

How the potential changes in technology and the resultant impact on society will affect the design of home products in the next 8 years.



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# **Abstract**

This report analyses how home products have changed from 1900 - 2012 and uses this analysis, combined with futurologist literature, to present and explain four important trends which will affect home products from 2012 to 2020. The report follows the effects of mass production, wars, social responsibility and technology on design as well as how these affect and initiated the design movements, such as modernism and post modernism. It is shown that the four defining trends are:

- A physical digital world.
- Personalisation.
- The connected home.
- Adaptive technology.

With these trends a future scenario is proposed in which trends and fashions are short lived, self expression in the home becomes more popular and home products become more connected to the internet and begin to be more adaptive to human lifestyles. Some example future products are described including a larger and more important role of the internet enabled television, SMART home lighting and domestic 3D printers. The accuracies and inaccuracies of the report are mentioned, including a possible need for a more extensive report and the effectiveness of historical analysis.

This report aims to help inform the readers thoughts about emerging home trends so that they are more informed for the development and creation of their own projects.

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# Introduction

Throughout this report a brief history of home product design is analysed. This analysis leads to the exploration of four different trends which are likely to influence the next generation of these designs. The report aims to show the way these trends will change home products.

The main questions explored in this report include:

- Why have home products changed throughout each period?

This question is discussed throughout the main body of the text. It analyses the time from 1900-2012 and mentions the key technological, social and ideological issues that have affected the design of home products. Following this there are several case studies of notable home products which reflect the relevant changes.

- What current or emerging issues will affect the design of home products?

The first half of the discussion identifies and explains the four trends which have been determined as important factors for change in home products.

- What changes will occur within the home in the next eight years?

The last half of the discussion addresses this question and presents a future home scenario, derived from the history and trend analysis.

By learning the answers to these questions it may be possible to inspire the readers about the ways in which they could develop their projects for the emerging home.

Trend analysis and future product designs are common topics of discussion which have been written about in many ways. This report makes use of trend analysis material (Sterling, 2003; Watson, 2010a; b) and the way design has changed throughout history (Woodham, 1997; Fairs, 2006; Miller, 2009; Lees-Maffei and Houze, 2010)

It was reasoned that research into the way technical and social issues have dictated the design of products will allow sensible predictions in the way these designs will change.

# 1900 - 1950

## Mass Production and the End of Ornamentation

The dominant theme that affected design throughout this period is mass production and the way design reacted to the machine aesthetic (Greenhalgh, 1990). Design started moving away from using ornamentation (Loos, 1908), as commonly seen in the Art Nouveau movement (Silverman, 1989), and begun focussing on form and function. This was due to making parts simpler for mass production, so that they could reach a wider audience at a lower price (Heskett, 1980). Modernism was a big influence in bringing together the machine and design. According to Greenhalgh (1990) it aimed to "break down the barriers between aesthetics, technics and society so that appropriate design of the highest visual and practical quality could be produced for the mass of the population."

## The Wars

The disruption caused by the First World War led to German efforts to create a modern aesthetic. The Bauhaus was born out of this as a school to make use of new production methods, modern materials and promote 'honest' design (Woodham, 1997).

The Second World War fuelled the development of many new materials, machinery and electronics (Woodham, 1997). Throughout this time the range of products available to the public was limited. This all led to people looking towards a post-war period. This was emphasised by Libby-Owens' Ford 'Day after tomorrow kitchen' which was reportedly visited by more than 1.6 million people in 18 months. It portrayed a flexible work/living space in a futuristic design whose ideas were developed throughout the following decades. (Woodham, 1997)

## Technology

Apart from the developments in new materials and production methods the early 20th century home saw many technological changes due to the increased use and advancements of electronics. Most notable of which include the radio, television, tape recorder and microwave (Singer, 1998).

## Notable Home Designs

### LC4 Chaise Longue - Le Corbusier (1928)

The Chaise Longue was designed as a functional sleeping lounger bringing together Le Corbusier's concept of a 'machine for living' (Fletcher, et al. 2006a). This is an example of how the development in machines and manufacturing techniques, as well as a clever manipulation of the 'machine-age aesthetic' led on to create beautiful and functional objects (Miller, 2009)



Fig 1. LC4 Chaise Longue - Le Corbusier



Fig 2. EKCO AD65 Bakelite Radio

### EKCO AD65 Bakelite Radio - Wells Coates (1932-3)

Previous radio designs were usually more akin to a piece of household furniture than a modern piece of technology (Tambini, 1996). The AD65 was designed as an independent feature of the home rather than to be hidden. It was a cheap and portable design which made use of the material bakelite, a plastic little used in domestic appliances at this time. The use of this new material allowed for the products' circular moulded form and stood to bring beauty to electronic products (Fletcher, et al. 2006a).

### Ball Clock - Irving Harper/George Nelson (1947)

The Ball or Atomic Clock, as it is sometimes called, represents the devastating effects the Second World War had and the repercussions this can have in successful design. It is often compared to the structure of atoms and is seen to symbolise the nuclear attacks during the war. The use of such simple geometric elements, colours and the absence of traditional numbers is fitting for the modernist period in which it was designed. The success of this product shows how well the designer was able to combine the symbolism of recent events into a modern and desirable product (Fletcher, et al. 2006a).

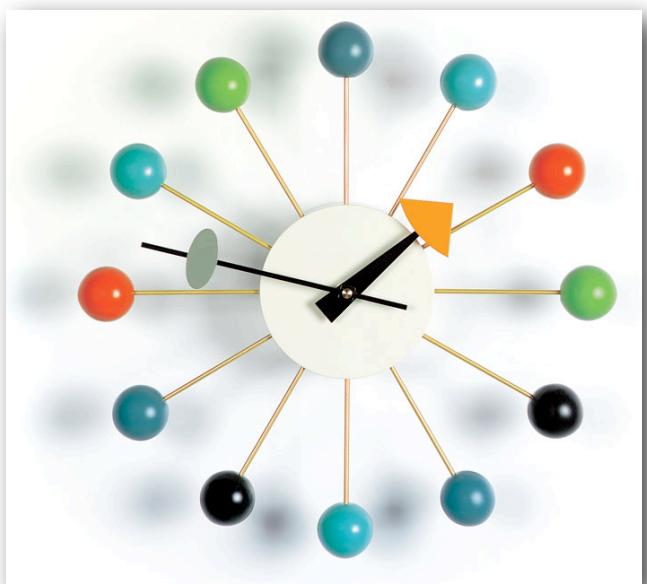


Fig 3. Ball Clock - Irving Harper/George Nelson

# 1950 - 2000

## Post War

The Second World War left the world with an abundance of relatively new materials, lightweight aluminium was the most important of these and found its' way into many products throughout this period (Miller, 2009). An economic boom began and people started to have increased wealth and leisure time which led to consumers taking more notice of design (Hine, 1987). The development and low cost of oil based plastics and the injection moulding process allowed designers to experiment with totally new forms in a variety of colours. This is commonly seen in the 1960's and the Pop Art movement. A culture of disposability grew in which products were rapidly replaced and built in obsolescence was seen (Miller, 2009). Events such as the American/Russian space race influenced a series of space age designs during this time (Tambini, 1996).

## Postmodernism

With the rise of new materials and processes a change occurred away from modernism. People started to want more choices and new designs. The 1950's saw the rise of the youth culture who wanted to do things differently. This all led to the postmodern movement which rejected the idea that 'form follows function' and became more about personal statements and getting rid of all notions of 'good design'. The idea that design can have meaning and communicate to the consumers began to take off, as seen within the Memphis group. "...a table may need four legs to function, but no one can tell me that the four legs have to look the same." was part of a quote by Ettore Sottsass, which accurately portrays the thinking of the postmodern movement.

Towards the end of the century people grew tired of the excess amount of postmodern designs and began to favour simplicity and truth to materials over the "visual anarchy" previously seen (Miller, 2009).

## Environment

Following the Chernobyl Nuclear Reactor Disaster in 1986, and the discovery that the hole in the ozone layer was growing, designers begun looking toward environmentally friendly designs. Recycling and energy conservation were among the most popular issues that were addressed. This can be exemplified by Ron Arad who used corrugated cardboard and car seats to be recycled and used to design chairs (Miller, 2009).

## Technology

Throughout this period was the introduction of new appliances such as the refrigerator, washing machine and the microwave (Woodham, 1997). The early post Second World War years saw the rise of the television which increasingly became more common place among homes (Miller, 2009). Miniaturisation of storage and playback components as well as the increase in speed and quality of the parts was seen. This eventually led to the cassette player followed by CD and MP3 players, as well as video cassettes and VCR's (Singer, 1998). Another important introduction was into electronic video games, which started to enter into the homes and became extremely popular. Computing devices like the personal computer were developed along with the mobile phone. The latter decades saw the rise of the internet, which enabled an extraordinary amount of connectivity across the globe (Singer, 1998). New developments in 3D computer aided manufacture software and easier material sourcing across the world allowed designers to create previously impossible forms and products (Woodham, 1997).

## Notable Home Designs



Fig 4. 'Carlton' Shelf Unit - Ettore Sottsass

success of the 'G-Force', Dyson's first bag less vacuum cleaner aimed at the Japanese market, he released the DC01 into the UK. Dyson created something unique in the way he obsessively followed the 'form follows function' mantra. In an effort to create the best working product possible it resulted in a product double the price of anything on the market and with a unique aesthetic that allowed the users to see through parts of the product. To the surprise of many the product became a huge success and has resulted in a company that puts a strong attention to detail and function (Fletcher, et al. 2006b).



Fig 6. iMac G3 - Apple

design' and attention to detail (Miller, 2009).

### 'Carlton' Shelf Unit - Ettore Sottsass (1981)

The Carlton shelf unit was designed by Sottsass for the Memphis group. It's bright, contrasting colours and unusual angles make it a typical example of postmodern design (Tambini, 1996). This product and many of his others were aimed, in Sottsass' own words, to be "products devoted to life, not posterity" (Sottsass cited in Miller, 2009 p.225). The whole movement shows how radical and rapidly design trends can shift from what is considered normal or good design (Miller, 2009).

### DC01 - James Dyson (1993)

Following the



Fig 5. DC01 - James Dyson

### iMac G3 - Apple (1988)

Since the iMac first came out, as one of the first all in one personal computers, they were seen as highly original and innovative. The iMac G3 with its iconic see-through coloured case and softly curved surface saw the first step in a trend to make computers more fashionable. Previously computers tended to be encased in dull box like structures. It helped to make consumers see the benefit of 'good design' and attention to detail (Miller, 2009).

# 2000 - 2012

## What the People Want

Moving into the 21st century has seen a shift back to minimalism in consumer electronic design but also a trend towards experimentation and sensuality within the rest of the home (Fairs, 2006). As the amount of technological products are rapidly increasing and becoming smaller the form factors of products have started becoming very similar in certain product categories. Most notable of these are mobile phones, in order to differentiate the products manufacturers have been paying close attention to detail and exploring the use of different materials, as seen in the unique glass back of the iPhone 4 (Apple, 2010a). Experimentation and sensuality has led to a return in decoration within products as especially seen within lighting, as shown in Tord Boontjes' Wednesday light (2002) (Fairs, 2006).

## Globalisation

As the internet is being increasingly used in more products and is getting faster and more accessible we are living in a widely connected world (Fairs, 2006). People can play games with friends over the internet and due to this and other online social networking there are increasing concerns of a lack of physical interactions between people (Watson, 2010).

## Systems of Integration

As the world becomes more connected an increasing amount of devices are talking to each other and a major part of recent design is the compatibility between devices. Microsoft and Google both have open software platforms which allow different manufacturers to create products that can all run the same software. Apple however solely design both the hardware and software together in order to generate a very controllable user experience (Isaacson, 2011). As more connected products are entering the home, such as Sonos or Airplay wireless speakers (Sonos, 2012; Apple, 2012) and internet enabled televisions the systems of integration and ease of use are becoming more important (Harper, 2011).

## A Design For You or Me

With greater connectivity there is a larger merging of cultures and styles. It is also easier for people to find the exact products they are looking for. Due to this we are seeing a larger array of styles within the home. Personalisation and customisation are both becoming more prominent, especially with more flexible manufacturing processes, and with desires for individuals to differentiate themselves these trends show little sign of stopping (Fairs, 2006). This can be seen in places like IKEA where they offer low cost furniture and home products, some of which can be customised, as with their desks (IKEA, 2012). Personalised decorations are also becoming more popular as services like Snapfish,



Fig 7. Wednesday Light - Tord Boontje

where you can create personal photo products like canvas', are becoming widely used (Snapfish, 2012).

## Sustainability

The global connectivity has made people more aware of the diminishing resources, energy waste and social responsibility that design has. As such manufacturers are responding to the consumers by providing more transparency in their sourcing of resources as well as a wider use of energy saving and recycled products (Fuad-Luke, 2004).

## Technology

The 21st century so far has seen rapid changes in technology including the more common use of the mobile phone and the merging of devices such as MP3 players, digital cameras, phones and portable computers. Flat screen devices have become more common place and there is currently a revival of 3D films and technology, as seen at the latest consumer electronics show (CES, 2012). Recently there has been a trend in having more of a physical interaction with technology, as seen in the Apple iPad and touchscreen computer monitors. Gaming has also seen a shift into a more physical medium, as made popular by the Nintendo Wii's motion controllers (Nintendo, 2012).

### Notable Home Designs

#### Xbox Kinect - Microsoft

Moving on from the Nintendo Wii's motion controllers the Xbox Kinect is a controller-less system. Users interact with the console via movement, which is detected by the systems two cameras, or voice control. Microsoft have been pushing for this device to be the centre of the homes' entertainment, being able to store and playback a wide range of media as well as being a games console. This shift into physical movement and a controller-less experience shows the move towards a physical based and controlled world (Microsoft, 2012).



Fig 8. Xbox Kinect - Microsoft

#### iPad - Apple

The Apple iPad is the first mainstream touch tablet. It is another example of the way physical interactions are becoming more preferable than traditionally using a mouse and keyboard (Apple, 2010b)



Fig 9. iPad - Apple

# **Discussion**

## **Introduction**

Throughout the discussion four trends are identified and justified, which are some of the most important factors affecting home design in the next eight years. Following this a future forecast is given for the years between 2012 - 2020, which has been derived from the mentioned trends.

These trends and future outcomes were complied from agreeing material by futurologist research (Sterling, 2002;2005; Watson, 2010; Harper, 2011), an analysis of design history and contemporary design, as presented so far in this report, and through the design knowledge of the author.

## **Trend Analysis**

### **A Physical Digital World**

As it has been shown technology has become more physical, with touch screen devices becoming common place and controller-less systems having entered the home. This trend is expected to continue, bringing more physical interactions to more aspects of digital or technological life. Current developments have involved technology trying to interact with our physical world instead of our physical inputs interacting with technology. SixthSense technology, which involves a wearable projection/camera system that senses the world around it, is a development that can be used to; take pictures wirelessly by just making a box shape with your hands, project a screen or information onto any surface, scan and recognise an object and relay extra information back to the user via visual or auditory means e.g. You pick up a book and the projector/camera system recognises it and projects price comparison information onto the the books inside blank cover for you to read (Mistry, 2009).

### **Personalisation**

From the 20th century where designers have dictated what consumers want we have started seeing a shift to where the designers are allowing the users to adapt and customise their products to their own preferences. This can be seen in greater choice, open source software and customisable products. With the advancement in rapid prototyping technology becoming rapid manufacturing technology and 3D printers which have reduced in cost enough to allow some to be aimed at the home market, it can be expected to see more choice, customisation and creativity from and for the consumers. Due to this it can be reasoned that more self expression will occur as people try to differentiate themselves and bring personal meaning to their products. New fashions will be extremely short lived as it becomes easier, cheaper and quicker to change (Fairs, 2006).

### **Connected Home**

What has been discussed so far has shown how media devices and connectivity have grown from the first radios and phones through to television and eventually the internet which can be used to control and monitor a great deal of things. Electronic appliances and technology has also increasingly entered the home. The connected home trend proposes that most of our home products will be able to communicate with the rest of our products and systems. There will be greater control of most aspects in the home including water and energy usage as well as lighting and media control. This can lead to greater

convenience and better utilisation of resources to make our home more sustainable (Harper, 2011).

## **Adaptive Technology**

Throughout all of the 20th century people have reacted to what technology does, with the rapid developments and increases in processing power it can be expected to turn around so that technology reacts to people. This has already been seen in some mainstream products such as the Siri voice control feature in the Apple iPhone 4S which learns what you are trying to say and do throughout using it (Apple, 2011). Taking this into home products we may see lighting that remembers and learns your preferences smart energy management that can automatically turn on/off devices as they're needed (Harper, 2011).

## **2012 - 2020**

### **Creative Individuals**

Due to the reduced cost of 3D printers, and intuitive use of simplified 3D CAD software consumers will be able to create their own designed and personalised products within their own home, either based on templates or created from scratch. The physical appearances' of homes will become more personal and differentiated.

### **SMART Home**

Internet and connected technology will become common place in all electronic appliances, non electronic products may carry RFID tags or similar to let the home identify these products. The home will start to learn the preferences of the users, as all the preferences are assigned to an individual they can be picked up by a new system e.g. at someone else's home. The home will be able to manage the most efficient utilisation of resources, turning on and off products as necessary etc. Desired content will be easily found through searches which can learn what you like. Control in the home will be intuitive through voice control, gestures and physical interactions.

### **Compatibility**

One of the biggest issues will be compatibility, which will determine the amount of connectivity, automation and how SMART the home will become. This may well be an area where open approaches like Microsoft and Google may triumph over closed system like Apple. However as Apple has proved good design comes from close integration of hardware and software. An interesting balance may occur between these two approaches.

### **Notable Home Designs**

#### **SMART Televisions**

Internet connected televisions are already around, however a large surge is likely to be expected in this market in the early 2010's (CES, 2012). To bring the family and home together, and away from the physical separation previously discussed, the television may become the highly interactive and fun product needed. Google have released an open internet television platform which allows users to download apps and search for online content (Google, 2012).

#### **Connected Lighting**

Moving away from the previous notion of a SMART home in which everything is hardwired into your house by a specialist we can expect to see individual products which connect to

the whole system wirelessly. In lighting we may see how you could buy different lights from different manufacturers and be able to universally control all of them, so that they all dim, change colour or turn off at the same time.

### **3D Printers**

There are already a small number of home marketed 3D printers (Makerbot, 2012), however in the next decade they are expected to make a more common appearance in homes, allowing people to create their own; utensils, decoration and lights etc. Consumers will be able to send and share designs with each other.

*For more potential products see Innovation/Extinction timelines and trend map in Appendix A*

# Conclusions and Recommendations

Having analysed the way home products have changed since 1900 and discussed the potential trends and new products we are able to summarise the answers of the original questions asked:

- Why have home products changed throughout each period?

It has been shown that many factors can affect the design of home products. Most notable of which include the effects of major events and that technological developments can drive the aesthetics and functions of products, either by reacting alongside the technology (e.g. Modernism) or reacting against it (e.g. Post Modernism).

- What current or emerging issues will affect the design of home products?

From the trend analysis it has been seen that the 4 defining trends are:

- A physical digital world.
- Personalisation.
- The connected home.
- Adaptive technology

These result in a more connected home with increased miniaturisation, processing power, adaptive technology and social responsibility. This leads towards a user centred philosophy which, mixed with the technical advancements, may result in a widely personalised near future.

- What changes will occur within the home in the next eight years?

Concluding all that has been done we may see the changes described in the trend explanations as well as a stronger rise in the development and use of internet enabled televisions, 3D printers and SMART lighting products.

As a large part of this report analyses past events there is a lot of consistency in the factual detail between the various texts however these texts give different opinions on which events were of most significance, especially as no texts solely devoted to home design were found. As the futurology texts are largely open for interpretation the consistent points across the literature, which complimented the historical analysis, were discussed, such as the connected home and personalisation.

Looking at the history of design before thinking about the future is necessary however the vast array of events and developments that took place and effected the outcomes make it hard to summarise in a report of this length. The main factors were discussed, however for a better understanding a more thorough and longer report may be required. Future work may go into a more thorough analysis of past events, trends and movements. As well as a wider scope of some of the potential trends and future predictions.

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# Appendix A

## 1. Innovation Timeline

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## 2. Extinction Timeline

Watson, R., 2010b. *Future Files: A Brief History of the Next 50 Years*. London: Nicholas Barely Publishing.

## 3. Trend Map

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