



# Design & Technology

Learning

## Daring to be New - Contemporary Architecture: East and West series

<p>01. The House Duration: 14 Minutes</p>	<p>Daring to be New gives an overview of the most innovative and experimental architecture in Britain, Japan, the USA and Europe.</p> <p>The programs are shot on location at some of the most striking and incredible buildings worldwide including The Lloyds Building, England, The Guggenheim Museum, Spain and The Umeda Sky City, Japan.</p> <p>For each building, considerations of setting, choice of materials, function, structure, scale and relationship to tradition are examined.</p>
<p>02. The Office Duration: 14 Minutes</p>	
<p>03. Sport Duration: 14 Minutes</p>	
<p>04. Art Spaces Duration: 14 Minutes</p>	
<p>05. Travel Duration: 14 Minutes</p>	

## Design 4 Life series

<p>01. The Super Modern Wardrobe Duration: 14 Minutes</p>	<p>This program explores two exciting facets of fashion design for the early twenty-first century:</p> <ol style="list-style-type: none"> <li>1) how the present day needs of urban youth culture (mobility, security and communication) have developed since the space-age 1960s</li> <li>2) the design opportunities provided by the new technologies of 'smart' textiles and integrated electronic products</li> </ol>
<p>02. The Colour of Emotion Duration: 14 Minutes</p>	<p>This program is about the importance of light and colour to the designer and is focused around four main aspects:</p> <ol style="list-style-type: none"> <li>1) the emotional influence of colour</li> <li>2) how architectural lighting designers use colour</li> <li>3) the rise and fall and rise again of the Lava Lamp and associated products</li> <li>4) the new profession of future colour prediction</li> </ol>

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<p>03. Fluid Foods Duration: 14 Minutes</p>	<p>This program explores the concept of 'encouraging young people to fall in love with tea' - a concept developed by the Brooke Bond tea company as a reaction to the rapid growth of American style coffee shops that are popping up in major high streets across the country. The program illustrates the following key features:</p> <ol style="list-style-type: none"><li>1) the rationale for the interior design of the Chá tea shops</li><li>2) the strategies used in the design of a rapid tea machine called Tea Bird</li><li>3) the 'design' of new tea drinks</li><li>4) a critical appraisal of all aspects of the tea project by design guru Charlotte Grindling</li></ol>
<p>04. Design Aid Duration: 14 Minutes</p>	<p>This program explores the notion that good design can improve our lives and make things better for people. The point is made throughout the program that designers should never lose sight of the various needs of the end user. Three case studies are shown which focus on the following challenges:</p> <ol style="list-style-type: none"><li>1) the use of mobile phones for the hearing impaired</li><li>2) bags to help combat theft and street crime</li><li>3) easy-to-open drink containers for both able-bodied people and those with handling difficulties</li></ol>
<p>05. Zen and the Art of Cycle Design Duration: 14 Minutes</p>	<p>This program contrasts two very different approaches to modern bike design, which come from two design teams with very different backgrounds. John Whyte, an ex-Formula 1 racing car designer has designed a radical mountain bike with wishbone suspension and Marc Newson and Jens Martin Skibsted designed the Biomega bike for 'urban hipsters', now on display in the San Francisco museum of modern art. Mark is a famous product designer who has worked for such firms as Nike and Alessi, designing products ranging from chairs to watches and restaurants to bottle openers. Jens used to run an art gallery and now makes bikes!</p>

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## Design and Make It series

01.

Food Technology

Duration: 14 Minutes

This program has three main sections:

- \* Designs Behind Bars (chocolate manufacture)
- \* Designer Meat
- \* The Big Chill (cook-chill products)

The first sequence takes us into the Cadbury's chocolate factory, where we see chocolate being piped, poured, moulded and mixed with other ingredients to make a considerable quantity of a range of familiar products. The design of the Wispa bar is followed in detail, with reference to production line control and automation.

We don't usually think of meat as being 'designed', but somehow meat producers need to be able to provide a range of products that are lean, fresh, hygienically prepared, last a reasonable time and are competitively priced: these qualities don't just happen by chance, but by careful decision-making and production planning. We see meat in carcass form being hung, weighed and analysed for consistency of structure and colour (NB some pupils may find these shots upsetting). Testing procedures involve cooking and eating, and computer analysis of the data.

Finally, in the supermarket the consumer is able to choose the cut, amount of further preparation, the method of cooking, and the price that suits their lifestyle. Not everyone has the time or ability to prepare and cook a complicated dish, and a growing range of 'cook-chill' meals are being produced. In the final sequence we discover how the Somerfields supermarket chain develops a new vegetable lasagne. In their test kitchen they analyse rival products for taste, appearance and texture and from this develop their own specification. In terms of production, achieving the correct portion size, quality of ingredients and accurate temperature control are all essential.

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02.

Resistant Materials

Duration: 14 Minutes

This program has three main sections:

- \* The Good Body Guide (car-body design and manufacture)
- \* The Tree, The Computer and the Wardrobe (flat-pack furniture)
- \* Heavy Metal (musical instruments made from metals)

In the first section we visit the TVR car-production factory in Blackpool. Unlike the major manufacturers, TVR produce around 22 hand-made, high-performance sports cars a week. Designer Damian MacTaggart explains how he designs car bodies with simple hand tools and polystyrene foam. The process of building up layers of glass-fibre and liquid resin in a series of moulds to make the body shell is demonstrated. The need for health and safety at work is emphasised.

Christies are a luxury fitted furniture company. They specialise in producing one-off, made-to-measure bedrooms, bathrooms, home offices and kitchens. By using a sophisticated CAD-CAM system they are able to design, make and deliver furniture and fittings individually for each customer within two weeks. In the program we see high-density fibreboard (HDF) being made and then follow the story from a client placing an order, through design, manufacture, and finally to installation in the home.

The third section looks at the making of brass musical instruments. Boosey and Hawkes were formed in the 1930s with the merger of two companies: Boosey & Co and Hawkes & Son. As well as the brass instruments they make in their Edgware factory, they make woodwind and string instruments. The sequence reflects the company's aim to fuse traditional methods of manufacture with the innovations of modern technology. It shows how they use a variety of hand- and computer-controlled production processes and quality control systems to produce products which sound and look right.

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03.  
Textiles Technology  
Duration: 14 Minutes

This program has three main sections:

- \* Virtual Fashion (summer dresses)
- \* Cover Story (fabrics for furniture)
- \* A Cast of Costumes (theatrical costumes)

The first section follows the progress of a range of summer dresses from the initial briefing with the designer through costing, the production of a sample garment, pattern making and fabric cutting to machining. Emphasis is given to the use of CAD and automated production processes in speeding up the time from design to delivery to the high street store.

'Andrew Martin International' print fabrics for furniture. Fabric designer Amy Wells takes us through the process of developing a design with regard to how the fabric will be printed, fixed and finished as this will affect its final appearance. The skill of the fabric cutter is essential to ensure the fabric is accurately prepared and fitted.

The use of dyes is an important part of the theatrical costumiers 'Angels' – matching colours with fabrics to look authentic for a period costume is a demanding task. Most of their costumes are made in small batches from scratch, using traditional methods, so skilled tailors and pattern makers are needed.

04.  
Electronic Products  
Duration: 14 Minutes

This program has three main sections:

- \* Secret Circuits (a car-tracking device)
- \* Launching the Microchip (an electronic personal organiser)
- \* Wired Plants (an atmospheric control system)

The 'Tracker' is a new idea to help beat the car thief. As soon as a device fitted in a car is activated it starts transmitting a signal which can be picked up by specially equipped police patrols. The PCB (printed circuit board) was designed using a sophisticated CAD package, and thoroughly tested before going into production.

Electronic products continue to get smaller, and the Psion personal organiser is no exception. To make it pocket-sized, the electronics had to be designed with the size and shape of the final casing in mind. While many operations on the assembly line are automated, fast and efficient, some of the delicate stages of the production and some of the testing needs to be done by hand. The production line sequence from PCB assembly to final quality control is followed.

At Kew Gardens we learn about their sophisticated electronic atmosphere control system. Light levels, temperature, ventilation and humidity can be individually tailored to the needs of tropical plants in ten different climate zones. Electronic sensors detect minute changes in the conditions and report back to a central control computer every two minutes. This information is processed, and blinds, ventilators and sprayers are automatically turned on and off. As a result, visitors to Kew can enjoy seeing the exotic plants, without the need to travel to a real rainforest.

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05.  
Graphic Products  
Duration: 14 Minutes

This program has three main sections:

- \* Screen Test (movie posters)
- \* The Can Plan (packaging cosmetics)
- \* Monster Graphics (exhibition design)

The opportunities and constraints involved in designing and printing a movie poster are explored. We see a range of different examples of the ways which posters attract our attention, raise our interest, create a desire to see the film, and tell us where and when we can see it. A sophisticated computer-graphic system helps the designer to manipulate images and text to achieve the final layout. Finally, the poster is printed and checked for quality.

The requirements for the design of cosmetics packaging have some similarities to movie posters, but also many differences. The production process itself, printing on to metal sheet which is then formed into a can, places many restrictions on the colours and textures and shapes and sizes which can be specified. A packaging designer talks us through the way in which he tackled the creation of a hair-spray can which had to include specific safety warnings and instructions for use.

'Creepy Crawlies' is a recent permanent interactive exhibition at the Natural History Museum, aimed at young children. There are things to pull and push, open and close, things which light up and things which make weird noises. We look at the way in which the exhibition designers set about presenting the subject matter in an engaging and informative way, using colour, typography, and mechanical and electronic devices.

## Design Challenge series

01.  
Emergency Beacon  
Duration: 14 Minutes

The challenge is set by outdoor clothing manufacturer, Sprayway. The intention is to produce a prototype for a reliable, cost-effective warning beacon that can be attached to a jacket and which can be activated in case of emergency. The challenge is undertaken by pupils from Ravens Wood School in Bromley, supported by Kirsty Groves from innovation consultancy, PDD.

02.  
Fashion Accessories  
Duration: 14 Minutes

The challenge is set by the Grace Barrand Design Centre in Surrey. The intention is to produce a new range of autumn fashion accessories for the over 20s that can be sold in the Centre. The challenge is undertaken by four teams of pupils from Theale Green Community School, supported by Teresa Searle, textiles designer.

03.  
Instant Sound  
Duration: 14 Minutes

The challenge is set by Newland Scientific plc, Hull. The intention is to design a consumer product to market an innovative loudspeaker technology that will resonate when placed on any hard surface. The challenge is undertaken by pupils from Elliot School, London, supported by David Malcolm from innovation consultancy, PDD.

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<p>04. Science Workstation Duration: 14 Minutes</p>	<p>The challenge is set by Bullers Wood School for Girls science department. The intention is to design a portable science lab to carry scientific equipment and enhance science investigations out on field trips. The challenge is undertaken by pupils from Bullers Wood School, Bromley, supported by designer Warwick Evans. An additional challenge involves another group of pupils, working with landscape designer Johanna Gibbons, on the redesign of the area surrounding the school pond.</p>
<p>05. Cafe Bar Duration: 14 Minutes</p>	<p>The challenge is set by ACC Milk, part of the Co-op Dairy, and ties in with the launch of a new milk product from the Dairy Council, part of the 'White Stuff' campaign. The intention is to design a re-branded school tuck shop to include a corporate logo and a healthy food and drink menu. The challenge is undertaken by pupils from Thomas Alleyne's High School, supported by Glenn Handforth and Phil Rawle from Handforth Rawle design consultancy.</p>
<p><b>Design Solutions series</b></p>	
<p>01. Graphics Duration: 14 Minutes</p>	<p>This program follows a team of designers who are designing a new corporate image for a cutting edge 3D computer animation design company.</p>
<p>02. Electronics Duration: 14 Minutes</p>	<p>This program follows a team of designers who are designing a new instant digital camera.</p>
<p>03. Product Design Duration: 14 Minutes</p>	<p>This program follows a team of designers creating a unique hi-fi system for a top-of-the-range sports car, focusing specifically on the amplifier cover plate.</p>
<p>04. Systems and Control Duration: 14 Minutes</p>	<p>This program follows a team of designers who are designing a remotely operated vehicle (ROV) for use underwater.</p>
<p><b>Engineering at the Cutting Edge series</b></p>	
<p>01. Duration: 24 Minutes</p>	<p>The series is presented by Ed McCann, a visiting lecturer in civil engineering design at Imperial College, London. It aims to inspire and excite young people with the best of British engineering.</p> <p>Question: 'Should we build things in new ways, when the old ways worked fine?'</p> <p>This program looks at two amazing structures: the Millennium Bridge in London and the Falkirk Wheel in Scotland.</p> <p>Presenter Ed McCann and Millennium Bridge designer Chris Wise look at how this 325-metre bridge became so famous as the wobbling bridge.</p> <p>The Falkirk Wheel is the world's one and only rotary boatlift and replaced . It was designed to replace eleven slow canal locks and lift heavy canal boats over thirty-five metres . It is so well balanced that it only uses the same amount of energy as two electric kettles to rotate over 600 tonnes of steel and water.</p>

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<p>02. Duration: 24 Minutes</p>	<p>Question: 'Can engineers ever come close to matching the engineering of the human body?'</p> <p>The program tells the story of two people as they have new limbs fitted and how they adjust to the changes it brings to their lives.</p> <p>Story one follows young mum, June Grinstead, and how she learns to walk again after the first fitting of her artificial leg.</p> <p>The second story is about Malcolm Gilbertson and his decision to have a new electronic arm fitted. The program shows the decisions he faced as the arm is made and fitted.</p>
<p>03. Duration: 24 Minutes</p>	<p>Question: 'Can engineers undo the damage they have wreaked on the environment?'</p> <p>This program looks at two automotive projects that show how important it is for designers to work with well proven standard car parts yet still emerge with completely different products.</p> <p>Student designers Colin Williams and Will Baxter design and produce a sports car called 'ToniQ R'.</p> <p>In the second project a team of Ford engineers take a standard diesel Transit van and try to increase its fuel efficiency by making the engine stop at traffic lights and drop off points.</p>
<p>04. Duration: 24 Minutes</p>	<p>Question: 'Should engineers be tinkering with the performance of the human body, and what will the consequences be?'</p> <p>Vaughan Lovelock has designed a footballer's headband meant to improve heading accuracy. Sheffield United footballers test it out and Vaughan nervously waits for the results.</p> <p>Athlete Gary Sanderson has cerebral palsy. He needs to improve his time to qualify for the Paralympics. Sophisticated computer technology and video cameras help the engineers find the extra speed.</p>
<p>05. Duration: 24 Minutes</p>	<p>Question: 'Should engineers use their talents merely for creating thrills?'</p> <p>Engineers don't normally design products to scare us but that is what the public wants when they go to the fairground. Today's roller coasters are designed and tested in virtual worlds before being built.</p> <p>John Roberts designed the 'Big One', which is the tallest and fastest ride in Europe. It is 72 metres high and the cars travel at speeds up to 90mph. When the car drops from the highest point it accelerates to 60mph in 2.7 seconds, faster than the quickest sports car. To ensure passenger safety the ride is continuously maintained, with computer technology in control and high-speed emergency braking systems fitted in case of problems.</p>

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## Hot Wired series

<p>01. The Eye Duration: 24 Minutes</p>	<p>In this episode of Hot Wired we see how ICT has played a crucial role in the design of one of London's recent iconic landmarks, the London Eye.</p> <p>We meet one of the architects who designed the impressive structure and discover what part CAD played in its design. We also explore the design and functionality of the London Eye website.</p> <p>The Hot Wired series examines six exciting contexts, such as round the world yacht racing and sportswear production, to discover the crucial role ICT in the world around us.</p> <p>We see computers and software used in the real world and then recap the curriculum points in the FAQ zone where students can get under the surface of the software and prepare to use similar applications themselves.</p> <p>Our two presenters, Katie Knapman and James McCourt, take students through the process in short, easy to understand segments.</p>
<p>02. Websurf Duration: 24 Minutes</p>	<p>This episode looks at how a group of Devon surfers use the internet as a communication tool and to search for information.</p> <p>Web Surf is one of six exciting programs in the Hot Wired series. This episode also looks at the organisation and analysis of structured information using spreadsheet software.</p>
<p>03. The Eden Project Duration: 24 Minutes</p>	<p>A visit to the Eden Project reveals how ICT helps to control the climate and monitor plants as well as manage the visitors and tickets.</p> <p>In this episode of Hot Wired, we also take a look at the organisation, presentation and analysis of information using multimedia and database software.</p>
<p>04. Personal Trainers Duration: 24 Minutes</p>	<p>In this episode of Hot Wired, we visit Decathlon - a retail sports outlet with CAD and research facilities as well as its own manufacturing base.</p> <p>The program explores how ICT merges these processes and enables the company to function effectively. It also looks at the organisation and analysis of structured information using database software.</p> <p>The Hot Wired series examines six exciting contexts, such as round the world yacht racing and the Eden Project to discover the crucial role ICT in the world around us.</p>
<p>05. Clipper Ventures Duration: 24 Minutes</p>	<p>A look at how a group of young people, who take part in round the world yacht racing, use ICT as a vital communication tool.</p> <p>Clipper Ventures is one of six exciting contexts in the Hot Wired series which reveals the crucial role of ICT. In this program, we discover how the intrepid sailors rely on technology to link up to their family, friends and their support team.</p>

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06. Hollyoaks Duration: 24 Minutes	This program looks behind the scenes at one of the UK's most successful soap operas to reveal how ICT is used in program production.
<b>Real Life Design series</b>	
01. Making Things Move Duration: 14 Minutes	<p>Automata (mechanical toys) provide a perfect introduction to mechanical principles and making things move. The cam is a fundamental component – an ideal first step to greater things.</p> <p>Creating the familiar, characteristic movement of animals or humans takes thought, care and skill. Man's fascination with mimicking human and animal behaviour goes back centuries. There are automata museums in both York and London which provide a great opportunity for school visits. Ron Fuller and Keith Newstead each have talent for combining artistic ideas with sound engineering principles when making their automata... an important quality for all students of Design &amp; Technology. The program focuses on translating movement from rotary to linear and providing some ingenious solutions. Prepare to be fascinated.</p>
02. Looking For Ideas Duration: 14 Minutes	<p>Fashion designers are always looking for ideas. Top fashion designers like 'Red or Dead' work at least one or two years ahead of the high street, but occasionally there are special events like the millennium which need careful, advanced planning. Fashion is not static, it is an ever-changing area which reflects the moods and trends of society. It is important that ideas are new and fresh but they also need to sell. Designing is not just about looks. Designers have to understand the technology of fabrics and their properties and manufacturing processes. They also need to know at whom the product is aimed and what its function is. Looking for ideas is a complicated business.</p>
03. Take Control Duration: 14 Minutes	<p>Human intelligence has enabled us to take control of our environment in a way no other creature can. Since the invention of the wheel we have sought ways to make life easier and better. To keep warm, human beings were able to harness the effects of friction on dry grass and wood. Today, however, many of us can switch on or off a central heating system in a matter of seconds. Such power at our disposal means that most people in the western world are able to live safer and more comfortable lives. Much of this success is through the application of systems and control.</p>

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04.  
Mama Pasta  
Duration: 14 Minutes

New products are essential to any business. For Pennine Foods Limited, this means developing new products and using packaging which attracts new customers who are eager to buy, eat and enjoy the products. There are two major phases in developing the food product:

- \* developing the food itself
- \* developing the packaging, advertising and labelling that is needed to sell the food

The work of developing the food product is done by the food technologists. They decide how to make the food. This is known as prototyping. They determine the ingredients and their quantities, they list the nutritional information for labelling, they calculate the shelf life, and ensure that the quality of the batch is as good as the prototype. This whole process can take up to nine weeks or more, and will involve many different teams of people undertaking a wide range of duties.

05.  
Inside Out  
Duration: 14 Minutes

Designers gain their inspiration from various sources but base most of their work on what has gone before. In a sense nothing is new, only a variation with improvements. Generally there is a sequence to work through when designing. However, you need not always start at the beginning. You could begin with an evaluation. This is how many industrial designers work; at Rover, 'tear down' is used to evaluate other companies' products.

Designers rarely follow a simple list of procedures. They move erratically from idea to drawing or model and then back to drawing in a zigzag path. They have their own vocabulary to describe their work and we need to try and understand their words and appreciate good design. As the program says: as consumers of the future we need to reduce waste and contribute to a better world.