



RON ARAD UNDER THE SPOT LIGHT

By V.Ryan (World Association of Technology Teachers)

Ron Arad was born in Israel in 1951. He studied Art, Design and Architecture in Jerusalem and London, in the early 1970s. He formed Ron Arad Associates in 1989, which specialised in both product design and architecture. In 2008 he established Rod Arad Architects. Ron Arad was the Head of the Design Products Department, at the Royal College of Art, between the years 1997 to 2009. His style is often a mix of technology, experimentation and 'fun'. He has collaborated with many of the best known furniture makers and design companies, including Alessi.

Ron Arad's early acclaimed work began in 1981 with the Rover Chair. The basic car seat was salvaged from a Rover 2000, in a scrap yard and updated with a metal tubular frame.

This design is acknowledge as having launched his career.

The 'Well Tempered Chair' (manufactured by Vitra of Switzerland), was designed by Ron Arad in 1986. It is composed of four tempered steel sheets, fixed together with wing nuts. It is known for its simple design and use of an unusual choice of material.

Ron Arad has designed buildings around the world. The Nobu Hotel and the Holon Design Museum are just two examples of his innovative style. Ron selects materials very carefully, creating unusual, eye-catching structures.

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Ron Arad



The Rover Chair



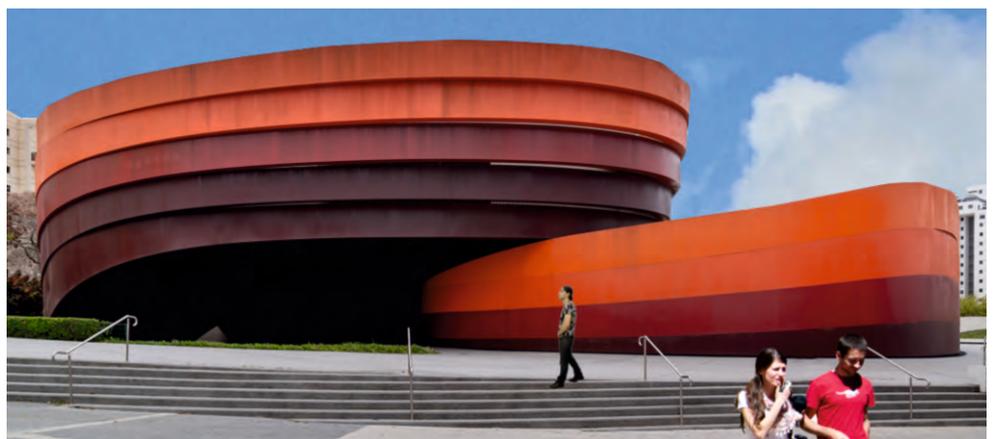
Well Tempered Chair



The Nobu Hotel, London



The Holon Design Museum



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PATRICIA URQUIOLA - DESIGNER WITH AN INTERNATIONAL REPUTATION

By V.Ryan (World Association of Technology Teachers)

Patricia Urquiola (born 1961), is a Spanish designer with an international reputation. She studied at the Universidad Politécnica de Madrid (Spain) and Politecnico di Milano (Italy). In 2001 she established her own design studio, working on product design, interior design and architecture. She has an individual and experimental approach to design, using carefully chosen premium materials.

She worked closely with Vico Magistretti, in the design of the Flower Armchair in 1996 (see below) and with the De Padova Furniture Company. Other examples of her early work are the Loom sofa and the Chaise Lounge Chair.

The Fjord Armchair Relax, was designed by Patricia Urquiola, for Moroso in 2002. A

distinct design, with its asymmetrical back rest, in a distinguished, elegant, Scandinavian style. The design is inspired by a broken sea shell.

The minimalist, Flo Chair, design by Patricia Urquiola for the furniture company Driade, in 2004. A steel frame with hard wearing brown wicker material. Suggests an African cultural influence. The wicker is hardwearing and helps to hold the framework in position. It is a material often used in African furniture.

Patricia Urquiola has been awarded several international prizes, including the Gold Medal in Fine Arts, presented by the Spanish Government.

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Patricia Urquiola



Fjord Armchair Relax



Flo Chair



Flower Armchair



Diamond Table





SIR DAVID ADJAYE - A DESIGNER WITH IMAGINATION AND CULTURAL AWARENESS

By V.Ryan (World Association of Technology Teachers)

Sir David Adjaye is a Ghanaian, British architect, one the leading architects of his generation. Born in Dar es Salaam, Tanzania, in 1966. His father was a diplomat and consequently, the family lived in a number of African and Middle Eastern countries.

He achieved a Bachelor of Architecture degree from the South Bank University, London in 1990 and this was followed by a Master of Architecture degree in 1993, awarded by the Royal College of Art.

He has a reputation for combining imaginative use of materials, innovative use of light and inspired designs, with cultural / historical reference.

He is an internationally recognised architect, with architectural work spanning several

continents. These include; Ruby City Museum in San Antonio, 130 William, in Manhattan, New York, USA and National Museum of African American History and Culture in Washington D.C.

In 2007, Adjaye was awarded an OBE for services to architecture and in 2017 he was Knighted. He became the RIBA Royal Gold Medal winner in 2021, which is recognised as the UK's most prodigious award for architecture.

Some of David's designs are shown below. They reveal an imagination, combined with cultural awareness.

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Sir David Adjaye



Ruby City Museum - San Antonio



National Museum Of African American History And Culture - Washington D.c.





MARC NEWSON CBE - THE DOWN-UNDER DESIGNER WITH UPLIFTING IDEAS

By V.Ryan (World Association of Technology Teachers)

Marc Newson is an internationally recognised Australian designer (born 1963), known for his work across various disciplines, including furniture, clothing / textiles, jewellery, watches, cookware, glass products and aerospace.

Marc Newson graduated in 1984 from the Sydney College of Arts.

He has worked in several countries, for well known companies / brands, such as Nike, Qantas Airways and Apple. He has his own Design Company. Marc Newson is regarded as one of the most influential designers of our time.

He designed the first version of the famous Lockheed Lounge Chair in 1986. This has become an iconic design. The chair was

manufactured from sheet aluminium, with sections rivetted together, the same technique as aircraft wings / fuselage. The chair is often described as the most expensive lounge chair in the world, having achieved high prices at auctions.

Marc Newson designed the stylish 'Super Guppy' lamp in 1987, and the Orange Lounge and Table manufactured from moulded fibre glass in 1989, when working in Tokyo.

The Newson Aluminium Chair 2018, was influenced by the style of the Bauhaus MB 118 Chair, by Marcel Breuer. The Newson chair is a modern, stylish adaptation, of the cantilever chairs of the past.

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The Lockheed Lounge Chair



Super Guppy and Orange Lounge / Table



The 'Event Horizon Chop Top Table



Diode Lamp

Newson Aluminium Chair





DAISUKE KITAGAWA (JAPAN) - FROM THE LAND OF THE RISING DESIGNERS

By V.Ryan (World Association of Technology Teachers)

Daisuke Kitagawa graduated from the Kanazawa College of Art in 2005. In 2011, he established his company 'Daisuke Kitagawa Design'. A year later he was named by 'The New York Times', as one of most prominent new designers. He aims for 'design purity', giving careful thought to detail, shape, form and the manufacture of the final product.

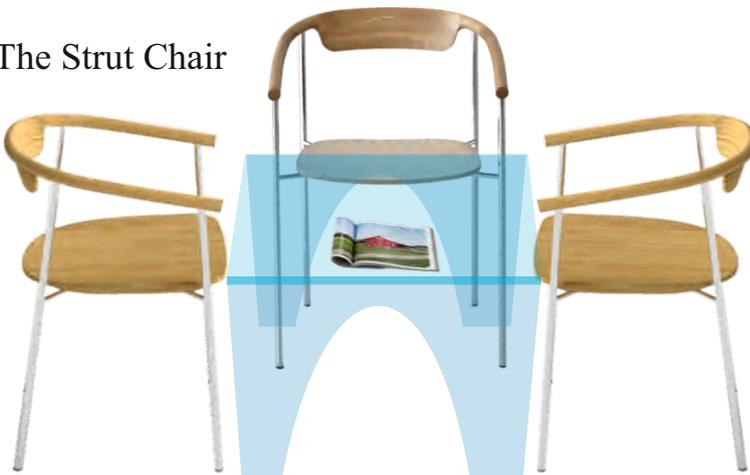
His background in home appliance design with NEC, shows in the products he designs. He keeps to the tradition of Japanese design, characterised by simplicity, a minimalist philosophy, functionality, ingenuity and aesthetically pleasing products. His designs are both elegant and contemporary.

The Strut Chair is comfortable, stylish and minimalist. The beautifully formed natural wood and chrome steel frame, are carefully proportioned. The materials complement each other. The chair is self-assembly, ergonomically designed and understated.

The 'Trifle' storage unit is a contemporary Daisuke design, with a dual purpose. It can be a storage unit or a table. The lightweight, thin sheet steel construction, gives structural strength and is 100% recyclable.

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The Strut Chair



'Trifle' Storage Unit





FUMIE SHIBATA (JAPAN) - ANOTHER DESIGNER FROM THE 'LAND OF THE RISING SUN'

By V.Ryan (World Association of Technology Teachers)

Fumie Shibata graduated from Musashino Art University and went on to work for manufacturers of electrical goods, including the Toshiba Design Centre in 1994. She is a professor at the same university. Fumie founded 'Design Studio S', a studio that focusses on industrial design and a broad spectrum of product design. Fumie is known and respected for her design of electrical goods, health care products and capsule hotels. She draws on traditional Japanese design as an inspiration for many of her designs. She prioritises the environment when designing.

The Bonbori Lamp, was inspired by traditional Japanese lamps, found at shrines and temples. The traditional Bonbori lamps are used at rice festivals and have a deep

cultural meaning. The modern version is manufactured from stainless steel and is 'powered' by an LED light. It emits a soft, warm glow, which shines through the laser cut perforations at its centre. The wiring comes through the base and is unseen.

The Vertebra03 is a deceptively simple chair. Its ergonomic design, results in a comfortable and functional chair, suitable for a range of environments, from the office to home. The back of the seat can be inclined from 0 to 25 degrees. In addition, the seat slides forward, giving more support and promoting a healthy and restful sitting posture.

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THE VERTEBRA03 CHAIR



THE BONBORI LAMP



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CHARLES RENNIE MACKINTOSH Scottish Architect, Artist and Designer

By V.Ryan (World Association of Technology Teachers)

Charles Rennie Mackintosh (1868 to 1928) was a renowned Scottish designer and architect, who contributed greatly to design in the early twentieth century. He designed buildings, including the impressive and imposing facade for the Glasgow School of Art (1899). He also produced floral watercolours, landscape watercolours, textile designs and interior designs. His furniture is especially memorable and their innovative design was important, at a time of change from Art Nouveau to Modernism.

Many of his designs were influenced by Art

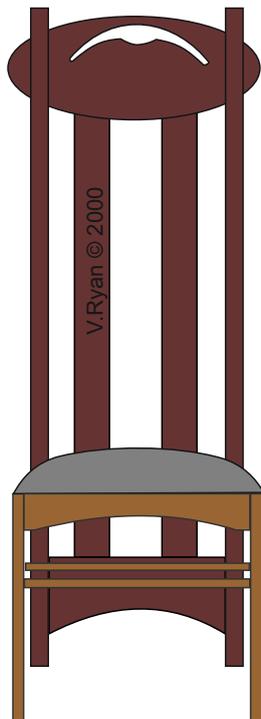
Nouveau and the Arts and Craft Movement. He can be regarded as a leading force in the modernist movement, although his designs were more artistic than those who followed strict modernist ideals. He often included floral patterns and Celtic Art, as simple decoration.

He was also influenced by Japanese style and design. He recognised that the Japanese brought simplicity, style, functionality and the use of natural materials to their designs/products.

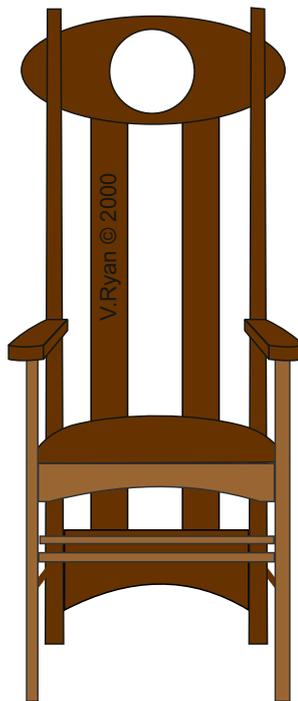
Charles Rennie Mackintosh did not design for mass production, but usually for individuals and for specific rooms. Mackintosh utilised a combination of design principles derived from Art Nouveau, the Arts and Craft Movement and Japanese design.



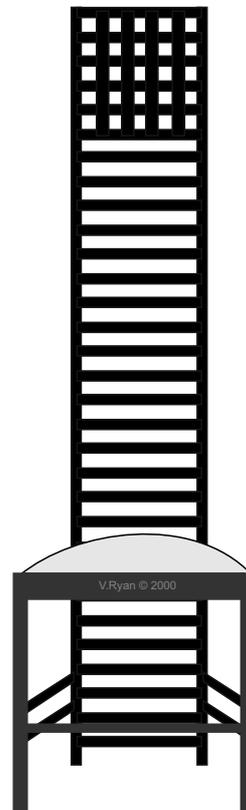
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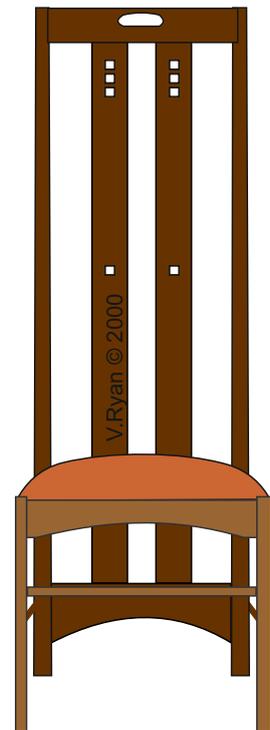
Argyle Chair



High Back Chair



Hill House Chair



Ingram Chair



EILEEN GRAY EMERALD ISLE TO MODERNIST DESIGNER

By V.Ryan (World Association of Technology Teachers)

Eileen Gray was a modernist designer, born in Enniscorthy, Ireland in 1878. She was an artist, interior designer and architect. She spent her early years training in London, but spent most of her time in France. Very few women worked in design during the early twentieth century, as this profession was male dominated.

Her work has always been held in high regard by fellow designers. Her designs were originally for wealthy clients. However, it is only in recent years that her work has been celebrated by a wider audience. Since the 1970s, her designs have been manufactured on a larger scale and for a wider audience.

Her work can be regarded as both functional and artistic. Much of her work was at the leading edge of the modernist movement and was influenced in particular by the Art Deco design movement.

The Bibendum Chair (1917 - 1921) is often

reproduced today. It has a chromed steel frame and curved leather tubing, giving rise to an extremely comfortable seating position. The seat is supported by a beech frame with rubber webbing.

The chair is modernist in style, very different to traditional designs of the same period. It has a simple and functional form and is a timeless design, still popular today and regarded as a classic, iconic design.

It was originally designed for Madame Mathieu Levy, a wealthy client. Gray was commissioned to design Levy's apartment in Paris. During this commission the Bibendum Chair was designed. The name for the chair was derived from the Michelin man, a character developed to sell tyres.

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Fauteuil Transatlantique, Armchair,



Bibendum Chair



The E1027 Table



Bonnaparte Chair



Non-Conformist Armchair



Dragons Armchair



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LUDWIG MIES VAN DER ROHE Director of Architecture at the Bauhaus in 1930

By V.Ryan (World Association of Technology Teachers)

The German architect Ludwig Mies Van Der Rohe, was given the responsibility to design his countries Pavilion (exhibition stand) for the 1929 Barcelona World Fair. The pavilion was to house manufactured German products, to promote German design, engineering and technology, in the same way trade fairs do today.

His 'Barcelona Chair' (also called the Pavilion Chair) was designed between 1928 and 1929. It was one of the German exhibits at the Barcelona World Fair. It quickly became known as a classic modernist design. He became Director of Architecture, at the Bauhaus in 1930.

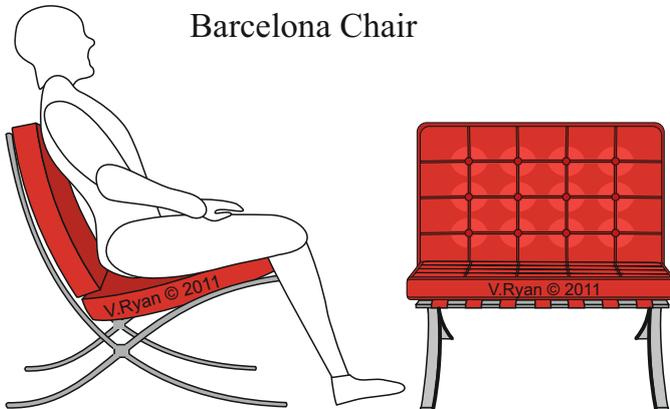
Each side frame of the original chair, was manufactured from two pieces of steel welded and 'bolted' together. In the 1950s, stainless steel

was considered a new material for furniture manufacture, used for the construction of frames. The adoption of stainless steel meant that the frame could be manufactured in one piece, without joint lines. The Barcelona chair was mass produced in 1950s by 'Knoll' furniture manufacturers and this continues today.

From a side view, the frame of the chair has a 'scissor form', a sign of power from ancient Egyptian times. Manufactured from two pieces of steel welded together. The welds are hand finished and hand polished. The frame is then chromed, a relatively new technique as applied to furniture in 1929.

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Barcelona Chair



Lounge Chair



Cantilever Chairs



Barcelona Daybed



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BETHAN GRAY - PRODUCT DESIGNER Welsh Designer, born in Cardiff, with a Persian Ancestry

By V.Ryan (World Association of Technology Teachers)

Bethan Gray is a Welsh Designer, born in Cardiff, with a Persian ancestry, from an artistic and creative family. She studied 3D Design at De Montford University (Leicester) and tends to focus mainly on contemporary furniture. She forged her early career with Habitat and became head of Habitat's furniture department , leading a design team, that was extremely successful, in designing a number of furniture collections, between 2004 to 2008.

In 2008, Gray left Habitat, forming her own company. Her designs are characterised by a deceptive simplicity, of a contemporary nature,

embracing a range of styles. A very high standard of manufacture, is achieved by blending high quality 'luxury' natural materials, with craft skills and modern industrial processes. The outcomes are elegant, often inspired by culture, aesthetically pleasing, stylish and tactile. She has travelled extensively in Asia, the Middle East, Africa and America, which has influenced much of her work. The style she has developed appeals to a wide potential client base.

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Carve Chair



Dhow Coffee Table

(inspired by the traditional Dhow sailing boats of Oman)



Oak, Plywood Dining Chair



Noah Sideboard



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PHILIPPE STARCK - PRODUCT DESIGNER French Industrial Architect and Designer

By V.Ryan (World Association of Technology Teachers)

Philippe Starck has been an internationally recognised designer since the 1980s. He started his road to success in the late 1960s, when he established an inflatable furnishings company. He then worked with the inventive and experimental designer Pierre Cardin, for a short time. By the 1970s, Starck had set up his own design studio in Paris (Starck Products), building a reputation as a pioneer in the world of design. He initially concentrated on interior designs and later products.

Starck's designs can be regarded as post modern, although they include elements of the

Memphis design movement, pop art and surrealism, with a hint of humour, environmental awareness, not to mention, invention. His products are often manufactured from materials, not normally associated with the product. A continuing feature of his designs, is that they are inspirational and regarded as 'designer' products, rather than focussing entirely on functionality.

Think Smart, Act Smart, Be Smart - This is D&T.

Juicy Salif



Moto 6.5



La Marie Chair

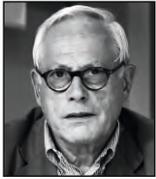
Louis Ghost Arm Chair



Microsoft Computer Mouse



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DIETER RAMS

Carpenter and Product Designer

By V.Ryan (World Association of Technology Teachers)

Dieter Rams was born in Germany in 1932. He developed an interest in carpentry at an early age, due to watching the work of his grand father, a carpenter. His interest in skilled practical work, led to architecture and product design. He is associated with innovative product design, especially electrical / electronic consumer goods. The quality and innovation of Dieter's designs, have led to international recognition and awards, culminating in the Lifetime Achievement Medal, at the London Design Festival, in 2013. He was one of the early voices against

the wasteful use of materials ('less, but better'), consequently drawing attention to sustainability. His 'Ten Principles of Good Design', are often used as a reference by designers, during the evolution of a design and product development.

Dieter Rams is considered to be one of the most influential industrial designers of the 20th century.

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Braun TP 2 - Pocket Radio And Record Player



601/ 602 RZ 60 Chair and Footstool



Braun SK4 Record Player and Radio



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ZAHA HADID

Internationally Recognised Iraqi-British Architect

By V.Ryan (World Association of Technology Teachers)

Zaha Hadid was an internationally recognised Iraqi-British Architect, responsible for a variety of outstanding buildings and other structures, often based on unusual geometrical shapes. She received a number of prestigious awards for her innovative architectural designs, including on two occasions, the Stirling Prize. She was the first female architect to receive the Royal Gold Medal (awarded by the Royal Institute of British Architects).

She established her own company - Zaha Hadid Architects, in 1979.

Hadid's break-through came in 1993 with the design of a Fire Station for the Vitra Factory in Weil-am-Rhei, Germany. This imposing building is based on a number of intersecting geometrical shapes, with the main road running through its centre.

The polished concrete building is now a display area for the factories extensive collection of designer chairs.

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Vitra Factory Fire Station - 1993



Sheikh Zayed Bridge, Abu-dhabi, United Emirates- 2010



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CHRISTOPHER DRESSER Designer and Philosopher

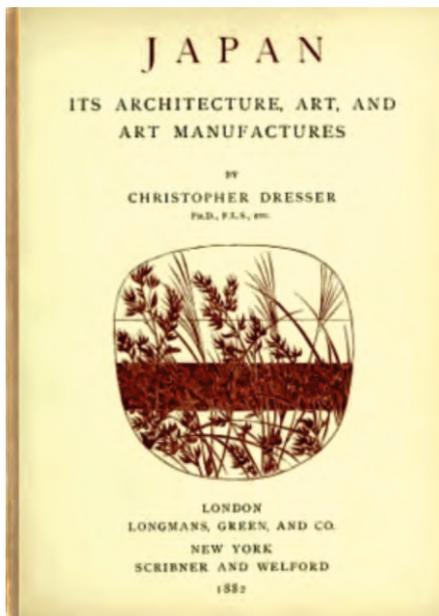
By V.Ryan (World Association of Technology Teachers)

Christopher Dresser is an important name, from the history of design, not only as a designer but also as a philosopher of design. He was born in Glasgow and was educated in the 'nature' of design from an early age, attending the Government School of Design in London, from the age of thirteen. Arguably, he became one of the most influential designers of the nineteenth century, with his influence on the world of design continuing after his death, throughout the twentieth century.

Dresser is known for his role in the Aesthetic Movement and later the Design Reform

Movement. The Design Reform Movement was concerned, with the lack of design quality of British products, compared to European competitors. The Movement believed that shape and form should take precedence, over elaborate decoration and that form was determined by the function of a product. Ornament / decoration should be simple. Dresser followed this set of principles for many of his designs / products.

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TOAST OR LETTER RACK
1884



WAVE BOWL
1885



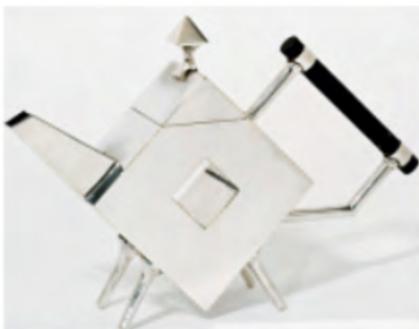
WALLPAPER
1876



PITCHER
1882



CAST-IRON GARDEN SEAT
1890



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CHARLOTTE PERRIAND Designer and Architect

By V.Ryan (World Association of Technology Teachers)

Charlotte Perriand was a designer and architect. Her work is regarded as modern and stylish today, as it was in the first half of the twentieth century. As a student, she studied furniture design at ‘School of the Central Union of Decorative Arts’, in Paris. She aimed to design affordable furniture that could be mass produced for a wide and varied customer base. Her early designs were regarded as radical and initially were not commercially successful. She became one of the most influential, innovative designers, of the twentieth century. Charlotte worked very closely with Pierre Jeanneretan and another famous French designer, Le Corbusier

(Charles-Édouard Jeanneret-Gris), in the late 1920s and early 1930s. They co-designed a number of commercially successful pieces of furniture, mainly manufactured by a company called Cassina. The LC4 Chaise Longue (Lounge) Chair of 1928, was an innovation in design, known also as the “relaxing Machine” due to the way the curves trace a person relaxing. It is said that the chair design was inspired by the smooth arcs of 18th century French daybeds.

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LC4 Chaise Longue (lounge) Chair - Model B3068



LC7 Swivel Armchair



LC2 Armchair



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ROBIN DAY

Best Known for his Innovative Design of the Polyprop Chair

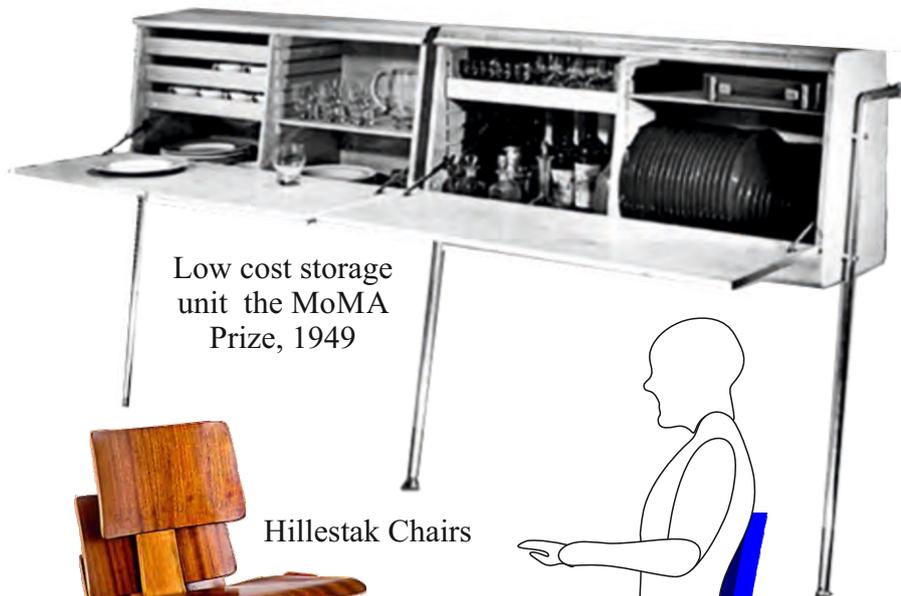
By V.Ryan (World Association of Technology Teachers)

Robin Day (1915-2010), trained at the Royal College of Art in the 1930s. He was a furniture designer, best known for his innovative design of the Polyprop Chair in 1963, although this was not his only recognised design. The Polyprop Chair was manufactured from polypropylene, through injection moulding. The design became a trend setter for cheap, quality, mass manufactured, stackable chairs. It can easily be argued that Robin Day is Britain's most famous designer. He is often referred to as one of the world's first 'eco' designers, as his designs required minimal materials, to produce stylish and yet functional furniture. He aimed to design products that were affordable for ordinary people. They were different and distinctive, using modern materials and manufacturing technology. He was innovative, often designing products that were in contrast with the 'traditional' approach to design.

Robin Day was an award winning designer. He won first prize for his plywood storage unit, at the 1949 Low Cost Furniture Competition, organised by the Museum of Modern Art in New York (the MoMA Prize). His designs were acclaimed at the Festival of Britain in 1951 and he won the Gold Medal at the Milan Triennale, for the pavilion he designed. Robin Day was an international success, with his designs selling across the world.

He employed new industrial production techniques. This included his 'avant-garde' use of plywood, which had seen research and development during the Second World War. He also used injection moulding, in his Polyprop Chair.

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Low cost storage unit the MoMA Prize, 1949

Royal Festival Hall Lounge Armchair

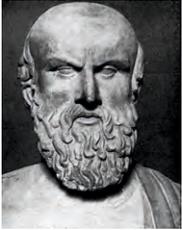


Hillestak Chairs



Polyprop Chair





ARCHIMEDES - 287 – 212 BC Geometry, Calculus, Mathematician, Physicist, Engineer, Astronomer, Inventor and Innovative Designer

By V.Ryan (World Association of Technology Teachers)

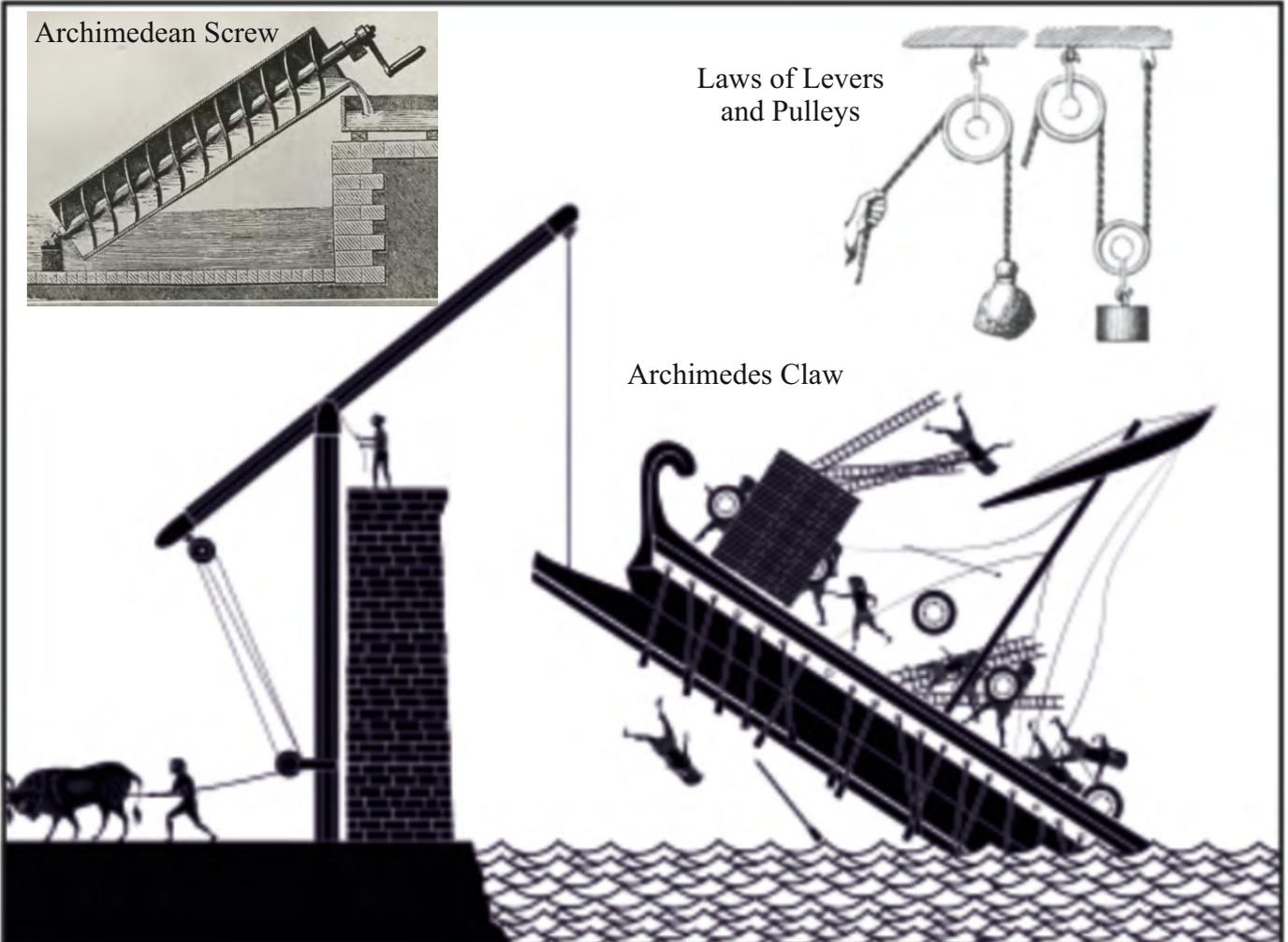
Born in Syracuse in Greece. He revolutionised geometry and calculus, and is regarded as one of the greatest mathematicians in human history. He defined the principle of the lever. Archimedes was also an inventor, developing a number of mechanical machines, including the Archimedean screw, a device for lifting water up hill.

It is believed that he devised a mechanical device that was used during the siege Syracuse (250 BC), to lift and destroy a fully armed and crewed Roman warship. This was called the Archimedes Claw. It is the first recorded use of compound pulleys. This is a system that multiplies the 'lifting' force many times over, making it possible to move very heavy weights.

His mechanical design ultimately did not save him. Although Roman soldiers were ordered to take him alive, he was killed at the end of the two year siege, reportedly for not following an instruction from a soldier.

His work gave rise to the sciences of Mechanics and Hydrostatics. He also determined the laws / mathematics of levers and pulleys, which are still relevant today. Furthermore, Archimedes was the first to understand the relevance and significance of the 'centre of gravity'.

Think Smart, Act Smart, Be Smart - This is D&T.





LOUNGE CHAIR BY CHARLES AND RAY EAMES The Most Comfortable Chair In The World

By V.Ryan (World Association of Technology Teachers)

The classic chair seen below, was designed by Charles and Ray Eames in the 1950s. It was first manufactured for sale in 1956 by the Herman Miller Furniture Company of Michigan, USA. The angle of recline cannot be adjusted, as it is set in one position permanently.

New materials and techniques were used in its construction, such as the use of laminated plywood (layers of veneers) which was extensively developed during the Second World War, for military purposes. The metal supports / frames were manufactured from lightweight aluminium. Rubber spacers between the laminated veneers and aluminium supports, allows slight flexibility, especially in the headrest. They also absorb 'shock', especially when the chair is initially sat on.

The cushions, aluminium frames and veneer forms, combine to form an interlocking chair and a stunning innovative design.

The design has been in production since its introduction in 1956 and other manufacturers have copied its modern style.

This lounge chair is regarded as a classic design in the world of the furniture / product designer. It can be considered to be on the same level, as the Bauhaus MB-118 Chair designed by Marcel Breuer in 1928. It set new standards in terms of its design, style, functionality, selection of materials and manufacturing technology.

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EAMES LOUNGE (670)



OTTOMAN (671)





JOCK KINNEIR AND MARGARET CALVERT Sign Post Stylists - You will never get lost.

By V.Ryan (World Association of Technology Teachers)

Margaret Calvert is best known for her work with her colleague Jock Kinneir (1957 to 1967). They designed many of the road signs that we see today, in a style that has been used widely around the world. Before the ground breaking work of Kinneir and Calvert, road signs followed a variety of styles and were not standardised, often making it perplexing for drivers.

With the advent of the new motorways and the increasing number of drivers, there was a growing need for a universal signage system across the UK network. The existing system was not fit for purpose, as signage styles differed according to the region / county, a variety of writing styles were used, often difficult to read when driving even at a moderate speed.

The Government gave the task to Kinneir and his assistant Calvert, both graphic designers. Calvert had previously worked with Kinneir, designing the

signage for Gatwick Airport, which had proved very successful.

They set about their 'brief' as Graphic Designers, designing infographics, in the form of simple maps. After research and development, a new font called 'Transport', was developed for all text, with both uppercase and lowercase letters being used. A colour scheme of reflective white lettering, against a non-reflective blue background was adopted. The signs were used in 1958, along the first motorway in the UK, the M6.

Since the introduction of the standardised signage, Kinneir's and Calvert's innovative style has been used around the world.

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MEN AT WORK
SYMBOL



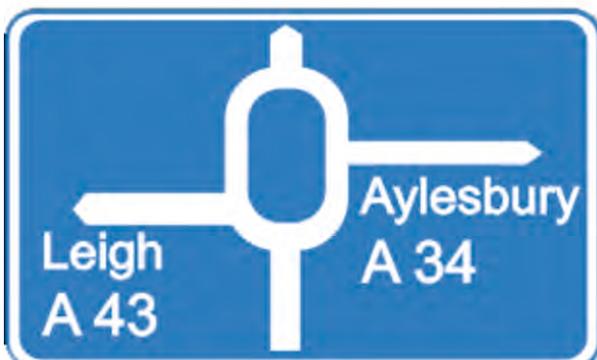
FARM ANIMALS
SYMBOL



CHILDREN
CROSSING



Transport Font



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MARCEL BREUER Influential Bauhaus and Modernist Designer

By V.Ryan (World Association of Technology Teachers)

Marcel Breuer was an influential modernist designer and made a significant contribution to the Bauhaus and the modernist movement. He was both an architect and a designer, like many of the influential modernists advocates, of the early to mid twentieth century. His early design education was as a student at the Bauhaus, where his ability as a designer was recognised. After a short time working in a Paris architectural practice, he moved back to the Bauhaus in 1925, as Head of the Carpentry Shop, working with his 'mentor' Walter Gropius (the founder of the Bauhaus).

Through designers such as Breuer and Gropius, the Bauhaus promoted the use of modernist materials including tubular steel. Material that had not been used previously in furniture design or even considered as a suitable material for furniture. Tubular steel is light, versatile and cheap. It can be joined, shaped and formed in different ways, opening up new design possibilities. This was the design philosophy of the

Bauhaus.

Marcel Breuer used tubular steel in the construction of his famous / iconic cantilever chair. The MB-118 Chair is manufactured to this day, from one piece of steel tube. This is now regarded as a design classic.

CHARACTERISTICS OF THE MB-118 CHAIR

- Minimalist in design.
- Simplicity is key to this design.
- Simple shape and form.
- The function of the chair put before decoration.
- Minimal material used.
- New materials and manufacturing techniques used in this innovative design.
- Aesthetically pleasing.

Think Smart, Act Smart, Be Smart - This is D&T.

Mb-118 Chair



Wassily Or B3 Club Chair



The B5 Chair



The Long Chair



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MICHAEL THONET AND THE No 14 CHAIR The Most Popular Chair in the World

By V.Ryan (World Association of Technology Teachers)

Michael Thonet (1796-1871), born in Germany, was a designer specialising in 'bentwood'. This is furniture manufactured from veneers of natural woods, normally beech. Beech was selected by Thonet, as he found that it was much less likely to split than other natural woods. Over many years, he developed a manufacturing processes, whereby veneers (layers) of beech, were softened by steam.

In 1855, Thonet invented a way bending solid pieces of wood, by using a long metal strip to aid the bending process. This was the break through in technology Thonet had been looking for. In 1859 the No 14 Chair, was manufactured for the first time, using this technology.

Unlike the craft based handmade approach of the Arts and Craft Movement, Thonet saw that there was a opportunity to use his innovative industrial production technology, to mass manufacture new designs. His chair designs contrasted the highly hand crafted chairs of the day. His No 14 Chair was the first chair to be mass produced on a production line. Due to Thonet's industrial manufacturing processes, the production

line was staffed by semi and unskilled workers. There was no longer a need to have skilled craftsmen at every stage of production.

The No 14 chair was manufactured as separate parts and simply screwed together (six 'steam bent' wood parts, ten screws and two nuts). This construction technique was a precursor to the way furniture is constructed in our modern world. This was also an innovation in the nineteen hundreds.

The No 14 chair (1859), also known as the Vienna Coffee House Chair, was made in separate parts, which could be assembled later, allowing for ease of transport around the world. The distributor / retailer would assemble the chairs on arrival at the place of sale. This is possibly the first example of 'assembly' furniture. A trend that is even more popular today, with modern knockdown furniture (also called flat pack furniture).

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OWEN MACLAREN AND THE MACLAREN B-01 BUGGY From the Spitfire Undercarriage to Innovative Child’s Push Chair

By V.Ryan (World Association of Technology Teachers)

Owen Maclaren is best known for his innovative design of a lightweight folding baby carrier. However, his earlier design work for the aeronautical industry, proved vital for the war in the air, during the Second World War. He designed the undercarriage of the famous Spitfire, which contributed significantly to the Allies war effort. He had been a test pilot for the Supermarine Spitfire. The new undercarriage design, allowed the plane to manoeuvre whilst on the ground. In 1944 he founded a company manufacturing aircraft parts, mainly for the thriving British Aeronautical industry.

As a designer and innovator, he was always looking for problems to solve. He saw an opportunity to apply his skills, when watching his daughter struggling with a child’s push chair. Existing push chairs were heavy and very difficult to lift and manoeuvre and lacked style. Owen Maclaren looked at the problem from that

of a designer and experienced engineer. Whilst working in the aeronautical industry, he used modern lightweight materials such as aluminium, due to the weight restrictions of fighter planes. He applied his knowledge of folding lightweight tubular structures, to that of children’s push chairs.

In 1965 he patented his design of the B01 and it reached the shops in 1967. This was the inspiration for many folding products that followed. He designed the ‘Gadabout Folding Chair, which was also a walking stick. In 1961 he designed a large buggy for the Ministry of Health. This was for very young disabled children and consequently, it was larger and became known as the ‘Buggy Major’.

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FRONT VIEW



SIDE VIEW



FOLDED BUGGY

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SYDNEY OPERA HOUSE- INSPIRED BY NATURE (Jorn Utzon)

By V.Ryan (World Association of Technology Teachers)

Jorn Utzon was a relatively unknown Danish architect in the 1950s, until he won the competition to design the National Opera House in Sydney Australia, in 1956. He was born in 1918, the son of a naval engineer. He studied architecture at the Copenhagen Royal Academy of Arts and much of his early work was in Sweden. He travelled widely and met many of the best known designers of the era. These included Mies van der Rohe and Charles Eames. In 1950 he opened his own Architectural business.

The design of the Sydney Opera House was inspired by nature, its forms, functions and colours. Utzon was influenced in his designs by bird wings, the shape and form of clouds, shells, walnuts and palm trees. He looked upon nature for guidance when designing, as

nature over time combined both efficiency and beauty, hand in hand.

The roof structures of the Opera House are called 'shells'. The design of the 'shells' was one of the most difficult aspects of the building's design. Jorn Utzon claimed that the final design of the shells, was inspired by peeling an orange. It is said that the shells of the 14 separate roofs, form a sphere if combined.

Jorn Utzon was one of the pioneers in the use of prefabricated modular forms and designing for sustainability.

The Sydney Opera House was opened in 1973 by Queen Elizabeth

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David Constantine

Motivation – Multisport Wheelchair

By V.Ryan (World Association of Technology Teachers)

David Constantine was a student in 1989, when he entered a competition to design a wheel chair (along with a colleague Simon Gue), that could be used in a range of terrains, such as those found in the third world/developing countries. David had already been a wheel chair user for several years. The wheelchair had to be manufactured from locally sourced materials, which helped to ensure that it's manufacture was sustainable and employed local technicians. The wheelchair had to be affordable.

They won the competition (the Frye Memorial Prize) and formed a non-profit making organisation called 'Motivation', in 1991. Following this, they were invited to go to Bangladesh to manufacture their wheelchair.

Form, aesthetics and particularly function, were applied to their designs. An important aim of their organisation and designs, was to raise the self-esteem

of the disabled user. Over a number of years, the organisation has sent designers, physiotherapists and engineers to developing countries, working with local companies to design and manufacture wheel chairs.

Each wheel chair is adjusted to fit the individual user, at the point of distribution. The chair's 'empower' the user to be mobile and to earn incomes, becoming active and valued members of society.

Motivation's design philosophy, is one that aims to motivate the user, through the freedom and independence that their chairs deliver. Their wheel chairs are adjustable, so that they will fit a wide range of users ergonomically. Further to this, their chairs are affordable and manufactured from locally sourced sustainable materials.

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Multisports Wheelchair



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LELLA AND MASSIMO VIGNELLI

“They made a significant contribution to design”

By V.Ryan (World Association of Technology Teachers)

Lella Vignelli (1934 - 2016)) was a successful, internationally recognised Italian designer, specialising in interior design, product design and furniture. She graduated from the School of Architecture in Venice in 1953 and went on to study at Massachusetts Institute of Technology, School of Architecture. She often worked in collaboration with her designer husband, Massimo Vignelli (1931 - 2014), with whom she established ‘Massimo and Lella Vignelli Office of Design and Architecture’, in Milan in 1960.

They made a significant contribution to design and it has been said that they brought

contemporary Italian design to the USA. By 1965 they established Unimark International Corporation for Design and Marketing (with seven other designers), working mainly from New York. Lella and Massimo often worked for established companies such as Knoll International, IBM, American Airlines, New York City Subway, Blooming Dales Department Store, Lancia, Ducatti and the Ford Motor Company.

Think Smart, Act Smart, Be Smart - This is D&T.

High Back Club Lounge Chairs



Tub Chair



Panton Chair



“Handkerchief” Armchair



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FLORENCE KNOLL Architect and Product designer

By V.Ryan (World Association of Technology Teachers)

Florence Knoll (USA) was an architect and product designer, who concentrated on the ‘office’. She favoured modernist and functional designs and aimed to make office work more comfortable and efficient. She worked closely with her husband Hans Knoll. In the 1930s, she studied architecture at Cranbrook Academy of Art and town planning at Columbia University. She was influenced by Bauhaus design, especially the work of Le Corbusier and Mies van der Rohe. She studied under Mies van der Rohe, at the Illinois Institute of Technology, in the late 1930s. Knoll Associates furniture design, was influenced by Florence. She was able to call upon her connections with international designers and some designed furniture for Knoll. She also collaborated with Lella Vignelli. The Florence Knoll modernist style, became established and popular in post war USA. She is

remembered for her collections of designs, “in the style of Florence Knoll”.

The iconic Womb Chair, designed by Eero Saarinen, for Knoll in 1948. Florence Knoll asked Eero Saarinen to design a chair that was like a ‘basket full of pillows’. It is designed to allow numerous seating positions, as the cushions are separate and can be arranged as the user requires. The chair has a fibre glass shell, with chromed steel legs and frame. The small ‘glides’ / ‘feet’ under each leg, are manufactured from stainless steel and allow the chair to be pushed and pulled across the floor.

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Womb Chair, designed by Eero Saarinen, for Knoll



The Knoll Armchair Inspired by the work of Mies van der Rohe



Multi-drawer Credenza by Knoll Associates



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VERDA ALEXANDER

A unique approach to design and research

By V.Ryan (World Association of Technology Teachers)

Verda Alexander was born in Nicaragua and moved to the USA to develop her career. She graduated with a Bachelors Degree in Fine Art and a Masters in Landscape Architecture. She is the Co-founder of an international interior design company called, ‘Studio O+A’ (co-founder Primo Orpilla), in San Francisco. She is co-chair of the Climate Reality Project’s Business Engagement Team. Studio O+A have designed ground breaking office interiors for major companies.

Studio O+A received the International Interior Design Association’s 2010 Northern California Award, for their work on Facebook’s headquarters in California. The couple previously designed offices for Paypal.

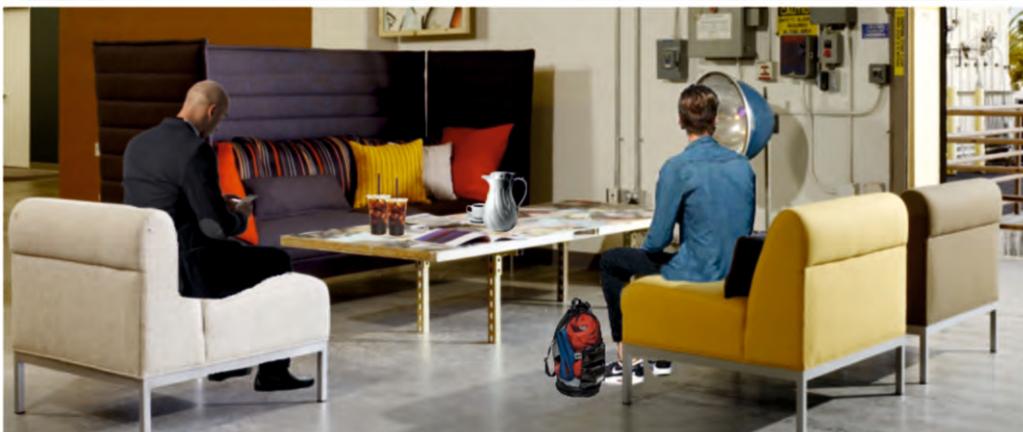
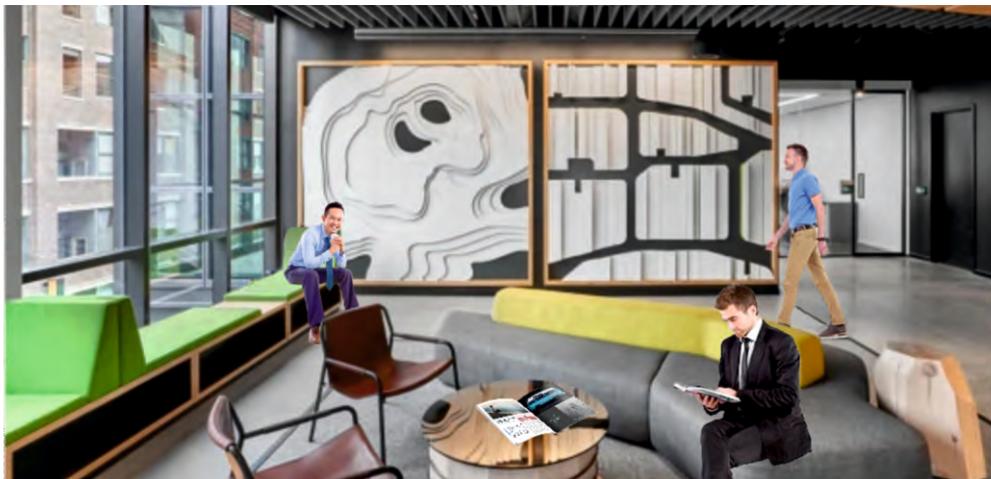
Verda has a unique approach to design and research, which involves an integrated consideration of several important social and environmental issues. These include climate activism, the environment, social

justice and art. She believes in putting people and the planet at the forefront of design philosophy.

For example, careful thought and research is put into selecting sustainable materials and reducing the carbon footprint of designs. Her designs strive to minimise the use of materials and to ensure that they have been ‘produced’, with ethical and fair treatment of the workforce.

She engages with the public and seeks their opinions, in a novel way. This is through a mobile office (a converted food truck) called, ‘Food for Thought Truck’. The truck has been used to go into local communities, allowing interaction between designers / architects and the public.

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NORMA MERRICK SKLAREK

First African American Woman to be Licensed as an Architect in New York

By V.Ryan (World Association of Technology Teachers)

Norma Merrick Sklarek, was the first African American woman (her parents were from Trinidad) to be licensed as an architect in New York and California, in 1954. This achievement cannot be understated, as there were no female role models to follow, in a era when the vast majority of licensed architects were men. It was a time of racial discrimination and racial tension. In 1959 she became a member of the American Institute of Architects (AIA), becoming the first woman to be elected as a Fellow of the AIA, in 1980. She was instrumental in the establishment of Siegel, Sklarek, Diamond of California, a company she also managed (a company owned by three women, which was ground breaking, given the male domination of architecture at the time).

She had several noted architectural achievements and collaborations with other architects, including the United States Embassy in Tokyo (1976) and the

Terminal One station (Los Angeles International Airport - 1984). She collaborated in the design of San Bernardino City Hall (California), the Pacific Design Centre, Fox Plaza (San Francisco), Commons - Courthouse Centre (Columbus), the Leo Baeck Temple (Los Angeles) and the Mall of America (Minneapolis). Her role in the development of the American Shopping Mall, cannot be understated.

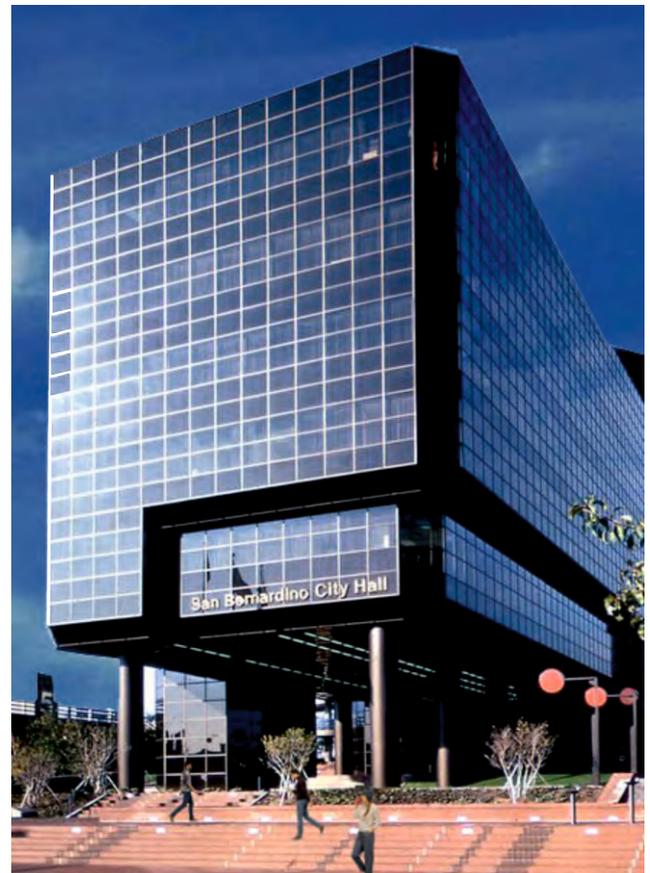
Norma has been called "The Rosa Parks of Architecture", named after an African-American activist in the civil rights movement, the 'First Lady of Civil Rights'. Norma 'blazed a trail' for other African American women in the field of architecture and has become a role model.

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United States Embassy in Tokyo



San Bernardino City Hall (California)



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HELLA JONGERIUS

Specialises in Blending Traditional Craft Skills with up to date Manufacturing Techniques

By V.Ryan (World Association of Technology Teachers)

Hella Jongerius is a designer from the Netherlands. Born in 1963, she specialises in blending traditional craft skills with up to date manufacturing techniques. She believes in the importance of ethical, sustainability and societal considerations, when designing and in the production process.

She taught at the Design Academy Eindhoven and was Head of the Living/Atelier Department from 1988 to 1993. In 1993 she founded the Jongeriuslab Studio in Rotterdam. Since its formation she has worked with important international clients / companies. These include, Vitra, IKEA and the Airline KLM. Her studio designs a vast range of products and collections, including textiles,

crockery and furniture.

Hella's work has been exhibited in galleries and museums in New York, Paris, Rotterdam and London, culminating in the Sikkens Prize. A good example of her work is the Polder Sofa, an asymmetrical sofa is based on a wood structure / frame, with polyurethane cushions. In Holland, 'polder' is a reference to agricultural lands, that have been reclaimed from the sea. The reclaimed land has been divided into fields surrounded by drainage canals. The design of the Polder Sofa was inspired by this geographical image.

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Polder Sofa

East River Chair



PLATFORM CAN BE USED AS AN OTTOMAN



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OTTO LILIENTHAL - 1848 to 1896

Born to Fly and a Forgotten Designer and Engineer

By V.Ryan (World Association of Technology Teachers)

Otto Lilienthal designed and manufactured gliders in the nineteenth century, in Germany. He was a Professor of Engineering and he was interested in flight and particularly the possibility of gliding. He spent time developing the shape of a wing, that would enable a man to glide. His designs were detailed and worked, enabling him to guide, although they were very dangerous.

He developed an interest and perhaps an obsession, studying the way birds fly, at a very young age. His interest in flying, led him to study mechanical engineering at the Royal Academy in Berlin, where he experimented

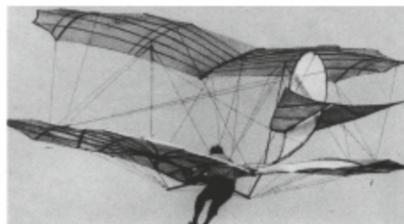
with flight and gliders. He joined the Aeronautical Society in Britain in 1873.

His designs of wings, were based on his knowledge and research into the structure of birds wings. He flew his designs from a huge artificial hill, he had constructed for this purpose. Large crowds attended his flights.

He died in 1896 when a sudden gust of wind caused him to lose control of his glider.

He should be regarded as a daring inventor, designer, 'biomimicrist' and innovator, in the field of aviation.

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BARNES WALLIS (1887 –1979) English Designer, Scientist, Engineer and Inventor.

By V.Ryan (World Association of Technology Teachers)

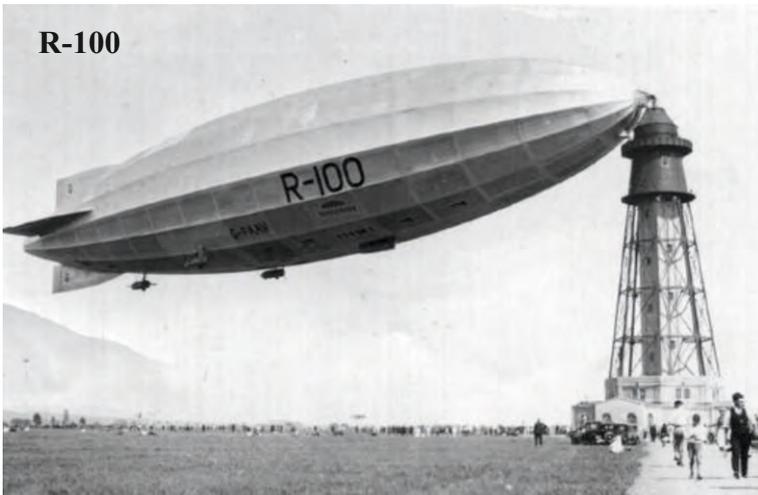
Barnes Wallis took the opportunity to study Aviation design after an earlier career in engineering. He worked on airships and aeroplanes and is famous for his design of the bouncing bomb, used on the night of the ‘Dam Buster Raid’ by 617 Squadron of the RAF, in May 1943.

However, he invented /developed several innovative designs, including the innovative ‘geodesic’ structural design (triangulation), for the Vickers R100. This was largest gas filled airship in the world in 1930. He applied his expertise of structures to aircraft, including the Wellington Bomber. .

During in World War Two, his success with the bouncing bomb led to further bomb designs, including the Tallboy and Grand Slam bombs, which were six and ten tons in weight. These were used to destroy impenetrable V2 Rocket facilities and to sink the German Battleship, the Tirpitz.

A respected hero of innovative design and engineering and contributed significantly to the war effort.

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R-100



TALL BOY BOMB



10 TON GRAND SLAM BOMB



ALI IBN KHALAF AL-MURADI 1000 AD

During the time of Islamic Spain - both a Scientist and Engineer.

By V.Ryan (World Association of Technology Teachers)

He lived in Islamic Spain and can be considered as both a scientist and engineer. He was also a mathematician and astronomer, belonging to a highly respected scientific circle called “Šā‘id al-Andalus”.

His mechanical designs were advanced compared to European water mills of the same era. He designed complicated clocks and other innovative devices. He was the author of ‘The Book of Secrets about the Result of Thought’. This is a technical book, that included thirty one of his designs for water clocks, automata, mechanical calendars and war machines. His book also includes designs for lift water from

wells and a portable sundial. All his devices required complex mechanisms (including gears, syphons and float valves) and were driven by a constant flow of water.

His book includes the first recorded description of segmental and epicyclical gears. It is believed that Leonardo DaVinci read and studied his book, which is still kept in Florence.

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SU SONG 1020 - 1101 AD (CHINA) A Mechanical and Architectural Engineer, as well as a Scientist.

By V.Ryan (World Association of Technology Teachers)

A mechanical and architectural Engineer, as well as a Scientist. He designed the first mechanical clock, powered by water and having a chain drive mechanism. The clock was designed to predict astrological events for the Emperor, ensuring that the Emperor could be seen as being able to predict the future.

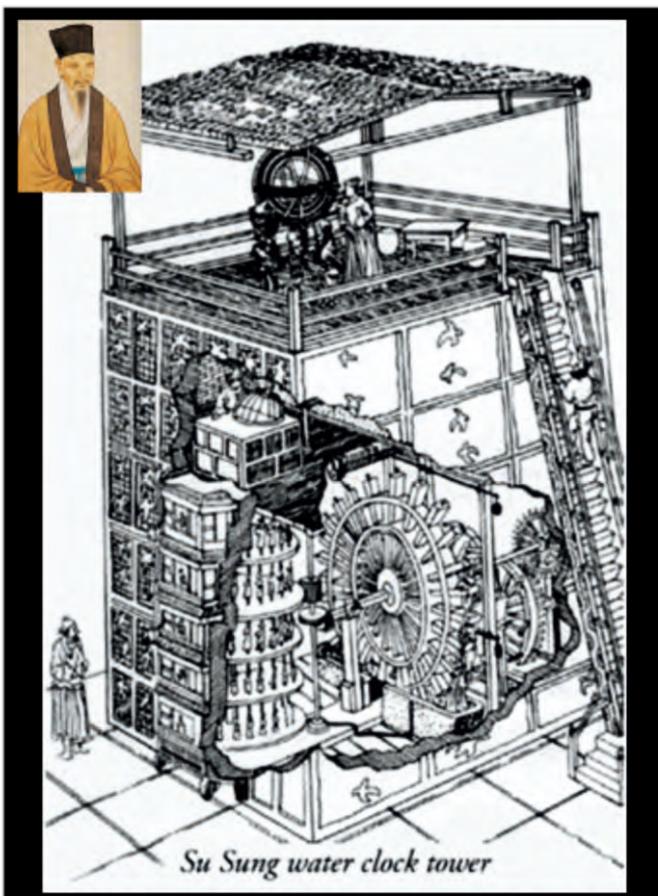
The scale of the tower can be seen in the image. At the top was a sphere, capable of accurate prediction of the position of the stars. The tower had ladders, to enable those operating it, to climb to the top. Water from 36 buckets were used to drive a water wheel, which in turn controlled gears and counterweights. Drive belts and the oldest recorded use of a chain drive, transmitted the

power.

At the bottom of the tower were automata, which would appear at certain times of the day, accompanied by automatic bells and drums.

Su Song's clock was destroyed during a war, but his chain drive system can still be seen today, in many mechanical devices including bicycles. It can be argued that the industrial revolution was possible, because of the application Su Song's innovative combination of mechanisms and drive systems.

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VLADIMIR SHUKHOV 1853 - 1939 (RUSSIA)

Renowned Engineer, Designer and Mathematician.

By V.Ryan (World Association of Technology Teachers)

A renowned Engineer and Mathematician. He designed a series of pioneering towers, based on hyperboloid structures. Existing towers such as the Eiffel Tower, had a wide heavy base, to secure the structure in position. They were also very bulky and over engineered.

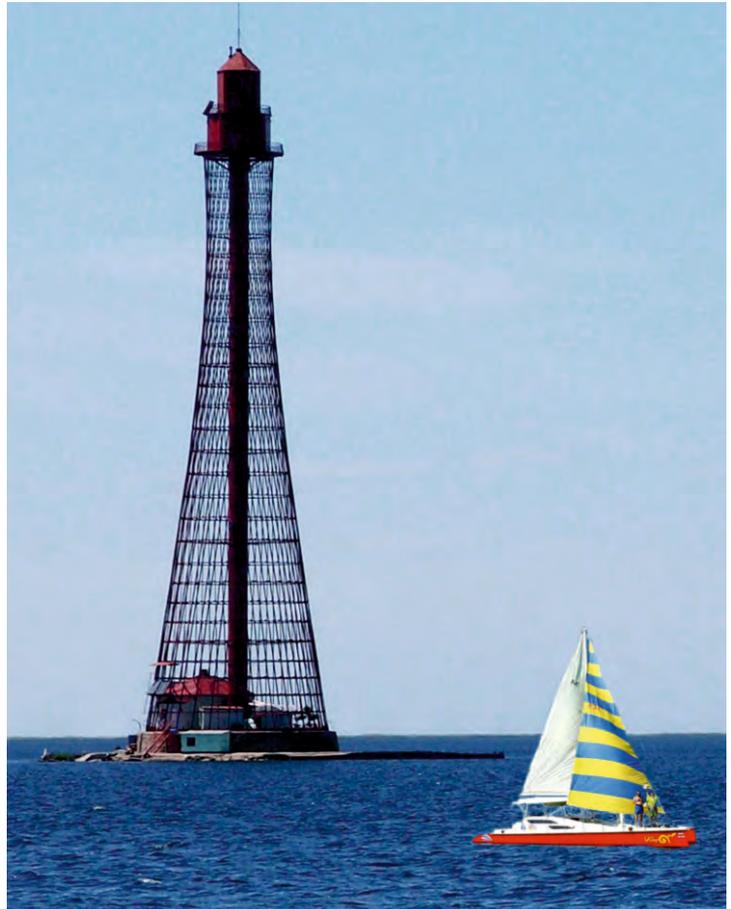
However, Shukhov used his Mathematical knowledge, to design curved lightweight hyperboloid structures. The towers he designed and constructed, looked far too light to stand up to high winds. Shukhov was one of the first to developed the mathematics behind calculating stress, compression and torsion. Consequently, he was able to design structures that were lightweight, striking in appearance and economic in the use of materials. Civil Engineering owes much to Shukhov's

innovative and mathematical approach to design.

Over his life-time, he designed and constructed nearly two hundred towers around the world. The best known is the Shukhov Tower in Moscow (1922), a radio broadcasting tower. At a height of 160 metres, it was far shorter than Shukhov intended. Due to a shortage of steel in Russia during the Russian Civil War, he had to reduce it's height (the original design was 350 metres in height).

Shukhov worked in a variety of areas of engineering, including designing innovative oil tankers, lighthouse design and he made a significant contribution to the oil industry.

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NICOLAS-JACQUES CONTÉ 1755 – 1805 FRANCE The Creator of the First Recognisable ‘Pencil’ and much more.

By V.Ryan (World Association of Technology Teachers)

Everyone owes a debt of gratitude to Nicolas-Jacques Conté, the creator of the first recognisable ‘pencil’. Pencils have made it possible for anyone to write, draw, sketch, present ideas, record facts and fiction and much more.

He was passionate about the mechanical arts (engineering) and science. He was interested in gas balloons and formed the first airborne battalion. It was during this era that he lost an eye, during an experiment with gas. He was an innovative engineer and also an accomplished artist.

In the Sixteen Hundreds, an early form of pencil was mass produced in Nuremburg. However, this type had a tendency to break easily and left a ‘stain’ on the writers hand. Britain, the only supplier of pure graphite, was blockading French ports and so a

alternative to pure graphite was also needed. Conte was asked to design a pencil, that would replace foreign imports and did not depend on British pure graphite.

He developed a technique of mixing graphite with clay, forming the compound into rods, followed by firing in a kiln. The rods were then encased between two wooden halves, producing what we would consider to be the first modern pencil.

His design of the humble pencil, has seen little change over the centuries and has helped educate millions of people around the world.

Think Smart, Act Smart, Be Smart - This is D&T.



**THE GLASS BOTTLE MAKER
A DRAWING BY CONTÉ**



**THE TYPE OF GAS FILLED BALLOON
FLOWN BY CONTÉ**





JAMES WATT 1736-1819 (SCOTLAND)

Innovative Thinker and Designer of Steam Engines.

Engineer, Scientist, Designer and Innovator.

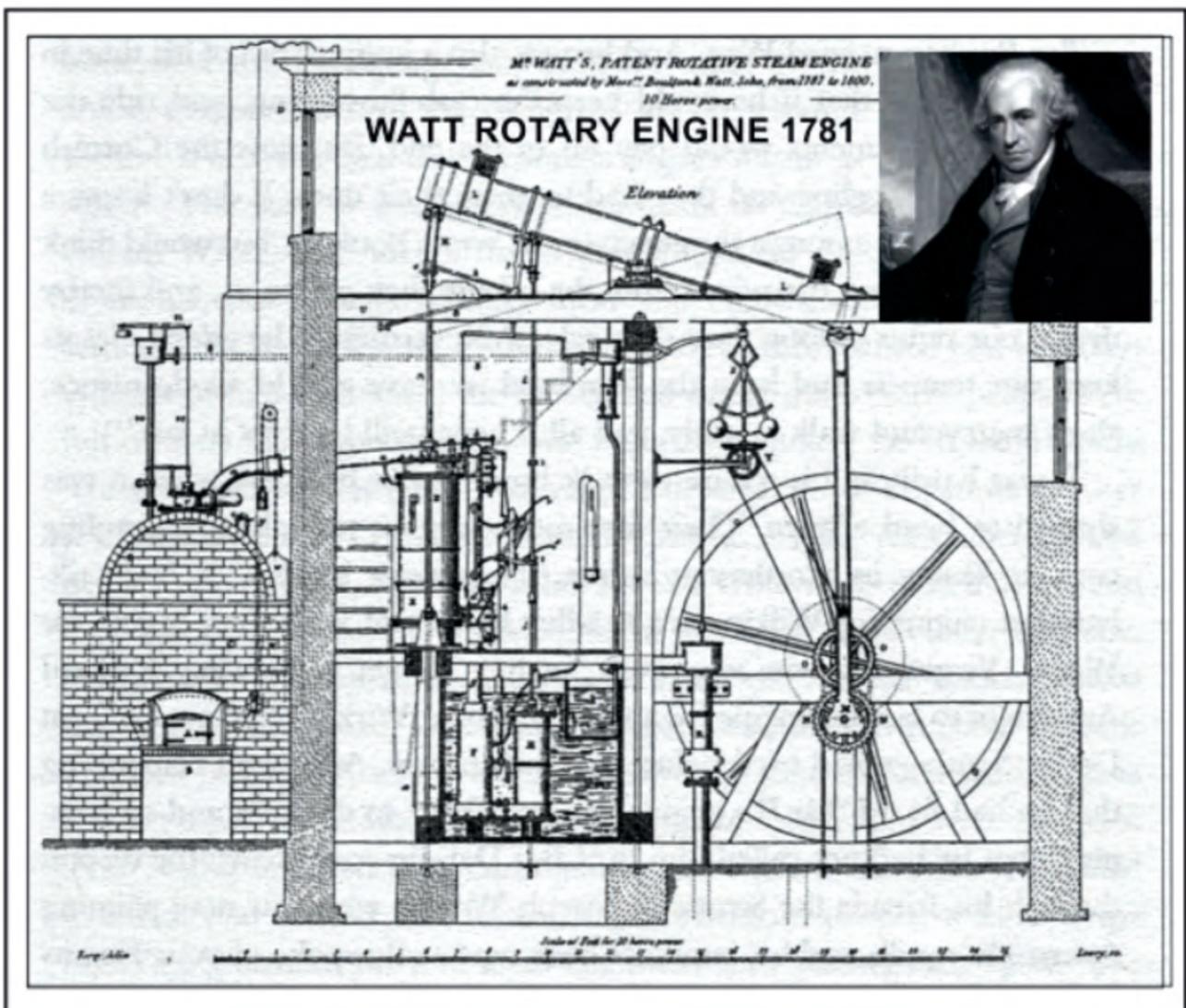
By V.Ryan (World Association of Technology Teachers)

A Scottish engineer and instrument maker, often claimed by science as one of their own. His innovative thinking led to improvements to the steam engines, designed and manufactured by earlier inventors. His interest in engines was stimulated, when he was sent one of Newcomen's steam engines for repairs. He realised that it's efficiency could be greatly improved, by the addition of a separate condenser. He went on to design a rotary engine, which could be used to drive a wide range of machines, such as those used in textiles factories. He teamed up with Matthew Boulton forming "Boulton and Watt", which

became the most important engineering company of it's time. He can be considered to be one of the pioneers of the industrial revolution. A truly gifted and innovative designer and engineer.

He has appointed to the Royal Society of London in 1785, followed by the French Academy of Sciences in 1814. In 1806, he was conferred the dignity of, 'Doctor Honoris Causa', by the University of Glasgow, in respect of his scientific and engineering achievements.

Think Smart, Act Smart, Be Smart - This is D&T.





LEONARDO DA VINCI 1452 - 1519 AD ITALY

Artist, Innovative Thinker, Designer and Futurist.

Exceptional Skills in Sculpture, Engineering, Cartography, Geometry and Science.

Leonardo should be the first on any list of designers for studying, compiled by Examination Boards.

By V.Ryan (World Association of Technology Teachers)

A genius, his ability cannot be overstated. One of the greatest painters of all time, with an inquisitive intellect to match. In addition to painting, his range of expertise included sculpture, engineering, cartography, geometry and science. He was born in Anchiano, close to Vinci in the Republic of Florence, hence his name Leonardo da Vinci.

Many design innovations have been attributed to his work, in the specialist areas referenced above. However, he had very little formal training. He was an architect and military engineer, inventing new types of machines. Many of his sketches / designs, have been made into working models, such as his design for a hang glider. He also designed a tank, helicopter and a lens grinding machine. Less known is his design of a

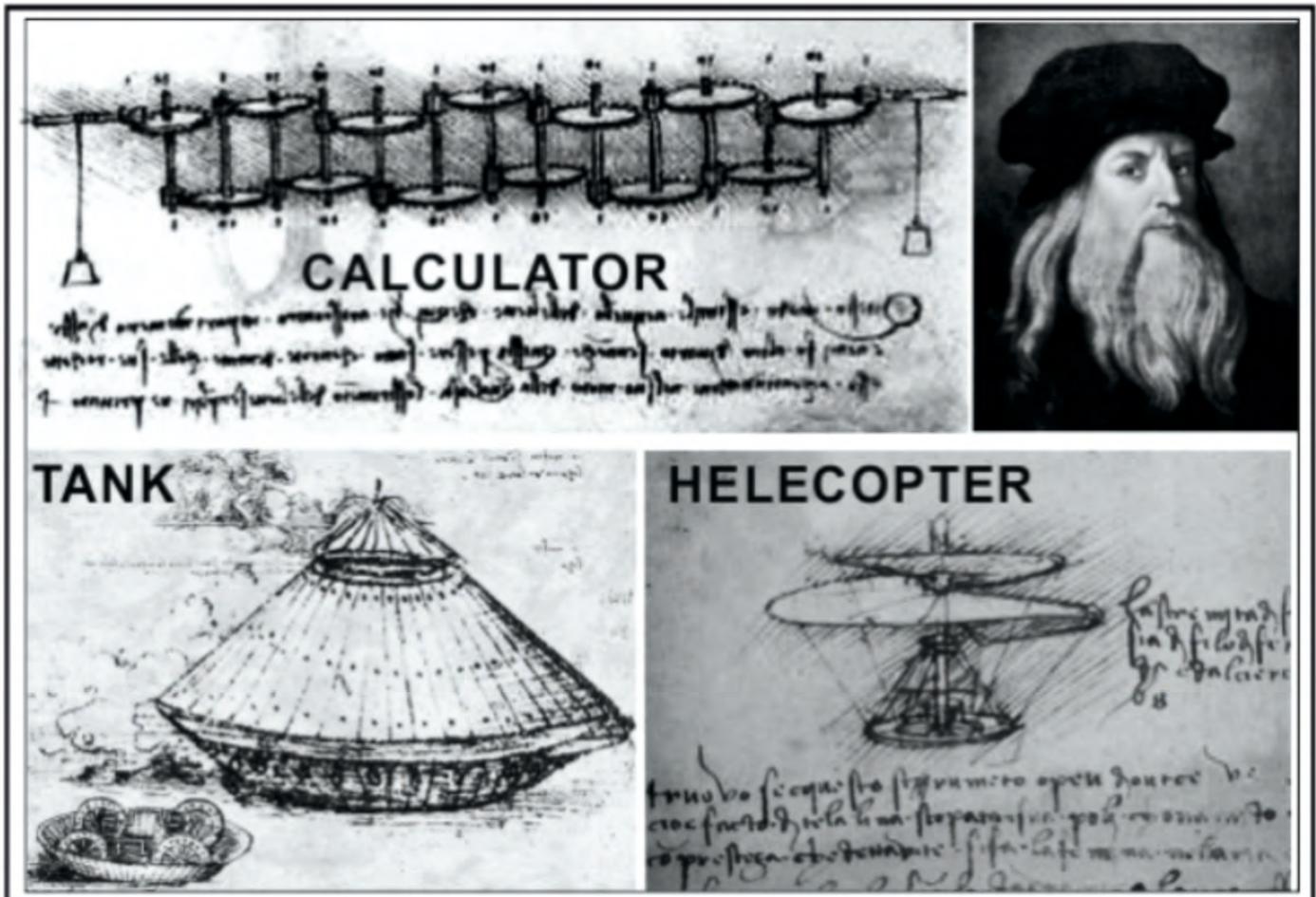
calculating machine (see below).

His study of human autonomy, led to a design of what has been called the first robot, in 1495. It was operated by a series of pulleys. An internal mechanism controlled the movement of its arms and legs.

Many of his sketches / designs, have been studied throughout history, inspiring thousands of engineers and product designers.

He studied nature and some of his flying machine designs, are clearly based on his extensive analysis of birds. In this sense, he was possibly the first to apply biomimicry to design.

Think Smart, Act Smart, Be Smart - This is D&T.





KIRKPATRICK MACMILLAN 1812 - 1878 (SCOTLAND)

The Designer and Manufacturer of the First Mode of Transport,
Recognisable as a Bicycle.

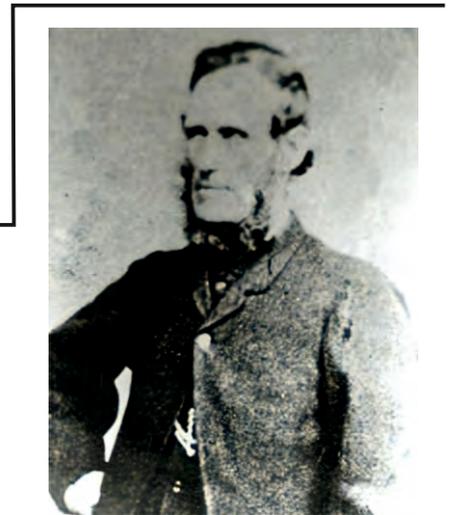
A forgotten designer and yet almost everyone on earth, will have benefited from his design.

By V.Ryan (World Association of Technology Teachers)

Kirkpatrick MacMillan can be regarded as the designer and manufacturer, of the first mode of transport, recognisable as a bicycle. As a young boy, Macmillan (a son of a blacksmith) saw a 'Hobby Horse' being ridden near his home in 1824. The Hobby Horse, designed in 1817 by the German Aristocrat Baron von Drais, was a walking machine, propelled directly by the riders feet / legs. After making one himself in his Smithy, Macmillan saw that improvements could be made. In 1839, he built a 'bicycle' that was powered via the back wheel, through connecting rods to treadle-type pedals. It is the first example of a bicycle being powered by reciprocating motion. Another innovation was that the front wheel provided steering, an innovation that still

exists in modern bicycles. Despite the uniqueness of his design, he did not patent it, which meant that he did benefit financially. His design was copied and improved by many, in the years that followed.

Think Smart, Act Smart, Be Smart - This is D&T.





RICHARD ROBERTS 1789 - 1864 (WALES)

His Inventions, Machines and Engineering innovations, made the Industrial Revolution Possible.

Another unknown designer and innovator, unfairly forgotten by time.

By V.Ryan (World Association of Technology Teachers)

A relatively unknown engineer and inventor, compared to the superstars of the Industrial Revolution. However, without the inventions, machines and engineering innovations, developed by Roberts, it could be easily argued, that the Industrial Revolution would have been at a much slower pace.

In engineering terms, he developed a precision gear cutting machine, followed by a precision machine for engineering precise flat surfaces, called a planer in 1817. This was at a time when precision engineered pieces, were often completed by hand work. He was also an innovator in the design of metal/screw cutting lathes. Some of his lathes were still in use, well in to the Twentieth Century.

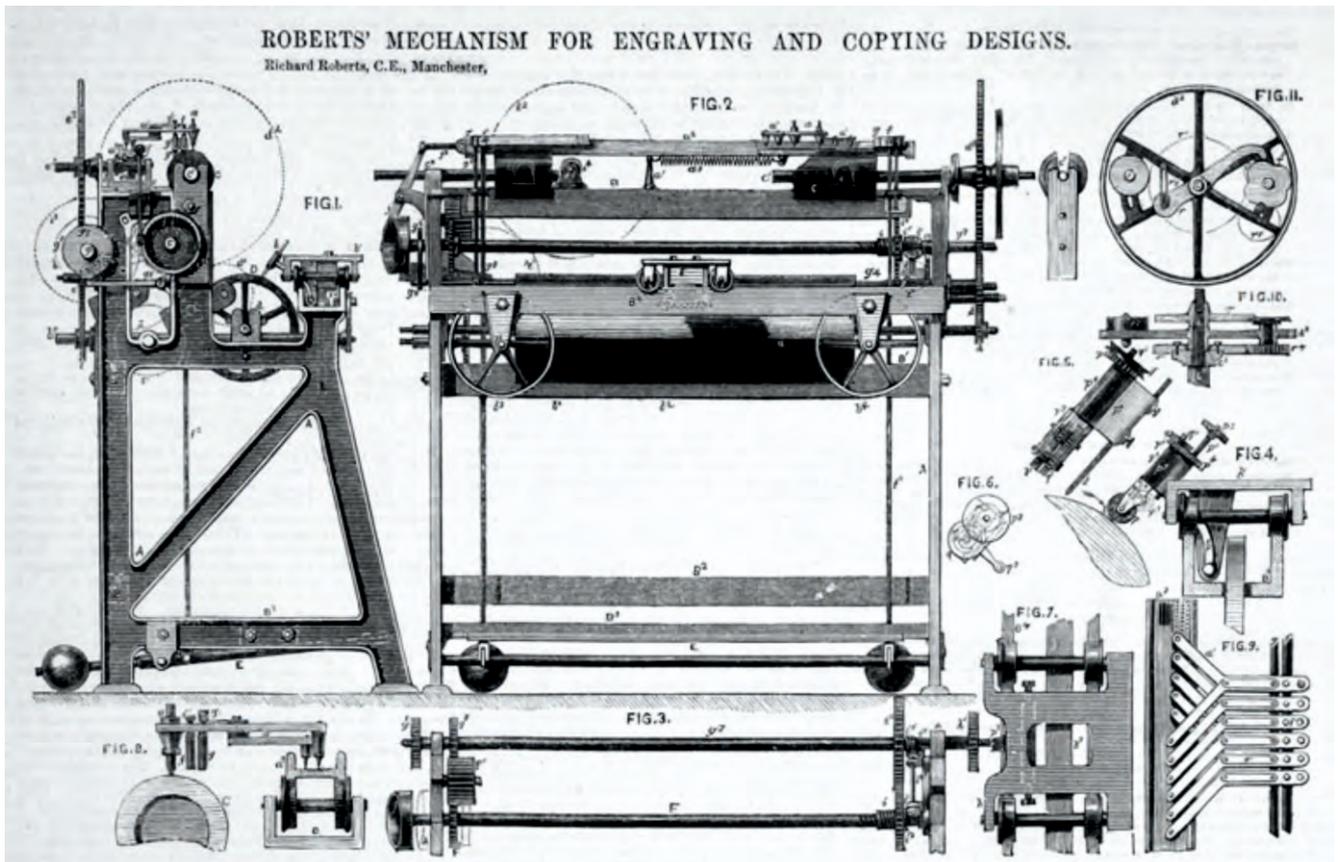
Roberts went on to design a patented power loom in 1822, for the textiles industry. Part of the design for the loom led to Roberts designing a keyway grooving machine in 1824. This machine mechanised the fixing of gears and pulleys to shafts, a job that had previously

been completed laboriously by hand. Roberts also invented the shaping machine (my favourite machine). Later he developed the first milling machines and a punching machine, that made it possible to rivet large plates together, required for the construction of bridges, including the Conwy and Britannia Bridges.

Roberts was an innovator as a railway engineer, designing and manufacturing several locomotives. His locomotives were in so much demand, that a second factory had to be built to cope with orders.

Roberts was probably the greatest engineer of the industrial revolution and yet died in poverty. His inventions were innovative with precision at their core. His engineering legacy continues to this day.

Think Smart, Act Smart, Be Smart - This is D&T.





JOHANNES GUTENBERG 1398 - 1468 (GERMANY)

His Invention Unleashed Creative Thinking, Innovation, Knowledge and the Thoughts of Mankind.

Another forgotten designer and innovator, unfairly forgotten by time

By V.Ryan (World Association of Technology Teachers)

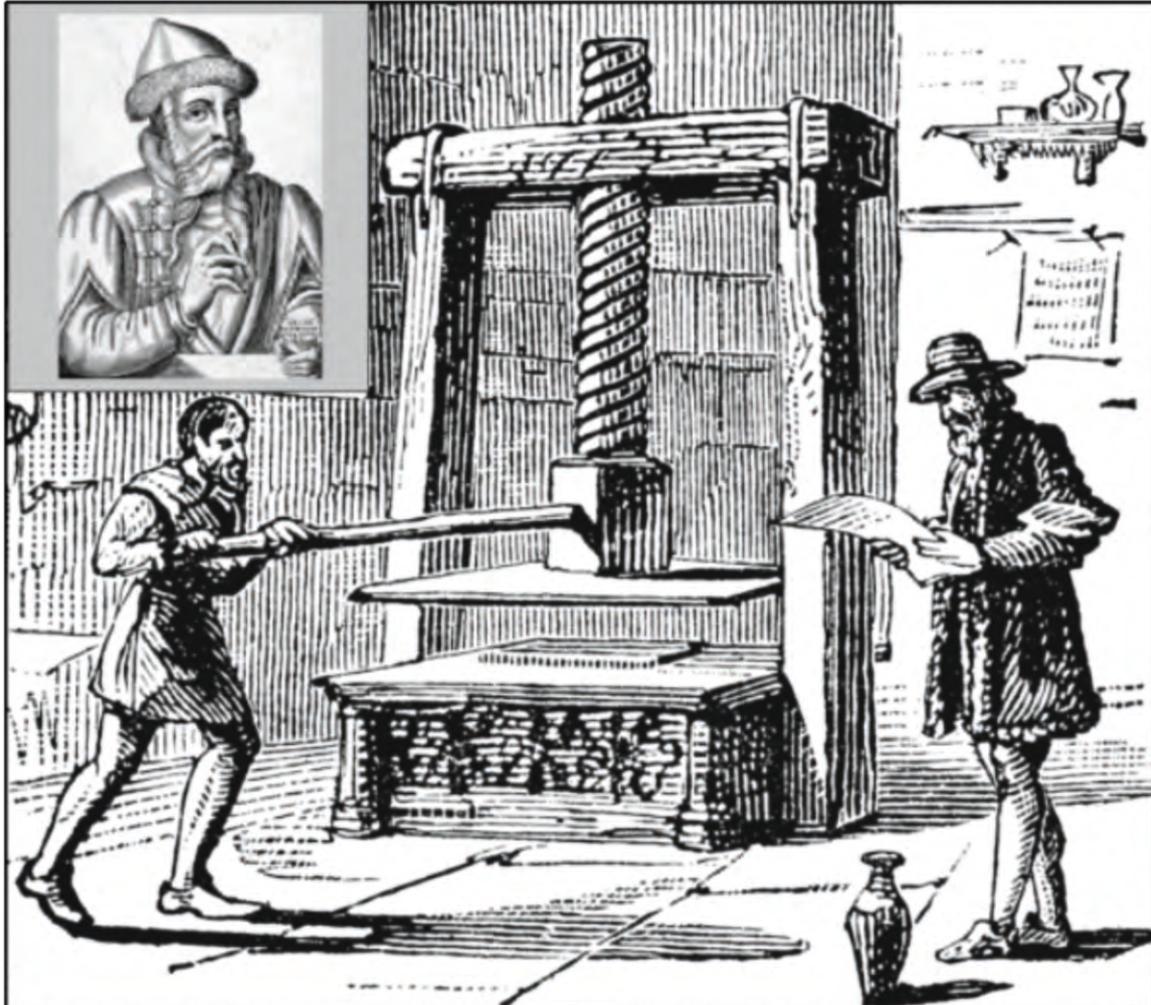
Known as the inventor of a machine / mechanical device, that would change the world, unleash creative thinking, innovation, knowledge, the thoughts of mankind, record history, make history and allow an unprecedented exchange of information, unrivalled until the 'invention' of the internet. He designed and manufactured the first printing press. Printing had been developed in China, but Gutenberg developed the technology into a press, capable of printing up to 3600 pages a day. Gutenberg's earlier work as a blacksmith and goldsmith, inevitably influenced his printing press invention.

A printing press operator would roll ink over the surface of letter blocks, which were held captive within a wooden frame. A press powered by hand via a

wooden screw, provided the force needed to transfer the ink to the paper. Gutenberg also developed oil based ink and it was this combination of ink and press technology, which made volume printing commercially viable. Gutenberg's press and ink, allowed information to be recorded and distributed in quantity, for the first time.

Gutenberg was bankrupted as a result of a dispute with a money lender and was exiled from his country. It is worth noting, that a very rare copy of the Gutenberg Bible was last seen at auction in 1978 and sold for \$2.2 million. A single page from one of the bibles sold for \$70000 in 2007. Where would we be without books?

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JOHN SMEATON 1724-1792 (ENGLAND)

A Designer and Engineer of the Industrial Revolution.

A Designer of Lighthouses

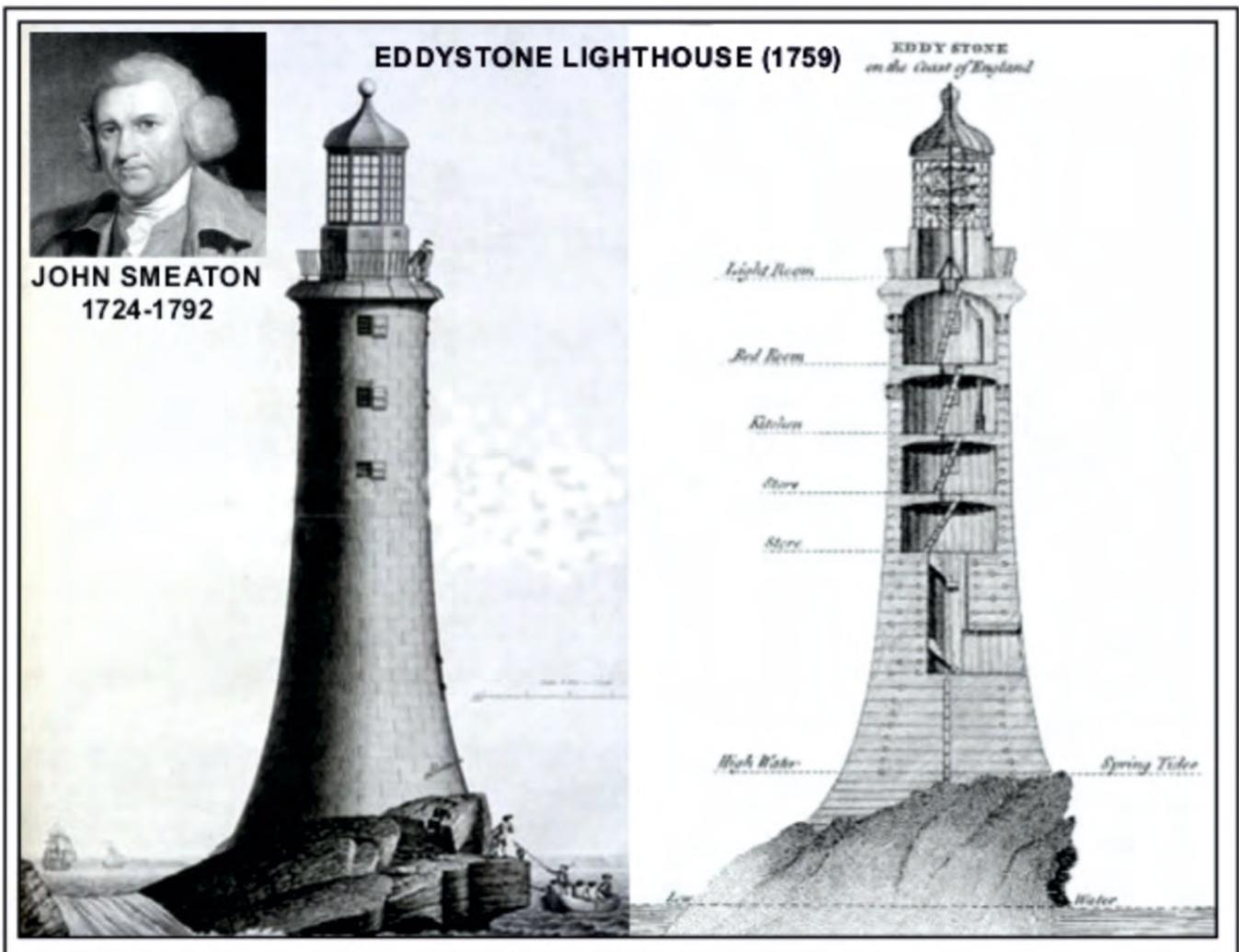
Another forgotten designer and innovator.

By V.Ryan (World Association of Technology Teachers)

John Smeaton was a designer / engineer of bridges, windmills, water wheels, canals, harbours and lighthouses. A little known fact is that Smeaton improved the efficiency of steam engines by 50%. He described himself as a 'Civil Engineer', which was the first time the term / description, was applied to this type of work. It was military engineers who were usually responsible for large engineering projects. Smeaton is best remembered for his radical redesign of the Eddystone Lighthouse (1759). This was stone built, with the stones at the base being dovetailed together for strength. Another

innovation was the use of hydraulic lime, which sets under water. This is a type of mortar that he developed and pioneered. His lighthouse design became the standard around the world and it is worth noting, that he did not protect his design with a patent. He believed that contributing positively to society, was better than financial benefit. His lighthouse design and the future developments it led to, has undoubtedly saved many thousands of lives.

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JOHN HARRISON 1693-1776 ENGLAND

Carpenter, Innovator, Engineer, Designer.

Precision Clock Maker and changed Navigation and Time Keeping with his H4.

He changed the World.

By V.Ryan (World Association of Technology Teachers)

John Harrison was a carpenter who became obsessed with clocks and in particular clocks that could keep time accurately. He designed several long case clocks, which he claimed were accurate to a few seconds a month. In the seventeen hundreds, this was a remarkable achievement.

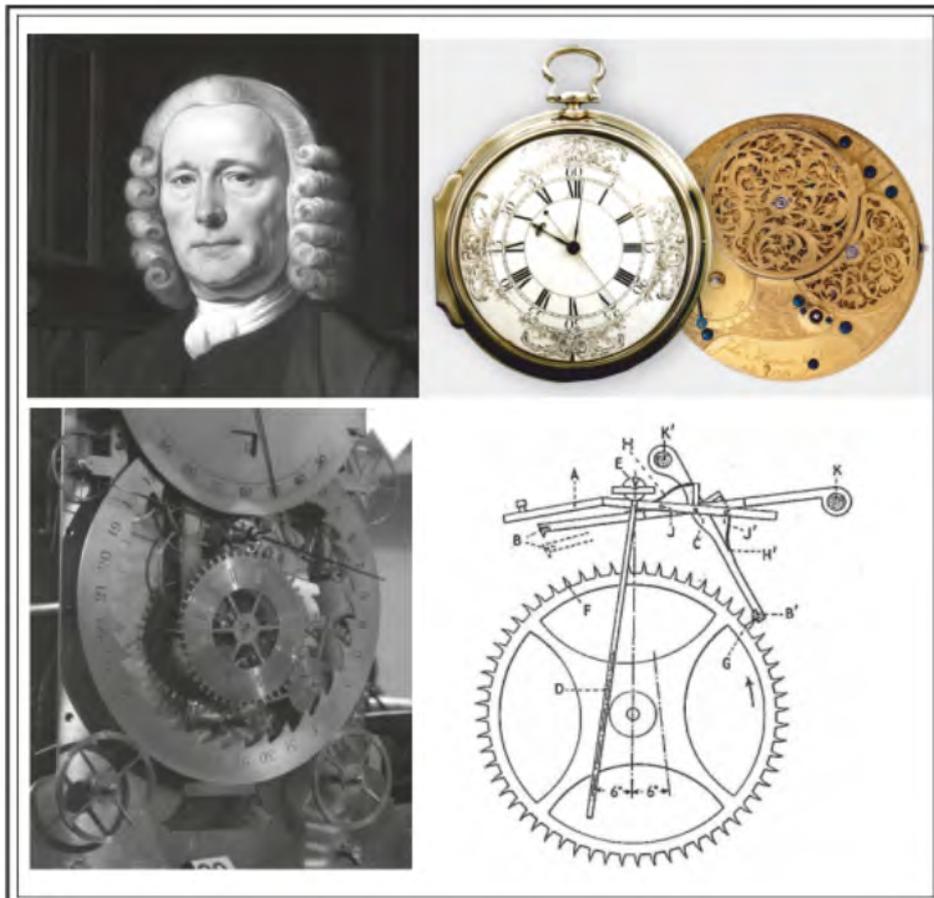
His clocks were very special, because the mechanisms were comprised of different types of exotic woods, chosen to counter expansion and contraction and to avoid the need for additional lubrication. Harrison is known to have experimented in his own house, heating up a room to tropical temperatures to test his clocks in warm conditions. Then, testing the clocks in a room with the windows open, in cold / cool conditions.

Harrison developed many new and innovative designs for the mechanisms for clocks and timepieces.

John Harrison activity pursued the 'Longitude Prize',

which was a very large cash prize offered by the British Government in 1714. The prize was for the designer / engineer, who developed a reliable precision timepiece, for the navigation of the high seas. The motion and nature of the sea, meant that any clock / timepiece had to be shock proof and corrosion resistant. This was an era when Britain was expanding and exploring the oceans and a precision timepiece was required for accurate navigation. In 1761, after many decades of development, Harrison came up with H4, a marine chronometer or a precision sea watch. Captain Cook took a copy of the timepiece H4 (called K4), on his trips of discovery in the southern Pacific Ocean, creating very accurate charts as a result. Captain Cook called K4, 'our faithful guide'.

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ISAMBARD KINGDOM BRUNEL (1806 - 1859)

Perhaps the Greatest Engineer and Designer of all time?
Designed railways, ships and docks to tunnels, viaducts and bridges.

By V.Ryan (World Association of Technology Teachers)

Undoubtedly, one of the greatest Designers / Engineers of all time? He contributed significantly to technological progress, during the Industrial Revolution.

Isambard designed railways, ships, docks, tunnels, viaducts and bridges. A daring innovator, with determination and an absolute belief in his own ability. He excelled in pushing forward knowledge and understanding, in the application of engineering and materials technology.

In the History of Design and Engineering, he stands proud, respected and studied throughout the world. He was an innovator and applied new technology to many of his designs. An example of this was the

combination of a 'propellor' and iron hull, seen in the design of his SS Great Britain, which was the largest passenger ship in the world, when launched in 1843.

The Clifton Suspension Bridge is another example of his engineering genius. The bridge had the longest of span in the world, when it was completed in 1864, after Brunel's death.

The achievements of Brunel, are a reminder to the present UK Government, that innovation, design and manufacturing, is the true mark of progress, left for future generations.

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REGINALD JOSEPH MITCHELL (1895-1937)

One of the most talented aeronautical designers of the Twentieth Century.

By V.Ryan (World Association of Technology Teachers)

R.J. Mitchell was one of the most talented aeronautical designers of the Twentieth Century. He excelled in the design of fast sea planes, capable of competing in and winning the Schneider Trophy, in the 1930s. He is best remembered for his role, as leader of the team that designed the legendary Spitfire, a fighter aircraft that combined speed, agility and beauty. This fighter aircraft came to represent Britain's defiance, strength, determination and resilience throughout World War Two. R. J. Mitchell died just before the war, but his contribution to the design of the Spitfire, was significant.

As a young man, Mitchell continued to develop his skills in Technical Drawing, Engineering and Mechanics. By 1917, he was an assistant at the 'Supermarine Aviation Works Limited', of Southampton. The Supermarine Aviation Works, designed and manufactured flying boats throughout

World War One and continued to work closely with the fledgling RAF, after the war. The company had a serious interest in winning the Schneider Trophy. This trophy was awarded annually, to the winner of a race for seaplanes and flying boats. Plane designers and companies across the world, aimed to win this prestigious trophy, beating their commercial rivals.

At the age of 27, R.J. Mitchell led the design team that produced the Sea Lion II, which won the trophy in 1922.

R.J. Mitchell died in 1937, but his innovative work, meant that the ground work had been set for the Spitfire, a plane that became a design icon, helping to win World War Two. Pilots were amazed at its flying capabilities and the beauty of its design.

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ETTORE SOTTASS AND THE MEMPHIS DESIGN MOVEMENT



Founder of the 1980s Memphis Collective / Design Group.

By V. Ryan (World Association of Technology Teachers)

Ettore Sottsass delighted audiences and potential customers alike, by designing items that were unusual, with bright colour schemes, producing imaginary designs of everyday objects.

Sottsass believed in design being different and not following tradition. To Sottsass, design was a continuation of fashion. His designs were usually received with shock, followed by controversy.

A good example of this is the 'Ashoka' Lamp (1981, named after an Indian Emperor). Sottsass spent time in India in the early 1960s and this experience influenced some of his designs.

Sottsass studied architecture before World War Two. In the 1940s, he worked for his architect father, who designed in a modernist in style. He worked in the USA in the early 1950s and was influenced by the way American designers used bright colours. When he returned to Italy he concentrated on designing

products such as furniture. He also designed innovative typewriters and calculators for the Italian company Olivetti.

Below is the Ceramic Totem, 171cm in height, designed by Ettore Sottsass, as part of the Memphis Group. The ceramic finish is coated in polychrome glazes, producing a colourful reflective surface.

The Articolo 6000 Vase (below) 1983, uses contrasting geometrical shapes and bright colours, producing a typically unusual Memphis design.

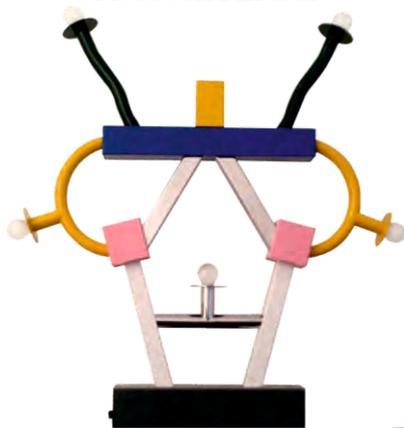
His greatest achievement was the formation of the Memphis Design Group in the early 1980s. The group rethought the approach to design, moving away from traditional ideas and preconceptions of design.

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CERAMIC TOTEM



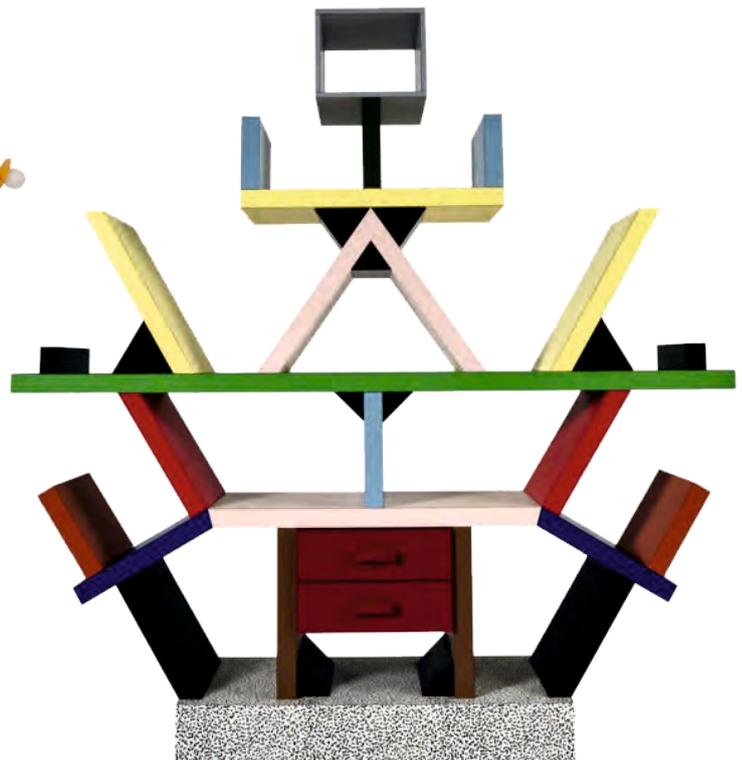
ASHOKA LAMP



ARTICOLO 6000 VASE



THE CARLTON DRESSER





GERRIT RIETVELD AND THE DE STIJL DESIGN MOVEMENT (NEOPLASTICISM)

The Style Developed during World War One, when the Dutch were Neutral

By V. Ryan (World Association of Technology Teachers)

The De Stijl Design Movement (also known as Neoplasticism), originated in Holland in 1917. De Stijl promoted a style of design, based on a limited range of colours (primary colours, red, yellow, and blue), used in conjunction with a combination of horizontal and vertical lines.

De Stijl's true origin can be traced back to Cubism. The artwork of Piet Mondrian, greatly influenced the De Stijl colour scheme. He became one of the leading advocists of the art movement.

This radical style, can be seen in Gerrit Rietveld's 'Red Blue' chair (1917-1918), which represents the De Stijl criteria, for product design. The chair was originally left with a natural wood finish, but was later finished according to the strict De Stijl colour criteria.

De Stijl (Neoplasticism) inspired architecture, as seen

in 'The Rietveld Schröder House' in Utrecht, Holland (built in 1924), designed by Gerrit Rietveld. It was a radical design for the 1920s. The furniture and fittings were all in the De Stijl style. Mrs Schröder, a banker's widow, lived in the house for sixty years. The house is now a museum and is on the UNESCO World Heritage List.

The unique house, has many similarities to the Bauhaus style, although it is asymmetrical. The two storey building has separate rooms downstairs. Upstairs it is an open space, with moveable panels, to allow the layout to be altered, as required. The space can become a bedroom or a living room, depending on the needs at time of use.

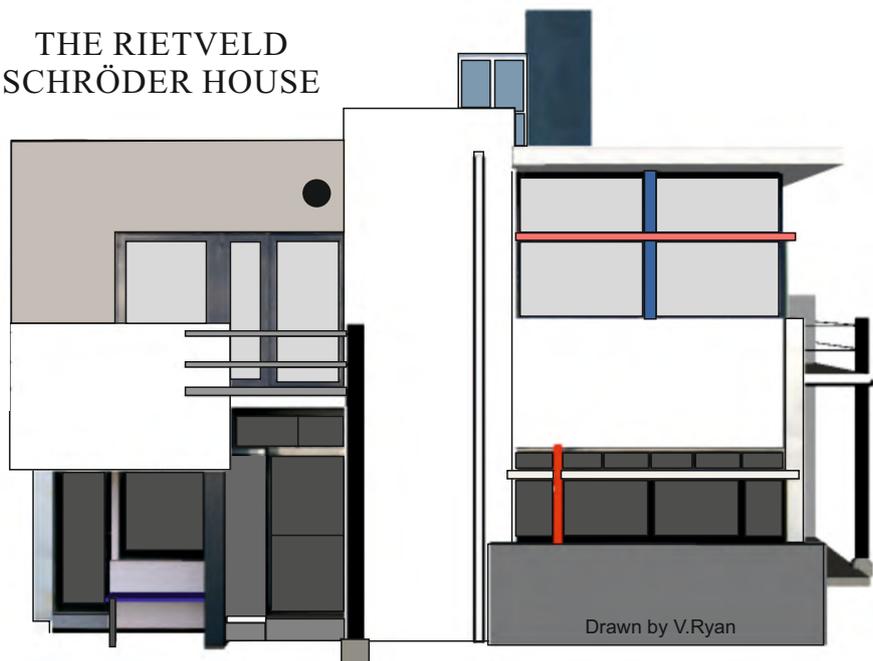
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RED / BLUE CHAIR



THE RIETVELD SCHRÖDER HOUSE



Drawn by V.Ryan

THREE IMPORTANT CONTRIBUTORS TO DE STIJL



THEO VAN DOESBURG (1883 to 1931)



PIET MONDRIAN (1872 to 1944)



GERRIT RIETVELD 1888 to 1964



ALEXANDER ARNOLD CONSTANTINE ISSIGONIS THE AUSTIN MINI - AN ICONIC DESIGN

Did 'Cool Britannia' start with Issigonis?

By V. Ryan (World Association of Technology Teachers)

The Austin Mini first rolled off the production line in 1959 and was the brain child of Alexander Arnold Constantine Issigonis. It was manufactured by the British Motor Company and was developed as a result of the shortage of petrol during and after the Suez crisis of the 1950s. It had a production run of 5.3 million cars and was the best selling British car, between 1959 to 2000. During the 1960s, it became popular with celebrities and was seen in films and on TV across the world, ensuring that it became a design icon. One of its most famous appearances, was in the film 'The Italian Job', driven by famous actors including Michael Cane.

Throughout its evolution, the Mini was at the forefront of design and engineering innovation. It was the first small car to have front wheel drive and had small 10

inch wheels. It had a traverse engine, which saved space and allowed a reasonable sized engine to fit into a small engine cavity. The sump was designed so that the same engine oil also lubricated the gears system. The radiator was on the left side of the engine cavity, again saving space.

The mini had a suspension system, based on rubber cones, not conventional springs. This saved further space, allowing the car to be lower down than other similar cars of its day. Sliding windows were a feature, developed with this small car in mind. This innovative design also included storage space, in the doors.

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WILLIAM MORRIS (1834 - 1896) The Arts And Crafts Movement

The Arts and Crafts movement developed from the views of people such as William Morris.

By V. Ryan (World Association of Technology Teachers)

Those involved in the Arts and Crafts Movement, promoted simple items (furniture, ornaments etc...) manufactured through good craft techniques. It was a rebellion against the age of mass production. A return to traditional craft methods and 'romantic' forms of decoration. Products were to be manufactured by individuals or small groups, rather than on a mass production line. Ornamental objects, floral fabrics, book making, weaving, jewellery, enamelling, metalwork and ceramics, were all influenced by the Art and Crafts movement.

The Arts and Crafts movement developed from the views of people such as **William Morris** (1834 - 1896). He was a poet and artist, who believed in a combination simplicity, good design and craft work. He believed that industrially manufactured items, lacked the honesty of traditional craft work. His views

and opinions were also supported by the artist / influential social intellectual, John Ruskin (1819 - 1900). As the movement grew in influence, architecture, furniture making and the decorative arts, such as interior design, started to display a simplicity and craft approach.

The philosophy behind the Arts and Crafts movement, was that the industrial revolution, had made man less creative, as 'his' craft skills had been removed from the manufacturing process. One aim of the movement was to put 'man' back in to the design and manufacturing process, Craft skills and good honest design would again be central to the manufacturing process.

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William Morris



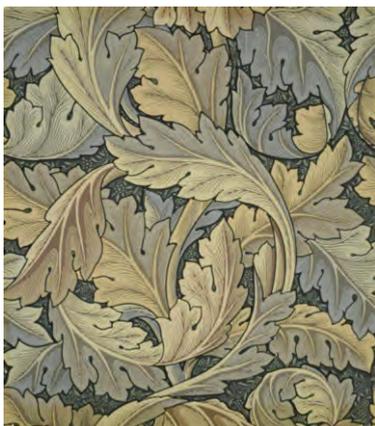
Morris Sussex Arm-Chair



Morris Stained Glass



Morris Wallpaper



Morris 1886 Arm-Chair





ALESSANDRO MENDINI AND STUDIO ALCIMIA

The aim was to move away from Modernist design principles to a new style.

By V. Ryan (World Association of Technology Teachers)

By the end of the 1960s, many designers were becoming disillusioned with the lack of change and progress in architecture and product design. Good design was often regarded as Modernism or earlier Art Movements, such as Art Deco. In 1976, Studio Alchimia was formed by the Italian Architect Alessandro Guerriero. Alessandro Mendini was one of the leading forces, behind the new design movement. The aim was to move away from Modernist design principles to a new style.

Studio Alchimia was composed of designers, whose aim was to design and manufacture exhibition pieces, rather than consumer orientated products. Their products were to be regarded as prototypes / one-offs. Studio Alchimia products were manufactured from cheap, readily available materials. However, although the designs showed many of the characteristics of Modernism, especially Bauhaus designs, they were

quite different. Designs included bright colours and decoration, and there was a move away from the symmetry of modernist designs, to asymmetrical characteristics. In many ways, Studio Alchimia was the stepping stone from the Modernist design movement, to the Memphis Group of the 1980s. Ettore Sottsass, who later helped form the Memphis Group, was an important contributor to this design movement.

The Kandissa Mirror, designed by Mendini, is composed of geometrical shapes, arranged randomly. 'Eye catching', vivid colours are also prominent. The Atropo Occasional Table, is another Mendini design. The Proust chair, is a typical colourful Mendini design. A blend of Baroque style and Studio Alchimia.

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Proust Chair



Atropo Occasional Table



Kandissa Mirror





THE WORK OF JULIA KRANTZ (BRAZIL)

Combining high level craft skills and consideration of sustainability.

By V. Ryan (World Association of Technology Teachers)

Julia works with sustainable laminated natural wood, from Brazil. Her work is both artistic, ecological and quite amazing. She combines laminates of natural wood and skilfully forms them into furniture. Her work is not only stunning, but also technically demanding. Her furniture is hand made. Each piece of furniture has been carefully designed and has real meaning.

The Mesa Baum Table has a beautifully carved ‘trunk’ as a base and an elegant plywood table top. Looking carefully at the top, you will see a carved bowl in its surface. This is a reminder of a Krantz family story from the Second World War, when her grandfather carved a bowl shape into the family table, as they did have not enough to eat from, due to shortages.

Throughout her life, she has tried to develop techniques that improve the quality of the furniture

she produces. She also aims through her sculptural work, to make a connection with the environment from which the wood was sourced. For example, the way the wood grain falls and is enhanced by her carving, reflects the influence of water, rain and rivers of Brazil.

Julia Krantz uses wood responsibly, relying on sustainable suppliers. Her work is made from stack-laminated plywood, approved by the Forest Stewardship Council. The stack laminated process is superior to more common production methods. Individual thin layers of natural wood are glued and compressed forming large blocks, ready for carving and routing.

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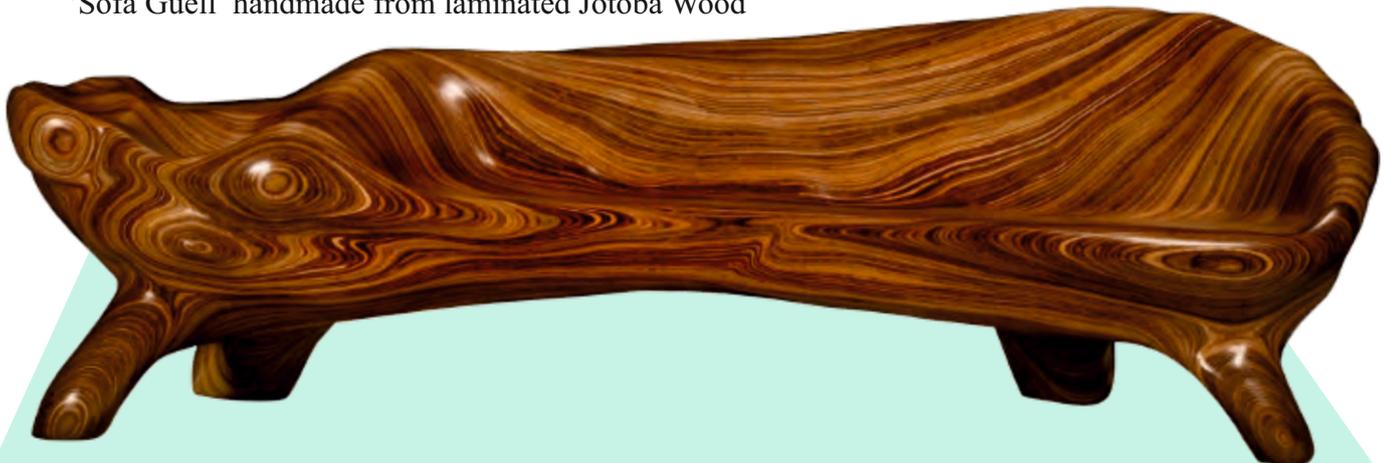
Mesa Baum Table



'Poltrona Suave'
lounge chair



'Sofá Güell' handmade from laminated Jotoba Wood



For more on Influential Designers: Go to the Designers Section of technologystudent.com



FRANK LLOYD WRIGHT DESIGNER AND ARCHITECT (USA)

From furniture design to architecture - he set the standard.

By V. Ryan (World Association of Technology Teachers)

Frank Lloyd Wright was one of the most prominent members of the Arts and Crafts movement. He advanced the design of interiors and exteriors of buildings, establishing a sought after style. He believed in 'organic architecture' (a phrase coined by Wright), whereby the design of furniture within a building, its decor, the buildings exterior appearance and the environment it all sat in, were in harmony. The building and the landscape are blurred into one unified natural scene.

As an architect he designed houses, offices, churches, schools, skyscrapers, hotels and museums. One example is the 'Fallingwater' house, constructed in 1935 in Pennsylvania. Designed for the Kaufmanns, a successful Pennsylvanian family. Its 'organic' cantilever design, allows it to sit effortlessly in its environment. The natural features of the landscape are

integrated into its interior. This includes boulders from the site, which are an integral part of the sandstone fireplace.

The chair seen below, is one of a set of four chairs designed by Wright in 1902, for the Ward W. Willits House in Illinois, which is identified as the first outstanding 'Prairie house style', by Wright. His furniture is often characterised by straight lines and rectangular forms. Wright's style is similar to that of Charles Rennie Mackintosh. They were both influenced by Japanese styles.

Wright is remembered as one of the USA's most famous and influential designers / architects. His work is studied across the world and commands very high prices (quite rightly), when auctioned.

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Fallingwater House 1935



Set of four chairs.
(1902)
Designed for
the Willits House





GEORGE NAKASHIMA DESIGNER, WOODWORKER AND ARCHITECT (JAPAN / USA)

One of the founders of the American Craft Studio Movement.

By V. Ryan (World Association of Technology Teachers)

George Nakashima (1905-1990), said when he was designing furniture, he was having a 'dialogue with a tree'. He preferred to be called a 'woodworker' rather than a 'designer' and set high standards, not only in furniture design, but also in his mastery of techniques used in their manufacture.

George was from a Japanese family and studied Architecture at the University of Washington. As a Japanese-American, he is acknowledged as one of the founders of the American Studio Craft movement. His work has been praised by fellow designers and is studied by students around the world.

His early career was in architecture, including working for a company, helping Frank Lloyd Wright in the design of the Imperial Hotel in Tokyo. His interest in traditional Japanese furniture began to develop, whilst working in Japan. He was interested in

the Japanese philosophy 'Mingei' ('hand-crafted art of ordinary people'), who believed in a return to craftsmanship, similar to the principles of the Arts and Crafts movement in Europe.

He developed his high level crafts skills whilst imprisoned in an Internment Camp, in the USA, during the Second World War. He was taught by Gentaro Hikogawa, a Japanese carpenter, mastering traditional skills and the use of Japanese tools.

After the war he continued designing and making furniture in his signature Japanese style. Walnut was his favoured timber, often using one large piece as the top / main surface. His work reflects Japanese values of balance, harmony, and simplicity.

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Conoid Bench



Conoid Dining Table



Grass Seated Chair



Conoid Chair



Minguren Table





CHRISTOPHER COCKERELL

Inventor of the Hovercraft

Designer, Innovator and Inventor.

By V. Ryan (World Association of Technology Teachers)

British inventor Christopher Cockerell carried out experiments during the early 1950s with a device that later became known as the hovercraft. The basic principle is that a vehicle can rest on a cushion of air and propellers can provide forward motion. He built a prototype in 1955, but the air force claimed it was a ship and the navy claimed it was a plane. Eventually the British Government became interested and classified it as top secret.

The British Government provided funding and in 1959 a prototype hovercraft was unveiled. A month later the prototype crossed the English Channel, which showed the technical durability of early hovercrafts. Many people at the time referred to the hovercraft as like a flying saucer.

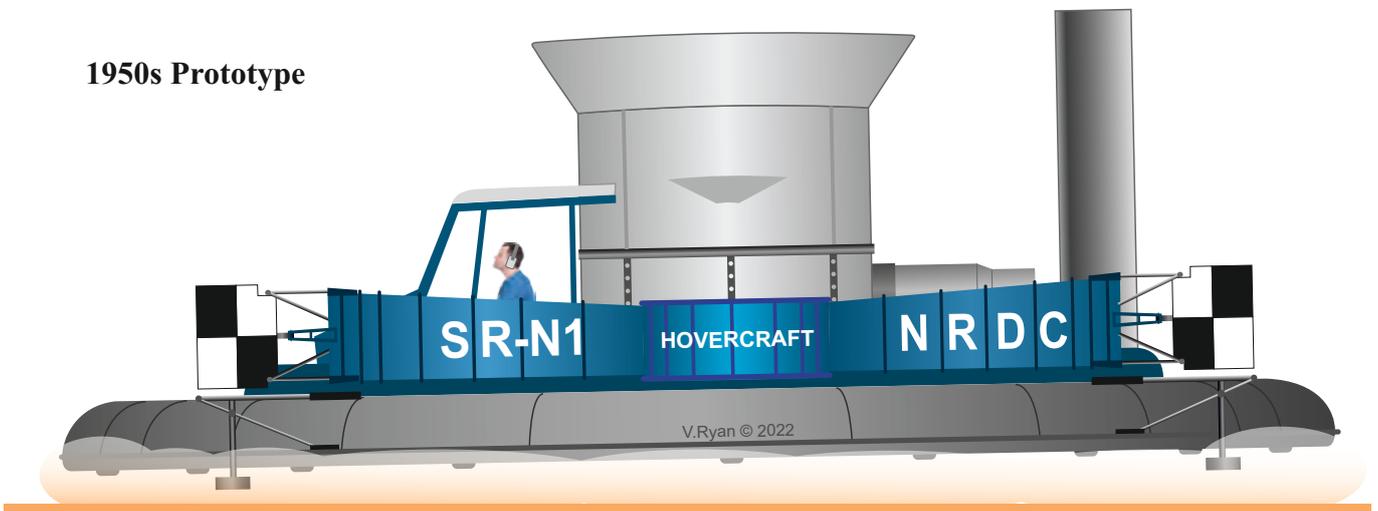
The basic operating principle is as follows; A propeller drives air down a hollow skin. The air inflates a rubber

skirt with some air escaping through holes to produce a cushion of air underneath the hovercraft. The early prototypes did not have the rubber skirt and this meant they were difficult to direct and they could not get over obstacles greater than ten inches in height. The skirt greatly improved this situation, with obstacles no longer being a problem.

The largest passenger hovercraft in the world was used for the Dover to Calais crossing from the 1960s, for nearly 40 years. The SRN4 was the largest passenger hovercraft in the world, capable of carrying over 380 passengers and 40 cars. It was 91 feet wide and 185 feet in length and weighed 300 tons. The propellers were 20 feet in diameter and with its power it could cruise at 70 mph. It was the fastest ferry in the world.

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1950s Prototype



1980s - Military version

