

Introduction

Context

Development of the exhibition

Designing an ergonomic(s) exhibition

Designing an ergonomic(s) exhibition: Experiences of a museum-university partnership project

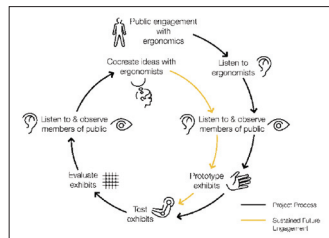
'Ergonomics: Real Design' was an exhibition showcasing contemporary examples of ergonomics across a range of domains and applications, held at the Design Museum in London from 18th November 2009 to 9th March 2010. The motivation for the exhibition was to celebrate the 60th anniversary of The Ergonomics Society (now known as the Institute for Ergonomics and Human Factors), and as such its objectives were to engage and enthuse practitioners, students and the public with the field of ergonomics. The project was sponsored by the Engineering and Physical Sciences Research Council (EPSRC) under its Partnerships for Public Engagement scheme (with additional funding from the Office of the Rail Regulator), with the partners being the Design Museum, Brunel and Loughborough Universities, and Laura Grant Associates.

In this paper, we tell the story of the exhibition project and its evaluation from the perspective of a museum-university partnership, highlighting the implications for future collaborations of this nature. For the Design Museum, this project represented a new and unique collaboration with higher education; meanwhile, this was also the first experience of a public engagement project for the investigators from the universities. As well as the partnership experience, we also include our own students' evaluation of the exhibition itself with relevance to their learning.

In 1949, ten scientists of differing backgrounds got together and formed an interdisciplinary research group to enable the study of human work (Waterson & Sell, 2006) – a group which has since evolved into today's Institute of Ergonomics and Human Factors (IEHF). Sixty years on, and although the science and the practice of ergonomics is arguably flourishing (the IEHF currently has around 1500 members worldwide), the wider uptake of ergonomics amongst related disciplines (e.g., design) and the general public seems to be more constrained. Ergonomists harbour grievances that those outside the profession mainly think of ergonomics as being 'all about chairs' – if they have heard of it at all. As an applied, interdisciplinary subject, it has direct relevance to the public as consumers, as workers, and as travellers. It is surprising that not more people take an active interest in ergonomics – especially given that it is colloquially referred to as the 'science of everyday life'. Thus the exhibition was conceived as a means of engaging a wider audience with the field.

The exhibition title – 'Ergonomics: Real Design' – emphasises the practical nature of the subject and its direct relevance to the key audience of the Design Museum. As one of the world's leading museums devoted to contemporary design, the Design Museum was identified by representatives of the IEHF as a potential venue for the exhibition some two years before the exhibition actually opened. Ergonomics is essentially a design discipline – its solutions typically relating to equipment, job or task design, and one of its key tenets being to integrate ergonomics principles in the design process. Indeed, the IEHF's publicity campaign for 2010 is to bring ergonomics and design closer together. We were especially pleased, then, to form a partnership with the Design Museum on this project.

We took an ergonomic approach to the development of the exhibition – finding out our users' (i.e., visitors') requirements, designing a product (exhibition) to suit, and then evaluating it when it went live to see how we had met our user's requirements (further details on the formative evaluation of the project can be



Exhibition development process – with anticipated future pathways marked in yellow

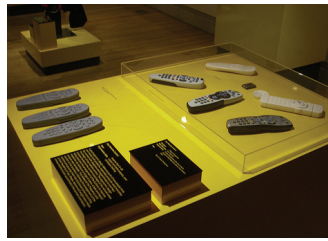
found in Grant & Williams, 2010, and Young et al., 2010a, 2010b). Our background work served to mould the structure of the exhibition. From the universities' side, we were keen to show the scientific rigour of ergonomics across a range of applications. The Design Museum picked up on the role of ergonomics in the design process, and saw value in highlighting the importance of prototyping and user trials as much as, if not more than, in the final product. Needless to say, both parties agreed that it was crucial to show contemporary applied examples over purely academic work – although we did also find the opportunity to exhibit a couple of applied projects from universities. For instance, students from the University of the West of England designed an ergonomic test rig for the prototype Bloodhound supersonic car cockpit, which had been tested by Wing Commander Andy Green himself (see pictures below).

The exhibits were classified into areas of 'home', 'work', 'transport' and 'medical', with examples ranging from remote controls to control rooms (see www.realdesign.org for more examples). Moreover, across these domains, the examples covered the gamut of physical, cognitive and organisational ergonomics, again with a view to widening appreciation of the breadth of the field. Finally, in most cases, the exhibits displayed prototypes from the user testing stages of the design process, and there were even exhibits of ergonomics tools used by designers (such as anthropometric software, and full-body simulation suits for osteoarthritis and old age). The use of scientific methods and data is probably one of the most pertinent messages that we as ergonomists can put across to the design community – as opposed to the familiar argument that 'it's all just common sense'.

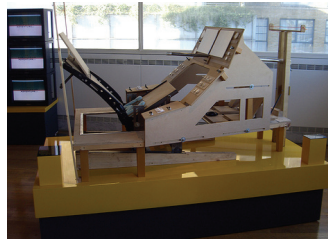
Evaluation of the exhibition

Whilst our summative evaluation of the exhibition focused largely on public museum visitors, (see Grant & Williams, 2010; Young et al., 2010a, for details), for the present paper's focus on higher education, we also took 20 of our undergraduate design students on a guided tour of the exhibition as a field trip for their Human Factors module. As the next generation of designers, the students were perhaps one of our most crucial audiences for this exhibition, since their perceptions of the value of ergonomics will be critical in ensuring its integration in the design process. The sample was selected from Product and Industrial Design programmes, and most had received at least some introductory teaching on ergonomics.

After the tour, the students completed a questionnaire (adapted from Bisset & Lockton, 2010) providing their ratings on four factors across the exhibition: their increased awareness of ergonomics, the relevance of the exhibition to their existing view of ergonomics, their confidence in describing the exhibition to a non-visitor, and their satisfaction with the representation of ergonomics in the exhibition. Ratings were given on a 10-point scale for each of these factors in five areas of the exhibition: introduction, home, work, transport and medical. The results are summarised in the table below, giving average ratings by area of the exhibition as well as by rating scale on the questionnaire. Reassuringly, the ratings were quite positive for these students, with an average score from all ratings on the questionnaire of 7.59 (sd = 1.49). Bearing in mind that these students already had a grounding in ergonomics from their degree programmes, the perceived added value of the exhibition to their studies seems to be high. This is supported by anecdotal comments afterwards, with students appreciating the practical examples of real-world case studies that have applied not only principles of ergonomics,



Two example exhibits – prototype development of the Sky remote control (left) and ergonomic test rig for the Bloodhound SSC cockpit



but also of good design that they have learned throughout their programmes.

| | Mean (SD) |
|--------------|-------------|
| Introduction | 7.49 (1.69) |
| Home | 7.84 (1.44) |
| Work | 7.53 (1.42) |
| Transport | 7.48 (1.4) |
| Medical | 7.61 (1.5) |
| Awareness | 7.31 (1.78) |
| Relevance | 7.68 (1.39) |
| Confidence | 7.41 (1.54) |
| Satisfaction | 7.96 (1.13) |

Ratings of the exhibition given by the student group

We also conducted a process evaluation, covering the project management and, in particular, the experiences of partnering with the Design Museum on the project. A debrief meeting for the project team was convened towards the end of the exhibition run. The meeting aimed to address the following evaluation questions:

- 1 What expectations did the academics and museum staff bring to the project?
- 2 What were the successes and challenges in working together to deliver the exhibition?
- 3 What learning can be captured for future projects?

It was clear that both parties were pleased with the exhibition, especially with the amount of media coverage it had gained. The partnership had not always been the smoothest, with some relatively large changes in the method of delivery throughout. In particular, the funding proposal had covered a Research Associate to do much of the exhibition design. This was in stark contrast to the Design Museum, who wished to have most of the creative control. The main outcome from the meeting was an agreement that clearer definition and communication of these roles between the different partners could have avoided tensions, especially as the Research Associate is not an abstract item on the list in the grant proposal, but an individual who was left in a very challenging and frustrating situation. This was exacerbated by the discrepancy in timescales the partners work to. The academics were keen to get started over a year before the exhibition opened, while the Design Museum team started work in earnest much later. On reflection, the tensions arose from the universities' efforts to impose a scientific methodology on what is ordinarily a creative curatorial process. Nevertheless, both sides agreed that there were positive learnings to come out of the relationship.

In terms of the exhibition, everyone cited it as a success. Some disappointment that larger or more interactive exhibits couldn't eventually be included was expressed, and the Museum's surprise at the positive reception from their visitors was discussed, to the point where Museum staff described being 'converted' from thinking that ergonomics is something you just do, to realising that it is a discipline with its own rigour and processes. The ergonomists suggested that they may have 'won over' the Design Museum to greater empathy for their way of thinking, and saw this as a success of the process. The ergonomists also described the 'halo effect' of the Design Museum, and the way that having the museum as a partner afforded them greater influence to start discussions within the Design community.

Conclusions

By all tangible yardsticks, 'Ergonomics: Real Design' was a success.

According to the Design Museum, visitor feedback exceeded their expectations (in our interviews, 92% of visitors rated the exhibition as 'good' or 'very good' and 78% said they would recommend it to a friend), footfall was up on previous quarters, the graphic design won critical acclaim, the exhibition attracted significant international media coverage, and at the time of writing, there are plans to tour the exhibition to other venues in the UK and around the world. Nevertheless, we did learn some lessons for future efforts.

One area of the project where the aim was not fully met was in creating dialogue between ergonomists and members of the public. Whilst this certainly took place with the ergonomists on the project team, opportunities to open it more widely were missed – this was highlighted as a weakness during the debrief discussion. Furthermore, the journey to deliver the exhibition on time and to a high standard was not always smooth, and the biggest lesson to be captured from the process was the need to clearly define roles from the very outset of such a partnership and to invest time in understanding each others' ways of working.

Despite these concerns, the exhibition was seen as successful by both the ergonomists and the Design Museum, with each partner recognising the perspective the other brought. Although a rocky road at times, the collaboration was ultimately a positive experience, and one which we hope can pave the way for future public engagement efforts in ergonomics.

Authors

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