Television Set Design - an Examination of the Relationship Between Technological Innovation and the Marketing of Television Set Design.

Final Year Dissertation

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INTRODUCTION

This dissertation attempts to answer the question; 'What is the relationship between technological innovation and the marketing of television set design?'

Technology is defined as being: 'The systematic application of scientific or other organised knowledge to practical tasks' (Mc Cloy, 1984, p. 1). All technological systems aim to produce something whether it be a component or a system. In this respect, a television set can be regarded as a component in the system of television (which would include other components, such as cameras, transmitters, a television studio, etc.). The technology of a television set is the application of known electronic principles to the task of producing a television picture. When the electronics of the television set are placed in an enclosure, technology is also employed in the manufacture of the enclosure.

Industry is the manifestation of technology and although technology is central to industry, it is effected by other disciplines. Industrial production is the culmination of input from many specialised areas (marketing, production and materials engineering, advertising, distribution, etc.).

Marketing for example, is part of this mix. Marketing is defined as being 'a philosophy of business which has three major implications: firstly, the success of any firm depends on the consumer and what he or she is willing to accept and pay for...' (Foxall, 1980, p. 15). Considerable

emphasis is placed on using the social sciences, especially social psychology and sociology, to understand the consumer. Social influences such as class, family and status are examined for their contribution to social thinking.

Industrial designers have the task of resolving input from the technical fields of production, materials, manufacturing and electronics engineering with that of the social information received from the marketing specialists into a tangible product.

Therefore, there is a relationship between technological innovation and marketing and that this is evident in the end product, in this case television sets. The problem is to establish exactly the nature of the relationship. Is technological innovation the slave of marketing or is marketing wholly dependant on technology? Is the relationship static or dynamic, with the emphasis continually swinging back and forth between technology and marketing? This dissertation addresses these questions.

The dissertation adopts the structure of a chronological survey. In order to answer the questions asked above, the following topics have been explored:

The pattern of application and development of radio and of wireless set design is discussed. Parallels are drawn between broadcast radio and broadcast television. Similarities in the aesthetic approach of designers of wireless sets and of television sets are highlighted.

The rapid rise in the popularity of television in the post World War Two years is examined, as are public perceptions of television, in relation to the social effects of it's application and content. During these years new manufacturing technologies and materials were introduced, the effects of which are examined.

In 1959 a new electronic technology, the transistor, was used for the first time by television manufacturers. The results of the introduction of this technology and the continuing rise in the popularity of television are discussed.

New public perceptions of television, emerging in the late 1960s and continuing to do so today are discussed. Broadening consumer awareness of the diverse possibilities of television technology, resulting in the introduction of new television related products is examined, with respect to the design approaches of television set manufacturers.

Finally, a conclusive answer to the questions asked previously is forwarded.

CHAPTER ONE - THE EARLY DAYS OF TELEVISION

In order to fully understand the history of television set design, it is necessary to examine in part, the history.of radio. Although it cannot be disputed that there are differences between the media of television and radio, television was influenced heavily in it's early days by radio programming and wireless cabinet design was in turn, influenced t.v. cabinet design.

This chapter outlines the pattern of discovery and application of radio and shows how this was to effect the development and application of television. Parallels are drawn between industry's approach to the design of wireless and t.v. cabinets.

This chapter begins by examining the origins of the concept of broadcast radio and the early days of wireless cabinet design .

Guglielmo Marconi (1866-1937), an Italian electrical engineer, received the first patent for a wireless radio device from the British government in 1896. In 1897, Marconi set up the world's first wireless company. Marconi was not interested in broadcasting as we know it today. Indeed, he seemed not to have even the faintest concept of the application of wireless technology for broadcast purposes. Marconi saw radio as a means of transmitting information from one point to another, with particular application in the military or naval fields. As far as Marconi was concerned, the most profitable market for

wireless was the Navy, due to it's need for ship-to-shore and ship-to-ship communication.

The first known incidence of a radio broadcast took place on December 24, 1906, when an American, Reginald Fessenden, talked and played a gramophone record to marine radio operators. The broadcast was made from a shore station and was heard within a radius of hundreds of miles.

However, the commercial possibilities of radio broadcasting went unexploited, largely because the American navy wanted a monopoly on the limited number of available wavelengths. Their attempt to achieve this was hampered by the increasing number of illegally practising amateur radio enthusiasts.

After the First World War, the general mood in America, where the most significant development of radio was being carried out, was firmly set against foreign domination of American activity and commercial enterprise. With the help of the government, General Electric, Westinghouse and AT&T formed a cartel, which became the Radio Corporation of America (RCA). The RCA took over the Marconi company's patents and assets and by doing so, assured itself a monopoly in the development and subsequent production of radio. This move made the USA the leading force in international radio communication.

RCA was set up in 1919 but in 1916, while still working as an office boy in the American Marconi company, David

Sarnoff wrote the following memo to the general manager of American Marconi:

> I have in mind a plan of development which would make radio a "household utility" in the same sense as a piano or phonograph. The receiver can be designed in the form of a simple "radio music box" and arranged for several different wavelengths, which would be changeable with the throwing of a single switch or pressing of a single button. The "radio music box" can be supplied with amplifying tubes and a loudspeaking telephone, all of which can be neatly mounted in one box. The box can be placed in the parlour or living room, the switch set accordingly and the music received.
>
> ...This proposition would be especially interesting to farmers and others living in outlying districts removed from cities. By the purchase of a "radio music box", they could enjoy concerts, lectures, music recitals, etc., which may be going on in the nearest city within their radius. (Armes,1988,p.107).

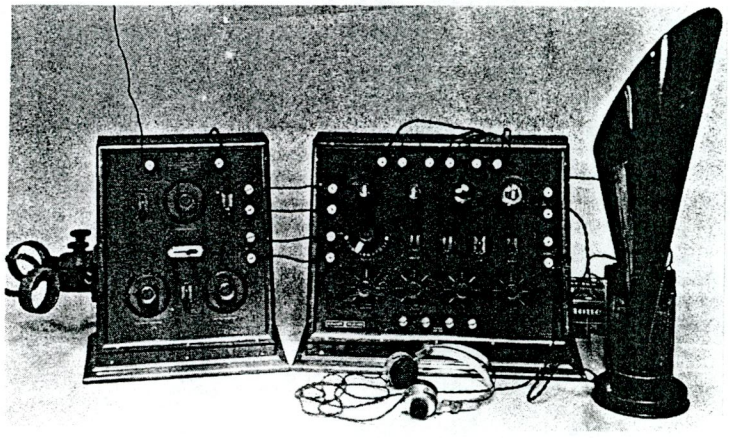
Surprisingly, the idea was rejected. This happened because the management of the company did not perceive the flexibility of the technology of radio, thinking of it only in terms of it's original conception, a device for point-to-point transmission of information. Radio transmitters and receivers were sold to amateur enthusiasts but these people were chiefly interested in the technology and the novelty of radio.

The early 1920s saw a boom in the interest in amateur radio. At first this was viewed by the RCA as something of a nuisance, as the increasing number of amateur transmitters were begining to crowd the airwaves, which up to this point had been used for legitimate, or military

communication. After some time, the RCA noted that in some areas, sales for receivers had been improving. They discovered that this was as a result of some amateurs broadcasting gramaphone music within the limited range of their transmitters. People within the range of these transmitters had been buying sets to listen to the music. Reliasing at last, the potential of broadcasting, the RCA set up the National Broadcasting Company (NBC) in 1926. The NBC was a network of transmitting stations set up to broadcast music, thereby encouraging the public to buy the wireless receivers as manufactured by the companies associated with the RCA cartel. The next network to be set up was ABC, formed in 1927 by the RCA and, also in that year, CBS, which was formed by the Columbia Phonograph Company. (Armes, 1988, p. 58)

For the public, radio came to represent something of a departure. Owning a radio was a very potent symbol of being on the cutting edge of the modern age. This may seem hard to imagine these days but if one thinks of the near adulation heaped on the computer 'whizz kids' of the recent home computer fad, it becomes easier to place the impact of radio on the 1920s public into perspective. As with the case of programming a home computer, using a radio in the 1920s demanded a comprehensive grasp of the technology involved. Early sets reflected this aspect in terms of appearance. Bristling with valves, dials, coils and switches, the Brundept IV wireless receiver (illus. 1), gives the impression that it is something to be used by the most

competent of operators. Note the prominence of the valves, without which the concept of radio would never have been realised. These valves, developed in the early twentieth century are the heart of radio.



illus. 1. Brundept IV Wireless Receiver, 1924

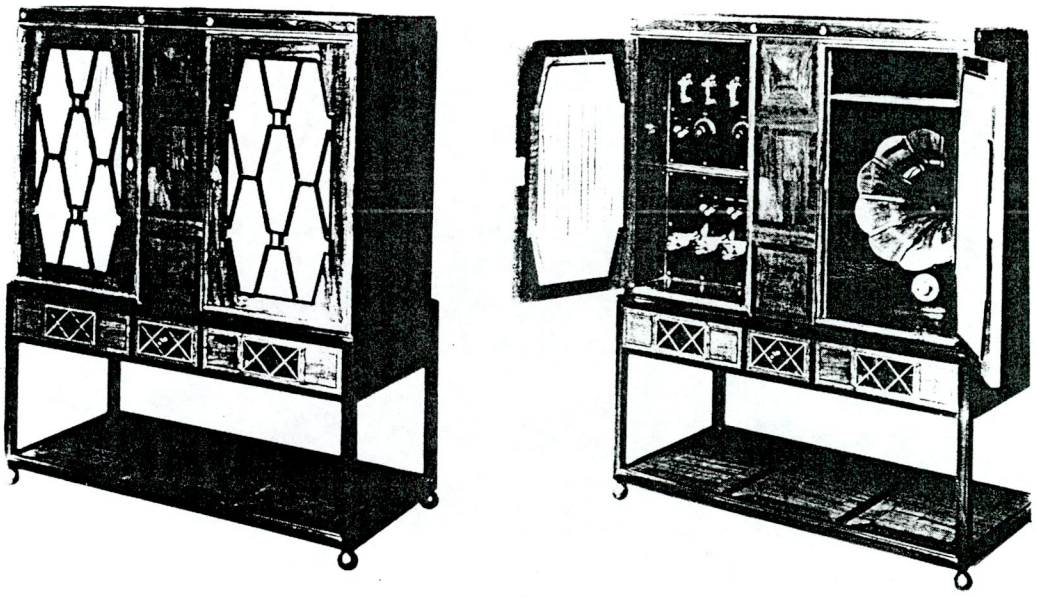
The popularity of radio and it's subsequent introduction to the home was to cause problems for wireless set manufacturers. While the public found the new medium and the technology of radio exciting, not everyone was comfortable with it. On one hand people embraced radio as being a beneficial product of the new age of electricity, particularly so because while other electrical products promised efficiency, radio promised entertainment, which is of course, much more enjoyable.

On the other hand, a great deal of people, while tempted by the promise of entertainment, were in awe and a little afraid of the new technology- what of the danger of electrocution? The prescence of disembodied voices and

music in the living room was also somewhat disturbing for some. Early listeners were encouraged to sit in a darkened room so that they would be transported by radio to the event that they were listening to. No doubt this was rather enjoyable when listening to Al Jolson but quite disturbing in the case of War of the Worlds. The broadcast of the H.G. Wells play was so convincing that it caused widespread panic, inciting some listeners, who had turned on their sets during the performance to flee their homes.

Wireless set manufacturers employed industrial designers to design cabinets for the sets they produced. Early sets were styled to represent domestic furniture. The logic behind this move was to 'familiarise' the new technology and to integrate it with the domestic envoirnment. The first such sets employed traditional cabinet making techniques and materials and in most cases was such an effective disguise, it was impossible to tell the radio set from any other piece of furniture.

Sir Ambrose Heal (dates unknown) designed one such set for King George V of England (illus. 2). The cabinet was built with mahogany and has a mother of pearl inlay, depicting a whispering shell transmitting radio waves and a conch shell receiving the waves. As can be seen in the illustration, this is the only external reference to the functioning of the radio when the cabinet doors are closed.



illus. 2: Wireless set owned by King George V, circa 1925

There was however, another approach to the problem, which, as we shall see later, was to be as significant for television cabinet design as it was for radio. Not every manufacturer agreed that disguising the radio set was a suitable approach to the aesthetic of the new technology. Radio was a symbol for a new age and a device without precedent. For the manufacturers, who wanted to sell more sets, radio was supposed to represent something to the consumer that lives and living rooms lacked: a modern symbol of progress.

Consequently, some manufacturers began to commision their designers to design sets which were pieces of furniture but recognisably modern.

The Murphy A-3 wireless set as designed by Gordon Russell (illus. 3) was one of the first sets produced to adopt

this approach. The set would have been quite prominent as a symbol of modernity in normal domestic surroundings. The policy was rewarded with commercial success and this approach to cabinet design was adopted by the majority of wireless manufacturers of the day.

illus. 3, Murphy A-3 Wireless Receiver, circa 1930

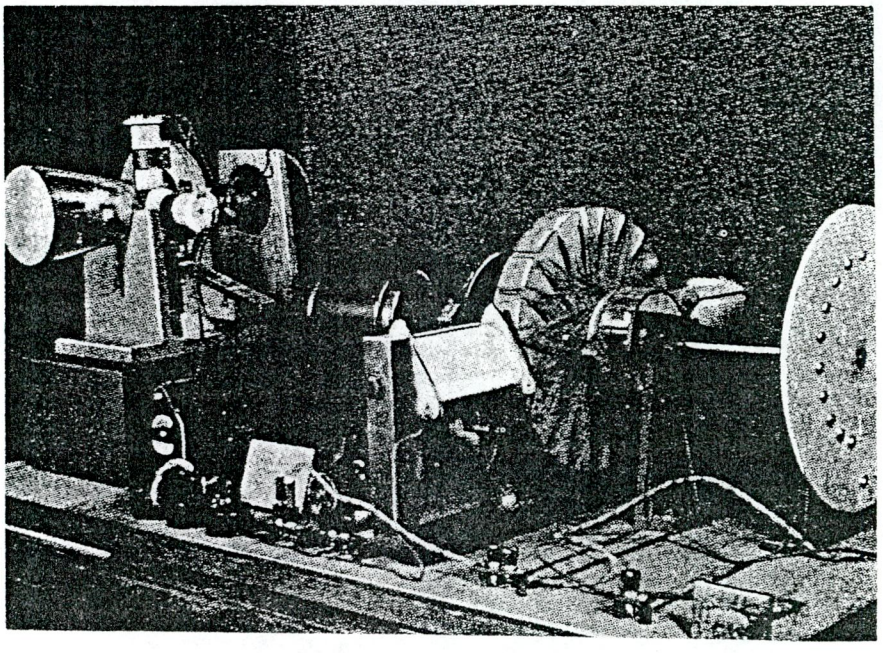
We have seen how radio was developed with the specific application of military and administrative communication in mind. Despite David Sarnoff's proposal to use radio for broadcast entertainment purposes, the commercial application of radio to broadcasting as we still know it today, came about almost by accident, it's potential being stumbled on and then adopted for profitable means by the wireless manufacturing industry. The converse is true of television.

Early proposals and work carried out on the development of television dates back to the end of the nineteenth century. The introduction of the first working

television systems in 1925 was the culmination of discoveries related to this development work. Charles Francis Jenkins, an American and John Logie Baird, a Scot, both realised mechanically based television systems in the first half of 1925.

These systems operated on similar principles. The subject was scanned by a disc (shown on the right hand side of the picture in illus. 4) and converted to a picture on the television screen by a cathode ray tube (on the left hand side of illus. 4).

The cathode ray tube (CRT) produces the picture on a television set and is to a large degree responsible for the overall form of the television cabinet.

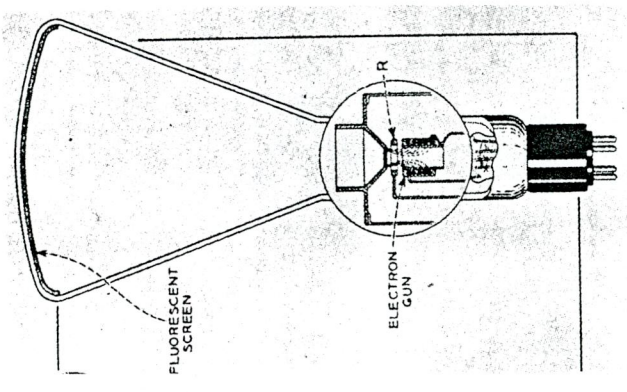


illus. 4: Experimental model of a television receiving set, circa 1925

An electron gun shoots a beam of electrons (negatively charged electricity) at the screen of the CRT. The screen is coated with a phosphorescent material, which gives of light when struck by the beam. The intensity of the light produced is governed by the strength of the beam of electrons, which is in turn governed by the strength of the current fed to the electron gun from the scanner.

The fluorescent screen (illus. 5) is a coating of 'dots' of phosphorescent material.Due to their small size, the eye does not actually perceive the dots but instead the light produced by the dots is optically mixed by the brain to produce a coherent picture image. The quality of the image produced is determined both by the number of dots on the screen and the rate (frequency) at which the electron beam scans the dots.

Although the mechanical method of scanning the subject, as used by Baird and Jenkins was later replaced by electronic means, the method of producing the picture on a CRT is still in common use today.



illus. 5: Cathode Ray Tube as used in early television receivers, circa 1925.

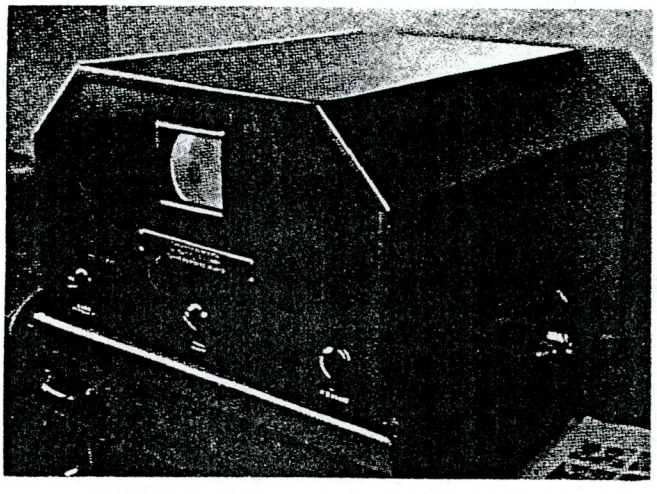
With the exception of Baird, who was an entrepeneur, all research and development of television was funded by the wireless manufacturing companies. Jenkins worked for General Electric which was controlled by the RCA. The manufacturing industry in general did not develop television for the same 'practical' purposes as radio had been but, instead, concentrated on developing television with application as an entertainment broadcasting medium in mind. As a consequence the perception of television as a medium, chiefly of entertainment, and largely predominant as such today, was determined by the manufacturing industry's experiences with radio.

The origins of television broadcasting in England are similar to those of American television. Like the RCA , the BBC was originally set up by a group of wireless manufacturers in 1922. At this point it was an independent commercial group known as the British Broadcasting Company. As with the RCA, the BBC was set up with the goal of increasing sales of wireless sets. The first managing director of the BBC, John Reith believed that the radio service should have been a public service and on January 1, 1927, the BBC became the British Broadcasting Corporation, operating as it still does, under royal charter. The BBC was then funded by a license fee system. Anyone wishing to listen to the service in 1927 could buy a liscense for 10 shillings (Armes, 1988, p. 60).

In terms of appearance, television cabinets were also affected by the wireless manufacturing industry's approach

to design, as adopted in the design of wireless cabinets. Unlike early wireless sets, designers of early television cabinets did not celebrate the raw technology involved in the operation of the television set, as had been the case with the Brundept IV (illus. 1). Television set designers skipped this phase of development and instead introduced television sets which were designed either as retro-styled pieces of furniture or as furniture in the modernist style.

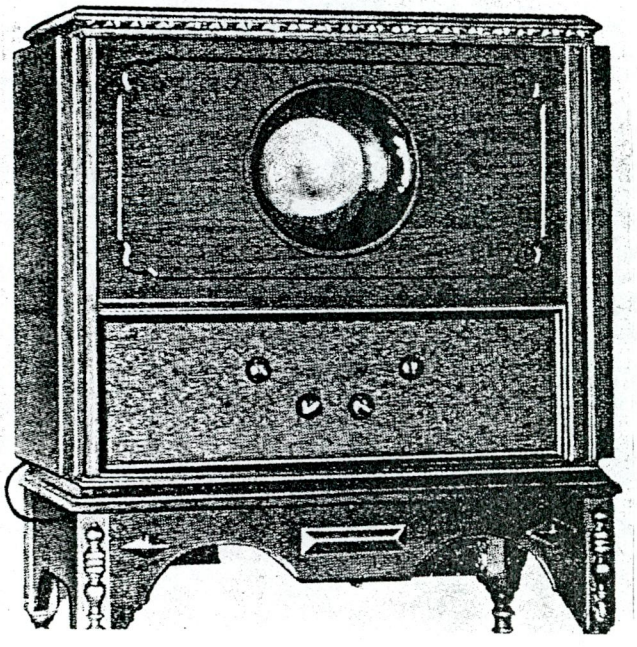
The German television, produced in 1930 (illus. 6), is unmistakeably a television set but the cabinet is wooden and is built with traditional cabinet making techniques. The clean lines, simple overall form and the neat arrangement of the screen and controls are very much in the modern style.



illus. 6: German television set, 1930

Note that the CRT on this set is round but that the designer has chosen to frame the screen with a rectangle. It is most likely that this was done because the rectangular picture format is more pleasing to the eye than the circular format of the CRT. This represents an interesting move on the part of the cabinet designer to overcome a technological limitation of the electronics of the television set. Early CRTs were made in the circular format due to the limitations of manufacturing techniques.

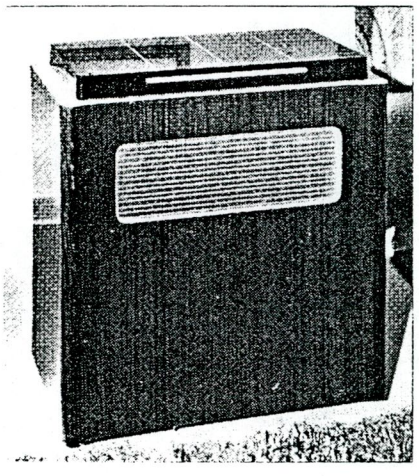
The designer of an American television set (manufacturer unknown, probably GEC) produced in 1931 adopted an approach similar to that of Sir Ambrose Heal, the designer of the wireless set owned by King George V (illus. 2).



illus. 7, American television set, 1931

This television set relies heavily on traditional cabinet making techniques, although it is interesting to note that no attempt is made to hide the screen or the controls (illus. 7).

Murphy, one of the first companies to adopt the modernist style in the design of their wireless sets adopted the same approach to the design of their television cabinets. Ironically however, there is very little to show that the set released, circa 1930, is in fact, a television set. In terms of style the cabinet features the sharp lines and clean detailing found on modernist furniture but the absence of either a screen or externally mounted controls confuse the identity of the product. It was only revealed that this was a television when the lid was opened. The hinged lid carried a mirror which was raised at an angle and reflected the picture towards the viewer. This arrangement was necessitated by the overall depth of the CRT (illus. 9)



illus. 9: Murphy television set, designed by Gordon Russell, circa 1930

CRTs of the type used in the smaller television sets (illus. 6) were only approximately 7" accross. This size was too small to make the set too small for group or family viewing. Unfortuneately, increasing the size of the CRT also increased the depth of the tube. If the tube in the Murphy set had been horizontally mounted, as was the norm, the set would demand an impractically large amount of floorspace. The CRT in the model illustrated was three feet deep.

The Murphy set was built with rosewood, pearwood and sycamore using traditional woodworking techniques. Designers of this type of wooden cabinet exploited the familiarity and the traditional associations of wood and it's implied warmth to integrate the previously unthinkable concept of television into the home. Wood provided a point of reference from the old 'non-television' culture with which the new television culture could be acceptibly expressed.

When the BBC began transmission of the world's first broadcast television service in 1936, broadcasting two hours a day, six days a week, a television set cost between 100 and 125 guineas. In 1936 this would have been the approximate cost of a fairly good motor car. This meant, that as far as the general public was concerned, television was a marvel of the new age but at this price, not a marvel for mass consumption.

The advent of WW2 did much to push thoughts of the new medium far from the public mind. In the UK, for example, The BBC was shut down for the duration of the war because of fears that the signal from the Alexandra Palace broadcasting station would act as a beacon for enemy planes and also, the War Office commandeered the station for use as a radar post.

Many parallels were drawn between radio and television as media and also between wireless and television cabinets as designed objects.

Early wireless sets were designed very much as a celebration of the technology and componentry responsible for the functioning of radio, the furniture imagery being adopted later in the development of cabinet design.

Early television sets on the other hand relied very heavily on furniture imagery. This would seem to suggest that while consumers of early wireless sets had a grasp of the technology involoved in radio, consumers of early television sets had no such understanding of the technology of television.

Indeed, the general public was discouraged from exploring the technology involved in the operation of their television sets. The British Television Annual of the early 1950s instructed viewers to 'Never go beyond the named controls-do not poke about inside the television receiver'(Conrad,1982,p. 3).

CHAPTER TWO - TELEVISION IN THE POST WORLD WAR TWO YEARS

This chapter traces the development of television in it's so called 'Golden Age', the post World War Two years of the mid 1940s to the late 1950s. Sales of television sets and television audiences were to grow, in these years, at a rate which has not been seen since.

In this period, television was to represent a powerful force of social change, bringing about new social and domestic unity. Thanks to it's coverage of events like the Coronation of Queen Elizabeth II and the way in which this type of event portrayed people of high social standing, like the Queen, as normal everyday people, television came to be seen as a desireable and beneficial commodity.

Television was to become one of the most significant social phenomena of the post war decades and cabinet designs reflected corresponding shifts in public attitude and to a lesser degree, technological advances.

The post war years of the late 1940s and early 1950s were to become television's boom time. Before the war, television sets were expensive and unfeasibly large, particularly as far as the general public was concerned. Before the war, the technology of radar had benefitted greatly from television research and development. After the war television benefitted from knowledge gained in the field of radar during the war and also, from the surplus of production facilities built to cope with the war effort's demand for components and equipment. Valves became

smaller and television screens grew in size but were reduced considerably in terms of depth.

Before the war, a good television set in the UK, cost in excess of 100 guineas and was guaranteed, at most, for a year's viewing (about 624 hours, compared to about 1600 hours, a years viewing according to today's figures,) by the manufacturer. The CRT very often blew up before even this short period had expired.

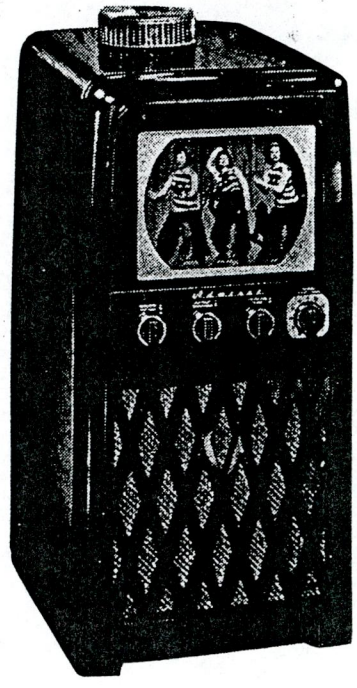
It became necessary to win the potential consumers confidence and to decrease the cost of a set. Although people were only too enthusiastic to be entertained after living through the frugal times of World War Two, consumers needed to be convinced that the experimental stage of television's development was over.

Previously, television sets had been hand built in small numbers, it now became necessary to mass produce television sets and 1949 saw the introduction of a new material and consequently, a new manufacturing process in television set design.

Phenolic resin became the first plastic to be used in the manufacture of television sets. Phenolic was pressed into moulds by hydraulic presses acting with tremendous pressure. Although this technique was capable of producing forms impossible to achieve with traditional manufacturing methods, not all designers adopted new approaches and many favoured dark, wood-effect colours,

probably as a result of the inherent brittleness and instability of lighter coloured pigments.

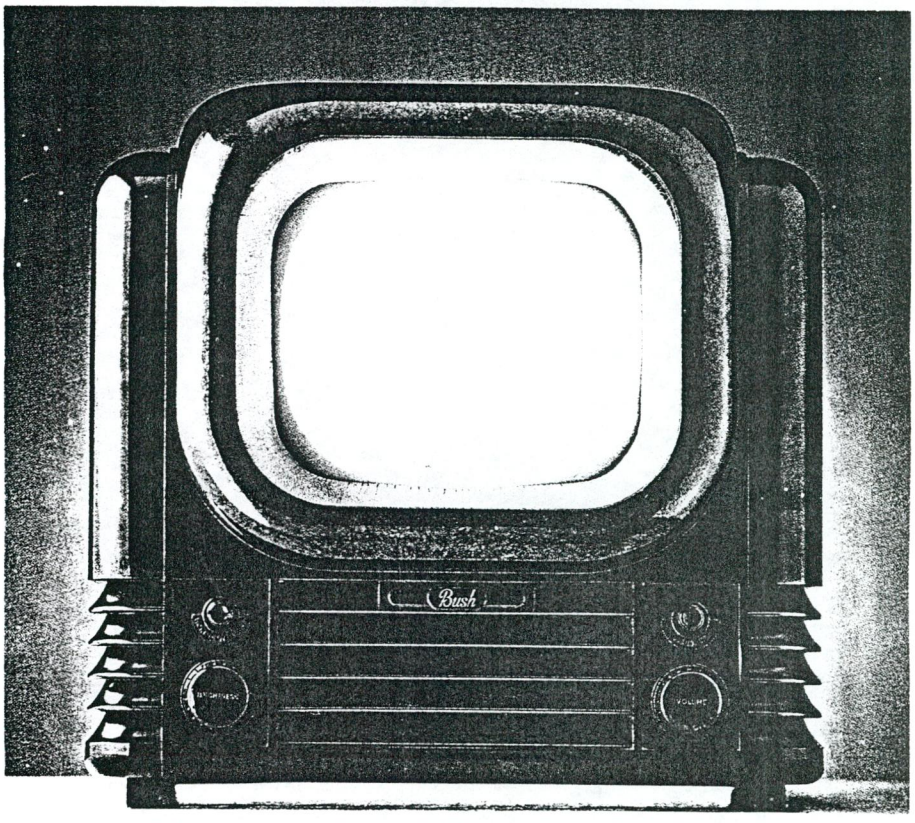
The Admiral television set (an American make) was produced with the new technique (illus. 10). The cabinet is 36" high and carries a rather unusually shaped 10" screen. Despite the use of new manufacturing techniques, the cabinet relies heavily on furniture imagery. The conversion by the Admiral company to plastics manufacturing techniques involved the installation of a hydraulically operated press which was two stories high and capable of generating a pressure of two thousand tons. The cabinet took only thirty six operations to make, as opposed to 525 operations, as when using traditional manufacturing methods.



illus. 10: Admiral television set, 1949

The set sold for $249.95 (US) at the time of introduction in 1949 and the Admiral company reported that 'sales took a sharp upward curve with the introduction of the cabinet' (Di Noto,1984,p. 144). Note that the set has a channel selector (extreme right on the control panel). Unlike the UK, America had, at this stage in the development of broadcasting, multi channell viewing.

In 1949 Bush introduced the TV12 Table Television Set (illus. 11). As with the Admiral set, the TV 12 was moulded in phenolic. The TV12, with it's unique form and ribbed detailing could not have been produced with traditional woodworking techniques and as such, represents a competent understanding of plastics technology by the designer.



illus. 11 Bush TV12 Table Television Set, 1949

On the other hand, the design, which is a progression in terms of technology, represents a regression in terms of style. The Art Deco style, in which the TV has been designed was most popular in the years from 1920 to 1935 and, according to William Pierce Randel, Art Deco 'always showed a high degree of individual craftsmanship, if not always great artistry'. (Randel,1978,p.112). This feature however, is made unattainable by the use of a high volume, automated mass production technique, as is plastics manufacture.

This paradox is similar to that of early cabinet designs in the modernist style, as typified by the Murphy set (illus. 9). Here, as with the TV12, the visual styling of the set is at odds with the method employed in it's manufacture. The Murphy employs the clean, sharp lines and right angles associated with modernism, thus implying machine, assembly line production. In actual fact, the material, wood and the small quantities produced (pre war televisions were not mass produced as the demand was not sufficient), necessitated the use of traditional craft based woodworking techniques.

Indeed, the designers of the Murphy set and the TV12 were both trying to achieve the same goal but with fundamentally opposing approaches. The Murphy set achieves it's expression of modernity through style and familiarity through the material employed in it's construction. The TV12, on the other hand, achieves it's

expression of modernity through the material and the production process, while achieving familiarity through style.

The extent of the public's interest in television and the rate at which they bought television sets is illustrated by the following figures: In America, in 1949, 1 million people owned television sets. By 1951, the figure had risen to 10 million people. In Britain, 0.7 million people held licences in 1951. This figure was to rise to 9 million people in 1958 (Armes, 1988,p. 60). Sales of television sets have never equaled the rate of these years.

1953 is said to have been television's peak year. In this year, on January 19, Lucille Ball gave birth to her son, as did her character on her television show 'I Love Lucy'. The show was watched by 68.8% of the American television audience. In Britain, on June 2 of the same year, 20 million people watched the television broadcast of the coronation of Queen Elizabeth II (Armes,1988,p.60).

The public's perception of television in these years was very different from that of today. The television set was not derogatively referred to as the 'Goggle box' or the 'Idiot box' as it might be today.

Television networks, in an effort to present television to the public as a friendly medium, exploited the post war mood of optimism. Television networks went to great pains to familiarise the presenters associated with the new medium, thus giving a friendly and human face to the

technology that post war consumers were inviting into their homes.

The 1952 British Television Annual included an article on 'The Announcers at Home', in which one announcer describes his local country pub, another is pictured serving nursery tea in 'the quite house hidden below the Sussex downs', a third declares 'I like home best' (Conrad,1982,p. 4)

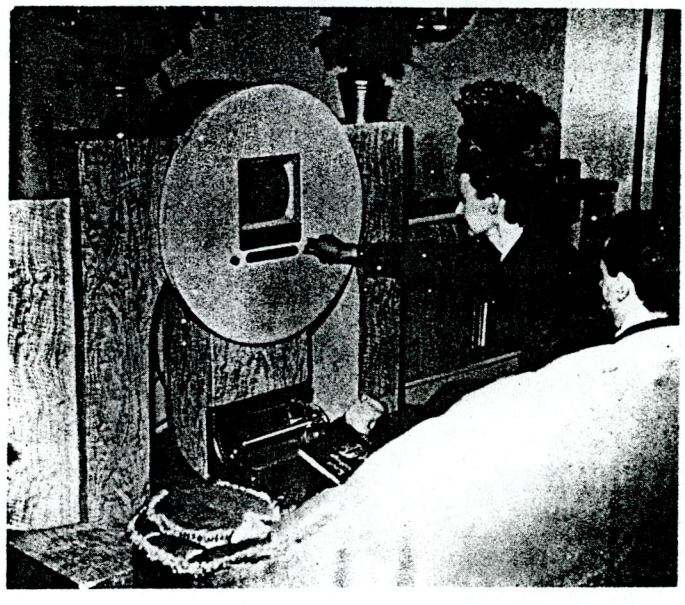
Television programming in this period and also of the 1960s consisted of many shows which allowed the general public to see events and places to which they had previously been forbidden access. In America in 1952, president Harry Truman led a television camera (and therefore the television audience) on a tour of the White House (Conran, 1982,p.42), thereby fulfilling the American ideal of democracy and equality.

The Coronation of Queen Elizabeth II in 1953 provided both television and the English royal family with an opportunity to show that they were moving with the times and taking leading roles in the new age of social and technological progress. The British Annual of Television wrote in it's 1954 edition of the coronation; 'the newly crowned Queen's simple, white handbag, on the seat before her within the golden coach' and also of 'the inquisitive outreach of the young prince Charles' hand to the golden armill, still about the queen's wrist as they stood on the balcony.' (Conran,1982,p. 42).

This type of coverage allowed the public to see details and aspects of the royal family which they had, until the advent of television , been unaware of and brought to television, the reputation of being a technology which had a sense of intimacy as opposed to being a product of an anonymous industrial research and development team.

The benevolence with which the new medium was viewed was not restricted to just the man in the street. In 1954 Pope Pious XII celebrated a mass at St. Peter's on television and in doing so, blessed the medium with the following words 'May this first international broadcast be a symbol of the union of nations.' (Conran, 1982,p. 41).

On studying the treatment of the television set in illus. 12, we can see that the designer intended the television set to be a focal point for the family, replacing the traditional fireplace.



illus. 12, television set displayed at the Daily Mail Ideal Homes Exhibition, 1949

In 1949, the year in which this set was displayed at the Daily Mail Ideal Homes Exhibition, television became a focal point for the family, a position which it was to hold well into the mid 1950s.

It may seem foolish to today's generation of television viewers to regard television as a force for bringing people together or encouraging family and community interaction. Nowadays the act of watching television is regarded as being almost an act of sensory deprivation, causing the viewer to temporarily forsake any awareness of the immediate surroundings for the sake of fully enjoying the television programme.

At the time the television set in question was designed however, the act of television viewing was seen as a participatory act. While it is true that radio was seen in much the same light and, to some extent preceeded television in this respect, it was not as effective a medium in this sense as was television, for a number of reasons. Radio was (and still is) a sonic medium and any discussion or comment forwarded by a member of the audience in a room, during a program would completely break the flow and disrupt the intake of events by other members of the audience. Television, on the other hand, did not rely so heavily on the sonic aspect of it's presentation and any viewer could still see what was happening on the screen, despite verbal interruption by other members of the audience.

Another significant reason for the perception of television held at this time, particularly in the UK, where there the choice of viewing was limited to one channel, was the fact that anyone sitting down to an evening's viewing was assured that thousands of others were doing exactly the same and therefore, sharing the experience. To a world which had just lived through the savagery and the loss brought about by WW II, this was indeed, a very reassuring feeling.

Philip Purser, television critic for the Sunday Times, wrote in 1954, of his thoughts on viewing a showing of George Orwell's '1984'

> I was vaguely aware that evening of what I now believe to be the unique virtue of broadcast television. I wasn't alone, or with a couple of others in that poky back room where they kept the television. I was plugged into a huge nationwide audience, hanging on to every turn in the story. (Dunkley,1985,p. 46).

Note the use of the word 'plugged'. Purser, in his enthusiasm, goes as far as to describe his experience in the terminology of the hardware associated with television.

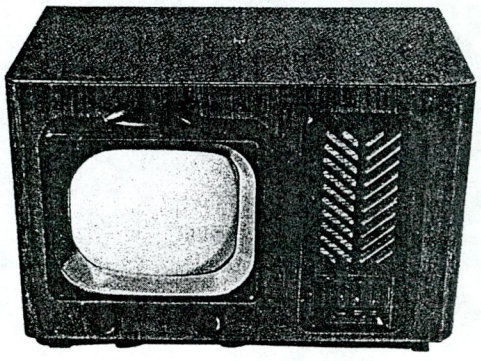
Jonathan Miller, a television producer and critic, is quoted as saying at that time:

> The peculiar reward of knowing that one's experience of these items, trivia or otherwise, happens to be synchronised with that of innumerable and anonymous others.(Dunkley, 1985,p. 46)

By the early 1950s, television had generated a considerable degree of consumer interest and uptake. Manufacturers had to compete to sell their products and the discipline of market research was brought into play. The 1950s was regarded as being the Age of Movement, the Atomic Age and the Age of the Automobile.

Demographic patterns changed after the war and continued to do so, right through to the 1960s. Young couples were settling in small houses built by property developers. Couples moved frequently, as often has the husband's career demanded (Powell and Peel,1988,p. 16). People and products adapted to this changing lifestyle. The giant television sets of the pre-war years, owned mainly by the upper classes were not suited to this new generation of consumers, the emerging middle classes desired smaller, more mobile televisions and manufacturers responded accordingly.

The PYE B18T (illus. 13) used a new type of electric circuit to eliminate the need for a transformer. This reduced the size and the weight of the television set considerabely. It is said that the PYE salesman would walk into a shop with the set under one arm, in order to underline the new television's compact design.



illus. 13, PYE B 18T television set, early 1950s

Despite it's technological advances, the PYE set was housed in the, by now, traditional wooden cabinet. In terms of form and detailing the overall image is one of modernity and rationality. The controls for the screen are logically mounted under the screen, while those for the sound are mounted in the loudspeaker panel. The only plastic to appear on the PYE set is the loudspeaker panel, moulded in phenolic.

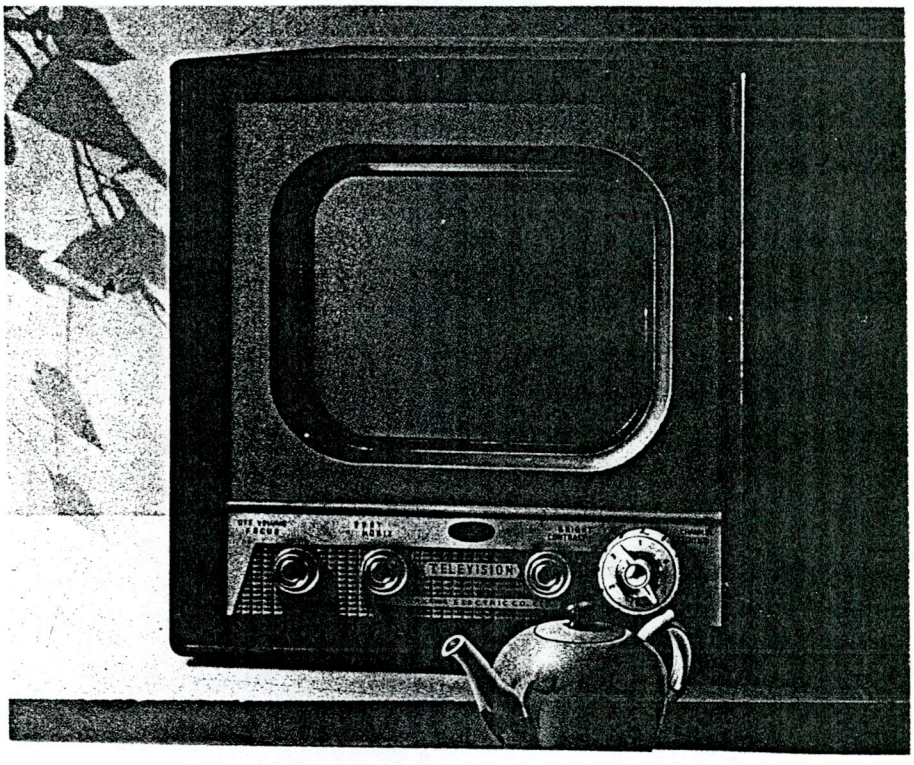
Plastics were not widely adopted by television manufacturers of this period. Despite the fact that plastics such as Bakelite and Cellulose had seen commercial

applications before WW II, they were not favoured by post war consumers. This was in part due to unsatisfactory experiences of the material, due to poor applications of plastics technologies to military equipment during the war. The equipment produced was unreliable and therefore the opinions of returning war veterans was biased against the material. Another reason for the poor public opinion of plastics was it's use during the war as a substitute for more precious natural materials required during the war.

These factors led the general public to form the opinion that plastics were of a lower overall quality than the more familiar materials, wood, metal and fabrics, although this opinion was to dissapate somewhat in the later half of the decade.(Sparke, 1990, p. 4)

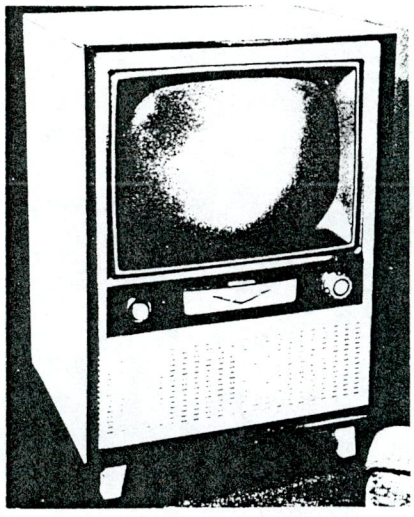
Thanks to a programme of post war reconstruction, Japan was to enter the television market.Initially concentrating on it's domestic and the oriental markets, Japanese companies like Sony and Sharp built small television sets which catered for the requirements of the compact oriental household.

The television set designed and manufactured by Sharp in 1953, (illus. 14) was released to coincide with the first Japanese broadcasts. This television set, which is very simple in visual terms, illustrates clearly, the rather odd mixing of Bauhaus modernism with American fifties automotive styling, a characteristic of Japanese industrial design during the post war period of reconstruction.



illus. 14, Sharp television set, 1953

The set combines clean, sharp lines and a simple overall form, implying sobriety and functionalism with chrome detailing of the type favoured by the designers of American 'jet-age' autos. As part of the post war reconstruction, Japanese designers studied American design and production methods and were deeply influenced by what they saw. America was, at this time, adopting the 'jet age' aesthetic associated with 1950s style and following it's successful application to automotive design, industrial designers trimmed television sets with chrome strips, insignias and 'dagmar' like chromed control knobs. (see illus. 15)



illus. 15, RCA television receiver, designed by Henry Dreyfuss,circa 1955

By the mid 1950s, the television sales boom had declined in America, and to a lesser degree, in the rest of the world also. On the other hand television was gaining popularity as a pastime and people were spending more and more time watching television. This was good news for the television networks and their associated advertising agencies but it posed problems for the television manufacturers.

The television manufacturing industry reacted by introducing the portable set. The portable was the television manufacturing industry's equivalent of the tailfin. It sold television sets but had nothing to do with function or improving performance. Early portable sets were more so by name than by nature. They were a marketing initiative targeted at those who already owned a

large set but who wanted another set for the bedroom or kitchen.

The first 'portable' set to be released was introduced by Ecko in 1955 (illus. 16). The Ecko TMB272 weighed in at 17 kilos and could be powered by mains or by a car battery.When running on the battery, the set was capable of providing a few hours viewing.

Portables were sold to the public by advertisements depicting young, smiling women, having a whale of a time, carrying the 'portable' in one delicate hand. The girl displaying the Ecko set at the 1955 Radio Show in Earls Court (UK) appears, at first glance, to be having no problems carrying the set but a closer study will reveal that her arm is severely strained. The girl modelling the American portable is most likely, holding a set from which the internals have been removed. Failing this explaination, this is not a woman to argue with. (illus. 17)

illus. 16, Ecko TMB272, c1955

illus. 17, promotional picture for an American portable set, circa 1955

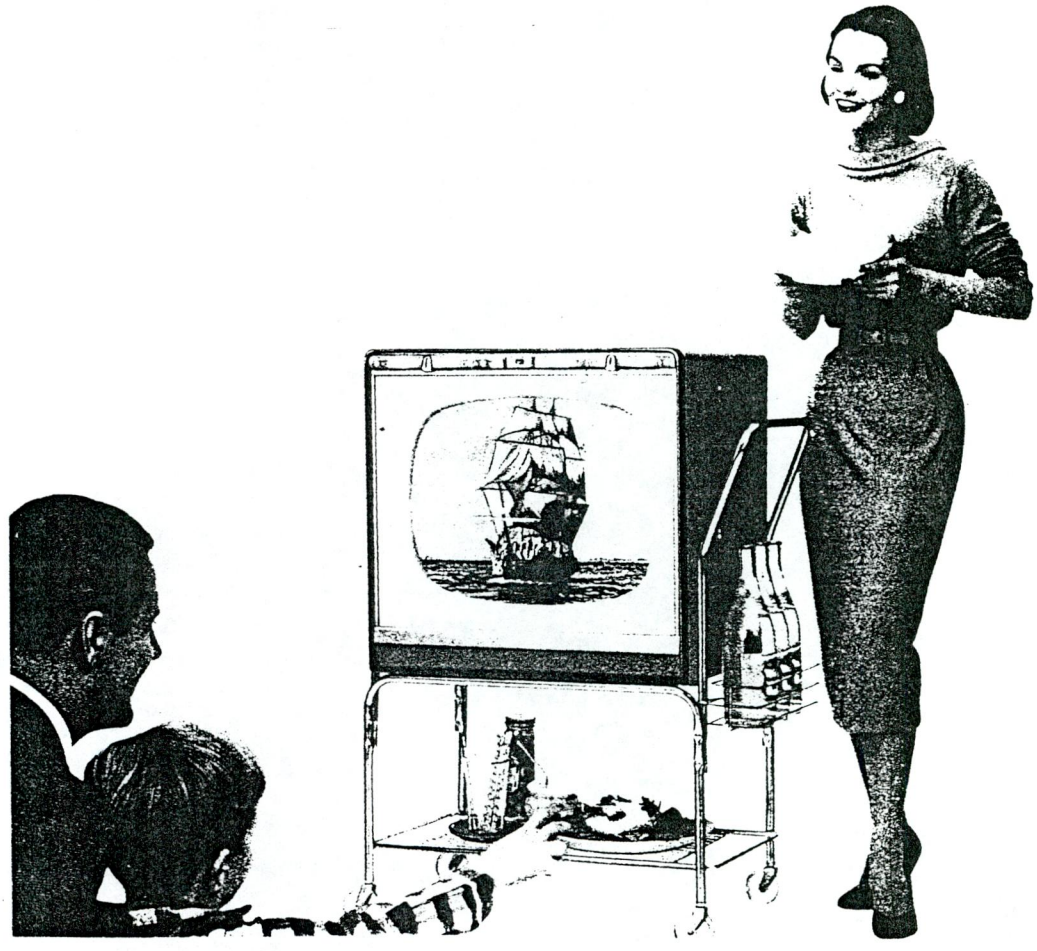
Note that plastics play a major role in the design of both sets. Previously plastics were perceived as being cheap replacements for other materials of higher quality. Plastics were used in the construction of portables for several reasons. Firstly, plastics were a functional choice because they allowed the production of a lighter cabinet than did metals or wood. Although people rarely moved or carried their portables after they had been brought home from the shop and installed in the kitchen or bedroom, it was important that they implied 'portability' and 'lightness' in their overall appearance.

The public's opinion of plastic as a cheap material led them to perceive a plastic portable television set as being less of an investment than a 'quality' wooden or metal set. Plastic moulding techniques also allowed faster assembly and production times and therefore cut manufacturing costs, leading in turn to a reduced cost to the consumer.

In terms of styling and concept, portables led to a complete break with the furniture imagery which was still quite popular with consumers of large sets.

The Ecko features a pull-out antenna, imagery borrowed from popular science fiction, spawned by the public's interest in space travel, the logical follow-on to jet flight. Automotive detailing was still quite popular, although appearing to a lesser degree on the English made Ecko set.

The theme of mobility and flexibility was also to influence designers of larger television sets at the time (illus. 18).



illus. 18, American television set, 1957

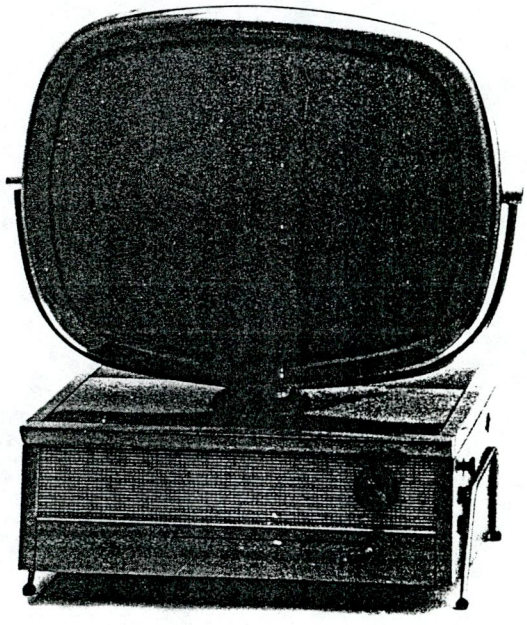
Efforts were made to make televisions appear visually lighter. This television sits on a tubular metal trolley. The design of the television shows the depth to which television had permeated American middle class culture. The television had become the centre point of family meeting

and interaction. The family meal is consumed while consuming the television programme. The television takes the place formerly occupied by the table. Television in America was even responsible for the introduction of new types of snack food and of course, the TV dinner, for consumption by a race of avid television watchers.

American industrial design of this period has been criticised for being concerned only with the visual packaging of the product. While this is undeniably the case with the spate of 'portables' introduced in the mid 1950s, it must be remembered that American industrial designers were capable of designing products that were innovative and functional. Such is the Philco Predicta, produced in 1957 (illus. 19).

This remarkable set is quintessentially 'fifties' in terms of styling. Metal and Fabrics have been used in the design and construction of the base and the detailing of the controls and chrome owes much to automotive styling. However, the Predicta carries many features which precede those found on sets arriving in the early eighties and ninties. The Predicta is not a portable set and yet it makes absolutely no references to furniture imagery. The screen swivels to provide a more comfortable viewing angle. The Predicta features a removable screen, a radical feature. The screen is attached to the television tuner by means of a ten foot long cable. This allows the viewer to sit with the tuner an controls within arms reach, while the screen is placed at a comfortable distance. In formal terms the

screen is largely unrelated to the tuner. The overall form of the screen is largely derived from the form of the cathode ray tube. Visual integration of the screen with the tuner is achieved through the use of metal rods to support the screen and as the cabinet legs.

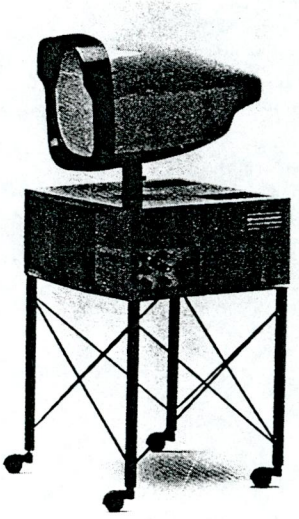


illus. 19, Philco Predicta television set, 1957

This television has been designed in terms very different to those of previous sets. The Predicta makes no references to furniture and, while it does sport automotive detailing, it's design in formal and functional terms is an expression of an understanding of the act and the experience of television viewing. In order to produce a design of this nature, the designer had to have had a

significant understanding of the habits of a typical television viewer. To this end, the appearance of the Predicta is an indication that television was an accepted and familiar concept and, consequently television sets could now be designed as objects in their own terms.

In Europe, Italian manufacturers Phonola, released their neo-rationalist model (illus. 20) in 1956.

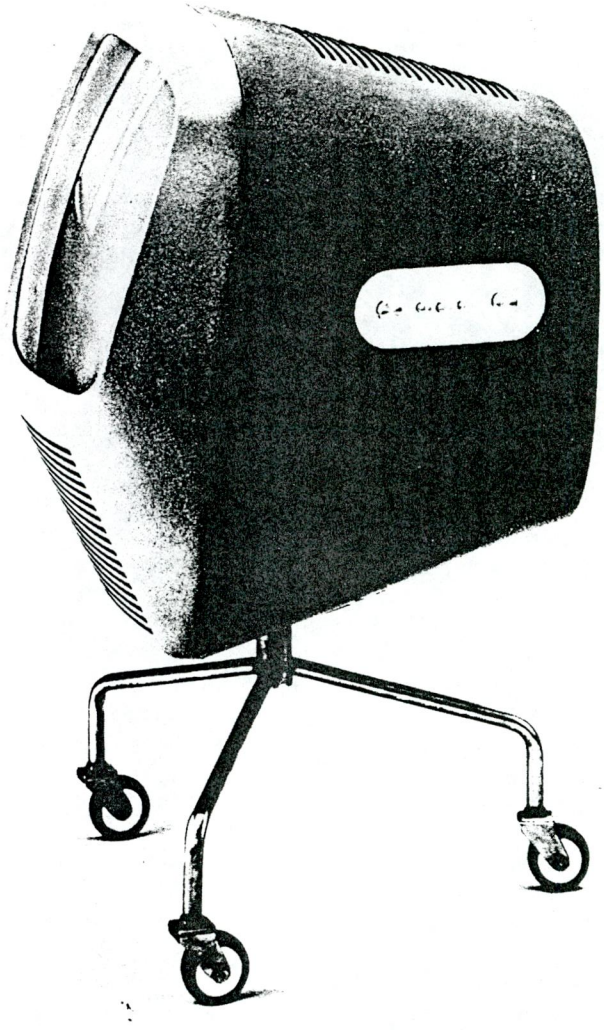


illus. 20, Phonola television set, Italy, 1956

The neat linear arrangements of the grilles and controls on the metal casing of the television tuner, define it as a sophisticated piece of electronic hardware. As with the Predicta, the screen housing takes it's form from that of the cathode ray tube. This design plays the 'cool' hardware of the metal casing of the tuner and the 'engineered' structure of the stand against the more irrational and dynamic element of the screen,the output for the content of

the medium. At the time this set was designed, this was primarily entertainment: shows, comedies and thrillers.

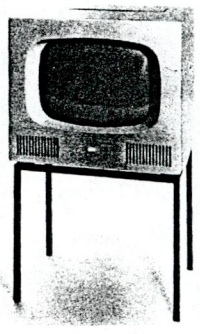
In 1959 Braun of Germany, worked on (but did not produce) a similar type of television set. The approach to the design of the Braun television concept (illus. 21) is similar to that adopted by the designers of the Phonola set and the Predicta. The Braun television is somewhat more austere than the other sets but the fundamental expression of technological rationality versus the more abstract point of interaction between the viewer and the medium is still apparent.



illus. 21, Braun concept television set,1959

The overall form of the 'cabinet' hints at, but does not refer as directly to the shape of the cathode ray tube as the Predicta or the Phonola. The rectilinear grille and control arrangements combined with the rather 'surgical' imagery of the chromed tubular stand and castors lend an air of technological coolness and sterility.

Braun also produced more contemporary models (illus. 22) in the 1950s. Although these models featured furniture type legs and forms relating more to furniture than technology, the overall emphasis is on rationality and technological coolness.



illus. 22, Braun television set,circa 1958

Through it's coverage of events like the Coronation in Britain and by providing family entertainment, such as 'I Love Lucy' in America, television fulfilled it's pre war promises to the public, establishing itself as a beneficial modern technology. Powered by electricity; the fuel of the modern age and bringing social and family unity to the post

war world, television was everything that a modern technology should have been.

The benevolence with which the new medium was viewed was not restricted to just the man in the street. In 1954 Pope Pious XII celebrated a mass at St. Peter's on television and in doing so, blessed the medium with the following words 'May this first international broadcast be a symbol of the union of nations.' (Conran, 1982,p. 41).

Design of television sets shifted it's emphasis from the pre-war and early post-war concern with achieving an ideological expression of the benefits of the new technology of television and it's application, through the application of the modern style and of furniture imagery. Instead, the emphasis of late 1940s and early to mid-1950s television set design shifted to aesthetics based on appearances, derived through references to other sources. The Bush TV12 refers to Art Deco, while the more typically fifties style sets rely heavily on automotive design for styling details. The 'portable' sets introduced in this period were designed to appear to be light but were not so.

With the introduction in the late 1950s of sets like the Philco Predicta, the Phonola and the Braun concept model, an aesthetic based on the expression and an understanding of television viewing is encountered. The designers of these television sets adopted an approach whereby the rationalist styling of the television tuner is played against the more expressive form of the screen enclosure; the point

of interaction between the viewer, technology and the medium.

The separation of the screen and the television tuner of the Predicta shows an intimate understanding of and familiarity with the needs of the television viewer, by providing a simple means of 'remote control' channel selection.

CHAPTER THREE - THE LATE 1950s TO THE LATE 1960s

This chapter traces the development of the portable television, introduced as a result of the application of transistors to the electronic design of television sets. The portable quickly became a youth product and it's success marked a decrease in the average age of the consumer, as well as the rise of Japanese design to the forefront of innovative product design.

For the most part, the optimism and the benevolence with which the new medium was regarded was to continue through to the late 1960s. As a result of the introduction of the first communications satellites, television continued to shrink the World, bringing it's inhabitants closer together.

1959 saw the application of a new technology to television design. The Sony corporation of Japan had been manufacturing transistor radios since the mid 1950s. These radios were much smaller than their valve based predecessors and due to their smaller power requirements were much more portable and efficient. Sony introduced the first television to incorporate transistorised (solid state) technology. The TV-8-301 (illus. 23) became an overnight cult object. Battery powered and weighing only 6kg (almost a third of the weight of the Ecko TMB272 'portable'), it was said to be the favoured television of J.F. Kennedy and of the pope (Wooley,1988,p. 26).

The 'portables' introduced by American manufacturers and by Ecko were no more than smaller versions of standard

illus. 23, Sony TV-8-301, 1959

The 'portables' introduced by American manufacturers were no more than smaller versions of standard television sets, released to boost flagging sales. Sony had developed the TV-8-301 for different reasons and therefore adopted a different approach to designing their portable.

Japanese manufacturers had initially concentrated on the developing post war oriental and domestic marketplace, designing televisions for the compact oriental home. Realising that existing valve technology could only allow a limited reduction in the overall size of the set, Japanese companies investigated other technologies and adapted them to meet their requirements. This policy of complete design was to eventually bring Japanese industry to the fore of world production of electronic consumer goods.

The styling adopted by Sony in the design of the set is a little regressive for such an innovative product. Much of the imagery relies on that generated by the American automotive designers of the early and mid fifties.

In 1957, Russia launched Sputnik, the first man-made satellite and the public's imagination was captured by the pushing back of a new frontier (Powell and Peel,1988,p. 56). Magasines carried articles and illustrations of spacecraft. Space fever gripped the public in one form or another and portable televisions sprouted Sputnik type antennae.

Note the prominence of the push button controls on the TV-8-301. In the late 1950s push buttons became a

representation of technology which made fine tuning and the subtle adjustment normally carried out by manual turning of knobs and dials. The introduction of push button controls signified the most advanced technology which was so efficient and competent that it could adjust and regulate itself 'at the touch of a button'.

Transistorised televisions were cheaper, easier to produce and more reliable than valve televisions. Solid state televisions did not require the same 'warm up' time associated with valve sets. Thus, the new televisions were more accessible and more efficient. This allowed the emerging youth market comprising people with a lower disposable income than those associated with the post war television boom to purchase television sets.

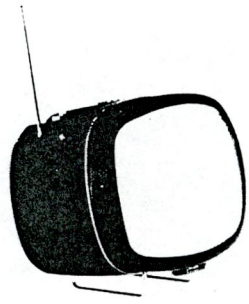
In Britain, the uptake of cheap, portable television sets by the youth market and the introduction in 1955 of commercial television was a cause of concern to the old 'establishment'. With the introduction of ITV in 1955, England was exposed for the first time to television advertising and concerns that this was having detrimental effects on the youth, causing them to adopt different, fundamentally materialistic values to their elders, were raised.

In fact by 1959, 60% of British adults were watching an average of 5 hours television every day in the winter and 3.5 hours a day in the summer. Three times as many

people watched commercial television than did those who watched the BBC (Harris,Hyde and Smith,1986,p. 15).

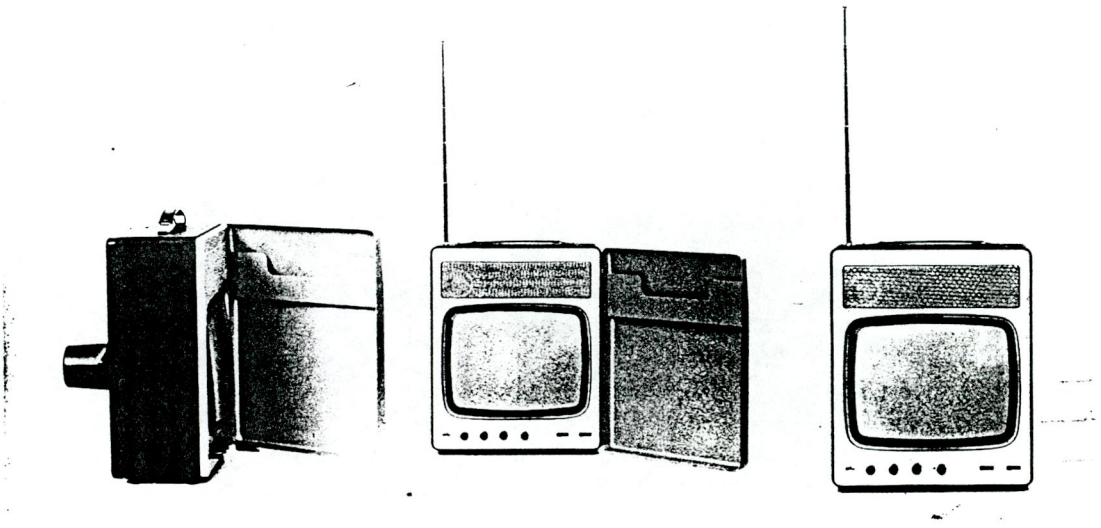
The emerging youth culture saw the new television culture as a means of expressing anti-establishment values and moving with the times. Portables became a youth product and were bought by the new wave of 18-30 year olds who had jobs, money and very often, their own flats which they decorated according to their perception of how the 'modern world' should be. The youth did not place their faith in traditional values and instead, embraced technology and all of the benefits that technological advance seemed to offer at the start of the 1960s: efficiency, cleanliness, flexibility and of course: increased leisure time. As a consequence new television designs were targetted at the youth market. Television forms softened and space technology became a styling reference.

The Doney portable television manufactured in Italy by Brionvega (illus. 24) 1962, was the first transistorised television designed in Europe and the soft forms found on space suits and helmets as seen when Yuri Gagarin became the first man in space, in the previous year.



illus. 24, Doney portable television, Brionvega,1962

Meanwhile, the design team at Braun, under the auspices of Dieter Rams maintained it's corporate policy of styling with technological 'coolness'. The TV-Portable (illus. 25) is a rational layout of controls, grille and screen. It does not take styling cues from other sources, relying instead on the arrangement of it's external components for visual impact. The cover is a sensible and functional inclusion on a television which is intended to be portable as it protects the glass screen from knocks and bumps while the television is carried about.



illus. 25, Braun television-Portable, circa 1963

It is interesting to note that Braun or Sony did not use plastics in the construction of the casings on these televisions, as had the American manufacturers of the previous generation of portable television sets. Plastics, with their properties of light weight, low cost and adequate strength would seem to be a more logical, functional choice of materials. It seems likely that metal was used in the construction of the casings of the first of the new solid state portables because of consumer perception of the material. Unlike the earlier portable sets, solid state portables were most likely to have been bought by first time buyers and, as such they regarded the purchase as being an investment.

As portables became more commonplace and as it was a material more suited to the production of the popular soft

forms of the 1960s space imagery, plastics eventually replaced metals as the primary material employed in television set construction. The acceptance of plastics was also due, in part to it's becoming 'naturalised' through familiarisation by the younger generation.

The introduction of solid state technology to the design of television electronics brought with it a change in the role that the industrial designer played in the overall design of television sets. This type of television was unprecedented and demanded a new approach to the organisation of the design and layout of the componentry of the television set. Previously, the form of the set was largely determined by the componentry which was, from one set to another, of basically the same layout.

Solid state componentry is of a physically smaller size than valve based cicuitry and dissipates less heat than valve cicuitry. As a result, less free space is required in the television cabinet for cooling of the cicuitry and tighter spacing of the electronic elements is possible. Coupled with the adoption of plastics technology, miniturisation allowed greater flexibility in the layout of the internal elements of the television set, providing greater freedom of form than previous technologies had allowed.

This meant that the industrial designer was moved from being the last stage in the production line system of designing a television set. The industrial designer was now responsible for more than the packaging of a fixed

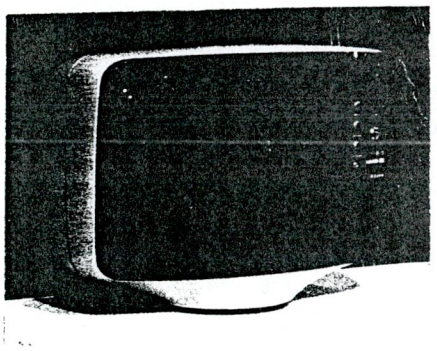
arrangement of electronic elements. The industrial designer of solid state televisions became a mediator/organiser working between the specialised activites (eg. electronic engineers, production management etc) concerned with the overall design and production of the television. Consequently the designer becomes more responsible for integrating the produce of these activities in the overall form of the television design. This change in the role of the designer had the effect of integrating the industrial design of the television set at a much earlier stage in the production and design of the television set, providing the designer with more control of the ultimate form of the set.

The efforts to humanise the technology of television through it's portrayal of figures of high social standing as ordinary, everyday, down-to-earth souls continued well into the 1960s.

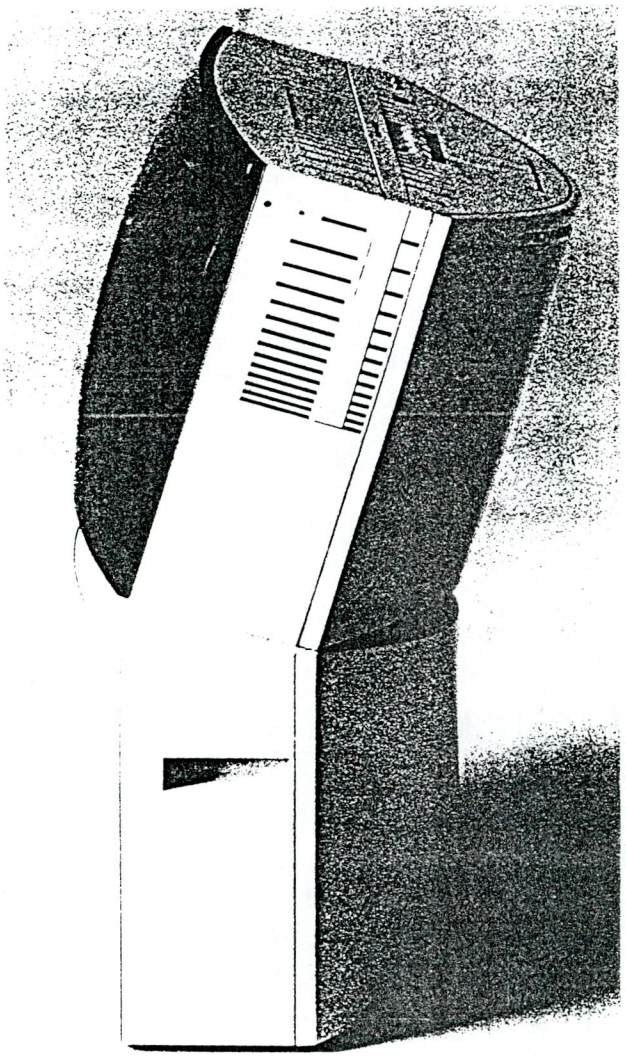
In the 1960s, the British royal family allowed the BBC to broadcast it's members chatting at breakfast and frying sausages at a picnic. The queen adopted television as her favoured medium for her Christmas message to the nation, preferring it's intimacy to the anonimity of radio. At first, the images used in these broadcasts were quite formal, showing the queen sitting rigidly at her desk but gradually, the programmes became more and more informal and relaxed.On some occasions, the queen included in her broadcast, clips from her home movies (Conran,1982, p.43).

In 1967, the Beatles appeared on the world's first global television broadcast, made possible by the placing of the Early Bird satellite in orbit and performed their song 'All You Need is Love'. The content of this broadcast underlines the optimism associated with the technology of television and it's ability to shrink and harmonise the population of, not just nations but the entire planet at it's height.

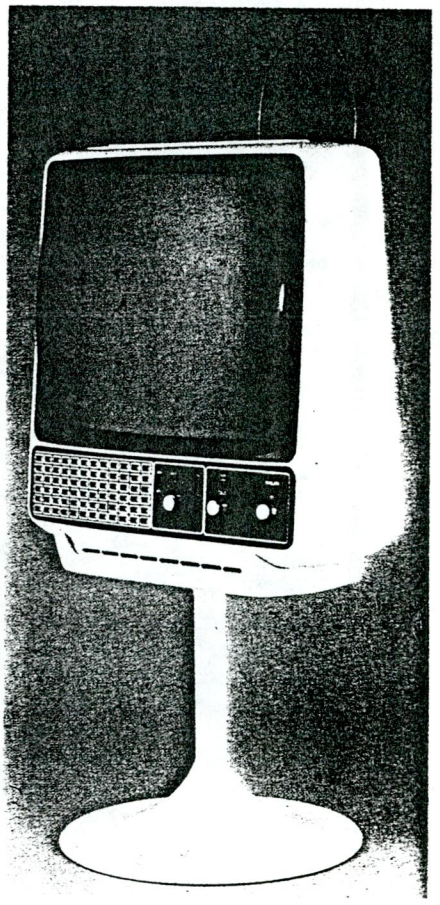
Most designers and consumers were quite happy with the increasing rate of technological advance of the post war decades and believed that the subsequent rate at which old products became redundant was a mark of progress. Consequently, the soft forms and colour combinations of gloss black and sterile white associated with space technology continued to be quite popular right through the late 1960s and into the early 1970s (illus. 26). This aesthetic was even applied to larger sets like that of the Aster 20, designed by Mario Bellini for the Italian company, Brionvega (illus. 27). This set features a tilting screen. Phillips also released a free standing television which did not escape the influences of the space age aesthetic (illus. 28).



illus. 26, French portable television set, 1969.

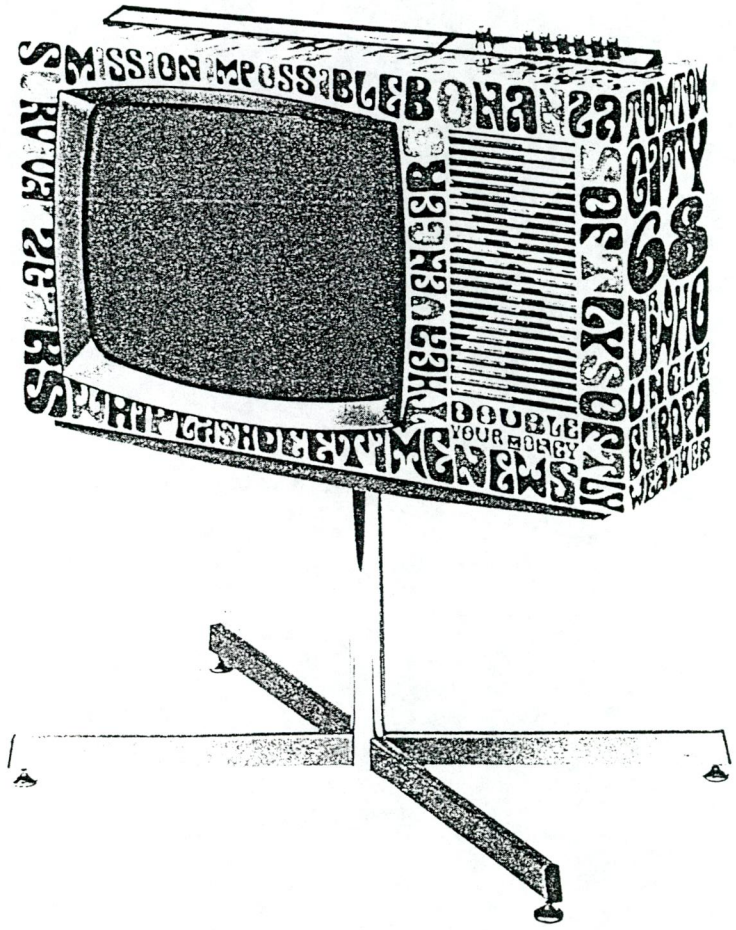


illus. 27, Aster 20" set, designed by Mario Bellini for Brionvega,1968



illus. 28, Philips TV set, circa 1973

The Murphy television set (illus. 29) was introduced in 1968. This set circuits and represents the peak of the 'high consumerism' approach to design at the time (known as Pop Design).



illus. 29, Murphy television set,1968

The aesthetic of Pop was dubbed the 'Throw Away' aesthetic. This television was available in a range of bright

colours, or illustrated, with psychedelic lettering applied to the wooden cabinet. The Murphy set represents the pop aesthetic at it's most extreme.Pop products were normally low technology goods-paper chairs, clothes, records, etc., which were brightly coloured and usually carried loud, applied decoration. They were designed to be used and discarded as soon as the user became bored with the product or could no longer tolerate the loud colouring. In an attempt to sell as many products as possible to the young pop consumers, some manufacturers applied the pop aesthetic to products not suited to the throw away image. This was the case with the Murphy set.

In the case of a paper chair for example, the parameters defining quality are very different than for those of a television, which is not a 'disposable' product in the sense that people invest a lot more time, money and effort in buying and using a television. The application of psychedelic graphics is also at odds with the fundamentally modernist styling and detailing of the wooden cabinet and the layout of the controls and loudspeaker grille.

The enthusiasm of the public for television seen in the 1950s carried well into the 1960s. Television was especially popular with the emerging youth culture, who saw the new technology of satellite broadcasting as a means for unifying the entire world.

In 1967, the Beatles appeared on the world's first global television broadcast, made possible by the placing of the Early Bird satellite in orbit and performed their song 'All You Need is Love'. The content of this broadcast underlines the optimism associated with the technology of television and it's ability to shrink and harmonise the population of, not just nations but the entire planet at it's height.

Television was also popular with the youth culture which wanted to align itself with values reflecting the new age of leisure and enlightenment brought about by the application of new technologies. Hence the success of portable television sets and the eventual widespread adoption of plastics in the construction of television sets.

The new solid state technology employed in the design of television electronics resulted in a closer integration of the industrial designer in the overall system of design and production of television sets, thus providing greater control and input of the final form of the television set.

In terms of aesthetics, television set design shifted it's late 1950s concern with designs expressing the experience of interaction between the viewer, technology and medium, to an aesthetic based on references to other sources. This is typified by the 1960s designs for television sets which take styling cues from the visual imagery of space suits and helmets.television sets of the late 1960s and early 1970s are recognisable through their use of sterile white and deep

gloss black colour schemes combined with soft, plastic forms (see illus.. 27-29).

The Murphy television set of 1968 achieves it's visual impact through the application of Pop imagery to a non-Pop, essentially non-disposable product.

CHAPTER FOUR - THE LATE 1960s TO THE PRESENT

This chapter examines the effects of new social perspectives on technology, consumerism and the mass media in the period between the late 1960s and the early 1990s.

The effect of public re-evaluation of television and it's applications combined with the introduction of television related television products on television set design is discussed. In the late 1960s consumers grew dissatisfied with the rapid rate at which their television sets were made redundant by the constant changing of the broadcast standards. The manufacturing industry responded by shifting it's emphasis from the changing of the broadcast standards to refining existing systems and introducing new technologies like video.

The general broadening of public perception of television technologies and their application in the 1980s and 1990s is discussed and related to current trends in television set design.

In the late 1960s and early 1970s, the mass media, particularly television became the centre of much critical examination. The role of television and it's application were (and still are) studied in depth, resulting in far reaching changes in the public's perception of the media.

Publications such as Joe Mc Ginnis' book, The Selling of the President, released in 1968 for example, showed how deeply television and it's conventions had permeated American culture. Mc Ginnis argued that political discourse

had come to base itself on the format of the television commercial.(Postman, ,p.126)

Concerns were raised that the image which a politician was capable of projecting through manipulation of television, had become more important than the issues and policies he represented. It is said that Richard Nixon's standing in the 1960 American presidential election suffered when he participated in a televised debate with opposing candidate, John F. Kennedy, not because of the credibility of his arguments but because of the insubstantiality of the image he projected. Nixon wore a grey suit which blended with the studio background.His movements were tense and his five o' clock shadow was highly visible. All of these elements combined to project an image of insecurity (Conran,1982, p.125).

The rampant commercialisation of television broadcasting was also scrutinised and as a result, the public realised that instead of admitting them to the new affluent society of the post war decades, television had been used to reduce the viewers themselves to commodities. Broadcasting time was sold to manufacturers of consumer goods as advertising space, both between and during programming.

Many of the 1950s and 1960s television programmes were 'sponsored' by manufacturers of commodities. For example, the situation comedy, Ozzie and Harriet was sponsored by Hotpoint and consequently much of the

show's activity took place in the kitchen. Popular heroine Lucille Ball, formally a symbol of American the family values associated with the early days of television, furnished her Palm Springs home with products received in exchange for free promotion of the goods on her television show (Conran,1982,P. 122-123).

These discoveries caused the public to call for changes in the broadcasting industry's applications of the medium of television, demanding that it be put to constructive uses, other than the exploitation of it's viewers. As a result, significant changes were made in the nature of broadcast programming.

In Britain, dramas like 'That Was the Week That Was,' the police series, 'Z Cars' and the comedy 'Steptoe and Son,' despite being entertaining and at times, amusing, used as their subject material, topical social issues which they portrayed in a realistic style. The popularity of these shows exemplifies the changing outlook of television audiences. 'Steptoe and Son' attracted audiences of 22 million and became the first show to cross the Atlantic from the UK to the USA. An agreement was made between the BBC and the American networks to sell the format of the show.Subsequently 'Steptoe and Son' became 'Sanford and Son' and the central characters became black (Dunkley,1985,p. 74-75).

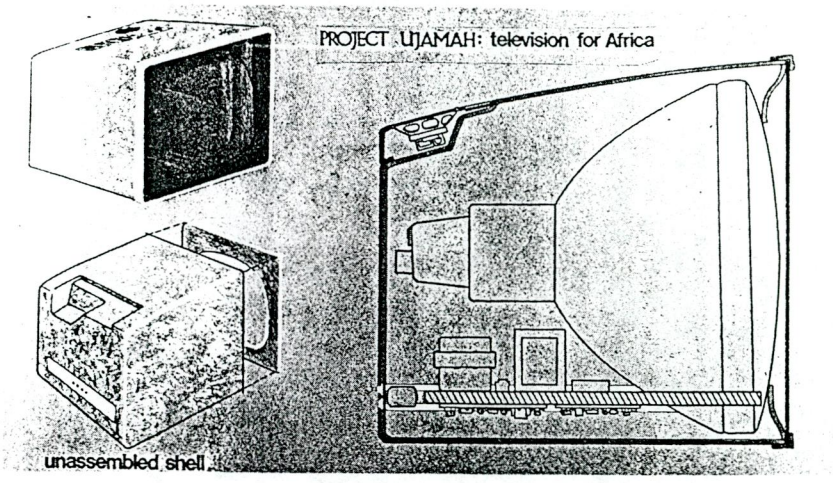
In the USA, the Public Broadcasting Service (PBS) was set up in 1970. The PBS was responsible for the

internationally famous children's programme 'Sesame Street.' 'Sesame Street' set out to captivate and educate children by using television commercial formats to explain simple concepts in small entertaining clips. The PBS represented a departure because it was set up as a non-profit organisation, responsible for the broadcasting of educational material.

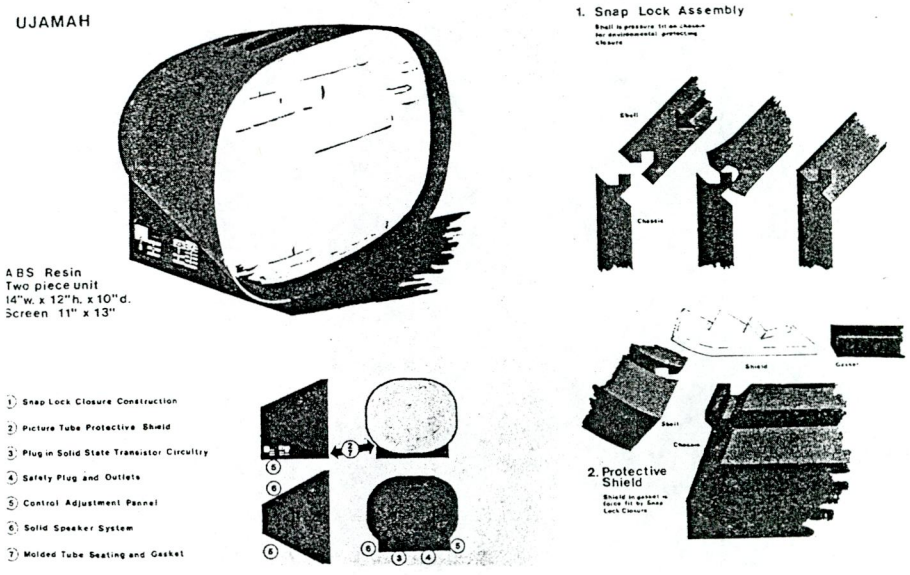
Just as the nature of application of the medium of television was to change as a result of social dissatisfaction in the 1960s, the nature of the industrial design of television sets changed. The most extreme possibilities were explored by radicals like Victor Papanek. Papanek was one of the most vocal of a generation of designers and design students who called for a change in the system of design of industrial products in the 1960s. While some people completely rejected technology in the late1960s, Papanek and his students argued that it could be used like any other tool of man for the creation, through a careful approach to it's application, of a better world.

In 1969, Papanek and his students designed three television sets for use as educational aids in seven African countries. The project was carried out in association with UNESCO. The television sets designed by the team were technologically sophisticated, featuring internal fans for cooling and capable of receiving 36 channels. These sets were designed to be produced in factories located in the participating African nations at a cost of $10 (US) per set (as opposed to $18 a set- the cost of a Japanese set). (illus.

30-31). Unfortuneately, the East African Congress was dissolved by the defection of Uganda, one of the participating countries and the project was abandonded.



illus. 30, television for Africa project, carried out by Papanek, 1968



illus. 31, television for Africa project, carried out by Papanek, 1968

This type of project was typical of a move by design theorists at the time to involve the users of the product in a system of 'participatory design'. This type of approach was envisaged as a complete system of design and production, controlled by the end users of the product. The users were continually called in to evaluate and suggest changes to the design as it evolved from concept to the finished product.

While activists like Papanek did not achieve exactly what they set out to do, his teaching and that of others of a similar outlook, combined with the general air of consumer disatisfaction led to an expansion of the interests of designers and manufacturers of consumer products, causing designers to look more closely at the needs and expectations of consumers and how products could, by design, satisfy these needs.

Not all consumers were enthusiastic about the increasing rate of obsolescence of products. Manufacturers were replacing old models with new lines so quickly that after sales services such as repairs or guarantees were non existent. People were becoming wary of buying new sets because due to technological improvements, the transmission standard was constantly changing. In Britain for example, when the BBC service was introduced in 1936, the government could only guarantee the scanning standard until the end of 1938. Even in the 1950s, repeated assurances that no more changes were anticipated had to be issued to allay the fear of redundance of television sets recently purchased.

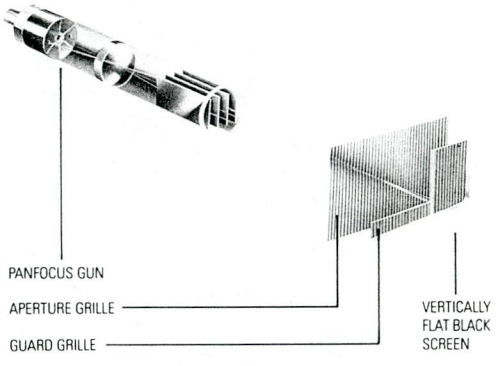
Technological advances such as the introduction of the BBC's second channel, operating on an improved system of picture definition meant that for a time, televisions had to be fitted with dual-standard circuitry in order to cope with the new system. Eventually old-standard sets became redundant. A similar situation arose with the introduction of colour broadcasting (Conran,1982,p. 5-6).

That television was a medium with possibilities other than those exploited by commercial broadcasting, coupled with consumer dissatisfaction with the rate at which television sets became obsolete due to changes in the broadcasting standards, was to have far reaching effects for television set design.

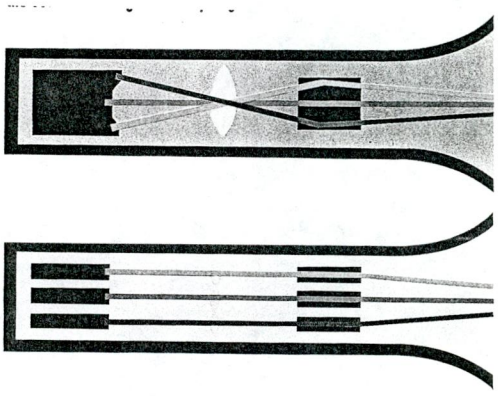
Papanek's television for Africa project was brought about as a result of television's adaptation to purposes other that commercial broadcasting. As a result of consumer dissatisfaction with the constantly changing broadcasting standards, technological development of television shifted it's emphasis to introducing refinements to the existing systems. Television manufacturers concentrated on introducing peripheral products like video equipment, external sound systems and remote control systems.

In 1968, Sony introduced the Trinitron system, (illus. 32-34) a refinement of existing CRT technology which was compatible with standard broadcasting systems. The Trinitron system uses one electron gun to shoot the three

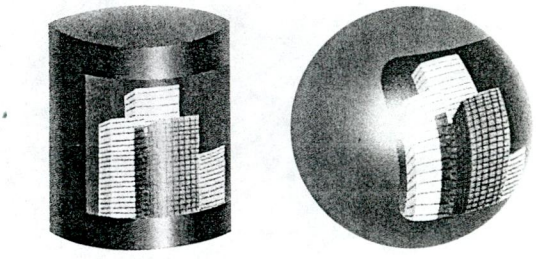
beams of electrons required for colour pictures, through one focusing system, which converges the beams on the phosphorescent screen of the television screen. Conventional systems at the time used three focusing systems, one for each gun. The Trinitron system provides a more focused, sharper picture on a screen which curves horizontally (as opposed to vertically and horizontally, as do conventional sets). This flatter, square screen which is not affected by reflections from other light sources (Sony,1990, p.1).



illus. 32, Sony Trinitron system,1968.



illus. 33, Sony Trinitron system,compared to a conventional system.

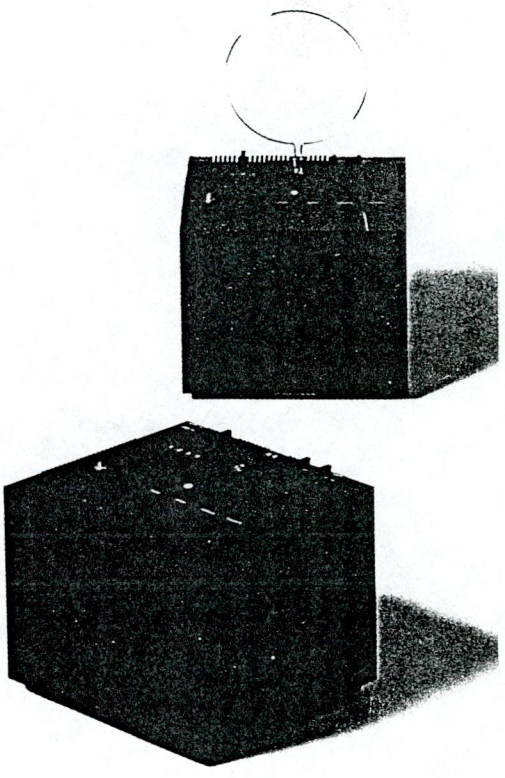


illus. 34,Sony Trinitron screen compared to a conventional screen.

In terms of styling, the rejection of the ideals of the high consumerism of the 1950s and 1960s was marked by the arrival in the late 1960s, of austere 'Black Box' aesthetics, reflecting a more utilitarian attitude towards technology.

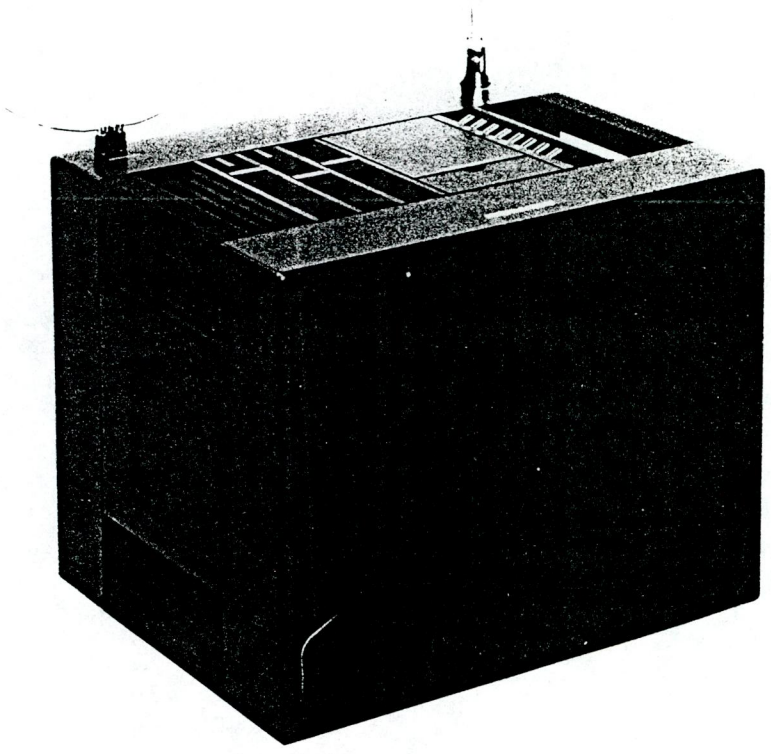
The Black 201 television set (illus. 35), designed in 1968 by Mario Bellini for the Brionvega company of Italy

was the first set to make black a fashionable colour for high technology goods.



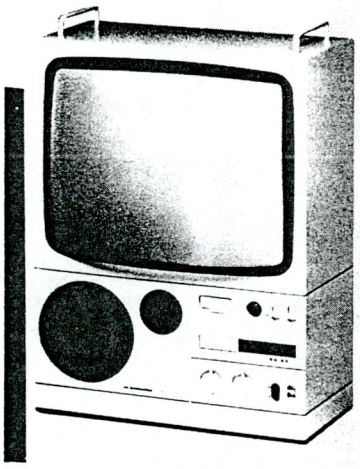
illus. 35, Black 201 television set,designed by Mario Bellini,1968

When designing the Monitor 15" television set for Brionvega in 1975, Bellini was to use the same imagery, based on the hard edged, anonymous black forms of electronic components such as transistors and integrated circuits. (illus. 36)



illus. 36 Monitor 15", designed by Mario Bellini for Brionvega, 1975.

Styling references to military hardware became for a time in the mid to late 1970s. Products like the Italian television set (illus. 37) carry to an extreme, the neo-rationalist aesthetic. This is a television set which is styled to represent a piece of equipment, built for television viewing and not for the consumption of the trivial type of programming so popular in the 1950s and 1960s.

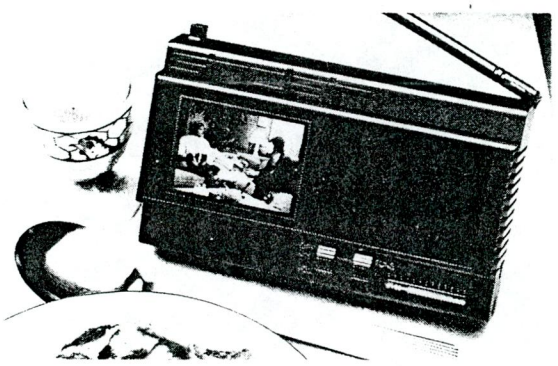


illus. 37, Italian television set, circa 1977

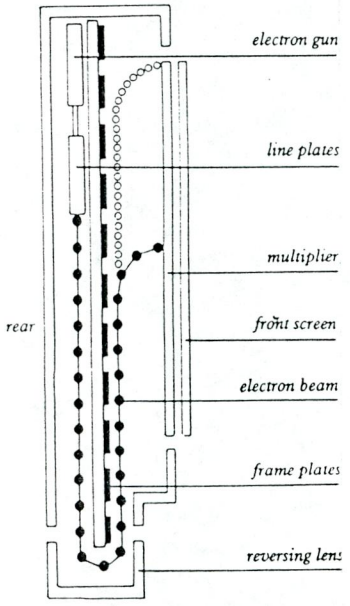
The wave of miniturisation spawned by the introduction of the TV-8-301 in 1959 continued and in 1984, Clive Sinclair, an English electronics entrepeneur released his Sinclair Pocket television (illus. 38). Using micro-chip technology and a new type of CRT, the Sinclair television weighed only 280g and measured 140x90x30mm.

As can be seen, the Sinclair CRT works on the same principle as conventional CRTs but by rearranging it's functional elements, the screen is rendered flat. Instead of mounting the electron gun behind the screen, Sinclair has mounted it beside the screen (illus. 39).

The Sinclair however, could hardly be described as innovative in styling terms, relying as it does on the 'black Box', high-tech aesthetics of the 1970s.



illus. 38, The Sinclair Pocket television,1984

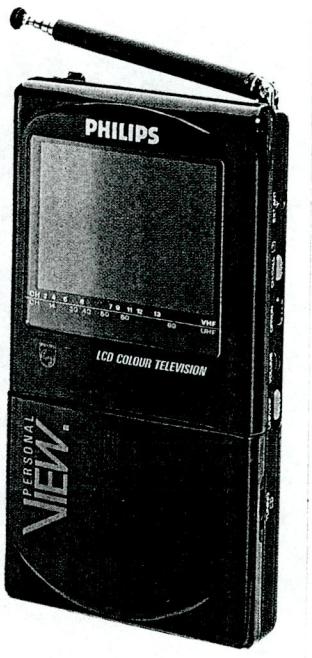


illus. 39, CRT arrangement featured in the Sinclair Pocket television set,1984

Sinclair was not the only manufacturer to release a pocket television.Sony and dutch manufacturers, Philips, were also to follow suit.

The Philips television set (illus. 40), although relying heavily on the Black Box aesthetic does so on somewhat

softer terms than the Sinclair television. This combination of high-tech imagery with soft forms seems to imply that the product in question is a friendly piece of technology, designed with human considerations. Technology, it seems is once again our friend.



illus. 40, Philips pocket television set,1990

To date,video has shown itself to be the most popular of the peripheral products,introduced by television manufacturers as a result of the consumer dissatisfaction of the 1960s. Introduced in 1965 by Sony, portable video recording equipment did not become widely popular until the 1980s, due to it's complexity and it's high cost. With the introduction of micro electronics, portability and ease of use increased and video cassette recorders, particularly, became the most popular television related product of the 1980s and 1990s.

At first, video was slow to take off. In 1976, a video cassette recorder (VCR) cost £750 (UK) but by 1985, the cost had dropped to £350. Many people rented videos, saving themselves the cost of investing in their own VCR and by 1985 40% of British homes had a VCR.(Dunkley,1985,p.13-14).

While the reduction in cost and improved ease of use has been in part, responsible for the success of video, the real reasons for it's popularity lie elsewhere. Video offered people more control over the material appearing on their televisions than was previously possible. At first, this freedom was practised in the form of 'time-shift' recording, where viewers taped their favourite television programmes and watched them at more convenient times. This had the double effect of freeing viewers of the television schedule and also of allowing them to 'fast forward' through the commercial breaks. By doing so, the advertisements were rendered meaningless. Due to the increased speed of the images, television audiences at the time of video's introduction could not decipher the advertisements. Fast forwarded material carries no sound.

Moves by the film industry brought about the release of box-office movies some time after their cinema release. At first these films were sold to consumers at high prices but eventually the distribution of films through networks of rental agencies brought about huge price cuts. Rented video movies are now the most popular form of video entertainment.

The introduction of small, hand held portable video cameras provided consumers with the possibility of producing their own television programmes. Small affordable cameras combined with the penetration of VCRs in the domestic envoirnment have opened up new possibilities for the application of television technology.

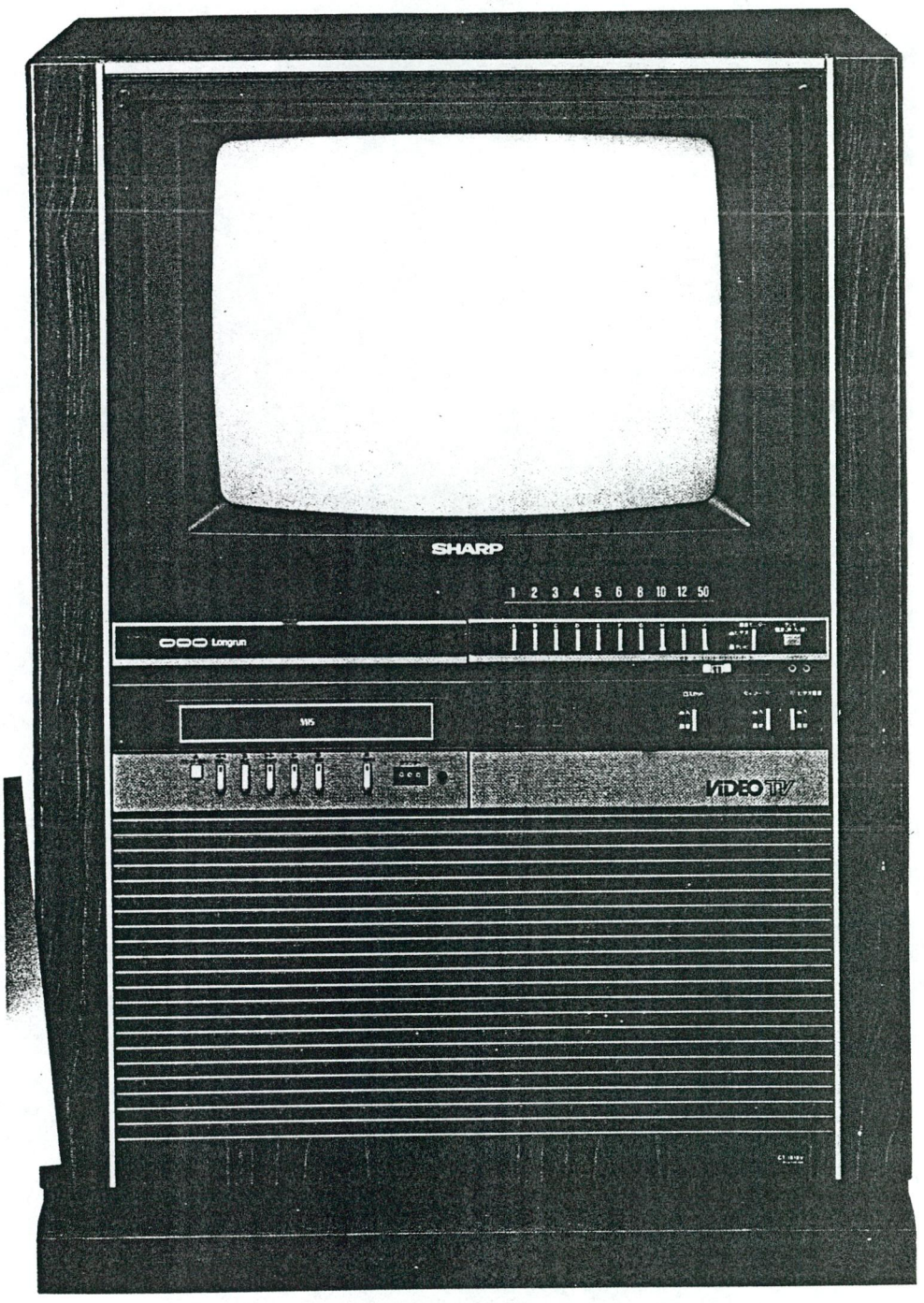
Perhaps one of the most significant appeals of video is that it has shown itself to be compatible with small scale gatherings similar to those associated with the early days of television.

In 1984, the American magasine Newsweek, in an article entitled 'The Video Revolution,' reported that an Alaskan video rental outlet rented tapes to remote communities, delivering them by air.'One guy rents it', said the owner of the outlet 'and half the town comes over to his house to watch it'. (Newsweek,Aug. 6,p. 34)

The phenomena is not confined to outlying communities.The same article goes on to report that;

> 'Shelly Berger's son Joshua,17, who lives down the block from his divorced father in Beverly Hills, brings girlfriends to his fathers paneled media room to watch movies on the VCR'.

Moreover, home movies, of the type made by people owning portable cameras, shown to small gatherings of friends or relatives, represent a progression of the social applications discussed above.This is a dimension which



41. Sharp TV/Video set, circa 1978

broadcast television has been unable to provide.In 1988 Roy Armes wrote in his book, On Video:

> Already various distribution circuits for video exist and video has shown that it has the potential to become the communal mode which television never gave us, with tapes being shown to an intimate audience which has gathered to see them. (Armes, 1988, p. 78)

It is not surprising to see that some manufacturers responded in the late 1970s by meeting this optimism with designs featuring, as in the early days of television, a mixing of furniture imagery with the contemporary 'modern' style of design. The Sharp Video/TV is such a product. By combining sharp-edged, High-tech imagery with a plastic, wood-effect laminate, the Sharp set is once again an attempt to domesticate technology. (illus. 41)

Video has not been the only product that manufacturers have developed since the 1960s. Due to improvements in the sound quality of televised material, television set sound systems were expanded. At first this was made apparent by the inclusion of detachable loudspeakers capable of delivering stereo sound. Home computer systems using the television set as a display terminal also became available, as did still video.

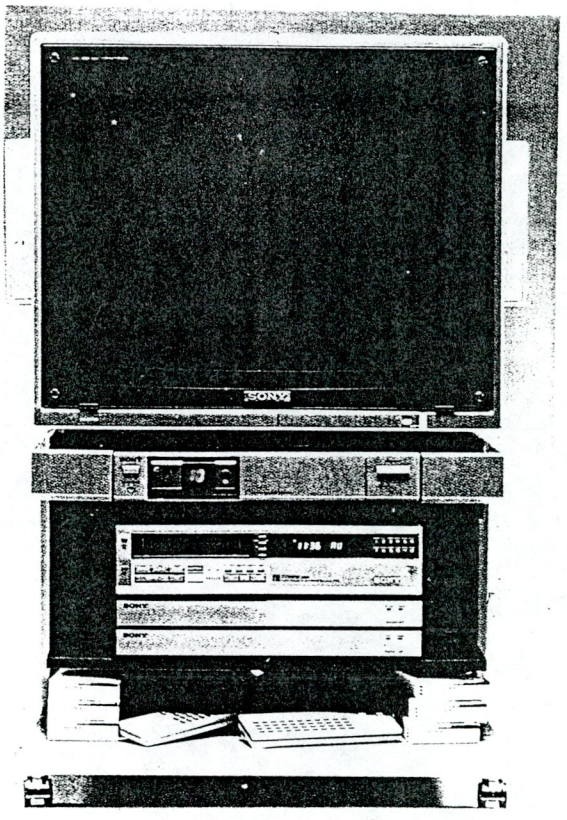
Still video is an extension of video and computer data storage techniques. Still video cameras record images and sound onto a floppy disc which allows playback of the images on a television screen. Still video does not record moving images, as does video but instead records static

images. Still video offers instant playback, erasure and recording all in one unit. It's audio capabilities combined with the possibilities afforded by telephone transmission of images, computer hookup and integration with desktop publishing systems show it to be a technology offering wider possibilities of application and use of television related media. Still video has not been available for a long enough time to determine it's practical and most suitable applications but it's possibilities are certainly exciting.

A significant trend of recent years has been the tendency to view technologies like video, still video, home computers, compact discs and hi-fi systems as being components of one overall system, the applications of which are determined by the user. This outlook is reflected in several ways in television set design. On one hand separate technologies like television and video technology have been integrated in one object (illus. 41) and on the other, the various elements in the system have been separated and presented as a visually integrated assembly of products.

An example of this second train of thought is the Sony Profeel system (illus. 42), introduced in 1981. The Profeel separates the sum of functions normally found in a television set (receiver, screen, loudspeakers) and combines them as separate modular components which can be bought and integrated at will, should the viewer wish to update the system. Hi-fi components, video, still video or a home computer system can also be added to build a complete entertainments system, suitable for either the consumption

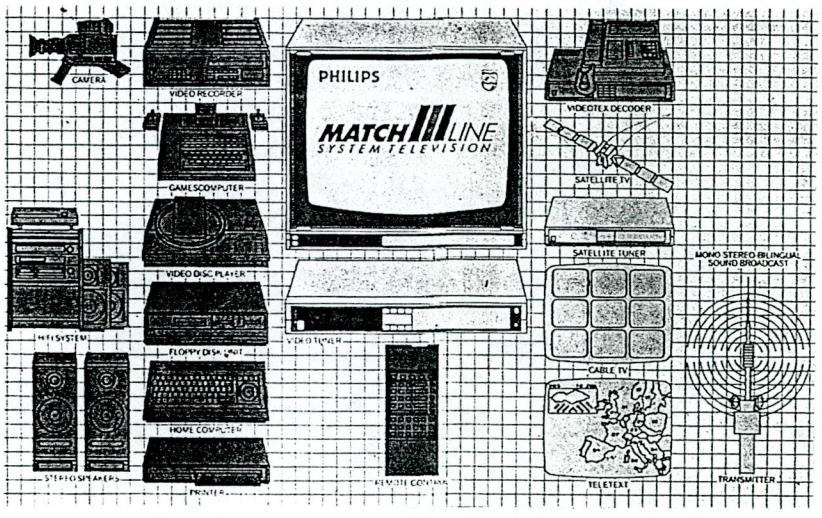
of ready made material or the production of home made material.



illus. 42, The Sony Profeel System, 1981

In 1983, Philips introduced a similar system, the Matchline (illus. 43). The introduction of systems like the Profeel and the Matchline has been brought about partially in response to consumer unwillingness to replace an entire television set, which may have been made redundant due to changes in the broadcast standards. All the consumer has to do if this happens is to replace the tuner. The introduction of television systems allowing consumers to produce and watch their own material, using sophisticated and highly flexible user-orientated technologies, was also brought about by the emerging broadening perceptions of

television and it's applications. The Matchline system diagram illustrates clearly, the flexibility of this type of arrangement. It's possible applications are limited only by the imagination of it's user and go far beyond that of the viewing of commercially broadcast material. As such, television systems represent products of functional and conceptual complexity.



illus. 43 System diagram for Philips Matchline

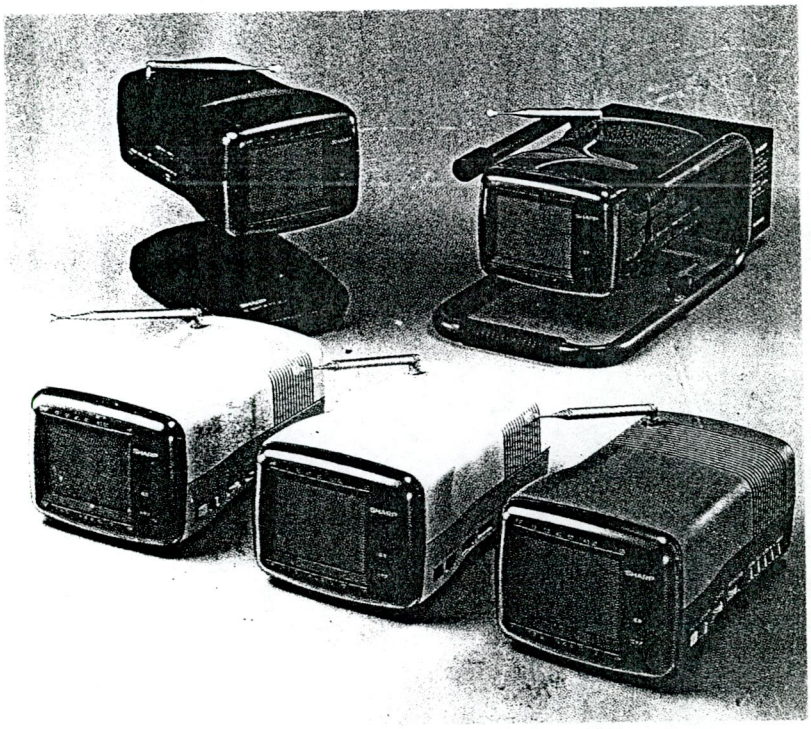
When addressing the functional complexity of television systems, much attention has been paid to the design of the remote control. When designing the Matchline system, designers at Philips stressed the importance of conveying as high a degree of user friendliness as possible, concentrating on a centralised control device. The design approach selected, like that of the Philips pocket television, was a combination of high-tech imagery with slightly softer forms. This was intended

to emphasise the concept of a user friendly interface from which the viewer could control the system.

The late 1980s and the early 1990s has shown much diversification in the field of television set design. On one hand the black box aesthetic is still applied, as can be seen in the styling of Sony's Trinitron sets (illus. 44). The softening of the hard edges of the high-tech look has been taken to it's extreme (illus. 45) and Sharp's range of portable sets feature a return to soft forms (illus. 46) and are available in a range of five, bright pastel colours.

The period dating from 1968 to the present has been witness to many changes and much diversification of thought relating to television and it's applications.

Some are content with the position held by television as being a form of entertainment, something to pass one's time with and realising that this aspect of television is not a group activity, favour portable sets or products like the Sinclair Pocket television (illus. 38). The implication of privacy involved in using these products is such that they are used to define personal space by commuters and by those who do not wish to engage in conversation with strangers. The re-introduction of colourful products like those released by Sharp seems to suggest that commercial television's changes in programming policy have won the confidence and trust of the consumer, who now believes that television is once again a beneficial technology.



46. Sharp portable sets, 1989

45. Panasonic set, 1990

44. Sony Trinitron set, 1990

The most significant factor influencing both the content of television programming and the introduction of television related products, allowing the users to make their own material has been the overall broadening of consumer perception of television media. The immediate effects of which were the introduction of the PBS in the USA and the television for Africa project undertaken by Victor Papanek and his students. This broadening of consumer awareness resulted in more control for the consumer over television and provided a suitable climate for the introduction of television related products like video, still video and home computers. Initially the introduction of video, a product compatible with small social gatherings promoting interaction between intimate groups of people, created an atmosphere of optimism similar to that of the early days of television. This is exemplified by the return of furniture imagery combined with the contemporary imagery of technological sophistication, implying an ideal of beneficial and domesticated technology.

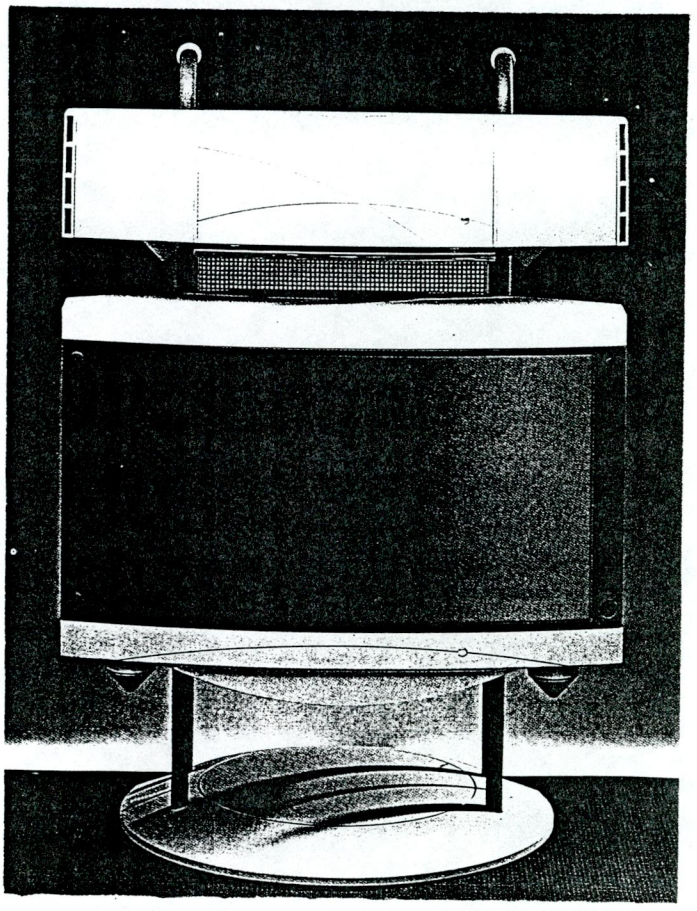
Increasing consumer desire for more control over television programming and the broadening awareness of new possibilities for the application of television related media has resulted in the introduction of more flexible domestic systems like the Sony Profeel and the Philips Matchline. For the most part both systems rely heavily on the black box aesthetic of the 1970s and early 1980s. Manufacturers of the Matchline system, Philips, have

adopted a variation of this aesthetic and have deliberately softened the hard edges of the black box imagery with the intention of conveying a degree of user friendliness. Likewise, the provision of a central remote control device, allowing the user to operate the entire system without entering into direct contact with the system components, allowed the designers to simplify visual complexity by removing the multitude of dials and controls usually associated with this aesthetic.

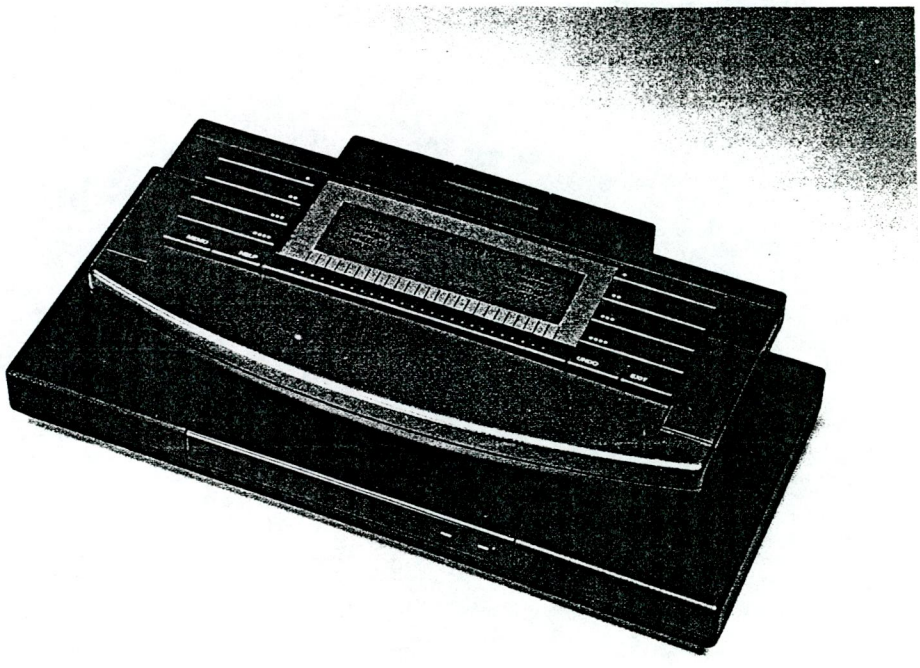
This approach is similar but less expressive than that adopted by the designer of the Philco Predicta set in the late 1950s. Although no attempt has been made by Philips or Sony to resolve in expressive visual terms, the interaction between user, technology, and media, the functional needs of the user/viewer have been extensively dealt with by providing such a flexible system.

The concept of these television systems represent a thorough understanding of consumer wants and needs. Japanese companies particularly, carry out extensive market research, employing sociologists to study how people live and behave and plan products to fit the patterns they discover. Hiroshi Shinohara, president of Canon's research division has said that this factor has caused his company to change the emphasis of it's design policy. Shinohara states that emphasis has shifted away from 'what we call "static symbolisation" [styling references to other objects] to "dynamic images" [imagery based on abstract social concepts].

This points clearly to the re-introduction of an aesthetic based on the overall experience of television and to further changes in the television related media and in their applications. Tendencies in this direction have already been noted. Work carried out for Philips by the Australian consultancy, Blue Sky Design, has been executed in clean geometric forms featuring discreet abstract detailing. The overall effect is to produce an image of technology that is sophisticated but discreet and reserved (illus. 47).



The Interactive TV Terminal designed by American consultancy GVO Ltd. for Interactive Network in 1990 illustrates a similar design approach (illus. 48). The idea of television as a strictly passive medium is under re-evaluation by Interactive Network. This system allows users to play along with game shows, educational shows and other types of programming. Signals are broadcast by radio and telephone lines.



The design of new products like the Interactive Terminal and the new television systems pose problems and challenges for designers. As well as designing for existing applications, designers must anticipate technological and programming changes, as well as changes in the patterns of application of television related products.

CONCLUSION

The question; 'What is the relationship between technological innovation and the marketing of television set design?' was forwarded in the opening paragraph of the dissertation. In order to answer the question, television's development has been examined from it's introduction in 1925, to the present.

In the late 1920s the application of television to the purposes of commercially broadcast entertainment was determined by the electronics industry's success with broadcast radio. Early television set design was also effected by radio set design. Television set design adopted the aesthetics of radio set design and television sets were designed to harmonise with the domestic envoirnment.

In the post World War Two years television's popularity rose dramatically. This was due mainly to the nature of it's programming and the subsequent public perception of television as a beneficial modern technology. Television was held to be a technology which provided a context for social interaction and unity on a small intimate scale and even on an international level. This explains the continuing popularity of the furniture imagery, employed to some extent in television set design well into the mid 1950s.

The introduction of new materials, such as Bakelite and their associated manufacturing techniques for the first time, points to the emergence of television sets as mass produced consumer goods. However, the styling of early plastic

television sets was reminiscent of goods produced in low volume, using craft based manufacturing methods and relied heavily on furniture imagery. Plastics of a similar appearance to wood were preferred to the more colourful possibilities offered by this new material. The treatment of this new material was brought about as a result of the consumer's belief that plastics were of poorer overall 'quality' than the more traditional materials of wood or metals. For the same reason, plastics were used in the design of the first portable sets so that the consumer would regard them as being 'cheaper', lighter and therefore, less of an investment than a larger set.

Similarly, the introduction of a new electronic technology allowing the production of smaller television sets, like the PYE B18T did not change the external appearance of the television set.

By the late 1950s television was commonplace. The emergence in this period of designs such as the Philco Predicta, the Phonola and the Braun concept model convey the relationship maintained between technology, viewer and the form of television programming at that time. The mixing of hard, geometric forms with freer, more expressive forms reflects the perception that technology is cool and neutral while the form of television programming is more irrational. At the time these sets were designed, television still held in the mass perception, the position of being a technology primarily used for entertainment purposes.

In 1959 a new electronic technology, the transistor was used for the first time in television set design. The transistor allowed the production of cheap, light and efficient portable sets. The first set to feature transistor technology was the Sony TV-8-301. Transistors were used in the manufacture of this set to allow it to fit into the compact homes of Sony's oriental target market. Other than a reduction in size, the new technology did not effect the appearance of the TV-8-301. This was also to happen when Clive Sinclair released his Sinclair Pocket Television, a set featuring a new type of CRT which allowed a huge reduction in the size of the television set but, like the transistor did not effect the styling of the set. Even the changes in the role of the industrial designer brought about by the use of transistors in the overall design of television sets, did not outwardly effect the appearance of television sets in the 1960s and 1970s, the style of which continued to be based on references to other objects or sources.

The primary material used in the construction of television sets continued to be metal, despite the fact that plastics are a more suitable choice, especially where portability is a concern. It seems likely that metal was used in the construction of the casings of the first of the new solid state portables because of consumer perception of the material. Unlike the earlier portable sets, solid state portables were most likely to have been bought by first time buyers and, as such they regarded the purchase as being an investment. Plastics were eventually adopted

when the youth culture of the 1960s consciously bought plastic goods, using them as a token of expressing anti-establishment values. By this time plastics had been 'naturalised' through familiarisation by this age group, who had no previous encounters of poorly applied plastics technology.

The public perception of the technology of television has broadened since the late 1960s and has continued to do so. Television technology is now openly accepted as having a wider range of possible applications than those exploited in previous decades. The development of this perception can be traced from it's initial appearance in the late 1960s to the present, in the changing design approaches of television set manufacturers.

At first, television sets were styled to represent utilitarian pieces of high tech viewing equipment. In the late 1970s when video first became available, the combination of furniture imagery with the contemporary 'modern' style was a response to the optimism generated by the social applications of video at that time. The recent appearance of television systems in response to consumer desire for more control over the application of television related media, shows clearly that television manufacturers carefully monitor the needs of the consumer and design products to satisfy these needs.

We can conclude by saying that technological innovation is fundamental to the television manufacturing

industry and therefore to the industrial design of television sets. While technological innovation makes possible the introduction of new applications of television and of television related products, it does not determine the applications of these products. We have seen that the application of television technology has always been governed by social factors and that television sets have been designed either to harmonise with or to reflect these social factors, which are the study ground of marketing specialists.

We have also seen that technological innovation in the television manufacturing industry has been directed by market [social] forces, as in the initial development of television for broadcast purposes and more recently with the introduction of the Interactive Television Terminal.

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