

# **THE PHILOSOPHY OF DESIGN**

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***'Form and function are one.'***

*'Now everything that becomes or is created must of necessity be created by some cause, for without a cause nothing can be created. (Plato, Ellerton-Harris, 2013).*

Philosophy translates directly from the Greek for 'The love of wisdom', in its broadest sense it is the study of ideas about the world and humanity's place in it. As human beings we have the ability to think, reason and question, it is this ability that raises many unanswered questions about life, for example, why are we here? What is the purpose of our lives? What type of life should we lead? What is a moral life? How do we know anything? And why do bad things happen to good people? Philosophers have pondered upon these types of questions for thousands of years. Philosophy has helped civilization understand itself better and even led to the birth of modern science. If it had not been for the likes of Plato and Aristotle writing down their thoughts about how they believed the universe operated and what humankind's place within it was, then these questions might never have been considered by the likes of Aquinas, Descartes, Hume, Wittgenstein and others, and our world and our understanding of it would have been much the poorer.

Ancient Greek philosopher and student of Plato, Aristotle developed his own philosophy which diverged from Plato's in several significant areas. His contribution to science and ethics has known no parallel in Western civilization. *'Everything that is in motion must be moved by something. For if it has not the source of its motion in itself it is evident that it is by something other than itself, for there must be something else that moves it. (Aristotle, Physics).* Aristotle takes great care in outlining the changes that can occur within the universe and everything in it in terms of motion, changes of state and movements in distance. This idea was further developed by St Thomas Aquinas, a 13<sup>th</sup> century Dominican priest from Italy. Aquinas is well known for using the philosophical works of Aristotle commonly referred to as Natural Theology. Aquinas referred to the 'First Way', meaning, 'notion' and 'change', he basically said that when we observe the universe we notice that things tend to be in a state of change or motion. He noted that things do not do this of their own accord but are instead 'moved' or 'changed' by something else. Therefore, everything is in a state of constant change and the philosophy of design also changes with the likes, ideas and preferences of individuals and time.

Aristotle used the example of a block of marble (potential) becoming a statue (actual) but only when acted upon by the sculptor (efficient cause). The efficient cause refers to the cause of an effect. The intermediate cause refers to a cause that relies on something else to have triggered it (similar to a domino line). The ultimate cause is the end result, within this example being the statue. Aquinas 'Second way' deals with the concept of cause and effect; he suggests that everything observable in nature is subject to this law. This could well be demonstrated in the end result such as designs like the Dwight D. Martin house which almost seems to "melt" into the earth, its final cause and therefore its form and function combined as one.



Frank Lloyd Wright coined the phrase “form and function are one” and spent his life creating organic designs. This was a decidedly post-modern approach to design –instead of focusing on form (like most contemporary designers), Wright focused on creating integrated designs that flowed easily into the surrounding terrain.

*“Form follows function – that has been misunderstood. Form and function should be one, joined in a spiritual union” – Frank Lloyd Wright.*

The term ‘Form follows function’, is a principle that is associated with modernist architecture and industrial design in the 20<sup>th</sup> century. The main principle ethos is that the contour and shape of an object or building should be primarily based upon its intended function or purpose. Louis Sullivan an American architect coined the phrase in 1896.

*Whether it be the sweeping eagle in his flight, or the open apple-blossom, the toiling work-horse, the blithe swan, the branching oak, the winding stream at its base, the drifting clouds, over all the coursing sun, form ever follows function, and this is the law. Where function does not change, form does not change. The granite rocks, the ever-brooding hills, remain for ages; the lightning lives, comes into shape, and dies, in a twinkling.*

*It is the pervading law of all things organic and inorganic, of all things physical and metaphysical, of all things human and all things superhuman, of all true manifestations of the head, of the heart, of the soul, that the life is recognizable in its expression, that form ever follows function. This is the law’. (Louis Sullivan).*

During the late 19<sup>th</sup> century in Chicago, Sullivan developed the shape of the tall steel skyscraper. This was a time when technology combined with economic forces and tastes of the time made it necessary to leave the design traditions of the past and push forward with new revolutionary design concepts. Sullivan suggested that instead of the traditional ‘form follows precedent’, there was a need for ‘form follows function’, in that the design would be determined by the purpose of the building. It was Sullivan’s assistant Frank Lloyd Wright who adopted this principle and professed a slightly different form. The new change perhaps gave way to new styles which gave more freedom and latitude.

Within architecture 'form follows function' became extremely popular in after the 1930s between Modernist architects and all ornament and decorative elements were considered to be superfluous in modern architecture design in modern buildings. Whilst all decorative elements may have been stripped away, Sullivan himself, often covered plain surfaces with explosions of Art Nouveau. He used decorations cast in iron or terra cotta, these were usually ranging from organic forms like vines and ivy, to more geometric designs, perhaps influences by his Irish design heritage.



Above is an example of this iron work, in what could be one of the most famous designs of this type, green ironwork covers the entrance canopies of the Carson, Pirie, Scott and Company Building, in Chicago. Although, designed by the student of Sullivan within his employment, they eventually became Sullivan's trade mark and instantly recognizable as his work.

This is not the only time where functional design and the high demands of the traditions, marketplace trends took place in 1935, following the newly designed streamlined Chrysler Airflow, the consequence of this design resulted in the American auto industry halting attempts to introduce optimal aerodynamic forms temporarily into mass manufacture. Some of the major car manufactures believed that the aerodynamic efficiency would result in a single ultimate auto-body shape, which was the 'teardrop' shape, although it was agreed that it would not be suitable for unit sales. Around this time General Motors began to adopt two different positions on streamlining, one for customers and one for the internal engineering community. Considering 'form following function', annually with body shape style, it was considered that aerodynamic styling is completely meaningless in terms of technical performance.

It has been drag coefficient that has become more of a marketing tool and a way of improving market sales as it reduces fuel consumption and increasing its top speed. It would be very comforting to think that a car designer could have the liberty and freedom to design according to their beliefs, philosophies, likes and what they would like to design. However, cars have to adhere to laws, budget, and packages and type approval regulations that give certain constraints. This gives very little room for individual artistic expression, be it aesthetic practices and tastes of the past and of the mode. Whilst this maybe a priority within car designs, it is also highly influenced by financial gain as well as profile. Form and function usually hold different empathic value individually. It may be that performance may outweigh look and form to the outer principles of gain.

A modern day example for architectural design that I believe provides the concept of 'form and function are one', is the McLaren Technology Centre in Surrey, England. It is a very modern and unique building, one of a kind. It consists of four buildings of which two of them are open, it houses the main headquarters of the McLaren group. The buildings are set around a series of lakes, the water from these is pumped through the exchanges to cool the building, making it environmentally friendly and sustainable. The overall design and layout of the buildings and lakes design have a likeness to the ancient Chinese Yin-Yang symbol, as they harmoniously interact with each other and helping Mother Nature. Therefore, its function not only provides a working place that is clean and friendly, but also connects with nature and does not harm the environment and provide a large carbon footprint. The McLaren building was designed by Foster and Partners who are a British company who are dedicated to designing sustainable, low-energy workplaces, which it says benefit the environment, providing a friendly workplace for the company's employees and therefore, increases a company's productivity.

The form of the building has one main aim in its design, to unite a global headquarters of a major world company under one roof. There are a variety of working areas, such as design studios, machine shops, laboratories, research and development and production facilities. Therefore, providing the company with all the specific work areas and environments that it needs and 'form and function' come together, this is why I believe that it is a very successful design and also short listed for award. This design proves that it is possible to combine (form and function) and designs do not have to follow the compromise of having one over the other.

I believe that 'form follows function' is incorrect, my belief is that 'form and function' are equally important and therefore should complement each other to produce a successful design. The overall look of a design should be appealing yet still fulfil its purpose. I do not believe that you should compromise function over look. My philosophy is that both should work hand in hand. If we were to consider different forms of car design, they are indeed different and individual to their car designer and their personal philosophy. Yet all provide a function that is also different and individual to their purpose.

An example of 'function following form' I would suggest is the Lamborghini Countach. Although this is quite an impressive looking and desirable car, designed without strict car regulations, there are many problems with its function because of its focus on design. The car is too low; it is only 40 inches tall and therefore drivability compromised. The windows only roll down 3 inches, it is best suited for a person 5ft 8 tall, and there is almost no rear visibility. Although it shocked the world with its outlandish design, it gave a 'wow' factor as the world press considered it outrageous yet impressive. It has a very origami shape, not very organic. It has harsh lines and aggressive body styling in its design, appearing futuristic and ahead of its time. It was a product of its time as it was designed in a time of different federal laws, when the outrageous was possible. Even though the Lamborghini Countach is arguably one of the most

iconic supercars ever designed, it has compromised practicality, which makes it a chore to drive and very un-enjoyable. Therefore, in my view this car highlights form-compromising function and are not 'one'.

An example of 'form following function' in my opinion is the Lada Niva 4x4, whilst not the most impressive looking car, it certainly performs its function. It is a Russian made car that was produced to be a cheap yet reliable car. Its primary function as a 4x4 vehicle is to cope with harsh weather conditions and terrain, such as subzero temperatures, hazardous conditions, such as ice and snow and ruff hazardous terrain. Also as a primary function its design purpose was to work, therefore its aesthetic value was not a focus and priority. The philosophy of this vehicle is produced in its working ability to perform and be a working car. Although it achieves this purpose, its visual appearance has not changed since its first production in 1977 to present day. This vehicle was designed specifically for the rural market in Russia, function was the priority and not form.

In my opinion the visual appeal is very limited, its design is bland, boxy and has no to little emotion. Whilst it may appeal to the rural market and is legendary due to its working ability, sustainability and reliability, it is not remembered and known for its aesthetic visual expression and looks. Therefore, form has been compromised over function.

An example of 'form and function as one' is the Koenigsegg Regera, this car is a combination of impressive aesthetic visual appeal and revolutionary engineering and performance. Its visual appearance is sleek yet could be said to be a little aggressive but at the same time elegant. Its long swiping curves were based upon the philosophy of a mega car alternative of the Koenigsegg traditional extreme lightweight race-like road cars. While traditional Koenigsegg's have always been quiet practical and creature comforts a priority, it combines form and function as it is designed to be at the for most practical, very luxurious and a hypercar alternative to the rest of Koenigsegg's previous lightweight lineup, this includes the Agrea RS and the One:1.

The Koenigsegg Regera does not have the traditional short comings of the previous One:1, its Direct Drive transmission (KDD) was invented by Christian Von Koenigsegg produces a revolutionary hybrid system and gear box. It is in fact so revolutionary as it does not have gears, instead they have developed a clutch-slip mechanism which uses a hydraulic coupling to convert torque. Its philosophy here is to produce power whilst giving the sensation of a traditional downshift, without the traditional gears. This produces the effect of function combined with form. This functional force produces the ability to power motorway travel and speed; for example, the KDD reduces the drivetrain losses compared to the traditional transmission of CVT by over 50%. All this is produced, as there is no step up or step down gear working in series with the final drive. The result is pure power sent from the engine to the wheels. In my opinion here, is that the overall philosophy of design results in 'form and function' being one. Combined together 'form and function' of the Koenigsegg, represents the pinnacle of this.

I have chosen Bugatti as the brand for my major project, as their philosophy is, '*A technical product is only perfect when it's aesthetically perfect too*', (Ettore Bugatti), as its ethos is 'Art', 'Form' and 'Technology', fits very much into my belief of 'form and function' as one. Bugatti is unique and its design is based on not only revolutionary motorsport technology, but also architecture and distinctive artistry. The high emphasis on artistic appeal features heavily in the unique and individual tastes of its family of designers, consisting of three generations of artists. Carlo Bugatti, a furniture designer, Ettore Bugatti, an engineer, Rembrandt Bugatti a sculptor and Jean Bugatti a stylist, make up the family team that developed the brand. The form and style of Bugatti developed by Jean Bugatti, represents an impressive combination of power and beauty, also a balance between elegance and superior performance, which I believe combines form and function. This is also demonstrated in the development of its technology which sets new benchmarks, in performance and quality. Overall, I believe that it could be said that looking at a Bugatti is just as much of an event as driving one. Form and function are combined to tie in with my philosophy of design and this is why I have chosen this brand for my major project.

In conclusion, my personal design ethics are greatly influenced by 'form and function' being combined together, providing an efficient working model with looks and overall usability. I believe that if a model is to work at its maximum potential it is also important that it is a timeless elegant design. I have given the examples of this above, for example, the Lada Niva 4x4, although it is a very useable and practical vehicle and functions to its maximum purpose, its form is of no importance and has not changed over the years. This means that although it is a successful vehicle it is not a vehicle that is designed to show off its visual looks. It is therefore not a design that is sold for its beauty but for its function. This vehicle is then limited as a vehicle that provides usage and aesthetic selling advantages. My belief is that both form and function appeals to a greater demographic and selling advantage to its producer and therefore, greater financial advantages.

I have therefore, chosen Bugatti as my major project as it is a brand that combines the importance of both form and function, not only is the design a genuine work of art, its performance has revolutionary technology. Overall, the question of function vs form as an argument is very interesting and regardless of what the factory's original ideas and functional intentions were, besides meeting the very necessary requirements to move someone from A to B, the final function of the vehicle is perhaps up to the individual owner.