

The Meaning of Design

AND WHY IT IS IMPORTANT TO ME

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Design is everywhere and is fast becoming more important than ever before. In a world with such vast arrays of products, services, architecture, cars and things you want it is essential they are designed in a way that they will function intuitively and look good, a combination that will make things very desirable. Without design in all of its different guises, the world would be a very dull, boring and grey place to live, a featureless environment, characterised by blandness and uninspiring road vehicles. Put simply, design, or at least good design, brightens up our lives. With automotive design it is the difference between sales and stock – good design sells, poor design remains in the showroom. In this essay I will outline what design is, its purpose and what good design looks like, regardless of the marketing. I will examine designs I find inspiring and explain why they are important to me. I will explain what events over my lifetime have influenced my design choices and future aspirations. Above all, I will show that good automotive design, even in an age influenced by artificial intelligence and machine learning, will always need a human, sympathetic to the environment, to create the best looking and most desirable vehicle, boat, bicycle or caravan.

What is Design?

Design can be defined as “making or drawing plans for something” (Cambridge Dictionary, 2021). This definition refers to the process of design, but design can also be an end product. Essentially the process of designing is making things look and function better, but the term design covers a huge range of practices and skills and can have different meanings depending on the context. This could be graphic design or plans for products, fashion, architecture or car design. Essentially “everything must be planned and designed” (Papanek, 1984). Sometimes it will be purely functional, an engineer designing a product that solves a problem and does a job or sometimes more aesthetics oriented in practices like fashion design. Both these examples of different forms of design require a combination of precise and creative ideas in varying proportions. (Lawson, 1980)

Like design the term art covers a wide range of practices from painting to sculpture and illustration all with the aim of using creative skill and imagination to produce works appreciated primarily for their beauty or emotional power (Lexico, 2021). Design, whether graphic, product or automotive aims to achieve similar beauty in terms of its aesthetics and also the user experience. A designer therefore “must appreciate the nature of both art and science and must be able to design” (Lawson, 1997)

The Purpose of Design

As put by Marek Reichman, Chief Creative Officer at Aston Martin, “design has to solve a problem – adding beauty makes it even, more desirable.”



Imagine a Bluetooth speaker, all it needs to do is connect to a phone and make a sound. Of course, sound quality is important but how it looks shouldn't matter yet brands like Bang & Olufsen push the design of a simple product to create something that could be considered a piece of art made using exquisite materials to create a product that is easy and intuitive to operate with incredible sound. Similarly with graphic design a website needs to look great to represent the brand and sell the product or service but if it is not clear to read and intuitive to navigate users will be put off and likely look elsewhere. So design can usually be described as the creation of objects that are to be looked at and used for a purpose. "Designers must understand something of the nature of these users" (Lawson, 1980) to design in a way that is not only aesthetically pleasing but easy and a joy to use by its intended audience. It is this functional aspect that differentiates the creativity in design from art. The purpose of design then is to create the solution to a problem considering both its function and aesthetics.

What constitutes a good design?



A great example of modern design and user friendly interfaces are Apple products. The first iMac was launched in 1998 and was the product that brought Apple back into profit for the first time in three years. Its designer, Jonathan Ive, believed "there is a profound and enduring beauty in simplicity; in clarity; in efficiency". It had a teardrop shape and came in bold colours making it one of the only computers that could be a "stylish and emotionally engaging object of desire" (Fiell & Fiell, 2016). With the fast growth of the internet the new iMac was aimed at a new audience who wanted to get online. The unique new design massively differentiated the Apple products from other PCs at the time and advertising that showed how simple they were to set up drew people in to buy them in vast numbers. It was then that they would experience the operating systems again designed to look good graphically, but most importantly be easy and intuitive to use.

In 1997 Steve Jobs said, "You've got to start with the customer experience and work backwards to the technology" (Fiell & Fiell, 2016). Meaning the combination of good looks and functional performance and user experience is designed then the required technology can be made. All together this will make the connection between the brand and the user who will likely buy more Apple products in the future.

Branding

Even with a well designed product good branding is essential. Consistent branding that compliments the design across different products, marketing material and website adds to the experience of the product and will keep customers excited and interested in the brand for future products. Again Apple is a great example of this with a clean and simple design style recognisable across all its products, not just in the way they look but the experience of using them. It is likely that many of the iMac users in

the late nineties would have been quick to buy an all new iPod upon its launch in 2001. Both the iMac and iPod have the instantly recognisable style even before seeing the matching Apple logos on the back. Not only do they look good together but they work in a way that means once familiar with one device operating the other will be second nature. With iTunes also launched in 2001 the two devices work together seamlessly and revolutionized the way people listened to music. (History.com Editors, 2019)



When new products are designed they have to represent the brand people know so they are recognisable while improving on design both appearances and experience so people want to use more of the brands products and stick with the brand when new products are launched. This is true of Apple since the original iMac to this day where they are one of the biggest brands and recognised all over the world.

Automotive Design

Designing a car is similar to designing any other product. The process has to start with a problem, something that the customer needs that the car can answer. This will lead to research of markets to understand the needs and desires of the people who will be buying it. This research will also cover competitors as ideally there needs to be a gap in the market for the new car. New manufacturing methods will also be studied as ultimately it will be the manufacturing limitations that determine whether the design can be put into production. Once this is understood the aim for the project can be set.

The role of the designer then is to take this research and understanding of the customer and, like Jonathan Ive's iMac, predict and create future trends for style and technology while maintaining brand identity.

The designer of the original Audi TT, Freeman Thomas, said "Vehicle design is not pragmatic; it is an art, a rebellious act that must also work and function" (Gilles, et al., 2014). When the Audi TT was launched in October 1998 with a design that stayed faithful to the original concept of 1995 it was like nothing else on the road. Small sports coupes were growing in popularity with models from BMW and Mercedes and with no previous cars in the segment Audi created something that didn't look back to classic cars and didn't have to "conform to corporate identity" (Adams, 2021). Instead Freeman Thomas designed a unique shape with a new look for the brand.

The New York Times described the new TT as "A car of traffic-stopping beauty and heart-racing cool, the TT is a postmodern masterpiece, probably the first such work in automobiles" (Neil, 1999).



But that is only half the designer's job, to be the sales success it became it also needs to function. Most models were fitted with a 1.8 Litre turbo engine producing 180 or 225 brake horsepower the TT was a fast and involving drive. Most examples feature Audi's famous Quattro four wheel drive that made it easy to drive fast and thanks to the platform from the Mk4 Volkswagen Golf it had safe and predictable handling.

It was a practical car too, considering its size, with comfortable heated front seats with plenty of adjustment to find the perfect driving position and good luggage space, especially with the tiny back seats folded down. There was even the option for a roof rack designed especially for the car inspiring a lifestyle of travel and adventure.



Like the Apple products a car designer will aim to capture the brands heritage and iconic lines and feature in an exciting new design. It needs to be recognisable and capture past models but predict future trends. For the Audi TT this has meant keeping the iconic outline and proportions while the car gets bigger. Over the last 23 years there have been only three generations, with the second and third continuing the trends set by the Mk1 while applying modern Audi design language and features.

In modern cars in car entertainment and connectivity are a huge part of the experience for the occupants and interior design. The newest TT uses Audi's Virtual Cockpit to provide all of the essential information about the car combined with in car entertainment and satellite navigation on one display in place of conventional dials. This means the rest of the dashboard remains clean and simple with circular air vents inspired by the original.

Design or Style

If the problem a car needs to solve is to move people around how important is design? The car to solve this problem wouldn't be a sports car like the Audi TT but likely something more practical with space for four or five adults and their luggage. Cars like the Ford Fiesta and Volkswagen Golf, two of the most popular cars in the UK. The designers of these cars will aim to create the biggest interior space while minimizing exterior size. They are styling the car around a functional package, but definitely still designing. A huge amount of functional design will go into developing a package with as little compromise as possible down to positioning of the drivetrain and suspension to encroach as little as possible into the interior space. (Gilles, et al., 2014) Usually this means a transversally mounted engine and front wheel drive like the original Mini. Since the Mini the popularity of the hatchback segment has rocketed and there is now so much choice on the market that design is now becoming more important than ever. With little between them in terms of driving and practicality the style, brand and interior are likely to be the biggest draws when choosing one of these cars.

As seen with the Apple products there is a market for well designed premium products. BMW, Mercedes, Audi were the third fourth and fifth biggest sellers of new cars in 2020 (Statista Research Department, 2021). All now make small luxury cars that have proved to be some of their most popular models. These cars will combine the practicality and functionality of cars like the Ford Focus with the desirability of the luxury brands flagship models.

With the importance of design in cars clear it is now bigger than ever before. It is no longer an industry with a 'one man one vision' approach where a single designer is behind the decisions. Designers like Sir William Lyons who was the lead designer behind the Jaguar XJ6 of 1968. With so many different skills involved the job of designing a car has been separated into multiple jobs each covering a specific area. Starting with sketching and physical and digital rendering followed by clay and CAD modelling. The different parts of the design process will then come together as a committee to make decisions on a shared vision.

Could this modern way of design be dulling down cars to please everyone to the point where there is little difference between them?

I am surprised how similar some modern electric cars are looking. It was my expectation that with platforms based around a battery and electric motor designers would have greater flexibility to create unique shapes with revolutionary packaging. Volkswagen recently launched the ID.3 based on the Volkswagen group Modular Electric Drive matrix (MEB). This platform is shared by the rest of the Volkswagen group for each brand to design and build a car on top of. There are models from Skoda, Audi and soon from Seat and Cupra but all while wearing different branding they are a very similar shape and style.

This combination of separate jobs is something I was surprised to learn about upon studying car design. Now with a better understanding of the processes involved in designing a car and some experience of each I am working to improve my 3D CAD modelling skills, specifically Alias and VRED.



In a design studio creating a new car the digital modelling comes nearer the end of the design process. It is the most accurate way to visualise a designers' sketches and renders in 3D. A good 3D model can be used to create photorealistic renders and video footage in VRED or can be used to make physical models. A CAD model can be 3D printed or can be milled. This is one of the quickest ways to see the design physically in 3D. A scale model of the car can be made or individual components scaled down or full size. Things like a mirror or light unit can be printed to analyse the shape, design and functionality. The alternative to CAD is clay modelling, another job in its own right. Designs are usually represented in quarter scale clay models first and then as full size models. The 1:1 scale clay models are wrapped to give the effect of painted metal to allow designers to see the shape as it would appear on a production car.

Automotive Design at University

At university all of the different aspects of designing a car are covered culminating in the final year major project where all of the individual skills are put together to design and model a car.

The first year was about developing and improving sketching techniques and starting an understanding of three dimensional shapes and surfaces. The amount of and importance of sketching still involved in the design process surprised me at first. I expected the process to be more digital. However, now with a better understanding of the digital tools and their uses and limitations it is clear that being able to visualise your design and ideas quickly and effectively is essential and physical sketches are still the best way to do that.

Second year was faster paced and was a deeper look at the skills already learned. Projects included physical rendering with markers and digital work on photoshop. Both are great ways to give depth to drawings creating shadows and highlights on the surfaces. Alias was taught too, software for creating three dimensional digital models. Similar to creating renders, being able to create a CAD model of a car requires accurate drawings and orthographic views. The most exciting part of the year was the live project with Lotus. A project that required a much faster output of work and the best possible quality. Split into stages, the project broke down the design process to start with sketching and idea development followed by further development of a few design proposals. For the final stage the best proposal of the group was finalised with sketches and once orthographic views were created the Alias model was made to present VRED renders with a package drawing and photoshop renders. This year demonstrated the importance of the basic skills, especially drawing, to lead to a good design.

So far the final year project is in its beginning stages creating ideas that could solve a problem and developing the best to present three design proposals.

For me this is the most challenging part of the process. While I have the ideas for the car design, I feel I struggle to draw them accurately, especially when perspective views are required. I feel more confident once the design is finalised and the process moves on to rendering the design with markers and photoshop and creating 3D CAD models. While challenging I enjoy the process and find the final results very rewarding.

My Design Inspiration



In an attempt to work out what design means to me I have compiled a mood board of things and cars that I like.

It appears they are all things that combine looks with function. Probably the best example being the Thule roof bars and bike rack. Their products have to put function, safety and durability before all else, yet they manage to combine this with a sleek looking design and quality materials to make a product that is extremely easy to use and feels top quality. It is a similar story for the other things in the mood board. The Ultimate Ears speaker and Garmin watch perform well and combine the functional aspect with style and quality materials, the Vans boots are comfortable, well made and look good.

This combination of looks and functions has to be the biggest challenge in car design. A car is designed around the drivetrain and occupants and crumple zones. The Aston Martin Vanquish has a 6.0 Litre naturally aspirated V12 under the bonnet and behind room for driver and passenger with a comfortable and sporty driving position and behind the occupants there is a good sized boot, all enclosed under the elegant coupe roof line and some of the best proportions in car design. It is a similar story with the Morgan Plus 6, aluminium body work wraps tightly around the 3 litre straight six engine at the front and the ash frame surrounding the driver and passenger at the back, all working

to create its characteristic style of long bonnet and wide wheel arches. Both cars look great but will really come to life when driving, looking and sounding effortlessly fast. Like the Morgan, the Airstream caravan is shamelessly retro and has become a timeless design wrapped around a practical and luxurious interior. While not as obviously retro the Vanquish has styling cues from classic Aston Martins and has become a timeless design that still stuns from every angle despite being almost ten years old.

My Design Influences

When I was younger I lived in Colorado, USA and travelled coast to coast. Since then there are definitely American influences represented in the things and styles I like on the mood board, not only the American cars and trucks but the Vans shoes and Rotiform wheels designed in California and the Yeti mountain bike designed and made in Colorado.

My love of cycling and the outdoors also influences my choice of car and design preferences as I need it to be able to carry a bike and want the car to look cool doing it.

So for me design must be functional, more than art that is purely aesthetic, while retaining a creative and fun side with a little bit of retro.

Good design Past, Present and Future



Design and what looks new and exciting appears to change in phases, there have been times where the majority of cars use organic shapes and curves and phases where sharp angular edges and straight lines are seen as the modern way. The Audi A2 pictured above made in the year 2000 has simple surfaces and curved lines, a big change from Audis of the 1980's like the famous Quattro rally car that was all straight lines and sharp edges with an aggressive square front face. That was the trend at the time followed by a radical change to more complex curved surfaces in the 1990's where sharp straight edges were almost completely removed from the designs. Since the time of the A2 automotive design in general has moved back towards incorporating sharp edges into the designs combined with complex surfacing. Most recently car designs are incorporating highly complex details, seen in the new Q4 e-tron. Something Audi have done exceptionally well particularly in the cars lighting with massive advances in LED technology. In the future it is likely there will be a return to the simplified surfaces retaining high levels of exquisite details.



The fourth car pictured above is the Audi Grandsphere concept, one of two Audi concepts that represent their vision of the future with an interpretation of a saloon for the future. It is described as “electric, automated, intuitive – and with plenty of individual space for immersive experiences” (Audi, 2021). The design has removed many of the edges that feature on their current range particularly on the front of the car and has moved towards a design language using advanced surfaces that flow together manipulating the light and reflections to create a sleek and elegant appearance. The design incorporates and advances on the current LED lighting style with small intricate light units front and rear. The clean design is continued inside with a simplified, uncluttered dashboard that flows into the doors and wraps around into the rear seat all over a flat floor.

This design language follows my preference for clean and cool design that performs and functions and would not look out of place in my mood board.

Design and the Environment

With such strong public interest in the environment and sustainability from everything in their lives it is essential when designing and manufacturing a car that it is sympathetic to the environment. For cars and any transport the main focus to improve sustainability is usually the engineering and drivetrain. Electric power is quickly growing in popularity. Materials are important too, using less plastic in the bodywork and throughout the car replaced with more sustainable and recycled materials. For example Tesla’s interiors use a vegan alternative to leather and Volkswagens new ID.3 is made net carbon neutral. Volkswagen as a whole has set the goal to be a company with a net carbon-neutral balance by 2050.

However currently despite the eagerness for efficiency and being seen as environmentally minded SUVs and crossovers are still growing in popularity. They are big and heavy cars designed to go off road yet they rarely do. Future challenges for efficient design will have to prove to people that aerodynamic and lightweight design will make a huge difference to the cars range and overall carbon footprint.

Electric power with zero tailpipe emissions is ideal for city cars to reduce pollution in built up areas. Of course for electric cars to really reduce pollution on a large scale all of the electricity that powers them needs to be sustainably sourced and renewable like wind or solar power. With limited range and slow charging times pure electric may not be the best answer for longer drives and currently can’t offer the flexibility and freedom of an internal combustion engine car. So maybe there is potential in alternative fuels, hydrogen for example either as a hydrogen fuel cell vehicle or a hydrogen combustion engine. Both options require filling hydrogen tanks taking no longer than filling with petrol and the only tailpipe emissions are water. Currently the biggest limiting factor for hydrogen power in Britain is the lack of infrastructure meaning a hydrogen car would struggle outside of London and the south east.

Applying my Design Ideas

Currently in the beginning stages of the final year major project designing the Ultimate Grand Tourer I am making sure not to lose the functional aspect when designing the car so that it can still fulfil its brief. As a successor to the Aston Martin Rapide it is a car to effortlessly travel across countries with family and friends and to see and experience the places that inspired the car. To do this it needs to be a true four seater with room for luggage and of course plenty of power. When looking at almost any Aston Martin side profile there are four key lines, the long roof, tops of the front and rear wheel arches and a straight line back from the front wheel. Keeping these lines and proportions, specifically the long sloping roof without compromising space for rear passengers has been a challenge. Achieved by stretching the base of the rear window right to the back of the car to create a long roof that flows from the top of the windscreen into the rear window. This also keeps the car low and aerodynamic. Downsizing engines with turbo power allows for a shorter bonnet than a conventional Aston Martin allowing for the front seats to be moved further forwards to create leg room for the rear passengers. Alias has been a useful tool to create basic three dimensional scale models of the design sketches to understand how the car would be packaged. Four ninety fifth percentile mannequins are used in the model to make sure the vast majority of people will be comfortable front and rear. From there the designs and drawings can be adjusted as required to make sure there is sufficient space for the driver and three passengers.

Conclusion

I have defined design and shown that good design sells products. I have explained designs that have influenced me and what design means to me. I have shown how automotive design has changed over the years and what it takes to create something that is new, exciting and unique. I have outlined the importance and impact of the environment on modern design. Even in this digital age, appealing and successful design will in my opinion always need human creativity. Design is so much more than its simple definition, “making or drawing plans for something” (Cambridge Dictionary, 2021). The process of design is, first and foremost, to solve a problem and in doing so produce a solution that both looks good and functions well. With such a vast choice when choosing to buy anything, big or small, good design is essential and makes the difference between what sells well and what doesn't. In addition to the outright design, the rest of the package is also important, the whole experience, from marketing, branding and packaging to the appearance and actual practical use.

Good design will always require a person and as vehicles become more autonomous and less involving for the driver all that is left to make it something desirable will be the aesthetics.

A well designed car combines so many skills and disciplines that can transform a car from something simply to get from one place to another, the solution to the problem, to something that feels alive and involving. It takes a team of fantastic people to create a car that is truly spectacular, a car that connects with the driver and the outside world. Above all, I have shown that good automotive design will always need a human, sympathetic to the environment, to create the best looking and most desirable vehicle, boat, bicycle or caravan.



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