

How technology changed design process



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Consider for a moment the argument of good vs. evil. Neither can seem ably exist alone, without the other surfacing or breaking the mould at one time or another. Now consider the historical friction between the arts & crafts era of design and today's computer aided 'magnificence'.

As soon as design aids such as AutoCAD, and laser cutters were created, people began to argue for the loss of design origins and individuality; some may even say its soul and character. Those who were enticed by this new technology that allowed production to be executed in half the time on twice the scale, were in awe, and naturally as with all two sided battles, alliances were formed.

"Gone are the days of hand carving and endlessly tiring man hours in workshops" shouted the people of the future, "what takes you a week and four men, takes us a day with a computer, with no need for getting grubby." The conceptual age of design was truly revolutionized by computers, no argument there, but was it necessarily a good thing? "No!" shouted the people of tradition, "where you exceed us in production... you lack in character, where is the heart and soul? The attention to detail absorbed through precise workmanship and craft?" (Pemble, 2010) Once again I feel that their argument is sound, but is it not also a prime case of people fearing what they do not understand?

As is the case with all arguments, it often takes a step back and a good long look at both sides of the case to induce or create a compromise that allows both sides to advance further than they imagined. For this we need to begin

in Weimar, Germany, the year is 1919 and the Bauhaus school of Art & design is formed.

Throughout Europe, world war one had clearly left its mark. The German state lay in disarray and its economy lay in tatters and after the initial turmoil over the future of Germany. Whether it be soviet communist or capitalist German, several factors were set in stone, the way of imperialist grandeur and ornamentalism design had to change, the transformation of 'emotional Expressionism to the matter-of-fact New Objectivity' (Minusfive 2006). This gave the German organisation, Deutscher Werkbund, founded in 1907 and considered the forerunner to the Bauhaus, a newfound vessel for their visions of design. The Werkbund's aim was: 'to harness the new potentials of mass production, with a mind towards preserving Germany's economic competitiveness' (MinusFive 2006). This kind of agenda for change become apparent in many areas of design, it may have originated in architecture, with the Werkbund's idea of economical production for housing and the built environment, but it spread to even the most menial of objects, combining industrial methods with artistic flair, an example I suppose being envelopes.

Up until 1840 all envelopes were handmade, cut from paper and constructed before being used to send mail. However, in that year a British man George Wilson derived a method of mass production from the geometric layout called tessellation. This enabled multiple envelopes to be cut simultaneously minimising the waste cut paper. Only five years later the production of envelopes was revolutionized further by two men, Edwin Hill and Warren De La Rue, whom pioneered a steam pressing machine that enabled the cutting,

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folding and gumming process of envelopes all to be done in one stage. As was to happen less than a century later to various crafts, the traditional method of production died slowly at first, then all together outclassed and outperformed by its machine age successor.

Here is where the compromise between industrial and traditional methods is required. During my journey in which I created my own envelope design, I was able to see the merits and disadvantages of both ends of the spectrum. The first step was to take a standard sized envelope and dissect, analyse, and recreate it, several times, to get the feel for and a thorough understanding of its design. I then, from a purely conceptual view, came up with my design, which was to be a clasp sealing disc shaped envelope. I then repeated the process i used for an existing design, for my own, entailing technical drawings, models, prototypes, and experimentations, until I came up with my finalised design. Here is where the ' best of both worlds' comes into its own.

If I were to embark on this project in an identical fashion, but in a 3D virtual computer world via programs such as CAD and 3DSMax, it would be quicker; however... there would be no feel for the design, certainly no character, and there would be no way of knowing if it worked, or how it were to assemble. Tactility is one of the charms of handmade works. It was at this point that I was encouraged to investigate the more industrial side of production, so after transferring my design from hand drawn plans to an AutoCAD design, It was then onto the laser cutter, which essentially is a robotic device that reads the lines, line weights, and colours of lines to determine where needs to be cut or scored on the material placed under the laser. Now here comes

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the difficult part, but does prove to be the part that pays off, as the laser cutter is undeniably fiddly to setup and calibrate with regards line weights, fold lines and cuts.

In this sense, there is still no smooth transition between man and machine, as it took several attempts for the laser cutter to 'understand' the design, however that said, once calibrated it is the perfect tool for recreating a single design on a mass production level. Modern methods have thankfully taken the stress and immense man hours required out of hand production and tradition, but the integration and principles of tradition and good design should never become fully digitalised like its successor. Just like the argument of analogue vs. digital regarding timepieces, each will have their role as one simply wouldn't exist were it not for the original.

The point of this investigation for me is that both modern and traditional crafts both have their roles, and as many influential figures agree, neither should be neglected nor overlooked, for they both hold merits. Technology has indeed renovated the design world, but in today's society it does on occasion overpower and fail to do itself justice, leaving the piece cold, generic and grey, failing to do itself justice. This as with most aspects of the design world boils back down to the roots of the Bauhaus.

Take for instance the idea of Bauhaus furniture design, it wanted to maintain the traditions of soul in design, along with logic, so for instance a better thought out design made with more economic materials and technologies, but still manually overseen or produced would therefore potentially be the perfect design formula. Enter Mies Van Der Rohe. Originally from Aachen, he

moved to Berlin in 1905. At the age of 19, he was unqualified and spent his time hopping between building sites. Not exactly the start in life most would stereotypically associate with a famous architect, whom set about change we feel the benefits of today.

‘ The tasks of design and construction were combined in his early education, not separated by increasingly common divisions between architect and builder.’ (Zimmerman C. 2006, p. 7)

Mies van Der Rohe was trained as an accomplished bricklayer and stonemason under apprenticeship of his father, but also trained as a proficient draftsman, after taking a keen interest in design whilst he worked for a specialized plasterwork company. He saw the need for an understanding of both the ends of the construction spectrum from the initial spark of an idea, to the laying of foundations, so that he may design more efficiently. Riehl House was his first commission under recommendation of a colleague at Bruno Paul architects, and was finished in 1907. ‘ The young Mies proved himself able to design and build competently, even skilfully, and capable of productively engaging the most contemporary issues of the architectural world in Berlin at the time.’ (Zimmerman C. 2006 p. 19)

This was only the beginning of a long and fruitful career for Mies, and this subliminal theme was present throughout his career, the breakaway from tradition and supposed acceptable form, in favour of modular, efficient modern materials in design. This ability to draw and recollect from the design ethos of yesteryear, and combine it with the forefront of technology to create something that is not only perfected in its balance, but also pleases

a wider audience is an ability he seldom neglected. A prime example is of this is dark red masonry built Lange and Esters House. 'The esters and Lange buildings were both surfaced in dark brick; but they are only partially bearing-wall structures. They were among the first modern buildings to free brick from its load bearing function.' (Zimmerman C. 2006 p. 33)

It gives the appearance of a traditionally built house of the time, yet modernised in aesthetics slightly, and due to its modular skeleton of steel it allows the large open views that it contains, and for the first time in German architectural history, the spatial design dictated the structural calculations.

Just like with his most prolific of projects like the Seagram building, IIT centre and exhibition hall in Berlin (ironically his career peaked both as he left and later returned to the city) he used the most modern of approaches to construct the building yet he still remained true to the classical ideals of open flowing space, secular views, and the overall mastery of the space provided. I suppose a pinnacle case study would be that of the Barcelona Pavilion. After being accepted into the Werkbund in 1927, Mies was commissioned by the German Reich to design and build the 1928 World exhibition in Barcelona. With its beautiful classical onyx and marble walling, and chrome framed glass facades of multiple shades, it was the epitome of form with function, a piece de resistance of the Bauhaus vision. Instead of the normal layout of conventional housing or building, it followed Mies combination of 'Rhythmic movement' and 'carefully composed views.' (Zimmerman C. 2006 p. 39)

Though beautiful, like all individual prototypes it was slightly flawed (due to insufficient budget and lack of specialised materials, the prolific flat roof was susceptible to water damage and nearly ruined the entire structure), but just like the method of trial and error in many of the hand crafts, Mies learnt from his mistakes, and embraced them with his future projects, like the Seagram building and IIT, whereby he perfected his steel frame designs that have revolutionized today's construction.

' The Seagram building was undoubtedly in this paradigmatic fashion. It is often seen as the finest high-rise building Mies ever built. No longer looking back to past historical design for legitimation, the building presents the architecture of capitalism with its most essential, concentrated face.'

(Zimmerman C. 2006 p. 16)

Just like in my investigation into envelope design, sometimes things can be flawed; the important part is learning from it and being able to continue. This is where I feel that by doing all of the experimenting stage by hand, with copious amounts of trial and error, I managed to succeed in a design that as viewed by others was vitally flawed, my point being this. The initial design criteria given to me was that the envelope had to be capable of holding this essay and any accompanying notes, drawings, work etc and my design being circular was therefore flawed, considering all of my notes and work is on rectangular pieces of paper. It may seem like a very simple answer to a glaring omission, but I have simply decided to enlarge the size of the envelope, and changed its own criteria in that it will be more like a folder, capable of holding my work. Just as alterations were needed to my envelope,

drastic alterations were needed to the world of design. The winds had changed direction, and change was coming.

As with a lot of the architects of the time and followers of the Neues Bauen, people frowned upon this new rationale of design. ' By 1933 many architects of Neues Bauen understood their precarious status in national socialist Germany, and many emigrated.' (Zimmerman C. 2006 p. 14) With the tension growing rapidly in Germany, and the intolerance of the now empowering Nazi party quickly showing itself, the design world soon became a focal point. With its grand imperialist nature, the new Reich wanted its capital to show this. However... tradition ruled the waves.

As soon as the National socialist party came to power the Bauhaus was voluntarily closed by its members, knowing the view of the new Reich and how its left wing ideals would be dealt with. ' Nazi writers like Wilhelm Frick and Alfred Rosenberg had labelled the Bauhaus " un-German" and criticized its modernist styles' (MinusFive 2006) Many architects of the time soon began to emigrate, restrictions upon Mies own work was imposed and his security was soon threatened. In 1938 he made a career changing choice and emigrated to the United States of America.

Here I feel began the true nature of ingenious design. By that I mean the ability to cover the entire spectra, correcting the negatives and reinforcing the positives, and fulfilling the Bauhaus ideals of singular design. The Seagram building was by any standard, miles ahead of its competitors. Yet it achieved this without claiming to be the future, or resenting the past. With classic interiors, a classy dark outside skin of externally mounted bronze,

and topaz tinted glass; it not only looked the part, but also integrated frontier technology, to aid in wind buffering and reduce UV glare/heat. Its latticed modular steel framework also represented the way forward, not only with its curtain walling efficiency that allowed simple mountings for the traditional venetian blinds, but also with regards a lighter, stronger, more adaptable construction method that retained so called classic features. However, the buildings piece de résistance is what many of today's skyscrapers have to thank.

Before Mies got his hands on the commission, he looked at the competitors, the other structural locale, and also back at his previous concepts. He then did what no one else had done. He set the tower a reasonable distance back from the street and created what we see throughout today's cities, urban landscaping. By creating this public space, this void filler that bridged the public and private sector he thereby integrated the Seagram immediately with its environment, it was this sort of thinking, that put Mies one step ahead, enabling him to cater perfectly for both ends of the spectrum by simply thinking outside of the box, where no others considered or dared to. It paid dividends, whilst also setting the trend of vertical design for decades to come.

Conclusion

Balance is what enables many things in life to perform at their respective bests, from the balance of work and social, to the balance of a relationship, and none more so than the design world. When it comes to the argument of traditional vs. Modern, the initial stages of design should always respect their roots, thus keeping to hand drawn methods, crafts, and human investigation

like sketching and model making. It is all too easy to rely solely upon CAD and other such programs that have made some of today's design rather inert and cold, without human charm, and the only possible preservative of these features is the maintaining of traditional methods and heritage to keep the human signature alive. The investigation I carried out made this all too apparent, that relying upon technology to carry a design from inception to creation is a vitally flawed theory, and that without sacrifice of man hours and effort with my own skills, my envelope would be nowhere near as thorough or well designed, not saying that it is a perfect example, but what designer is without his or hers mistakes? Far too many things in life have slipped into the vast abyss that is history and all because we've become too eager and thirsty for this new age of production ease, of technological employment, whereby objects are no longer designed, they are manufactured, devoid of all the initial ingenuity.

' The radically simplified forms, the rationality and functionality, and the idea that mass-production was reconcilable with the individual artistic spirit.'

(MinusFive 2006)

Within the last century, the Bauhaus is the only thing that has come in the way of the seemingly unstoppable machine age. It questioned craftsmanship vs. Mass production, usefulness vs. Beauty, and mainly whether a singular proper combined form could exist. In many areas it succeeded, especially in furniture design, with the likes of Breuer and Stam, whom renovated modern furniture with the cost effective use of steel, providing form and the most necessary function. At the end of the day, the dispute over the necessitation of design evolution will rage for years to come, the important factor which I

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cannot emphasise enough is the compromise, the balance, the equilibrium, and however many other words there are to describe the simple fact that both are equally as important as the other.

‘ One of the main objectives of the Bauhaus was to unify art, craft, and technology. The machine was considered a positive element, and therefore industrial and product design were important components’ (MinusFive 2006)