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Designers on designing

Malcolm Welch

The designed world

Hannah Arendt (1958), the social philosopher, wrote that our environment could be divided into two parts: the *'planet'*, which is shaped by natural forces and the *'world'*, which is built up by human effort.

This chapter illustrates the breadth and the beauty of some products that comprise the *'world'* and provides a glimpse into the work and minds of designers who have had a positive impact on the made world.

As you look at the photographs and read about the designers who have created these products, think about the influence your experience and perception of these and similar objects has on your life and the environment in which you live. The designers included in this brief survey all believe the primary purpose of design is to make people's lives better. Few have put this so eloquently as Henry Dreyfus in his now classic book "Designing for people" (2003/1955):

'[Designers] bear in mind that the object being worked on is going to be ridden in, sat upon, looked at, talked into, activated, operated, or in some other way used by people individually or en masse. When the point of contact between the product and the people become [sic] a point of friction, then the... designer has failed. On the other hand if people are made safer, more comfortable, more eager to purchase, more efficient - or just plain happier - by contact with the product, then the designer has succeeded.'

There is now a general consensus amongst designers that products should go beyond simply considerations of form and function. Products need to become 'objects of desire'. To achieve this, products must make pleasurable emotional connections with their end-users through the joy of their use and the beauty of their form. To what extent do the products with which you surround yourself bring you joy?



William Morris (1834-1896) was a British craftsman, early Socialist, designer and poet whose designs generated the Arts & Crafts movement in England. He once said: *'have nothing in your house that you do not know to be useful, or believe to be beautiful'*.

To what extent do you agree with this statement?

Are utility and beauty the only criteria for judging the worth of an object?

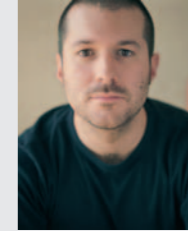
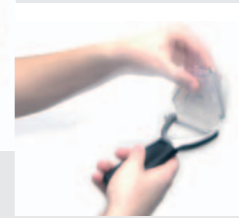
01 02 03 04

- 01 Two sculptural arm pieces.
- 02 Textural neckpiece.
- 03 Neckpieces and bangle.
- 04 Davin Stowell.
(Photograph 04 © Claudia Christen for Smart Design.)



05 06 07 08

- 05 'Good Grips' peelers & grater.
- 06 Easily replaced peeler blade.
(Photographs 05 & 06 © Claudia Christen for Smart Design.)
- 07 Jonathan Ive.
- 08 Apple's 2006 iPod family.
(Photographs 07 & 08 © Courtesy of Apple.)



Angela O'Kelly (1973-) Jewellery designer

'[My] inspiration derives from a fascination with simple shapes, textures and repetition. It is taken from observing landscapes, boglands, rock formations and sea life. Colour is very important, with earthy browns and greys, and vivid greens, blues and reds from the sea, featuring throughout my work.'

Angela O' Kelly is one of Ireland's leading art and design-led makers.

Angela combines paper with fabric, felt, silver, gold, cord, recycled plastic and semi-precious stones using a variety of textile and jewellery techniques to create wearable art that crosses boundaries between sculpture, jewellery and textiles. Texture is her main consideration, achieved by layering hard and soft fibres and knotting and sewing paper cord: *'I produce two ranges: firstly, large sculptural wearable art pieces; and secondly smaller neckpieces, brooches and bangles. Both ranges are bright, tactile, vivacious and subtle.'*



Is there a place in schools for collaboration between the art department and design & technology? If so, what would this collaboration look like?

Which materials, both natural and synthetic, could you use with pupils? How would these be incorporated into products?

Davin Stowell (1953-) Designer of Good Grips kitchen aids

'People will pay for safety, ease of use and comfort.'

Sam Farber, an entrepreneur who has made human-centred design a hallmark of kitchenware, was in his kitchen one day and saw how his wife's arthritis was causing her pain while peeling potatoes with the usual peeler we are all familiar with; the one made out of steel with a bent piece of metal for a handle. Sam's wife struggled and then turned to him and said, *'can't you make something that doesn't hurt my hands?'* Sam, a long-time advocate of human-centered design, which takes into consideration the physical, cognitive, social, cultural and the emotional needs of users, telephoned Davin Stowell at Smart Design and challenged him to design a better potato peeler that was also dishwasher-safe, high quality, affordable and attractive.

The design team looked at tool handles, utensil handles, and equipment handles. In the end, they decided to create a handle that had a soft, squishy feel that invites

you to grab it. And so grab it they did - left hands, right hands, hands with arthritis, small hands, hands with crooked fingers, hands of a mailman, next-door neighbour hands - no hand or handle model went untested. Carving Styrofoam and wood mock-ups produced hundreds of models.

Davin's team also investigated the practice of professional chefs and food preparers. Because blade sharpness is critical for these heavy users, they actually throw out and replace used peelers as often as weekly. They think of peelers like disposable products. So Davin conducted a blind test of twenty peelers, comparing the difference between old, used peeler blades and new ones. He found that new, sharp blades required less force, had wide, even peels and rode over irregular surfaces smoothly. Since a peeler blade, like any knife blade, will dull with use and since you cannot sharpen a peeler blade yourself, Davin designed a blade that is easily and safely replaceable. A spring-loaded blade release was added to the peeler, along with a safety 'peeler blade replacement cartridge'.



What are the educative benefits of asking pupils to redesign, rather than design, a product or service? What would pupils learn

if they were required to identify an object (a toy that broke easily, scissors that hurt the hand or the ugliest lamp ever seen) and redesign it? What questions would you pose to them in order to stimulate their thinking about designing an object?

Jonathan Ive (1967-) Designer of the iPod and iMac

'It's all about removing the unnecessary.'

The winner of the Design Museum's inaugural Designer of the Year award in 2003, Jonathan Ive is senior vice-president of design at Apple, whose innovations include the iPod and iMac.

'It's all about removing the unnecessary...[and moving toward] the utterly serene' says Jonathan about the ethos that informs his landmark product designs for Apple Computer. Nothing better fulfills Jonathan's ambition to create elegant, intuitive machinery than his revolutionary design for the iPod MP3 player. The iPod is not only a very new product but this ode to minimalism has redefined the way consumers experience technology, to say nothing of music.

09 10 11

- 09 Philippe Starck.
(Photograph © JB Mondino.)
- 10 Starck's lemon squeezer, the Juicy Salif, has become an icon despite its impractical design.
- 11 Philippe Starck's W.W. stool.
(Photograph © Starck.)



12 13 14 15

- 12 Isamu Noguchi.
- 13 Noguchi coffee table.
- 14 Noguchi Akari lighting.
- (Image 12 photograph by Jun Miki. Images 12 - 14 © The Isamu Noguchi Foundation and Garden Museum/ARS, New York, 2007. Image 13 Photography Ezra Stoller © Eslo. Images 13 & 14 © DACS, London 2007.)
- 15 Marcel Breuer.



When asked what it is that distinguishes the products that Apple develops, Jonathan replied, *'the decisive factor is fanatical care beyond the obvious stuff: the obsessive attention to details that are often overlooked.'*

Q Make a list of elegant, whimsical and iconic products that have defined the way that users experience a product group. How will you introduce this aspect of design to your pupils?

Philippe Starck (1949-) Architect, interior designer, product designer

'Today, the problem is not to produce more so that you can sell more. The fundamental question is that of the product's right to exist...[An] object must be of good quality...a good product is a product which lasts.'

Philippe Starck, whose work ranges from chic hotels to chairs to lamps to toothbrushes, is one of the best-known contemporary designers in the world. He has not only received public acclaim for his amazing building interior designs but has also proved to be an accomplished architect and product designer.

The items Starck designs become objects of adoration and desire. Although many of them are eventually mass-produced, they often remain akin to artworks in their basic function. Starck has created his own style, which, although not uniform, remains highly recognisable. His designs are sometimes loaded with irony and parody. He has said that, *'my idea is to bring happiness, respect, vision, poetry, surrealism, and magic [to design]... We have to replace beauty, which is a cultural concept, with goodness, which is a humanist concept'*. Philippe Starck wants to bring love and happiness into your life by designing objects, environments, and appliances that will brighten your days.

Q Philippe Starck has reiterated a design principle first advocated by the Bauhaus: high quality, tasteful industrial design should be available to everyone. Ironically, his lemon squeezer - the Juicy Salif - has become an icon despite its impractical design. To what extent should pupils be given the opportunity to design and make products that are playful, sometimes simply absurd?

Isamu Noguchi (1904-1988) Sculptor and designer

'New concepts of the physical world and of psychology may give insights into knowledge, but the visible world, in human terms, is more than scientific truths. It enters our consciousness as emotion as well as knowledge.'

Trained originally as a sculptor, Isamu Noguchi brought a sculptural sensibility to the lighting, furniture, gardens and stage sets he created. He sought to make sculpture useful in everyday life, and his furniture and interior designs display the biomorphic imagery of his sculpture. After the Second World War Noguchi moved to the city of Gifu where he developed new designs that harnessed the ancient skills of the Gifu lantern-makers to produce modern electrified versions of traditional candle-lit lanterns. The Akari light sculptures, beautifully shaped and capable of folding perfectly flat, are still made by hand in Gifu from the minogami paper that comes from the bark of mulberry trees.

During the 1950s and 1960s he designed 'organic' furniture in curvily sculpted wood. He was equally prolific as a landscape architect. After creating a memorial garden to his father at Keiō University in 1950, he recreated the ancient Buddhist stone gardens he had loved in Kyoto at several locations.

Q How will you both encourage and enable pupils to identify, understand and use biomorphic shapes, that is, shapes derived from organic or natural forms, in their design work?

Marcel Breuer (1902-1981) Architect and furniture designer

'Objects should be impersonal, standardized, styleless and timeless. An object's clear and logical form should be based on rational principles (economy of means, truth to materials), determined from the object's primary function and ergonomic requirements.'

From 1920 to 1928 Marcel Breuer was a student and teacher at Germany's Bauhaus, a school of design where modern principles, technologies and the application of new materials were encouraged in both the industrial and fine arts. During his time spent there Marcel completed the carpentry apprenticeship and subsequently became one of the early 20th century's most influential furniture designers.

Breuer is best known for his design of the Wassily Chair No. B23, the first tubular bent-steel chair, designed in 1925 for Wassily Kandinsky and inspired in part by the shape and form of bicycle handlebars.

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18

16 Marcel Breuer's Wassily chair.
(Photograph © Jefferson Belmonte. <http://creativecommons.org/licenses/by/2.0/>)

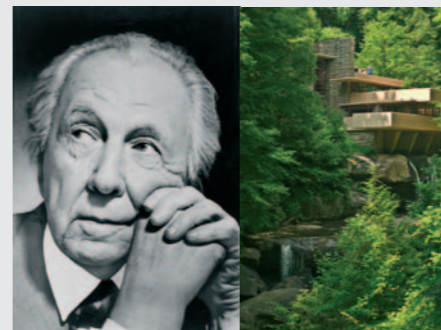
17 Le Corbusier's chaise longue LC4.
(Photograph © <http://steelform.com/lc4.html>)

18 Le Corbusier's Villa Savoye.



19 20

19 Frank Lloyd Wright.
20 Frank Lloyd Wright's Fallingwater house, Pennsylvania.



The frame of the chair was made from polished, bent, nickelled tubular steel, which later became chrome plated. The seat came in canvas, fabric or leather. Still in production, the chair can be assembled and disassembled most easily with bicycle tools.



How will you encourage pupils to use existing products as a stimulus for new ideas?
Would attribute analysis be a useful technique to teach pupils?

Charles-Edouard Jeanneret (Le Corbusier) (1887-1965) Architect and furniture designer

'You employ stone, wood and concrete, and with these materials you build houses and palaces: that is construction. Ingenuity is at work. But suddenly you touch my heart, you do me good. I am happy and I say: "This is beautiful". That is Architecture. Art enters in.'

Charles-Edouard Jeanneret, who adopted the pseudonym Le Corbusier in 1920, was a French Swiss-born architect, famous for his contributions to what is now called modernism, or the International Style. He was a pioneer in theoretical studies of modern design and was dedicated

to providing better living conditions for the residents of crowded cities.

Le Corbusier placed systems of harmony and proportion at the centre of his design philosophy, and his faith in the mathematical order of the universe was closely bound to the golden section and the Fibonacci series, which he described as *'rhythms apparent to the eye and clear in their relations with one another. And these rhythms are at the very root of human activities.'*



Mathematical relationships are found throughout the natural world. For example, the spirals of a Norway spruce cone and those in the head of a dahlia are part of a Fibonacci series. How will you both encourage and enable pupils to incorporate the fluid forms found in nature and the precision of mathematics into their designing?

Frank Lloyd Wright (1867-1959) Architect

'Organic buildings are the strength and lightness of the spiders' spinning, buildings qualified by light, bred by native character to environment, married to the ground.'

Believing that *'the space within [a] building is the reality of that building'*, Frank Lloyd Wright practiced what is known as organic architecture, an architecture that evolves naturally out of a context. Most important for him was the relationship between the site and the building and the needs of the client. From his early Prairie Style homes, to the sculptural curves of the Guggenheim Museum in New York, he defined a North American style of architecture that was rich in emotion and sensitive to its surroundings. As well as creating buildings that were radical in appearance, Wright had a rare ability to integrate them with the landscape - stemming from his deep love and knowledge of nature.

Wright challenged his mentor Louis Sullivan, whose slogan *'form follows function'* became the mantra of modern architecture. Wright changed this phrase to *'form and function are one, joined in a spiritual union'*, using nature as the best example of this integration.



Richard Seymour and Dick Powell argue that how a product engages with us emotionally is at least as important as how well it performs mechanically.

Otherwise, they contend, all our choices would be based strictly on price and functional efficiency rather than emotional resonance and visceral appeal. They call this phenomenon *'emotional ergonomics'* and argue that highly successful products broadcast their appeal on a non-logical wavelength; the potential user feels the attractiveness as an initial response before engaging in any conscious thought about the product. How can you encourage pupils to think about the products they design in terms of emotional ergonomics?

27 28 29

27 United States pavilion at Expo 67 by Buckminster Fuller.

(Photograph © Library and Archives Canada, MIKAN No. 3198274.)

28 David Marks & Julia Barfield.

29 The London Eye.



30 31

30 Alec Issigonis.

(Photograph © British Motor Industry Heritage Trust.)

31 A Morris Mini-Minor being delivered to a family in Arlington, Texas in 1959.



His philosophy evolved to cause him to think in terms of 'four-dimensional, or 4D design'. He defined this as thinking in time instead of only the three dimensions of space: thinking of consequences for humanity instead of only immediate personal gain. He devoted his life to this question, trying to find out what an individual like him could do to improve humanity's condition that large organizations, governments, or private enterprises inherently could not do.



The latest unique contribution statement for design & technology in the National Curriculum (Qualification and Curriculum Authority 2007) states '[pupils] learn to think creatively and intervene to improve quality of life...' How can you reinforce in the minds of pupils that each can make a contribution? What forms can this contribution make? Must it always be to design or redesign a new product?

David Marks and Julia Barfield Architects and designers of the London Eye

'We believe that good design transforms the quality of the environment'.

David Marks and Julia Barfield were winners of Architectural Practice of the Year in 2001 and a Queen's Award for Enterprise in 2003 for designing the London Eye, the largest observation wheel in the world. The wheel carries 32 sealed and air-conditioned passenger capsules attached to its external circumference. It rotates at a rate of 0.26 metres per second or 0.85 feet per second (about 0.9 km/h or 0.5 mph) so that one revolution takes about 30 minutes to complete. The wheel does not usually stop to take on passengers; the rotation rate is so slow that passengers can easily walk on and off the moving capsules at ground level. It is, however, stopped on occasion to allow disabled or elderly passengers time to disembark safely.

This elegant structure has captured the public's imagination. Since its opening in 1999, over twenty million visitors have enjoyed unparalleled views over London, and it has made a significant contribution to the regeneration of the area.



The London Eye has become a landmark. Originally, a landmark literally meant a geographic feature, used by explorers and others to find their way back through an area on a return trip. In modern usage, it is anything that is easily recognisable, such as a monument, building, or other structure that might be of interest to tourists due to notable physical features or of historical significance. What would pupils learn about designing if required to list some international cities and their landmarks?

Alec Issigonis (1906-1988) Automotive designer

'Never, never copy the opposition'.

One of the most original car designers of the modern era, Alec Issigonis is best known as the creator of the Mini, but also designed two more of the five best-selling cars in British motoring history - the Morris Minor and the Austin 1100.



Alec Issigonis was a successful designer because he was able to 'think outside the box', that is, able to look at a problem from a new perspective without preconceptions. Out-of-the-box thinking requires openness to new ways of seeing the world and a willingness to explore. What strategies can be used with pupils to encourage them to think outside the box?

32 33 34

32 Dean Kamen's Segway.

(Photograph © Reinhold Eder, Urban Mobility GmbH.)

33 Dean Kamen's insulin pump.

34 Dean Kamen on his Ibot Transporter.



35 36 37

35 William McDonough.

36 Brano Meres.

37 Brano Meres' bamboo bicycle.

(Photograph © Brano Meres.)



Dean Kamen (1951-) Inventor of the automatic infusion pump, Ibot Transporter and Segway

'You have teenagers thinking they're going to make millions as NBA stars when that's not realistic for even 1 percent of them. Becoming a scientist or engineer is'.

Dean Kamen is well-known as the designer of the Segway, a self-balancing, battery-powered two-wheeled transportation device that can carry one person along pavements crowded with pedestrians. But Dean is less well-known for his design of products that improve the lives of people with certain types of disease and also disabled people.

While Dean was attending college in the 1970s, his brother, then a medical student and now a pediatric oncologist, complained that there was no reliable way to give steady doses of drugs to patients. So Dean invented the AutoSyringe, an automatic, self-contained, ambulatory infusion pump designed to free patients from round-the-clock injections and, in some cases, from their hospital beds. The wearable device delivers precise doses of medication to diabetics and other patients with a variety of medical conditions.

When Dean watched a man in a wheelchair try to negotiate a curb in the late '80s, he wondered whether he could build

a chair that would hop curbs without losing its balance. After \$50 million and eight years in development, the Ibot Transporter was born - a six-wheeled robotic 'mobility system' that can climb stairs, traverse sandy and rocky terrain, and raise its user to eye-level with a standing person.



Each year many people die from medical errors in hospitals directly or indirectly related to medical device use. Medical devices can harm patients, family members, or healthcare providers as a result of failure of the device or the actions of the user. Human factors engineering (HFE) is the science and the methods used to make devices easier and safer to use. HFE helps improve human performance and reduce the risks associated with use. How will you introduce pupils to human factors engineering and encourage them to think about it when designing?

Sustainable products: Planet pleasers

'I believe we can accomplish great and profitable things within a new conceptual framework - one that values our legacy, honors diversity, and feeds ecosystems and societies...It is time for designs that are creative, abundant, prosperous, and intelligent from the start.'

William McDonough, architect and designer.

Sustainable products are those products providing environmental, social and economic benefits while protecting public health, welfare, and environment over their full commercial cycle, from the extraction of raw materials to final disposition.

William McDonough's greeting cards are designed to flow safely through multiple life cycles. Each card comes with a two-way return postage-paid envelope that allows its constituent materials to be safely re-used rather than discarded. Both the cards and the envelopes are made from a Certified Technical Nutrient plastic material. Cards returned using the self-mailing envelope are used as raw material for new carpet tiles.

'I have seen many amazing constructions made of bamboo and I always wondered why such [a] light, strong, stiff and elastic material is not [widely] used for building bicycle frames.'

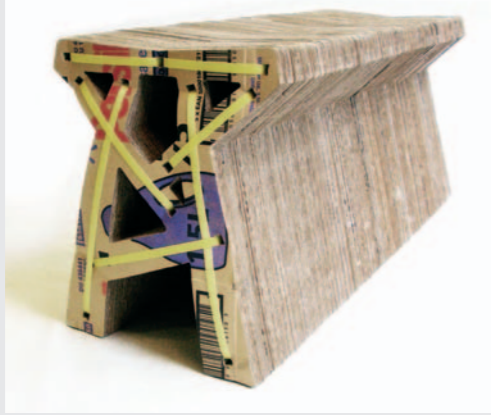
Brano Meres, mechanical engineer.

Bamboo is the fastest-growing woody plant. Several subtropical species can grow 30cm per day, while others have been documented as growing over 100cm per day. Brano Meres has made a prototype bicycle frame from bamboo rods filled with polyurethane foam to increase their rigidity. According to Brano, the frame has better vibration damping than a carbon fiber frame. Other bamboo frame makers smoke and heat-treat the bamboo to prevent splitting.

Jason Iftakhar was struck by the amount of waste packaging supermarkets generate. So in response, he developed a forged steel die cutting tool that enables supermarket packing machines to turn old cardboard boxes into simple furniture, allowing supermarkets to re-use, rather than recycle, waste product and so save money and, more importantly, resources. This upcycling turns a low value item into a neat new product for the store. As Jason says: *'My idea is about getting a big result without wasting a lot of energy. The materials and the machinery were already there; it just needed to be harnessed. It's the perfect environment to take advantage of a system that's already established'.*



'Industrial ecology' is a term being used for the new practice of one industry using another industry's dross as raw material



or redesigning products to make them easier to re-use, recycle or incinerate. Is there dress available in your community? If so, how can you acquire and use it in your classroom?

Endnote

Many professional designers, some well-known, some not so well-known, contribute to the made world in which we all live, work and play. Charles Owen (2004) has suggested that *'design is a profession concerned with the creation of products, systems, communications and services that satisfy human needs, improve people's lives and do all of this with respect for the welfare of the natural environment.'*

From paper clips to airplanes, from clothing to medical equipment, from packaging to airports, design means more than styling or giving shape to an object. Good design requires a complex process in which various, often contradictory, requirements have to be fulfilled so that objects can function in the desired manner. Design is only 'good' when aesthetics, economics, durability, function, ecology and comfort come together to complement and harmonise with one another.

If this is what designers do, should pupils learn to design? Is it possible for pupils to design? What knowledge, skills and understanding would they need in order to design? These are the questions that the chapter, "The pupil as designer" will address.

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