

The Human Touch

Ergonomics is at the centre of any good design for residential interiors. Achieving the ultimate in user-friendly is an ongoing challenge, as a new exhibition at the Design Museum examines



DESCRIBED as the science of everyday life, ergonomics uses the knowledge of human performance in conjunction with design and engineering to create systems, products and services which are safe, efficient and enjoyable to use. Our size and shape, how we move, what we see, hear and feel and how we think, all this information has been collated and applied by ergonomists to aid the design of both everyday and extraordinary objects.

In an increasingly technological society, awareness of ergonomics is of paramount importance for designers and consumers alike. From the humble tape measure and TV remote control, to the vast and complex areas of transport systems and medical care, ergonomics is the study of how we interact with products, the relationship between

man and machine, with the primary aim to optimise this symbiotic affiliation.

Ergonomics is the unsung hero of good design and is often only noticeable by its absence, when a product is badly designed or fails to be user-friendly. It's a thin line between mistaking the hot and cold tap to averting an air traffic disaster or power station meltdown. A misplaced element in either system can be fatal and whilst the consequences are majorly different the theory – in design terms – is much the same.

A current exhibition at the Design Museum in London explores the world of ergonomics, and whilst not focused on design in the home, the displays do provide plenty of food for thought on the principles of ergonomic design. It highlights the thought and process behind this science, exploring the theory, principles and





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Young says: “Ergonomics really needs to be the starting point of the process. It has to be about what the user is trying to achieve and what their requirements are when using a product. User trials and focus groups can help to obtain this information at the very beginning.”

In the 60 years that ergonomics has been a recognised scientific discipline in the UK, understanding and implementation of the principles behind it have grown significantly. Today, some design consultancies employ qualified ergonomists and many other design groups work closely with specialist ergonomics consultancies. Large manufacturers, such as Ford, Philips and Nokia employ ergonomists to work alongside their in-house design teams. Most design projects involve multidisciplinary teams, including designers, engineers, market researchers, brand managers and, increasingly, ergonomists.

However, Young is quick to point out that despite the progress made to date, there is still a long way to go before

manufacturers and many of those designing their products fully grasp how to get the best out of ergonomics. “It’s a big bugbear of mine to hear manufacturers call something ‘ergonomic’ when really all they’ve done is add a bit of rubber to make the edges softer. Good design should be fundamentally ergonomic and yet some producers are introducing it too late in their product development process – sometimes even after it has already gone to market. This ‘bolt-on’ approach is the wrong way to go about it.”

One of the most obvious ways in which the research done so far on this subject has been harnessed is with accessible design. Meeting the needs of individuals with specific physical requirements has been given much attention by manufacturers in all sectors and it’s an area that Young believes has benefitted in a number of ways from new technology. One example in the exhibition is the Digital Accessible Information System (known as DAISY), which makes all manner of reading material available to blind or partially-sighted users by combining braille with modern eBook technology. →

methods used and applied to create usable, quality items.

Through prototypes, interactive displays and examples of ergonomically designed pieces – including the Sky TV remote and the CERN Control Room – the exhibition sets about the task of emphasising the importance that ergonomics plays in creating design for the real world.

Dr Mark Young, Senior Lecture at the Human-Centred Design Institute, Brunel University, says: “Ergonomics is about applying science and method to what might otherwise be assumed as common sense, you could call it ‘evidence-based design’ and this exhibition showcases the added value that ergonomics can bring to the design process.”

Of course, designers are trained to consider the people who will use the products, systems and environments they design, but they also have many other factors to consider. All too often commercial or time pressures mean that ergonomics principles are compromised or not given adequate priority until too late in the design process.

However, in recent years, crowded and competitive markets, raised consumer expectations, and new legislation have led to a more rigorous application of ergonomics. Fundamental themes of ergonomics, such as ‘user-centred design’, ‘user-friendly’, ‘inclusive design’ and ‘usability’ have become buzzwords within the design industry. Far from being a constraint on creativity, ergonomics methods can be applied at the earliest stages of the design process, defining user needs and identifying opportunities for innovation.

Above: **Observations, interviews and postural assessment tools were used by design studio PearsonLloyd in the development of the Design Bugs Out Commode for Kirton Healthcare Research**

WHY IS ERGONOMICS SO IMPORTANT?

Ergonomics deals with the interaction of technological and work situations with the human being. The basic human sciences involved are anatomy, physiology and psychology, these sciences are applied by the ergonomist towards two main objectives: the most productive use of human capabilities, and the maintenance of human health and well-being. In short, the job must ‘fit the person’ in all respects, and the work situation should not compromise human capabilities and limitations.

The contribution of basic anatomy lies in improving physical ‘fit’ between people and the things they use, ranging from hand tools to aircraft cockpit design. Achieving good physical fit is no mean feat when one considers the range in human body sizes across the population. The science of anthropometrics provides data on dimensions of the human body, in various postures. Biomechanics considers the operation of the muscles and limbs, and ensures that working postures are beneficial, and that excessive forces are avoided.

Our knowledge of human physiology helps to address two main technical areas:

WORK PHYSIOLOGY addresses the energy requirements of the body and sets standards for acceptable physical workrate and workload, and for nutrition requirements;

ENVIRONMENTAL PHYSIOLOGY analyses the impact of physical working conditions – thermal, noise and vibration, and lighting – and sets the optimum requirements for these.

Psychology is concerned with human information processing and decision-making capabilities. In simple terms, this can be seen as aiding the cognitive ‘fit’ between people and the things they use. Relevant topics are sensory processes, perception, long- and short-term memory, decision making and action.

“GOOD DESIGN SHOULD BE FUNDAMENTALLY ERGONOMIC AND YET SOME PRODUCERS ARE INTRODUCING IT TOO LATE IN THEIR PRODUCT DEVELOPMENT PROCESS”

Right and below:
Handheld tape measure
designed by Frazer
Designers for Fisco



Other clever ergonomic designs may be less high-tech in their final form, but certainly utilized extensive and highly detailed testing to develop the solution. A handheld tape measure which can be used easily with one hand, a remote control for Sky that through clever button arrangement and carefully considered shape, has become ubiquitous in homes up and down the country, and a passport control desk with a simple cut-away section which reduces strain for the UK Border Agency's document control officers.

Kitchen appliance manufacturers have been working for some time on improving user interfaces across their products to make them more intuitive and to better reflect user patterns, whilst bathroom products are increasingly focusing on natural shapes which are designed to be in sync with the user's body shape and movements.

And yet despite the important part that it can play in the ultimate 'usability' of a product, ergonomics seems destined to remain something of an unsung hero of the design world. Young explains: "Good ergonomic design is never really recognised. It's only if something is wrong that it gets noticed."

We write much on these pages about aesthetics and finding pleasure in creating spaces that look great, but designing in such a way that the environment around us is easier to negotiate and more intuitive to live with is every bit as important in making the world a better place to live in. **designer**

Ergonomics – Real Design runs until 7 March 2010 at the Design Museum, London (www.designmuseum.org)

ERGONOMICS – FURTHER INFORMATION

More details on ergonomics and the central role it plays in design can be found in the 'design techniques' section of the DESIGN COUNCIL website

www.designcouncil.org.uk

THE ERGONOMICS SOCIETY website is a mine of information from the international organisation for professionals using knowledge of human abilities and limitations to design and build for comfort, efficiency, productivity and safety. It also has a list of Ergonomics Society registered consultancies for any business or organization looking for ergonomics advice or input into a design project

www.ergonomics.org.uk

THE ERGONOMICS AND RESEARCH SAFETY INSTITUTE at Loughborough University primarily focuses on vehicle safety, but through its Applied Ergonomics Centre, also encompasses research into broader aspects of design

www.lboro.ac.uk/research/esri

