence as works of art, although no automobile was considered for inclusion unless its mechanical performance met the highest technological standards. A second consideration was their relevance to contemporary problems of passenger car design. The older cars, dating back as much as twenty years, were chosen not to show historical progression but to show prototypes of design that are still valid today. Racing cars and limousines, and experimental or unique cars, however beautiful or historically influential, are not the concern of this presentation and therefore have not been included. Such designs are in themselves material for future exhibitions.

Automobiles are hollow, rolling sculpture. They have interior spaces corresponding to an outer form, like buildings, but the designer's esthetic purpose is to enclose the functioning parts of an automobile, as well as its passengers, in a package suggesting directed movement along the ground. This illusion of movement is inappropriate to architecture, but it is often implied by sculpture. Its successful introduction to automobile design is generally the result of one or two basic approaches. The first of them is the conception of an automobile as a box resting on wheels, and the second approach minimizes the distinction between separate parts by enclosing all of them in a single metal shell.

Reinforcement of the horizontal movement suggested by the box on wheels comes from the parts which must be added to it. But an automobile designed this way has as much to do with building and shelter as with sculpture: a motor at one end and passengers at the other determine the height of the box; the roof is lifted above the passenger compartment and the consequent opening is glazed to provide windows. The chief interest of such designs lies in the way various elements are joined to the box, in their shapes, and in their relation to each other. The Jeep, the Mercedes, and the Bentley illustrate this with different results, the Mercedes being an unusually consistent example of a box with applied parts, while the parts applied to the Bentley are themselves less...
Cisitalia: a subtly pierced and modeled metal envelope.

Cord: an American design contrasting a coffin-shaped hood with separate streamlined fenders.

The second approach emphasizes the idea of light, unencumbered movement. In its ideal version the type appears to be a single envelope covering passengers and motor as well as accessory parts. Modeling the envelope as though it were sculpture helps to indicate what has been covered. In this way surface undulations are used to describe the wheels (which may no longer be visible) or to provide a setting for lights, these mechanisms often being held within the envelope as an eye is contained in one's head. The contours of the envelope are usually influenced by aerodynamics, and a characteristic of the streamlined automobile is that it can indicate direction and movement without benefit of clarification from added parts. The envelope becomes, in effect, a metal skin on which applied decoration, like tattoo marks on the human body, would be of limited esthetic value.

The chief interest of such designs derives from what tends to contradict them: the openings which must be cut into the envelope. Their relation to each other and to the total shape of the car are indications of the designer's skill in preserving the illusion of a one piece shell. Pinin Farina's Cisitalia is perhaps the most resourceful demonstration of this approach to automobile design.

But the designer may wish to maintain a distinction between separate parts, and yet choose to treat each section as a piece of sculpture. One way to do this is to assemble a set of individually wrapped parts, each one being sharply defined by its own metal envelope. The method draws equally from the maximum articulation of parts characteristic of the Mercedes and the Bentley, and the monolithic sculptural unity of the Cisitalia. For example, the Talbot Lago consists of five distinct shapes — front and rear fenders and the passenger compartment — related to each other by a general similarity of size and contour. Color groupings can sometimes effect a further unification of these shapes, the Talbot in particular lending itself very well to this treatment.

When several independent but similar shapes are assembled in this way, the details which relate them, like openings for grilles and windows, and bumpers or other applied parts, must be evaluated chiefly for their success
in relating the larger shapes to each other, and not for their intrinsic appeal. Indifference to this fundamental distinction often leads to those rolling collections of ornamental hardware in which some startling accessory appears to be carrying the car.

The designer may choose a basic box shape for the major part of an automobile, and relate it to shapes of different sculptural character. Such designs may have great variety, and their interest generally lies in the devices, both applied and integral, which the designer may employ to unify dissimilar shapes. The Cord combines balloon-like fenders with a deliberately contrasting squared body. What all the parts have in common are rounded corners to blunt and soften the intersections of planes. This detail alone is almost enough to unify the design.

Whether it is conceived as a box, an envelope, or a collection of variously shaped parts, there is no single, fixed way to design an automobile. Even the most rational and objective program will admit of as many interpretations as there are designers. But each of these cars is characterized by a development of its parts consistent with one basic idea.

It is interesting to look at American automobiles with these ideas in mind, since so many automobiles are produced here. Processed by these tools of appraisal, the most satisfactory of them (shown in the exhibition by photographs but not by actual models) are the 1949 Ford, the 1947 Studebaker, the 1938 Lincoln Zephyr, and the 1939 Cadillac 60 Special.

The Ford treats the hoods of its motor and luggage compartments like broad fore and aft decks of a boat. The passenger compartment is centered on these decks, with its front and back windows skillfully angled to relate it to the rest of the body. Separate fenders have been completely eliminated, so that the wheels are enclosed within a single, box-like shape. Its squareness is tapered and softened to indicate direction, subtly and with restraint. Excellent doors are well related to the size of the car and to its broad lines.

The first successfully designed streamlined car in America was the Lincoln Zephyr. Its passenger and motor compartments, and the front and rear fenders, are distinct shapes
related to each other by tapering lines and sharp, prow-like leading edges. The Zephyr has an impeccable, studied elegance, enhanced by such small decorative details as the thin, linear grille and simple hub caps.

Like the Lincoln Continental, the 1939 Cadillac is a long, low car with large windows. Its additive style combines similar shapes in a sober, unaffected design. A sharp contrast to it is the more recent Muntz Jet, a fast and powerful sports car. It is a massive automobile made effective by a limited number of details, all of them in appropriate scale, though not all of them contribute equally to the merits of the design.

The Studebaker retains a box-like character though its angular fenders, and the sharply sloping rear line of the passenger compartment, are pronounced sculptural devices for giving the car a forward direction. Its arrangement of large windows is a strikingly original departure from previous models, and makes of the passenger compartment a turret-like observatory. The Studebaker was the first post World War II car to present any serious changes in automobile design.

Willys-Overland’s Jeepster, like its predecessor the famous military Jeep, is a sharply rational vehicle. Adaptations for civilian use have introduced consciously stylized details, but the Jeepster remains an extraordinarily clear-sighted demonstration of esthetic appeal derived from a closely reasoned design program.

Even though the American system of mass production does not encourage esthetic speculation, these cars contradict the claim that the American public prefers what is ugly, gross, or even vulgar. Popularity polls which pretend to discover public taste are, in reality, testing only the efficiency of advertising. It is true that the furious productivity of modern factory methods is sustained, in part, by making the automobile a symbol of wealth and social position. The value of the symbol is renewed from year to year by what is known as artificial obsolescence, forcing arbitrary changes in what may be already satisfactory designs. But quite often our automobiles fail to be enhanced by fresh applications of chromium. The dollar grin, as the American grille is known abroad, does not represent our best effort.
It is sometimes said that European automobile designers achieve so high a standard because they are preoccupied with relatively simple problems. The expensive and frivolous sports car is supposed to be easier to design than the inexpensive family-sized car. But sobriety no less than frivolity is entitled to the best, and principles of good design which happen to be applied to sports cars can, of course, be applied just as effectively to larger automobiles, whether they are for sports or family use, patiently tapped out by hand or rolled off the assembly line by the thousands.

Many European cars illustrate this. Pinin Farina's Bentley is a family-sized car matching his Cisitalia for subtlety and verve. The Simca is also based on the Cisitalia. It is a less costly sports car designed for large scale production. The Triumph, a popular British car, is a similar adjustment to technical processes, adapting the razor-edge lines of the custom built Bentley to faster, simpler fabrication. The Jaguar Mark VII is a large, five passenger car designed specifically to compete on the American market. It has many features comparable to American designs, and a remarkably well finished interior.

One of the most interesting European cars is the Volkswagen. This small, rear-engined automobile carries four passengers and is noted for its balance and maneuverability. At first sight the Volkswagen presents a somewhat disquieting contour, but the logic of its form encloses the centered passenger compartment and the front and rear hoods under a metal lid like a walnut shell, with a structural corrugation running along the center of both hoods. Fenders and other details have been treated with equal directness, chromium decoration is judiciously applied, and the reasonableness of the whole design is expressed with considerable style.

The technological skill that goes into the creation of an automobile should be accompanied by a more earnest attention to principles of design than most of the public and most professional designers have given them. An automobile is not a shop front or a new dress, however much it may be influenced by fashion, and the automobiles in this exhibition represent some of the most serious thought given in our time to the esthetics of automobile design.—A.D.
8 automobiles

1. Mercedes Lent by D. Cameron Peck
2. Cisitalia Lent by John Wheelock Freeman
3. Bentley Lent by Briggs S. Cunningham
4. Talbot Lent by Carroll Bagley
5. Jeep Lent by Willys-Overland Motors, Inc.
7. MG Lent by Sports and Utility Motors, Mamaroneck
8. Lincoln Continental Lent by Bimel Kehm
Mercedes Model SS, 1930. Manufactured by Mercedes-Benz GmbH., Untertürkheim, Germany.

Overall length 16 feet 3 inches.

The designer of the Mercedes regards an automobile as four enormous wheels carrying a box. No detail relaxes for a moment its authoritative carriage, no intransigent decoration mollifies its stern purposefulness; but for all that the Mercedes combines an extravagance of metal with quantities of hardware, in an amusingly solemn piece of stagecraft.

The Mercedes has a mighty engine, placed well behind the front wheels for technical reasons of weight distribution and steering performance. But physical bulk, justly attributed to mechanical requirements, hardly accounts for the coherence of its grandeur. This is the art: each detail, regardless of mechanical necessity, is developed on a scale appropriate to the total effect. The body of the car serves as a backdrop for a glittering ensemble of circles and bars, a necklace of lights, bumpers, straps, horns, and handles, undecorated but nevertheless expressively decorative, as were the caps and goggles which used to ornament the serious motorist.

The Mercedes looks as large as it is because the parts applied to it, whatever their size, incorporate an amount of detail sufficient to reveal their complexity. Hundreds of wire spokes, for example, visually expand the wheels by their intricate radiating lines. No two details are quite alike: each part appears to have its unique, mechanically appropriate form. But in every case this form is justified by the total effect. Thus the removable canvas top, a practical expedient for a sports car, also avoids disrupting the horizontality of the body, while the fenders isolate the inflexible horizontality of the hood and passenger compartment with their flowing, grandiose curves.

Like most twentieth century artifacts which make one think of the machine because of their precise details, the Mercedes represents the triumph of craftsmanship in an older meaning of the word. What makes it a classically conceived object, and a classic among automobiles, is the successfully concluded search for a particular form, patiently tooled and polished to give it a resounding finality.
Cisitalia 2

1949 (model first produced in 1946). Manufactured by Automobile Cisitalia, Turin, Italy. Coachwork by Pinin Farina, Turin. Overall length 12 feet 6 inches.

The Cisitalia's body is slipped over its chassis like a dust jacket over a book. Modeled by swellings and depressions, the surface of this seemingly one-piece metal jacket is made to incorporate those elements which, in the Mercedes, are superimposed on the body.

The openings Farina cuts into the jacket provide some of the most skillfully contrived details of automobile design. The grille opening is a modified cross section of the hood, which thus resembles the cut end of a cigar, while the rolled edge of the opening itself helps to suggest that the grille is part of a continuous structural framework beneath the metal surface. Because the sloping hood lies below the two front fenders it suggests low, fast power. This hood treatment has the additional merit of making the wheels seem larger, (an illusion reinforced by the high, tight curves of the openings which skirt them) and because they are dominant elements in the design Farina has made them appear to project outside the body by decorating them with slotted, chromium plated discs, as if they were bright roulette wheels.

To maintain the sculptural unity of the entire shape its surfaces are never joined with sharp edges, but are instead wrapped around and blunted. The door is minimized to prevent it from contradicting the appearance of a taut metal skin. Vertical contrast, necessary for an illusion of length, is supplied instead by the clearly modeled rear fender. The side window is given pronounced forward direction by one sharp corner pointing toward the front wheels, and the roof and window seem to unfurl from this point, flowing back like a pattern of air currents in a slipstream.

Perhaps the most subtle device in the Cisitalia's design is a slight shift in its horizontal axis. The back of the car, particularly the fender, is lifted at an angle rising from the strict horizontal base line which gives stability to the design. Thus both ends of the car gain an extraordinary tension, as though its metal skin did not quite fit over the framework and had to be stretched into place. This accounts, in part, for that quality of animation which makes the Cisitalia seem larger than it is.
The designer of the Bentley regards an automobile as a box, with each side clearly defined and limited by a sharp edge. Attention is thereby focused on the intersections of surfaces, rather than on the surfaces themselves. These intersections produce the Bentley's characteristic swift and precise contour—the famous "razor edge."

Front and rear fenders, and the spare wheel, have been treated as marginal incidents superimposed on the body. But the interest these elements contribute to the design depends more on their interpretation as curved planes moving across a flat surface than as independent sculptural shapes. The integrity of the surfaces is further maintained by the kinds of openings cut into them. Unlike the Cisitalia, the Bentley appears to be built of solid slabs of metal; a step-like indentation at the base of the side windows suggests an impossibly thick metal wall.

Certain problems of scale and direction have been solved by modifying the simple box shape. The trunk, for example, appears to have pushed its way through the tonneau. Its height is determined by the hood rather than by the side plane, from which it is set back. Thus the trailing, downward sweep at the rear is clearly terminated by the trunk's contrasting curve. While the front fenders reach ahead of the hood and seem to pull the car forward, the combination of small, tight, tense lines at the rear serve to weight it down.

The designer has amplified the car's linear quality by a chromium stripe applied just below the windows, relating the back of the car to the intersection of windshield and hood, where the passenger compartment appears to begin. Because they do not readily lend themselves to the chiseled treatment of the body, the spare wheel and the hub caps are also decorated with chromium lines. Ornamentation is not limited to applied materials, and the articulate razor edge appears on the front fender, where its use is entirely decorative.

The Bentley is a carefully groomed object—rigid, poised, powerful—with a patrician urbanity of style other schools of design have failed to render obsolete.

The Talbot combines two distinct techniques of automobile design. Secondary parts joined to its body remain clearly defined, as they do in the Mercedes and the Bentley, but while the component parts of the Bentley are related to each other by a series of flawless intersections, the Talbot's unity derives from repetition of one motif. The individual parts are varied by a sculptural modeling similar to the Cisitalia's, but substitute for the Italian car's incisive detail a witty juxtaposition of highly stylized curves.

Ornaments on the hood provide a key to the designer's approach: points or circles with trailing flow lines, like the tail of a comet, state a theme repeated in the fenders and progressively enlarged to include the entire passenger compartment. Front and rear fenders, which are connected to each other at the base line, appear to cradle the passenger compartment. This produces a roughly symmetrical balance of oval shapes, so that from all sides a single dominating element is flanked by two smaller ones. The rear wheel is covered to preserve the fender's oval contour, and the clarity of the entire organization is reinforced by color differentiation.

In contrast to the Cisitalia's single, all-inclusive envelope, the several envelopes composing the Talbot require only minor punctuation. Outlined with a chromium strip, the Talbot's grille seems almost applied rather than cut into the body, but in common with the Cisitalia the oval opening is a cross section of the hood. The Talbot's door is perhaps its most successfully integrated shape. It provides a conspicuous center of gravity, glorified as an interruption rather than a connecting element in the design. The window itself, like certain Parisian hats, constitutes an inventory of curves used elsewhere.

Derived from aerodynamics, the Talbot's vocabulary of shapes makes it a peculiarly expressive symbol of streamlining without the restraints of actual flight. Its smooth exuberance makes it a Lachaise among automobiles.
Overall length 10 feet 3 inches.

The admirable Jeep seems to have the combined appeal of an intelligent dog and a perfect gadget. It is an appeal so vast that this wonderful tool for transportation has won approval for much more than its practicality, though the engineers who perfected it worked without the concern for style with which other automobiles are designed.

The Jeep looks like a tray, or perhaps a sturdy sardine can, on wheels. Part of the top appears to have been cut open and folded up, to serve as a windshield. From it a canvas canopy can be stretched over some metal struts to the back of the car, thus affording temporary shelter from rain. Large wheels dominate the design, and insist rather than suggest that the Jeep's primary purpose is transportation.

One of the most striking illustrations of its direct design is the front fender. It is composed of two rectangular platforms placed at the best angle for preventing mud splash. The two sections are connected by an overlap, left plainly visible, and the lower section is joined to a small step. The side walls are low enough for passengers to step in, thus eliminating mechanically troublesome doors. Even refinements of contour grow out of practical considerations: the fenders have rounded corners to avoid cutting passengers as they get in.

With its wheels removed and the windshield folded flat the Jeep fits into a shipping case. Uncrated and on the road it can maneuver its way through spaces blocked to larger vehicles. It can be stood on end and pushed through narrow passages; it has on occasion been dismantled and carried, piece by piece, over unmanageable terrain, and with suitable equipment it can be driven underwater. Bolts visible on the wheels and the body facilitate either the removal of parts or periodic tightening.

Those who have used the Jeep will recall certain limitations of comfort. Yet there are few automobiles which give their drivers so exhilarating a sense of speed and control. The Jeep substitutes for a deliberate esthetic program the formative principles of construction; its design is unified by the economy, (disdaining the merely decorative) with which each part is fitted for its purpose. It is one of the few genuine expressions of machine art.
Front wheel drive.
Overall length 17 feet 2 inches.

Like the Talbot, the Cord faces the road flanked by two voluminous fenders. But where the French car's passenger and motor compartments repeat these inflated forms, the Cord contrasts them with a vigorously box-like body. Each part is treated as an independent piece of sculpture, the whole collection being partially related by similar details for each unit. But at the rear of the car the passenger compartment, the tonneau, and the fenders merge in one broadly rounded form, summarized by a small window divided into two almost semi-circular parts.

A depression between the front fenders and the hood allows the fenders to be tied to each other by a platform on which the hood appears to rest. This detail contributes most of all to the forward pull the fenders seem to exert on the passenger compartment. Stability is given by repetition of a horizontal element: the grille, extending along the sides as well as the front of the motor compartment, acts like a hinge connecting various parts of the car.

One would expect vertical emphasis to match this insistent horizontality. It is found in the clearly articulated door post, isolated for maximum effectiveness by symmetrical windows on either side. Thus the Cord consists of vertical and horizontal axes around which its parts are grouped. A suggestion of movement comes primarily from these shapes, but also from a slight distortion of the horizontal axis. The body is tilted upward toward the rear, while only the heavy louvres of the grille are on a true horizontal plane. A similar axial distortion is employed at the rear of the Cisitalia, where it contributes extra tension to the design. Here it is used to suggest power, as though all the weight of the body were pressing down on the front wheels while the grille and the fenders alone represent stability.

As with the Cisitalia, and more particularly with the Talbot, many of the Cord's lines are borrowed from aerodynamics. But if the Talbot recalls the sweep of a light glider, the Cord suggests the driving power of a fast fighter 'plane. It is, in fact, a most solemn expression of streamlining.
The MG gives the illusion of being the unenhanced piece of machinery which the Jeep actually is. Unlike the Jeep, however, the MG's stylistic understatement is the result of an intense but devious preoccupation with appearance. Its designers have chosen simply to elaborate the look of a machine, and have appropriately used toward this end a few concise details to convey a quantity of information.

Both the front and back of the MG look like separate, solid boxes connected by a shallow passenger compartment. The door enclosing this passenger compartment is reduced to the smallest possible size by a sharp, downward cut making an elbow rest. This surprising feature is so pronounced that the door itself seems to be the essential connecting link between the front and back of the car; its removal, it appears, would leave nothing to join both ends but the long front fender, which, starting at the rear of the door, springs into place above the front wheel.

Like the Mercedes, the MG has wheels animated by sparkling wire spokes. Extravagantly slender rims, resembling the wooden hoops children play with, drily recall the artful simplicity with which less important details have been treated. Openings cut into the surface of the body enliven its horizontality; louvres to ventilate the motor compartment, for example, are set at an angle. A more conspicuous kind of ornament is provided by chromium plating selected parts of the machine, rather than by adding elements for decorative purposes alone. The radiator cap, the frame of the folding windshield, wheel hubs, door handles, and lamps are all turned into chromium highlights.

Perhaps the most skillfully integrated elements of which the MG is composed are the fuel tank and the spare wheel. The designers have checked the trailing curve of the rear fender—and this is a difficult problem in automobile design—by contrasting it with the steeper slope of a fuel tank. And capping the tank is a spare wheel, a large and practical ornament. The plain horizontal box housing the motor tapers to a narrow grille at the front, so that the design begins with an insistent pattern of lines similar to that which terminates it.
Like the Cord, the Lincoln Continental is, basically, a box to which fenders have been added. The Continental differs from the Cord, however, in that its front fenders, which are the only major addition to the body, are not shaped for maximum contrast. Instead, they are kept flat and tight to the sides, from which they seem to grow. Both the body and the fenders give way to each other as they meet. Just where a rounded sculptural treatment of the front fenders is unavoidable, the low, squared body itself changes shape, tapering into a prow-like grille of pronounced sculptural character. This flexibility in relating planes is due not to a specific detail alone, but to the varying nature of the parts themselves.

The squareness of the luggage compartment, for example, is derived from its function, and the spare wheel without which it seems incomplete is its perfect sculptural complement. While the fenders of the Cord are related to the body by rounded intersections common to every part of the car, the Continental has some sharp and obvious joints scored with a chromium line for extra emphasis. This detail is particularly evident at the rear of the passenger compartment, where a chromium stripe joins the base line of the side window to the higher level of the luggage compartment. Chromium is used to accent other important points: the rising base line of the front fender, the stabilizing vertical of the doorpost—scored with extra weight—and the headlights whose frames stretch to follow the contour of the fenders, rather than of the circular headlights.

Among so many variants the characteristic line, giving discipline and continuity to the whole design, is a very flat curve abruptly ended by a tight hook or curl—which leads immediately into the next long curve. This sequence of lines has an incisive, "drafting board" quality, a studied limitation of resources, which, while it may account for the somewhat underscaled wheels, disciplines a design unusually free of any single, all-embracing concept. The Lincoln Continental satisfies the requirements of connoisseurs while capturing the imagination of a public less preoccupied with the refinements of automobile design.
Trustees of the Museum of Modern Art


Honorary Trustees

Frederic Clay Bartlett, Mrs. W. Murray Crane, Duncan Phillips, Paul J. Sachs, Mrs. John S. Sheppard.

Department of Architecture and Design

Philip C. Johnson, Director
Arthur Drexler, Curator of Architecture
Mildred Constantine, Assistant Curator
Greta Daniel, Assistant Curator
Margaret Jennings, Secretary to the Director

Consultant on the exhibition, John Wheelock Freeman
Photographer for the exhibition, Alexandre Georges
Catalogue design, Leo Lionni

The Museum wishes to thank the following persons for their advice and cooperation: Griffith Borgeson, Joseph Ferguson, Wilder Hobson, Max Hoffman, Raymond Loewy, Charles Moore, George Nelson, D. Cameron Peck, Antonio Pompetti, Ken Purdy, Delmar G. Roos, and Walter Dorwin Teague.