

The House of Lords Science and Technology Committee Inquiry into Waste Reduction

Memorandum by the Design Council

Executive Summary

In the ecosystem of innovation we cannot think about waste as something that is associated with the left-over or end-life of a product. A more holistic approach is needed. The role of design here should be to look at the entire life-cycle of products and services and to identify ways of embedding sustainability from the outset. The role of design should be to unlock innovation and connect science and technology to the market place. As such sustainable design should be seen as a business opportunity in a low-carbon economy.

A key new set of design skills is needed to address sustainability, but as yet there is little demand for these skills in UK industry. Experience from other countries such as Germany, Denmark and Sweden suggests that if a critical mass of designers are equipped with knowledge about product life-cycles, the impact of materials' choices and manufacturing processes on product development and consumer behaviour the impact on waste reduction would be considerable.

Over the coming years the demand for design that aids sustainable development will rise as regulations become more stringent, consumers become more discerning and businesses require specialist design input. A UK design industry with the skills and confidence to deliver sustainable solutions could become a world leader in this field, collaborating internationally and opening up access to new global markets. To achieve this, a whole-industry response will be required along with effective education and training.

Following some discussion of the issues, we will set out a number of recommendations that we believe will minimise the creation of waste. These are:

- Greater support for design-led innovation that will enable SMEs to embed sustainability in all their products and services
- More emphasis on sustainability in design education as part of a nationally co-ordinated skills programme
- Greater collaboration between design, science, technology and business higher education institutions
- Greater emphasis on 'service design' in the development of products and services
- Greater public engagement to familiarise ordinary people with value of design

1. Introduction

The Design Council welcomes this opportunity to respond to the House of Lords Science and Technology Committee Inquiry into waste reduction.

Design Council research shows that companies that invest in design out-perform in practically every measure of business performance including market share, growth, productivity, share price and competitiveness. For example, the Design Council's Design Index (2005) demonstrates that over a ten-year period, design-intensive companies outperformed the FTSE by more than 200 per cent. Our studies also demonstrate the link between design expenditure and economic performance. The Design Council's Value of Design Factfinder (2005-2006) found that for every £100 a design-alert business spends on design, turnover is increased by £225. Yet, remarkably, 45 per cent of all UK companies are failing to invest in design and only 16 per cent believe that design is critical to success.

On the subject of improving economic, social and environmental sustainability, design has the potential to make a positive contribution, in supporting businesses to create environmentally sound and desirable alternatives to existing services and products and in enabling changes in patterns of materials use, production and consumption, and in product disassembly and recycling.

Major design-led companies like Electrolux, Unilever and Nike are already using design to address sustainability, and car manufacturer Toyota has advanced a sustainable automotive design model. By

investing significant resource in the design programme behind hybrid cars like the Prius, it is building an internal knowledge base about sustainable design that should serve it well in this emerging market.

Our research shows that the most environmentally aware businesses are already seeking design solutions that respond to consumer demand for greener products, but that they are beginning to find that UK designers don't always have the relevant expertise. In response to this, we believe that sustainability should be at the heart of the design curriculum.

2. The role of design in waste reduction

With 80% of the environmental impact of today's products, services and infrastructures being determined at the design stage¹, influencing the key design decisions that designers make can bring about extensive change in the amount of waste produced in a product life-cycle. The EU has passed a directive, the Eco-Design of Energy Using Products Directive (EUP), to help designers deal with the problems of waste at the design phase. Further legislation that reinforces these principles should be considered, though there are many measures that designers and businesses can take in the existing legislative framework in order to reduce the environmental impact of their activities.

Designing to last

Companies can strive to build more durable products to ensure they last longer. As an example, the furniture company Vitsoe has become a market leader with a product designed to last a lifetime. The 606 Universal Shelving System's stated aim is to "help people live better with less that lasts longer." Its highly flexible modularity allows owners to install and extend their shelving easily themselves. For a nominal fee Vitsoe also offers a service dismantling and rebuilding its system for relocations.

Also, designing product components for easy removal and replacement encourages people to repair parts rather than replacing the whole object when it breaks down.

The Aeron ergonomic chair shows how successful these principles can be. It has 66% recycled parts and 100 per cent of its aluminium parts are recycled, making it about 95% less destructive to materials, energy, water and air. All its plastic parts are labelled with International Standards Organisation (ISO) recycling symbols and the chair is easy to disassemble, with 94% recyclable parts. Repair is simple and the chair has a ten-year life-span – about double that of an ordinary office chair. It has been a worldwide success and has been recognised as a design classic by the Museum of Modern Art in New York.

Add value by reducing waste

In a time of increasing energy and waste disposal prices, product re-designs and rationalised production processes can not only reduce environmental impacts but can also bring economic savings. For example, American grocery retailer Walmart reduced packaging for just one toy line and made annual savings of more than \$2.4 million, as well as saving more than 3,800 trees and more than 1,000 barrels of oil.² Retail packaging, whose function is often to increase shelf visibility, accounts for about 20% of all waste put out by households.³

Design to recycle and remanufacture

At the moment, when waste is re-used, it is often downgraded. Cars are routinely melted down without separating out useful metals such as copper, meaning these become unusable in the resulting alloy.

Xerox, as well as saving resource by making multi-functional products that scan, copy, fax and print, also remanufacture their old products. They estimate that this results in their products having up to seven

¹ *How to do Ecodesign: A guide for environmentally friendly and economically sound design*, German Federal Environment Agency (ed), 2000

² www.walmartfacts.com/FactSheets/1292007_Sustainability.pdf

³ Defra, *Waste Strategy for England*, 2007

lives. Evidence suggests remanufacture can be twice as profitable as manufacture, but few companies currently use it.⁴

From products to services

Home appliance manufacturer Electrolux is experimenting how design can transform their core business offering. In a pilot service, they provided free washing machines to customers, enabling customers a pay-per-use model that has worked out as more profitable in the long term for the manufacturer. In this sense they are selling a washing service, rather than a product. Customers are furthermore likely to run their machines less often, thus also bringing about a significant saving in water and energy. Since Electrolux retains ownership of the machine, they also have greater incentive to build it to last. The United Nations Environment Programme claims that in addition 'the company has the potential to take a role in the end-of-life of the washing machine by remanufacturing or recycling its materials.'⁵

3. User-centred and service design

Britain is at the forefront of a new 'service design' industry, and this new discipline is evolving as a powerful new tool for both business and sustainable development. It can use social and economic innovation to help reduce and improve on wasteful processes and can speed up the transition to sustainability. By putting people at the heart of the design process, it explores new ways of carrying out familiar, every-day activities to create personalised user-centred services.

The Design Council has recently worked with regional development agency One North East to pilot a set of community projects that aim to improve aspects of daily life through the successful application of 'service design' principles. 'Service design' case studies from this initiative included projects that aimed to reduce home energy use in an economically deprived part of Northumberland; and one that aimed to exploit the capacity of cars on the road in order to reduce overall car journeys in a remote part of the North East. We would be happy to provide further information on these products in order to examine the role of service design more closely.

4. Recommendations

4.1 Greater support for embedding sustainability within business and business support programmes

Caught up in adapting to new conditions and legislation, many businesses currently see environmental factors as barriers to growth rather than opportunities for innovation. They tend to be unaware that design can address complex strategic issues and allow perceived lack of time or resource as a barrier to invest in this research. Design is frequently seen as an add-on and an expense rather than an important part of improving profitability. However, it is also true that companies that wish to, currently have difficulty sourcing sustainable design skills.

For instance, Designing Demand, the Design Council design-led innovation service for SMEs, is working to embed sustainable practice at its heart. The programme will target a total of 6,500 businesses by 2010. A mentoring scheme, as part of this programme, is delivered by a roster of expert 'design associates', within flexible framework, developed by the Design Council, that allows associates to advise businesses according to their needs. Sustainability is a cross-cutting theme and design associates are there to help raise awareness and signpost businesses to other resources around complex sustainability issues.

4.2 More emphasis on sustainability in design education as part of a nationally co-ordinated skills programme

Presently, there are only a small number of undergraduate and postgraduate design courses with sustainable design elements and few design companies, agencies and freelancers show an active

4 Caspar Gray interview with Rolf Steinhilper, 2006.

5 United Nations Environment Programme, Product – Service Systems and Sustainability – Opportunities for Sustainable Solutions, updated, 2005.

commitment to sustainability principles. However this is by no means typical of the sector as a whole. The reality is that most designers do not yet recognise the strategic role they could play in tackling the problem and teaching about the application of sustainability principles is still under-developed in design education. Also, our research into design skills has found that designers still do not rate sustainability as a priority, claiming it is because their clients do not ask for it.

The UK Design Industry Skills Development Plan, 'High-level skills for higher value', jointly published by the Design Council and Creative & Cultural Skills sector skills council, recommends a '360 degree' approach to skills development: improving the teaching and content of design courses in schools and higher education as well as improving professional practice and embedding sustainability element across education.

4.3 Greater support for collaboration between design, science, technology and business HEIs

Design should play a greater role in connecting our research base to the market place.

There is currently not enough interaction between scientists and designers. We commend the work of organisations like MADE (Materials and Design Exchange) was established to address that issue. MADE is part of the Materials Knowledge Transfer Network (KTN) supported by the Government, forging a link between designers and other sectors of the KTN that are concerned with metals, plastics, textiles and the full range of modern materials. The core partners of MADE are the Institute of Materials, Minerals and Mining (IOM3), The Royal College of Art (RCA), the Design Council, the Institution of Engineering Designers (IED) and the Engineering Employers Federation (EEF South). Speedy implementation of Lord Sainsbury's Review of Science and Innovation Policy, Race to the Top, is also needed to ensure that there are greater connections between design, science, technology and business in our universities.

4.4 Greater emphasis on a 'service design' approach from business

Looking at the life-cycle of products and services requires a user-centred approach that engages all stakeholder groups in dialogues and encourages their active participation in the design process. However, the relatively new discipline of service design, which allows a designer to identify the brief through examining a situation in its entirety is still not widely recognised by business as an effective tool for innovation.

'Shared visions act as forces of innovation. Designers can imagine some situational condition that does not yet exist, but describe it in such a way that it appears to be a desirable new version of the real world.'⁶ The design process here can prototype new ideas and rapidly test them with target user groups. In each instance, service design's strength is the capacity to rapidly and cheaply work through iterations of solutions practically with the participation of all relevant interest groups. This means that a service design approach can help businesses test new ideas and propositions before they are taken to market.

4.5 Greater public engagement to raise awareness among the general public about the value of sustainable development and design's role in it

There is a greater need to raise public awareness about how design can influence consumption habits and waste impacts. By raising awareness, consumer choice is better informed. Public engagement programmes like Designs of the Time (Dott07) reach a broad cross section of society, and play an important role in developing this awareness. The Design Council will continue to uphold a strong focus on sustainability within its Designs of the Time programme. This should in turn result in the creation of more consistent demand for well-designed and better performing products and services that create less waste.

⁶ John Thakara, Programme Director, Dott07

Appendix

5. Definitions

In the context of this submission we have used the following definitions, as described in the Cox Review into Creativity in Business and Design Council's Added Value Research:

'Creativity': the generation of new ideas – either new ways of looking

at existing problems, or of seeing new opportunities, perhaps by exploiting emerging technologies or changes in markets.

'Innovation': the successful exploitation of new ideas. It is the process that carries them through to new products, new services, new ways of running the business or even new ways of doing business.

'Design': links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end.

'Added value' – the term describes how a business adds value to what they offer, over and above providing the core product or service that is at the heart of what the business does. For example, Apple added value by offering i-tunes to add to their i-pod range, i.e. the value of the product is significantly higher with the i-tunes service that goes with it, and both of these were designed together from the outset.

'Sustainable development' - is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'⁷

'Design'- is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end.

'Design for sustainable change' - is neither an add-on, nor an elite area of design. Design for sustainable development is the process by which all designers can improve the social, economic and environmental impact of their work.

⁷ *Our Common Future*, the Brundtland Commission report, 1987