Tracing the Evolution of Automobile design: Factors influencing the development of aesthetics in automobiles from 1885 to the present.

Jaafarnia\(^{(a)}\), Bass\(^{(b)}\)

\(^{(a)}\) Indian Institute of Technology Guwahati
\(^{(b)}\) Art Center College of Design, Pasadena

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**Abstract**

Using selected well-known automakers, the influence of new technology, lifestyle and culture on automobile design has been mapped, starting from 1885 through present day. We have identified seven eras to date. The study of history often yields clues to the future. Influences such as fashion, makeup and missiles have shaped automobile design since manufacturing began. The evolution of the car has been driven by the desire to create a semantic frame for speed. Over time, changes in lifestyle and culture have changed the semantic meaning of the frame. This timeline will help automobile designers understand the markers that influenced the evolution of the automobile, and act as a tool to predict the future of car design.

**1 Introduction**

Using selected well-known automakers, we’ve mapped the influence of new technology, lifestyle and culture on automobile design starting from 1885 through present day. These influences have shaped automobile design since manufacturing began. This timeline will help automobile designers understand the markers that influenced the evolution of the automobile, and act as a tool to predict the future of car design.

We have identified seven eras to date. Beginning with the horseless carriage, automobile design has been driven by the attempt to create a semantic frame for speed. The apex of this arc was reached with the missile designs of the 1950’s. Changes in lifestyle and culture have changed the semantic meaning of the frame over time. History has brought us full circle today as designers assign the semantic frame of animals to bio-designing techniques.

In the beginning, all vehicles looked basically the same. In 1885, the new motorized vehicles did not have a body or shell. The first car was essentially an engine, three wheels and a frame. All of the mechanics were exposed for easy access. Inventors were more concerned about function rather than form. Getting the machine to work properly was the first priority. Design aesthetics came later. The first typewriters, electric shavers, sewing machines and airplanes had no outer shell. Figure 1 compares the original forms of these early machines with later versions. Products like cameras and submarines did have a shell. But then again, a submarine without a hull is simply missing the point of deep sea diving.

**2 Evolution of the Automobile**

The seven eras in chronological order are: Invention era, Innovation era, Manufacturing era, Capsule era, Classic era, Integration era and Modern era. Each era is earmarked by a particular style or design aesthetic. The particular aesthetic was influenced by a number of factors including fashion, makeup, hairstyles, art and architecture, popular culture and movies. This period in history witnessed a shift away from the horse carriage to the Model T Ford. Automobile semantics followed an arc of speed and power reaching its zenith in the 1960’s at the height of the missile era in U.S. politics. In the modern age, designers have come full circle using organic forms, animals and bio-designing as the semantic frame.
2.1 Invention era

This era began with the invention of the Benz car in 1885 and continued roughly ten years with the introduction of Henry Ford’s first automobile. Before Benz introduced his motorized wagon, vehicles capable of human transport were mainly steam-powered. [1] The Benz car was the first car to use a gas powered internal combustion engine. This new horseless carriage had a powerful allure, but it confused people. Most found it a strange eccentricity that a carriage could move without a horse.

Karl Benz produced industrial machines and static gas engines. The success of the company gave Karl Benz the opportunity to indulge in his old passion for designing horseless carriages. He wanted to create an automobile that would run entirely on its own power. This would not be simply another motorized stagecoach or horse carriage. Using the same technology that was in his beloved bicycle, he introduced the Benz Patent Motorwagen in 1885. It featured wire wheels (unlike the wooden ones on carriages) [2,3] and a four-stroke engine of Benz’ own design. It incorporated a very advanced coil ignition and evaporative cooling system rather than a radiator. Power was transmitted by means of two roller chains to the rear axle. [4]

2.2 Innovation era

After 1896, automobiles changed radically from those in previous years. Throughout the Innovation era, widespread car use was still uncommon and the automobile was seen as more of a novelty than a genuinely useful device.

With the high price of the car it was still only the hobbyist and enthusiast who could afford one. It was not a reality for most people. Henry Ford, the father of modern assembly lines, revolutionized the industry when he established the Ford Motor Company in the U.S in 1903. Ford had a global vision, with consumerism as the key to peace. [6] One of the first adopters of mass production techniques, he introduced the automobile to the ordinary man. He is credited with using the assembly line to make large numbers of inexpensive automobiles coupled with high wages for his workers. Ford vowed to build a great car at a great price. His commitment to lowering costs led to many technical and business innovations. Ford introduced the Model T in October 1908 at the affordable price of $950. The year, 1908 was significant, marking the point when the majority of automobile sales shifted from the hobbyist and enthusiast to the average user.

The horse and carriage was the reliable method of transportation, but automobiles sparked people’s imaginations. Automobile designers knew that the carriage’s form, which had a relationship to the horse, was not appropriate for their new automobiles.

The new cars reflected other changes in society. The new industrialists were quickly replacing the old familiar ways with a fast-paced lifestyle. As the automobile evolved, it epitomized speed and freedom. Henry Ford was the first to bring his innovative designs to the New World. Ford’s automobiles were different from the other cars of the day. His new mass production methods and quality materials set his cars apart. The price of Ford’s car was higher than other vehicles. This only added to the allure.

2.3 Manufacturing era

The Manufacturing era lasted from roughly 1908 through 1914, the beginning of World War I. Before 1908, designers favored the ornate Edwardian architecture and it was the preferred architectural style. This new industrial era reflected simpler, more affordable automobiles. Automotive technology developed rapidly due in part to hundreds of small manufacturers competing to gain the world’s attention. Key developments included the electric ignition system, independent suspension and four-wheel brakes. [5,7]. Transmissions and throttle controls were widely adopted, allowing a variety of cruising speeds.

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2.4 Capsule era

Between 1920 and 1930 designers closed the body of the car. When designing a car interior, the value and semantic meaning can be manipulated by opening or closing the space. Simply changing the way the space is
divided can change the emotional expression of the space for the consumer. [7] The new closed body accentuated by curved glass and privacy had intrinsic value for the consumer.

2.5 The Classic era

The Classic era began with the Great Depression in 1930 and ended around 1940 shortly before World War II. The cars of this period were less rectangular and industrial. The new automobiles were sleek and beautiful. The new technology allowed designers to create luxurious aerodynamic cars with big curves and deep arches. The new salon/sedan body style was made for cruising and even incorporated a trunk or boot at the rear for storage. Automobile designers modelled their forms on airplanes and trains because these objects semantically carry the meaning of speed. Applying the airplane’s semantic frame to a car assured the automaker that its jalopies would look fast even if, in fact, that was not the case. The wheels, lights and fenders hugged the body and articulated the safety and strength of the frame. Tires were wider and thicker than in the Capsule era adding to the solidity of the vehicles. The old open-top runabouts, phaetons, and touring cars were phased out by the end of the Classic era as wings, running boards, and headlights were gradually integrated into the body of the car. Integrated fenders and fully closed bodies began to dominate sales.

2.6 Integration era

Automobile design finally emerged from the shadows of World War II in 1949. This was the year that United States carmakers, General Motors, Oldsmobile and Cadillac introduced modern one-piece auto bodies. The Integration era joined all the parts of the car to make a shell very similar to the modern car body we know today. On the technology front, the biggest developments of this era focused on safety in the design of automobiles.

Cadillac was the first company to successfully borrow the semantic frame of the V2 missile and apply it to its cars. (Fig. 8) Cadillac’s 1959 Cyclone is a prime example of the application of the semantic frame of a missile to an automobile. In the late 1960’s General Motors, Chrysler, and Ford tried to market radical small cars, like the GM A-bodies, but had little success. In America, performance became the prime focus of marketing, exemplified by pony cars and muscle cars like the Ford Mustang and the Plymouth Barracuda. Third world countries entered the automobile race in the late 1950’s. Indian and Iranian car design has been traced from 1959 onwards (Fig.12.) The first Indian automobile produced in 1958 was similar to Germany’s 1953 Opel Capitan, shown in Fig.12. The first Iranian car introduced in 1968 (in the modern era) was similar to American cars designed ten years earlier, shown in blue, in Fig.12. Both, in fact, were designed by UK designers.
2.7 The Modern era

The Modern era began around 1968 and continues to the present day. Designers today take into account not only the functionality, but also consumer’s emotional reactions to their automobiles. Designers are well aware of how to create the feeling of speed, but the feeling of speed is not the only expression the consumer is looking for. The semantic frame of the car is changing once again. Designers have recognized the potential to appeal to the consumer’s personal desires and tastes using all areas of an automobile.

Automobile designers no longer only borrow semantic meaning from planes and missiles. Today, they are looking at more organic, bionic forms to mirror. Car designers study the bio mimicry of animals and insects and indirectly insert the animal’s semantic frame into the look and feel of the car. It’s not necessary to use the animal’s literal form. The meaning is implied. [8]

Body styles have changed in the Modern era. Three types dominate today’s market: the hatchback, the minivan, and the sport utility vehicle. All are relatively recent concepts, spurred by an aging, active generation who love to be on the road.

3 Discussion

In previous years, automobile styles were affected by safety, culture, market conditions, art movements and technology. Improvements in manufacturing and methods increasingly allowed designers to design with fewer limitations. Technological gains in other disciplines like train and airplane design benefited automobile design by providing a semantic frame for the look and feel of the car. In previous eras we saw the semantic frame of the airplane (Fig. 10) and missile (Fig. 8) used in car designs. There were two creative schools of thought regarding semantic frames. The first school promoted the use of the old familiar product forms like the horse carriage as a frame for the first automobile. The second school promoted new creative forms to represent the changes in society.

The latter school, exemplified by the designs of Marco Ricotti, have influenced product designs in other disciplines. Ricotti’s design of the Alfa Romeo in 1914 still influences present day airplanes. [9] Vittorio Jano borrowed the form from the 1932 Fairchild J2K (Fig.10) and used it in the 1935 Lancia Astura. The Lancia Astura, in turn, influenced baby carriage designs in 1950.

Evolving lifestyle and culture have changed the semantic frame in automobiles. In the Integration era, American car companies divided designs into men’s and women’s cars. Designers heavily borrowed from fashion, makeup, color trends and personal products. (Fig.11) Makeup and eyeglass fashion had an effect on 1959 Chevrolets as shown in Figure 11. In an effort to reach separate markets, automakers introduced cars that matched the design of the high fashion model’s dress and makeup pictured in their advertisements. (Fig. 11)
In 2003, the Ford Motor Company produced the Streetka, the most feminine car in automobile history. (Fig. 11) When the Streetka was launched, Ford said 80% of the buying public would be female. In 2003, 1% of men bought this car, launched by Kylie Minogue (a well-known American singer). A special pink version of the car was match was made and sold at a charity auction. 

![Fig.12  The evolution of the automobile](image)

Here, you can see the ability of European and American designers in three periods:

- European designers were innovative and pioneered before 1936 and after 1965.
- Two parts of car evolution were revealed in this time line, which demonstrated U.S. ingenuity and innovation (between 1936 and 1965).

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4 Conclusions

Automobile designers have been adapting the semantic frame of their cars ever since they affixed the first engine to a horseless carriage. The automobile and its frame have evolved over time, reflecting the changing culture and lifestyle of the times. The Invention era was concerned with building an engine that could propel a carriage. In the Integration era it was very important for the automobile to express speed. Once the form was established, the Manufacturing era saw the industrialist become proficient at mass production. In the Capsule era designers began to pay more attention to creating a body and interior space. The integration era paved the way to the uni-body designs we see on today’s vehicles. Current modern design theory is looking at the bigger picture to design cars for individuals. Auto designers today use all parts of the car to express a personalized semantic frame for individual lifestyles. Speed is not the only feeling designers are trying to convey in their automobiles. We are moving into a time of more awareness of environmental factors and cars that reflect a gentler lifestyle and aesthetic.

References

[4] DRP’s patent No. 37435 was file January 29, 1886 and granted November 2, 1886, thus taking effect January 29