

FOREWORD

Of all the products of the industrial age, the one that has been the most significant to mankind in the last hundred years has been the automobile. With the invention of the horseless carriage and the individual mobility and independence that the automobile has provided, the landscape of the world has changed. At the same time it has given rise to a new passion, a new excitement, a new obsession. The automobile, after the house, is the most important buying decision for an individual or a household. But without doubt, the most important decider in that buying decision, after the price-affordability factor and reliability, is the looks of the car: the design.

Design is obliged to bring the concept of the beautiful into harmony with other values such as practicality, functionality, originality, comprehension and enjoyment. And designers are called upon to create forms that reflect all these and yet be attractive to the buyers of products and services. For most of the last century, the symbiotic relation that car design has had with modern society goes beyond being just a barometer of human conditions: it has been a catalyst for economic change and a reflection of 'human' industrial history.

This book is all about that: the history of car design and how it has changed over the decades; coachbuilders, who as scalpel wielders, have shaped the design evolution of the automobile; the star designers who have played a very significant role in influencing the world of design, both automotive and otherwise, and finally, the cars themselves: the bold, the beautiful, the intriguing. And for our last chapter we have the stuff made of dreams: the dream cars and concept cars that are a fascinating window to the future.

I am sure you will enjoy this book and I am sure you will treasure it as a reference point for automotive design. Such a comprehensive publication on automotive design - a first in India - with close to 400 photos, many of which are being published for the first time, makes us proud. But our endeavours to bring you this very special coffee table book would not have been possible without the help of Apollo Tyres. I would like to take this opportunity to thank them for their vision.

Ashok H. Advani



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CHANGING TIMES

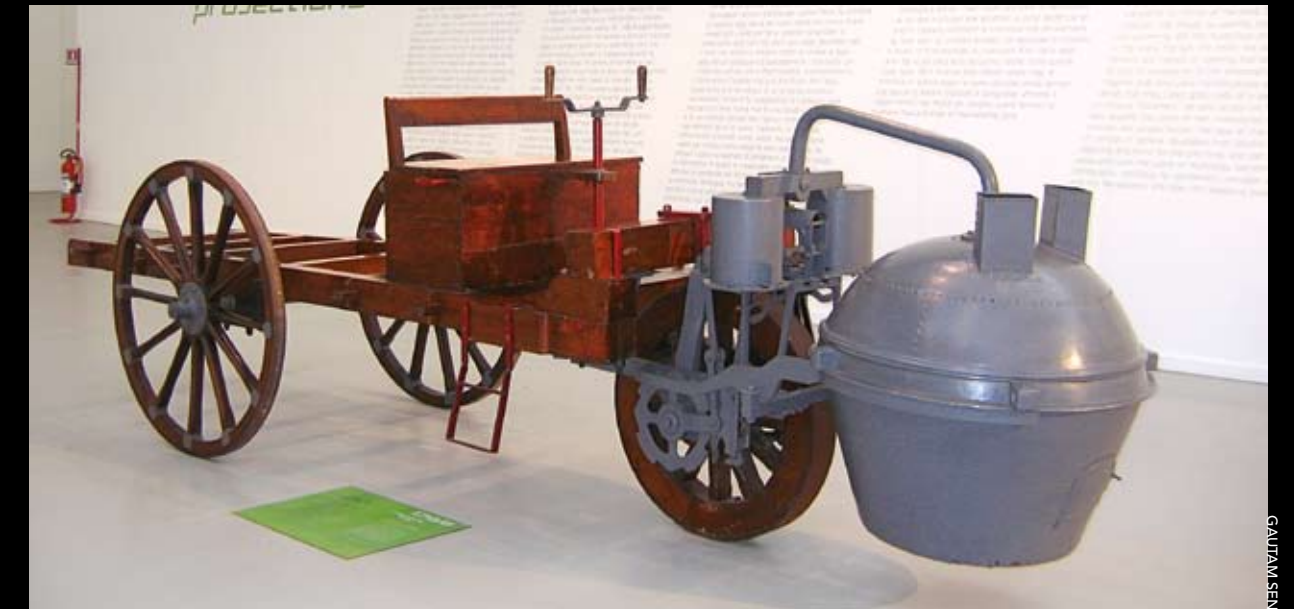


At the very dawn of motoring, many called the automobile the 'horseless carriage', as that's exactly what it was. Karl Benz's (the person who is regarded as the inventor of the gasoline-powered automobile) very first 'automobile' was a three-wheeler. For Benz's first four-wheeler he had the four passengers' seating facing each other like in a horse carriage. It took the pioneering French company Panhard et Levassor in 1891 to come up with the Systeme Panhard, which consisted of four wheels, a front-mounted engine with rear-wheel drive, and a (crude, sliding-gear) transmission aft of the engine. This was to become the standard layout for automobiles for most of the next century. And even if today most small-to-medium-sized cars have their front wheels as the driven wheels, the idea of locating the engine at the front, with the passenger space aft of that, remains.

So, in the early years of car design, the engineers' prime objective was to get the design of the mechanical bits correct, get that engine and radiator covered and provide a practical body with seats and doors to carry people. The design of the body followed the practice of carriage making, with extensive use of wood, some steel, leather and fabrics. And the styles followed those of carriages too: closed bodied broughams and coupés, open bodied tourers, cabriolets, etc.

Soon, car manufacturers came to realise the importance of branding, image and recognition, and with that came the idea of designing recognisable grilles. For that, credit must go to Henry Royce, for he designed a distinctive as well as attractive grille that, though inspired by classical Greek architecture, has retained its timelessness in design terms. Other carmakers followed and marques like Lancia, Mercedes, Hispano-Suiza, Bugatti and others came up with designs unique to the prows of their cars.

At the same time as Henry Ford introduced the concept of assembly line mass production, he also recognised the need for different, but standardised, body styles for different uses and requirements. But upmarket carmakers, with limited industrialisation, followed another approach: provide the customers with the mechanical bits, and the customer would go to a coachbuilder to get the body design of his choice. And not just a choice of body styles to suit a purpose, but a choice of designs and features to distinguish their car from that



Though Karl Benz and Gottlieb Daimler are credited with the first automobile, the first really self-propelled vehicle was the steam-driven fardier à vapeur (above) from 1769-71 by Nicholas Cugnot

A short history of car design (opposite page) – Rovers through time, starting with a 1905 model, through the Rover 75 (1948) and the P5B (the Rover 3.5-litre) from the 1960s, to the 1999 Rover 75

of their neighbours. So, it was the coachbuilder, who, to get more business, started investing in designers and design; most of them stressing aesthetics and proportions, but some of them also exploring the potential for advanced materials as well as better aerodynamics.

Car manufacturers too began looking at these aspects. Benz, as they went racing, explored the idea of minimising frontal area and better aerodynamics in the design of the car that came to be known as the Blitzen (Lightning) Benz, which featured a tapered, torpedo-style rear. In the 1920s, Italian carmaker Lancia developed the very first load-bearing monocoque-type body. By doing away with the chassis rails, the Lambda was decidedly lower than contemporary cars, making it much sleeker in looks. Rolls-Royce, in order to compete with sportier rivals Bentley, developed a series of experimental cars that put lighter, smarter boat-tailed bodies on their otherwise heavy chassis.

But it was across the Channel that real progress was happening. The French and to an extent the Italians explored the theories of aerodynamics and airflow

CHANGING TIMES

Ford's Model T (near right) from 1908 encapsulated functionality and modularity at its best with the Model T on offer with a variety of body styles based on the same set of mechanicals

A Wolseley (far right) from 1908 originally bought by the Nawab of Janjira (now a part of the Abbas Jasdawala collection) shows how the early automobiles were essentially elaborate horse carriages

Lancia's Lambda (below) from 1922, was unusually low thanks to the innovative construction of the car: the Lambda was the world's first monocoque-bodied car, eliminating the chassis rails altogether



management that had been scientifically proven by the Hungarian engineer Paul Jaray and German aerodynamicist Wunibald Kamm. In the US, Walter Chrysler decided to translate these theories into a production car, the result being the commercially disastrous Chrysler Airflow from 1934, a car that was too advanced

for a still conservative market. General Motors, though, had taken the first steps in acknowledging the importance of design by starting a design office under the moniker Art and Color Section in 1927, with Harley Earl as director, but they stayed away from any real progressive design work till the late 1930s.

But things were different in the Old Continent. Carmakers like Peugeot were more adventurous with their non-mainstream models, developing cars like the 402 Andreau, a design prototype conceived by renowned aerodynamic engineer Jean Andreau. Citroën launched the Traction Avant, a very advanced car for its time. Designed by engineer André Lefèvre and stylist Flaminio Bertoni and launched in 1934, the Traction Avant featured front-wheel-drive, monocoque construction and a very low-slung rakish body style that was funky in 1934 and modern enough to allow it to remain in production till 1955.

In the meantime, the French coachbuilders too were going great guns, and designing voluptuous, yet sleek designs that had aerodynamics in concert with elegant, creative expressions that pushed the limits of automotive design, and on many occasions, technology. The science of aerodynamics was taken up by the coachbuilders and designers of cars who realized that in order to produce a fast



car they would need to understand and follow the rules that came out of the study of the interaction of moving objects within the atmosphere. Streamlined styling of automobiles was a worldwide phenomenon that changed automobiles from square boxes on wheels to rounded, contoured shapes designed to offer the least resistance to air flow. The term 'streamlined' became synonymous with 'modern' and 'efficient', and because the teardrop (or 'goutte d'eau' in French) is considered by experts to be one of the perfect shapes for an object in motion, it was applied to many of the premier French cars of that time, like the Bugattis, Delahayes, Delages and Talbot-Lagos.

French coachbuilders Figoni et Falaschi, Pourtout, Chapron, Franay, Kellner, Letourneur et Marchand, Saoutchik and many other lesser known ones flourished in the 1930s, making automobiles of great luxury and beauty, tailored to fit the tastes of wealthy and prominent clients like the Aga Khan and the Maharani of Kapurthala. The cars were exhibited at various concours d'elegance events and the top couturiers of the time, such as Elsa Schiaparelli and Coco Chanel, joined with the car designers to create high fashion ensembles.

In Italy too carrozzerias such as Bertone, Boneschi, Castagna, Ghia, Stabilimenti Farina (and Pininfarina from 1930), Fissore, Touring and Zagato were designing some beautiful cars on Alfa Romeo, Fiat, Isotta-Fraschini and Lancia chassis.

In the US, the streamlining movement and the idea of integrating the pontoon-



shaped fenders into body sides and rounding the front and rear of cars was in vogue. American designer Gordon Buehrig came up with the 'coffin-nosed' Cord 810 that merged streamlining with very fine aesthetics and solved the problem of the headlamp interfering with the design by putting it behind a pop-up cover. Harley Earl used this idea to great effect in the Buick Y-Job, in 1938, following that up with the production Buick Eight in 1942. The normally detached parts were incorporated into the basic body envelope, producing a new streamlined shape, with the front fenders flowing neatly into the rear ones.

From 1925, the Hanomag 2/10 (top left) had almost managed to eliminate fenders

The Chrysler Airflow (top middle) from 1934, was seen as too advanced

1935 Buick (top right) is a year 'younger' than the Chrysler; it was still rather staid

J Gurney Nutting coachwork on this Rolls-Royce (above), from 1935

BODY ART



STILE BERTONE

Towards the end of the 19th century when the horseless carriage came into being, the business of building coaches moved from the horse-drawn variety to the horse-powered variety, and with that came the advent of new technologies in terms of materials and methods.

Carmakers like Oldsmobile and Ford went the mass production route and for that it made sense to make standard bodies that kept costs down. Ford realized that the need varied from customer to customer and so offered a variety of body styles with a range of uses in his Model T. But carmakers catering to the upper end of the market realised that the more discerning customers preferred their cars 'tailored' to their requirements and tastes, thus ensuring the role of the coachbuilder. So, prestige carmakers like Rolls-Royce, Hispano-Suiza, Isotta Fraschini, Duesenberg and many others preferred supplying just the mechanicals and the chassis, leaving it to the customer to go to a coachbuilder of his choice to clothe the car. Over time, as coachbuilders looked for more business, they recognized the need for better aesthetics, which presupposed the need for talented, gifted designers who could design better looking cars, all of which would eventually influence the evolution of automotive design.

All the major car-making nations had great coachbuilders: famous names like Barker, J Gurney Nutting, Hooper, H J Mulliner, Park Ward and James Young from the UK, Brewster, Brunn, Murphy, Derham and Willoughby from the US, and Baur, Erdmann & Rossi and Karmann from Germany. For the matter, there were coachbuilders in India too. From records, the oldest might have been Steuart & Co, from Calcutta, the capital of British India till 1911. Established in 1775, Steuart & Co were horse carriage makers 'by special appointment' to The Prince of Wales and the Earl of Minto! With the advent of the automobile age, the company started to make bodies for cars. Around 1879, a gentleman called Pestonjee B Press formed a company called the Fort Coach Factory in Bombay to produce carriages for horse-drawn vehicles. Into the 20th century Fort Coach Factory was importing-French Brasier cars in chassis-engine form, coachbuilding the bodies on them and selling them. Though Chennai-based Simpson & Co was set up to build railway carriages, they made horse carriages as well and then later bodies for cars.

Yet most of the Indian wealthy, the maharajas and the British administrators

and entrepreneurs living in India, preferred to have their cars coach-built in the country from where the cars were being ordered. Most of the British, American and German coachbuilders made very elegant and beautiful cars, and employed designers who left their mark and influenced the evolution of automotive design, designers like A E MacNeil, and later John Blatchley of J Gurney Nutting (who went on to become the design chief of Rolls-Royce after WW II), Howard 'Dutch' Darrin of Hibbard & Darrin, or Johannes Beeskow of Erdmann & Rossi. But the coachbuilders who really pushed the boundaries of design were the ones from France and Italy – the following pages feature a selection of some of the best.

Nuccio Bertone, one of the greats from the world of coachbuilding and car design, takes a close look at the Alfa Romeo Carabo (opposite page), an epochal concept car by Bertone's designer Marcello Gandini, from 1968

One of the most striking cars ever, this Duesenberg SJN for the Maharaja of Indore, Yashwantrao Holkar, was coach-built by J. Gurney Nutting to an A E MacNeil design



KAPIL MATHAPANI

DESIGN GREATS



ITALDESIGN-GIUGIARO

Only a few people have really influenced the automobile business and designers have played a significant role in the history of the automobile. Over the years there have been thousands of designers but just a few men have actually shaped the destiny of car design.

In the following pages we feature a selection of the greats from the past and present. Between the following set of gentlemen (sadly, there isn't a lady amongst them), over a thousand cars have been designed, and millions upon millions are on the road. Stars in their own right, many are surprisingly low-profile and self-effacing, despite their talent and influence. The design heads play an important role in the design and decision-making process today, so we profile some of them too, as well as the engineers who have bridged the disciplines of design and engineering, penning some of the most iconic designs of all time, specifically the Jaguar D and E-Types, the Fiat 500 and the Mini.

From the pre-war era, one of the most important designers was an American, Gordon Miller Buehrig (1904-1990). A freelancer working on various designs for Packard, GM and Stutz, Buehrig was hired by Duesenberg in 1929 to head their design studio. The Duesenberg Model J designs came from that period. Following the takeover of Auburn and Duesenberg by Errett Loban Cord, Buehrig moved to Auburn in 1934, designing a distinctive boat-tail shape of the Auburn 851 Speedster. Cord planned a baby Duesenberg, and Buehrig was asked to conceptualise such a car. That became the legendary Cord 810 (later, the 812). With ornamentation that was minimal and a clean, uncluttered look, the Auburn Speedster and the Cords remain two of the best American designs from the 1930s. Postwar, Buehrig penned the 1956 Continental Mark II, one of the finest American designs from the over-the-top 1950s. With minimal chrome accents, clean, timeless lines and tasteful restraint in the detailing, the Continental II remains a classic.

When Buehrig led the design team for Auburn-Cord-Duesenberg (ACD), a young 19-year old, Alexander Sarantos Tremulis (1914-1991), joined the team in 1933. After Buehrig left the group in 1936, Tremulis became the Chief Stylist and remained in that role until Errett Loban Cord's company failed in 1937. During his stint at ACD, Tremulis worked on the Cord 810/812 under Buehrig's supervision, and many believe the credit goes more to the younger designer than to Buehrig.



MAKARAND BACKAR

Tremulis briefly worked with GM before moving to Briggs-Le Baron, a custom coachbuilder for Chrysler. He went on to design the 1941 Chrysler Thunderbolt, a concept car that set the trend for design in the post-war period, with separate fenders disappearing forever.

Soon after the War, Preston Tucker, the maverick entrepreneur, employed Tremulis to design the radical rear-engined Tucker saloon. With the failure of the Tucker, Tremulis was hired by Ford and in 1957 designed the Ford X-2000. In 1963, he left Ford to found his own consulting firm and among his last designs were the 1978-to-1987 Subaru BRAT pick-up.

Virgil Exner (1909-1973) was another prominent American designer from the same period. Harley Earl of GM gave him his first design job at GM's Art and Color Division. In 1938 Exner left to work with famous product designer Raymond Loewy. Six years later Loewy fired him, but Loewy's client, Studebaker, decided to hire him directly. There he was involved in the design of some of the first cars to be produced after the War. It is the opinion of many that Exner was the principal designer of the acclaimed 1947 Studebaker Starlight coupé, although Raymond Loewy got most of the credit.



A beauty from the pre-war era, the Cord 810 (top) and the 812, along with the Auburn 851, were masterpieces from one of America's finest designers, Gordon Buehrig (above)

A rendering of the Alfa Romeo Caimano (opposite page) concept by the 'Designer of the Century', Giorgetto Giugiaro

BOLD & BEAUTIFUL

1966 LAMBORGHINI MIURA

To many, including this writer, this is the most beautiful car, ever. Penned by Marcello Gandini, Bertone's new recruit in 1965, much of the detailing – the slats at the rear, the 'eyelashes' around the headlamps, the pop-up headlamps, the door handle as a part of the air intake slats aft of the trailing edge of the door, the use of black chrome for the bumpers and other ornamentation – was innovatively new in 1966.



AUTOMOBILI LAMBORGHINI

According to the Greek philosopher Plato, what differentiates man and other living creatures is the ability to sense what is right, what is good and what is beautiful. These virtues, Plato says, stand for the absolute truth, a criterion that we can fall back upon by listening to an inner message, thereby awakening these value standards within ourselves. The form of an object, whether it is a flower, a woman's face or a building appeal to us instinctively and unconsciously as either beautiful, or ugly, or just boring. They appeal to our emotional sense of the beautiful (or otherwise) automatically, and this action of consulting our inner values manifests itself as both aesthetic and ethical thinking. The subtle strokes of a painting, the sinuous form of a sculpture or the supremely perfect proportions of the Taj Mahal stimulate a variety of feelings and emotions in us; yet all derive from an innate definition of what we associate with beauty.

Yet there is nothing more personal than the appreciation of beauty. As the saying goes, 'beauty lies in the eye of the beholder', what's beautiful for this writer may not be beautiful for the reader. And what's beautiful for the reader may not be beautiful for someone else. Deciding the most beautiful cars through time isn't easy. So, for this list of the 50 most beautiful ever, we set some rules: contenders had to be cars that were production models, however few were made. Thus there are cars such as the Figoni et Falaschi-bodied Talbot Lago T150C, the Aston Martin DB4 GT Zagatos and the Zagato-bodied Maserati A6Gs, each with production runs of just 16, 19 and 21 respectively.

The list also includes cars that have been important 'turning point' designs, as well as regular production cars that have sold in the millions. A few of the cars were out of date by the time they were put into production; however the timelessness of their designs justifies their place in this list. And, clearly, cars don't have to be expensive to be beautiful. Readers may also notice that sports cars and coupés figure much more than regular saloons. And that estates or SUVs don't figure at all. Readers may also argue that several of the newer SUVs are striking automobiles. But then drama is not the same thing as beauty. And beauty is not only about proportions, subtlety and fine detailing, but also about the philosophy that a design embodies.



FIAT GROUP

1931 LANCIA ASTURA

Though Lancia was the first carmaker to put into production monocoque construction way back in 1922 with the Lambda, they decided to also retain the body-on-frame style of construction for their more upmarket models like the Astura, as they realised that the wealthy preferred more individuality for their cars' body designs. Pinin Farina and brother Battista Farina, Bertone and Carrozzeria Touring were amongst the many prominent coachbuilders who tried their art on the Asturas, but it was the beautiful bodies so typical of Castagna that remain the most desirable of the lot.

While enthusiasts discuss the Lamborghini Miura, they talk not only about proportions and detailing, but also about what it stands for. This is explained by its designer Marcello Gandini: "The Miura stands for a kind of beauty that lies in merging opposites. It is a body with lots of muscles, but they are the muscles of a beautiful woman, not a male body builder. It is wicked, but with some gentle touches. It has lots of edges but all the curves are in the right places. The stare is aggressive, but tempting, the car is intimidating, but attractive."

Models from carmakers such as Alfa Romeo, Ferrari, Jaguar and Lamborghini figure more than others. But these carmakers have built up their reputations and images on the fact that they have made some of the most beautiful cars through time. Expectations are that much higher whenever these carmakers are launching a new model. The fact is that beauty comes for free – the cost of making a good looking car or an ugly or boring one is the same. The choice is with the people who run the companies, people who lead the design teams and people who take the crucial decisions.

DREAM WORKS

1970 LANCIA STRATOS ZERO

Taking the wedge theme to its logical extreme, the Marcello Gandini-designed Stratos was a mid-engined two-seater, with the engine from the rally-winning Lancia Fulvia located behind the almost supine driver and passenger, who had to get in to the cockpit through the upward opening windscreen! Vestigial side windows allowed for some peripheral vision. The first use of digital LEDs for headlamp lighting was probably the most significant contribution in design terms, other than influencing the subsequent design of the Lamborghini Diablo. The Bertone-made Stratos (Zero as it was called later) convinced Lancia into developing the world championship rally Stratos, another brilliant Gandini design.

STILE BERTONE

Once upon a time they were called dream cars. Today that term is no longer in vogue – cars of the future are called concept cars. What is a concept? According to the dictionary, concepts are abstract ideas, bearers of meaning as opposed to agents of meaning. But concept cars are far from that: here are automobiles that are in metal and material, but by being windows to the future they too are bearers of ideas and hopes for the future. In fact, concept cars are essentially the automobile industry's periscopes on its own tomorrow. In another sense, they are a form of advanced research for car designers to test potential designs, ideas and technologies. And at every motor show it is the concept car that, more often than not, is the star of the show.

This is because the concept car has become the symbol of the public's ever growing fascination with the life it can expect in the future. Every year, most carmakers spend a fortune in designing concept cars to unveil and exhibit at motor shows around the world, essentially to test public reactions to design and engineering innovations.

GM's design chief Harley Earl is credited with inventing the concept, or show, car, and did much to popularize it through GM's travelling Motorama shows in the 1950s. But the very first such car, the Buick Y-Job, was unveiled in 1938, more than a decade earlier. European automotive historians have a different point of view to the Y-Job being the first concept job, and one does tend to agree. French and Italian carmakers and coachbuilders were into a whole host of exciting experimentation in the 1930s that took form and function to a new level of style, exploring the frontiers of aerodynamics and the use of materials. Carmakers such as Peugeot, Bugatti, Delahaye, Delage, Alfa Romeo and Lancia, along with many French and Italian coachbuilders including Pourtout, Figoni et Falaschi, Saoutchik, Pininfarina and Touring, amongst others, came up with a series of brilliant and original concepts.

For instance, French aerodynamicist Jean Andreau developed a Peugeot 402-based streamliner in 1936 that is today acknowledged as one of the most important examples of studies in aerodynamics. Similarly, the Hispano-Suiza H6C Xenia from 1938 was another extraordinary French design from the pre-war era: featuring sliding doors and curved glasses that were decades ahead of

their time. The Andre Dubonnet-designed Xenia was not just an advanced study in aerodynamics, the car pioneered the innovative coil-sprung suspension technology that carmakers like Alfa Romeo, GM, Fiat and Delahaye soon after bought from the Frenchman.

Post WW II, it was America's turn, when the country entered a golden age of prosperity and took the lead at churning out some brilliant concept cars. GM's travelling Motorama shows were where the public caught a glimpse of radical new designs and bizarre trends like soaring tailfins, Perspex bubbletops and aviation-inspired ideas such as gas turbine engines. Into the 1960s and 1970s it was the Italians that took the lead. And then the Japanese and the Koreans. Is now the time for the Chinese and the Indians...? Today, concept cars are truly an intrinsic part of the car scene, showcasing new ideas, designs and features. In the following pages we look at 50 of the most exciting concept cars through time. And, as we admire their lithe lines and futuristic features, dream a little.



GM ARCHIVES

1938 BUICK Y-JOB

The car that gave birth to the concept of concept cars, the Buick Y-Job was designed by GM design chief Harley Earl and featured power-operated pop-out headlamps, chrome wraparound bumpers, flush door handles and styling cues that went on to Buick models until the 1950s. Clean lines, sculpted looks and the tasteful use of chrome marked out the Y-Job as a timeless design.

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