

**Impact case study (REF3b)**

<p><b>Institution:</b> Birmingham City University</p>
<p><b>Unit of Assessment:</b> 34 – Art and Design: History, Practice and Theory</p>
<p><b>Title of case study:</b> Shifts in the seating market for niche communities through design research integrating postural analysis, user needs and manufacturing technologies.</p>
<p><b>1. Summary of the impact</b> (indicative maximum 100 words)</p> <p>Since 1989, Birmingham Institute of Art and Design (BIAD) has spearheaded a comprehensive seating design research programme that has resulted in specific and recognisable outputs and impacts.</p> <p>Key areas of knowledge have been developed through:</p> <ul style="list-style-type: none"> <li>• detailed studies of the operational needs of specific communities;</li> <li>• investigations into the postural requirements of user groups; and</li> <li>• exploring manufacturing technologies appropriate to the economic scale of production.</li> </ul> <p>The research has resulted in multiple innovations demonstrated through registered designs. All designs have been licensed to UK companies for the purposes of manufacture and distribution. From January 2008 to end June 2013, sales have comprised more than 30,000 seating units across three continents.</p>
<p><b>2. Underpinning research</b> (indicative maximum 500 words)</p> <p>BIAD's seating design research integrating posture analysis, user needs and manufacturing technologies has resulted in three separate design registrations and a US Design Patent encompassing:</p> <ul style="list-style-type: none"> <li>• Opus seating – for orchestral musicians (Birmingham City University, 1990; Rowe and Snell, 1993; Snell and Rowe, 2005);</li> <li>• SE range – for schools and colleges (Birmingham City University, 2007); and</li> <li>• Age Inclusive Seating (AIS) – addressing the needs of the elderly (Birmingham City University, 2013).</li> </ul> <p>The original work investigated the postural and ergonomic requirements of musicians in collaboration with the City of Birmingham Symphony Orchestra (CBSO) and other major orchestras and resulted in a registered design, Opus1 (Birmingham City University, 1990).</p> <p>To address the complex needs of the various orchestral musicians, the design incorporated complex curved and laminated components for the seat and back. The design was developed through a constructive dialogue between the manufacturers and researchers to create seating that could be manufactured at a competitive price. It also took account of the architectural sophistication of the new Birmingham Symphony Hall.</p> <p>The product was manufactured originally by Hostess Furniture Ltd and is currently manufactured and distributed worldwide by Amadeus Performance Equipment Ltd (Amadeus).</p> <p>A period of evaluation and further postural research followed resulting in an improved design, Opus 2 focusing on the flexibility of the chair's upper back component (Snell and Rowe, 2005). This design won a Birmingham Design Initiative Award in 2002 and was selected as an illustration of design and manufacturing capability for the Furniture West Midlands exhibition at the National Exhibition Centre in January 2006.</p> <p>Of particular significance in the research is the relationship of the lower back support with the upper back support. This was crucial in the development of the SE chair to meet the requirements</p>

**Impact case study (REF3b)**

of the BS EN 1729 standard published in 2007. The consequent design addressed not only postural issues, but also the need for several sizes to suit children of all ages as in the standard. Additionally, consideration was made of the market opportunities arising from the then government's 'Building Schools for the Future' initiative. This required a range of chairs that were attractive in appearance as well as being robust and affordable.

The design solution, resulting from a partnership between the researchers and manufacturers, is a modular system from which the six size variants can be produced from a limited number of components. By minimising tooling, assembly and storage costs the range of chairs meets the financial constraints of the sector. The chair has been produced and marketed by Hille Educational Products Ltd (Hille) since 2010.

The latest research has resulted in 'Age Inclusive Seating' (AIS) (Birmingham City University, 2013). Starting in 2011, exploration and analysis has been undertaken into existing care home chairs and the needs and ergonomic requirements of the elderly users as well as their carers. A major aim of this work is to design furniture that enhances the quality of life and independence of this group, leading to more people being able to live independently for longer. There is now an agreement with hf Contract Furniture to develop the product range commercially.

The research has been led by Professor Richard Snell working with David Rowe. Professor Snell was Head of the School of Fashion, Textiles and 3D Design at BIAD (2002 to 2009) where he continues to research and teach. Now a freelance designer, David Rowe was Course Director for Furniture Design and employed from 1 February 1983 to 30 September 2002 and 30 September 2003 to 27 January 2004, as well as being a visiting tutor for various times between 2004 to 2012.

**3. References to the research** (indicative maximum of six references)

Birmingham City University (1990) UK Design Registration 2009754 (20 September 1990) [Design registration for Opus1]

Rowe, D. and Snell, R. (1993) *Chair* US Patent Des. 336,795 (29 June 1993) [USA design registration for Opus1]

Snell, R. and Rowe, D. (2005) *OPUS2 Chairs for Musicians*, Birmingham, ISBN: 1900813084 [Returned in RAE 2008]

Birmingham City University (2007) European Design Registrations 000756127-0001# and 000756127-0002# Available from <http://eSearch.oami.europa.eu/copla/design/data/000756127-0001#> and <http://eSearch.oami.europa.eu/copla/design/data/000756127-0002#> [Accessed 24 September 2013] (SE chair design registrations) [Returned in RAE2008]

Birmingham City University (2013) European Community, *Seats [furniture] (part of -) 002284406* (Age Inclusive Seating (AIS) design registration) [Returned in REF2014]

Please note that in 2007 Birmingham City University changed its name from University of Central England in Birmingham (UCE).

Necessarily some of the details relating to these projects are commercially sensitive and difficult to make accessible [**See Snell REF Output 1 for portfolio**]. Further confidential reports on investigations conducted during this work including preliminary design sketches, production drawings, product photographs and design registration documents for the resulting products can be made available to REF reviewers on request from BIAD.

**4. Details of the impact** (indicative maximum 750 words)

The seating design research has had significant impact across a number of areas including market

**Impact case study (REF3b)**

and business expansion and development; sales; user benefits; design for manufacture and corporate identity.

**Market and business expansion**

Licensing the designs has proved to be a major spur to developing new products and markets for the licensee. This includes a measurable effect on jobs and profitability, not only for the principal manufacturer, but also subcontractors. Licensee of the Opus designs, Amadeus ([www.amadeus-equipment.co.uk](http://www.amadeus-equipment.co.uk)), based in Battle, Sussex, has grown from a sole trader to a business employing five people. It subcontracts to build the frames for the chairs, thus safeguarding further jobs and turnover.

In the case of the SE chair licensee, Hille ([www.hille.co.uk](http://www.hille.co.uk)), it was purchased from the administrators in 2009 by the injection moulding company that had developed the plastic components of the chair. The new company brought together the expertise of both resulting in significant synergies, reducing the time to market, providing scales of economy and decreasing manufacturing costs. Relocating to Ebbw Vale, Gwent, South Wales, the company now employs 64 people in an area of high unemployment. [Ref 1]

Licensing and the development of the AIS range is proving to be a catalyst for the development of hf Contract Furniture ([www.hfcontracts.com](http://www.hfcontracts.com)). It will be the first home-grown design for the company, resulting in a new approach to the care home marketplace as well as opening different markets, such as those in China. [Ref 2]

**Sales** [text removed for publication]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

**User and organisational benefits**

For individual users the postural and ergonomic features contribute to wellbeing. For the organisation the visual language enhances the appearance, appropriateness and context of its environment. For example, still in use in the Symphony Hall, Birmingham, the Opus seating has provided user benefits in terms of players being able to rehearse for longer as well as a contemporary design that complements its surroundings. (<http://birminghamtoolkit.com/case-studies/visitor-economy/cbs> shows the current CBSO conductor, Andris Nelsons, talking about the orchestra with Opus seating in the background.)

“I am firmly of the opinion that Opus chairs are the market leader for orchestral musicians.” [Ref 4]

**Impact case study (REF3b)**

“The Opus Chair is, in my opinion, just fantastic. It provides excellent support and comfort for me as a 'cellist and is always my first choice of chair....” [Ref 5]

The sleek appearance of the SE chair has proved to be very popular with the new academies. It too has provided user benefits with children sitting still for longer and improving their concentration. [Ref 6, Ref 7]

**Modular design**

In the case of the SE seating, by producing the chair in two moulded parts (instead of the more common single component), the number of moulds required to produce the six sizes of the BS EN 1729 standard is three. Clearly, six different moulds would be required for a single component version. The moulds are also smaller. Added together, this results in a substantial reduction in tooling costs and the level of pre-production investment required.

**Corporate identity**

The final area of impact is that of the seating designs and values being used to reinvigorate the whole of a firm's design led ethos. Again this is particularly evident in Hille, as evidenced by its website [www.hille.co.uk](http://www.hille.co.uk), as well as its liveried delivery vans that feature the SE chair.

**5. Sources to corroborate the impact** (indicative maximum of 10 references)

Ref 1: Sales Director, Hille Educational Products Ltd, Identifier 1

Ref 2: Director, hf Contract Furniture Limited, Identifier 2

Ref 3: Confidential sales information held on file by Birmingham City University and available for inspection if required

Ref 4: Director of Orchestral Management, City of Birmingham Symphony Orchestra, Identifier 3

Ref 5: By email from a City of Birmingham Symphony Orchestra musician, held on file by Birmingham City University and available for inspection if required

Ref 6: Business Manager, St Mary's High School, Identifier 4

Ref 7: Equipment Officer, Herts Supplies, Identifier 5