

Institution: Arts University Bournemouth		
Unit of Assessment: D32 Art and Design: History, Practice and Theory		
Title of case study: Understanding the value of plastics		
Period when the underpinning research was undertaken: 2006 to 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Professor Susan Lambert	Role(s) (e.g. job title): Chief Curator, Museum of Design in Plastics	Period(s) employed by submitting HEI: 2006 to date
Period when the claimed impact occurred: From July 2013 onwards		
Is this case study continued from a case study submitted in 2014? N		
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Plastics are ubiquitous within museum collections of modern artefacts. They can also be among the least stable, with some material types deteriorating abruptly and dramatically. Despite their bad press in popular media plastics artefacts represent some extremely valuable cultural and artistic heritage. Lambert's research has led to the development of resources that provide museums, especially those with limited financial, scientific or technical resources, with tools to identify plastics types, develop appropriate storage and conservation strategies and to understand the history and significance of their collections. It has also enabled researchers, designers and artists, and the public to appreciate the valuable role that plastics play in modern life.</p>		
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>The underpinning research was undertaken by Lambert, Chief Curator of the Museum of Design in Plastics, (MoDiP), the only accredited UK museum with a focus on plastics, hosted at Arts University Bournemouth.</p> <p>For over half a century a greater variety of objects have been designed and made in plastics than in any other materials group. In 2007 Lambert secured JISC Enriching Digital Resources project funding (£79,732) to create the world's largest database of these objects, amounting to 29,486 images. The outputs were peer reviewed by members of the Plastics Historical Society and the UK Centre for Materials Education, the leading organisations in this subject area. These items provide a living history of how plastics have and continue to drive the evolution of design and push the development of new plastics.</p> <p>Research underpinning the database demonstrated that few museums afforded the documentation of plastics the same respect and rigour as more traditional materials. Therefore, Lambert embarked on an on-going programme of research to support the many curatorial staff working in the heritage sector, who do not have a scientific background and have limited plastics' expertise. It focused on three key projects which all form part of a Plastics Subject Specialist Network (PSSN) resource.</p> <p><i>A Curator's Guide to Plastics</i> was developed through an iterative process with its potential users. Four national workshops were attended by over 100 plastics' experts, academics, curators and conservators. These were held at the Design Museum, London, in partnership with the 20th Century Society; the Scottish National Gallery of Modern Art, Edinburgh, with the Modern</p>		

Materials in Collections Scotland; Tate Liverpool with the UK Centre for Materials Education, University of Liverpool; and Wakefield Museum with the Social History Curators' Group. This online resource was peer-reviewed by six experts with complementary knowledge in the field of plastics. It enables better identification and curation of plastics objects; demonstrates how plastics have increasingly become significant; and suggests approaches for their interpretation and presentation.

Creation of the *Curator's Guide* revealed that museum professionals had difficulty identifying particular plastics involved in the manufacture of plastics objects. This led Lambert to research effective methods of imparting this type of information resulting in the *Identifying plastics toolkit* with supporting online components, and peer reviewed by the PSSN. The resource includes details of different manufacturing processes which are seldom described but which can help identify the material of the object.

Preservation of plastics remains an underdeveloped area in conservation, researched mainly by scientists working with expert conservators, including significant international research projects such as the EU-funded *PopART* (2008-12) and the Getty's on-going *Preservation of Plastics*. Lambert's research instead focused on resources to support day-to-day curatorial practice. *Confronting plastics preservation* provides an online resource to support the preservation of plastics objects across the heritage sector. It was developed in a series of collaborative stages, each one involving the heritage community including a seminar held at the Museum of Childhood, Bethnal Green, London, at which papers on a range of collections, including early plastics, fine art, social history and a specific textiles area: swimming costumes, were presented and subsequently published as videos in the resource. The resource was peer reviewed by polymer scientists at the Victoria and Albert Museum, and a 3D art conservator at Tate, who worked previously at the British Museum.

Lambert also researched and devised a ground-breaking series of curated exhibitions in which the primary focus was plastics, including MoDiP's inaugural exhibition, *Ways of seeing plastics* which identified a number of possible approaches such as materials, manufacturing processes, date, product type, form, theme, context and subject.

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

R1) Book Chapter: Lambert, S. (2012). Extreme collecting, challenging practices for 21st century museums. In: Were, G. and King, J. (eds). *Extreme collecting: challenging practices for 21st century museums*. Oxford: Berghahn. [Returned to REF 2014].

R2) Website: Lambert, S. (2013). A curator's guide to plastics. [online]. Available from: www.modip.ac.uk/projects/curators-guide funded by Museum, Libraries and Archives Council (£12,000). [Returned to REF [2014].

R3) Artefact: Lambert, S. (2013). Identifying plastics toolkit. Details can be found at www.modip.ac.uk/projects/toolkit funded by Arts Council England, (£4,980)

R4) Book chapters: Lambert, S. (2014). Bic Cristal Pen, France (Société PPA, 1950); Polypropylene chair designed by Robin Day, 1960-1963. In: *Iconic designs 50 stories about 50 things*. London: Bloomsbury. [Returned to REF 2021].

R5) Website: Lambert, S. (2014-2019). Confronting plastics preservation. [online]. Available from: www.modip.ac.uk/research/confronting-plastics-preservation funded by Arts Council England, (£9,900). [Returned to REF 2021].

R6) Exhibition [physical and online]: Ways of Seeing Plastics (2007). Museum of Design in Plastics. <https://www.modip.ac.uk/exhibitions/ways-seeing-plastics>

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

The primary aim of the research was to transform curatorial workforce skills and knowledge of plastics across the heritage sector. But it has also enabled researchers, designers & artists, and the wider public to better understand how the plastics group of materials has shaped and benefited the modern world from manufacturing to medical and sociological advancements.

Transforming workforce skills around the curation of plastics

Lambert's research was primarily disseminated through a comprehensive series of online guides. These were the first, free, globally available resources to support the curation of the many plastics objects in heritage collections. They facilitate correct identification of the hundreds of different plastics types from which objects have been made, rather than documenting them simply as 'plastic'. *I consult your website a lot and find it really helpful. In fact, it was suggested to me as a "go to" source when I started working on this project. (R1)*

The environment in which a plastics object is kept is the single factor that has the greatest impact on its life expectancy. By detailing the different conditions required by different plastics types, the resources have supported heritage professionals in understanding that what is best for one plastic can be bad for another. This has led to better care of plastics within collections, which will support the preservation of such objects for future generations.

MoDiP's online resources are very valuable in this respect. They provide museums, including those with limited financial or technical resources, with tools to identify plastic types, develop appropriate storage and conservation strategies and to understand the history and significance of their collections. Analytical tools for identifying plastic type such as spectroscopic equipment are very expensive and need specialised training. This is beyond the scope of many museums, and if plastic type cannot be identified then planning collections care is very difficult. The "Identifying plastics toolkit" from MoDiP is a very simple and accessible resource that provides a workflow to identify the plastic type of an object based on material properties such as transparency or colour. Once the plastic type has been identified, further information about the history and properties of each plastic is provided. (R2)

The research was largely disseminated through the portable toolkit. It has been used by museums as diverse as the Priest's House, Wimborne, a social and local history museum (autumn 2013); the Wimbledon Lawn Tennis Museum, London; the Design Museum, London (2015). After a recent spell with the South West Museums Service, it is currently with the Whitworth Art Gallery, University of Manchester. It also toured Swedish museums under the auspices of the Swedish National Heritage Board (2016). Staff from Wimbledon commented 'We thought the toolkit was brilliant and it really helped us become more confident working with plastic materials in our collection'.

Further dissemination was carried out through a series of workshops directly targeted at the workforce including the South West Museum Skills Programme (2014). Participants said that they 'had learnt new skills, which they felt able to practice and share with their colleagues' and 'felt inspired to do things differently'. The toolkit also informed other activities in the UK and beyond to support heritage professionals:

The MoDiP online plastics educational materials provide an excellent and comprehensive resource for those interested in the subject of plastics in heritage collections. At the V&A we used the Identifying Plastics Toolkit to underpin our non-analytical method of identification of plastics for curators and conservators. We have since given training sessions in-house and to museum personnel from all over the United Kingdom. (R3)

Enabling researchers, artists and designers, and the wider public to appreciate the significance of plastics in the modern world

Researchers

Lambert's work has impacted on researchers through such activity as the 2015 major international conference *Provocative Plastics* and the publication of selected papers, Palgrave Macmillan, 2020 which attracted a large number of academics and experts from the plastics industry by exploring issues around the nature of plastics design and consumption; the development of the Modern Materials Artefacts MSc at the University of Glasgow (2018); and doctoral thesis dissertations at the Universities of Brighton (Dennis), Institut für Konservierungswissenschaften, Staatliche Akademie der Bildenden Künste, Stuttgart (Keller), University of Technology, Sydney (Isaac). The research underpinned MoDiP's HEMG award from Research England in recognition of the *Museum's unique and significant contribution to national and international research and scholarship. (R6)*

Artists & designers

A programme of *Meet the Maker* workshops held at AUB has introduced designers from across the UK to plastics manufacture. For example, one designer noted *We worked with MoDiP to understand SLS 3D printed device enclosures which helped us successfully pitch for a pilot with Watford Council to monitor authorised and unauthorised use of taxi ranks and resident parking zones. 160 such devices are currently being tested. (R5)* Two residencies supported by Arts Council England realised innovative artistic projects that explored the history of plastics through for example musical theatre (Wimhurst, *w-Rap*, 2018; *Synthetica* 2019) performed in Poole and London; and photography, (Neudecker, *Plastic Vanitas*, 2016), which toured widely in the UK and Germany and featured at the Plastics Heritage Conference, Lisbon, 2019. **(R9)**

Wider public

Drawing on Lambert's research, MoDiP's comprehensive exhibition programme (29 exhibitions within the period) has highlighted to the public the benefits of plastics to modern life. For example, *Threads: plastics wearing well* (2015): looks at some of the uses of semi-synthetic and synthetic fibres over the last century in everyday and specialist clothing; *Design for Childhood* (2016): explores a number of areas where designers have utilised the specific properties of plastics materials to create products that fulfil the needs of both the child and the care giver. *Polyphonic: music through plastics* (2018): explores plastics' role in democratising the playing and enjoyment of music; *Revolution: environmentally conscious design in plastics* (2019): looks at the use of recycled and upcycled materials, alternative sources of raw material feedstocks, and ways in which plastics objects can help to prevent environmental damage. Members of the public commented that the exhibitions have '*shown us a much more positive angle on plastics*' and '*illustrated how indispensable plastics has become in everyday life and how essential it is to develop affordable recycling/disposal facilities.*' **(R4)**

All the exhibitions are available on the MoDiP website which has been an important tool for disseminating Lambert's work. Public and online attendances have significantly grown over the

period with online visitor figures of 148,000 in 2019/20 and from 221 countries across the world during the period. **(R7)**

Lambert's work has led to her being invited to contribute to two BBC Radio 4 programmes (2018), including 'Costing the earth'. **(R8)** These questioned the prevailing negative attitude to plastics offering a more balanced perspective, recognising the huge benefits to life they have realised. She also represented museums in a debate entitled 'Sea change: how can museums turn the tide on ocean plastics' at the Museums Association's conference (2019). Lambert is quoted on the international affairs think tank, Chatham House's Hoffmann Centre for Sustainable Resource Economy Reinventing Series: 'Plastics more broadly I would say, have changed the world, both for good and for bad. There is no possibility of going back to a world without plastics, so it's essential we find a way to live with them so they don't do damage to the world'. **(R10)**

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

Statements

R1) Curator of Technology, National Museum of Scotland. [Correct identification of plastics].

R2) Associate Professor of Sustainable Heritage, UCL, and leader of the ERC funded project, 'COMPLEX: The degradation of complex modern polymeric objects in heritage collections system dynamics approach'. [Supported heritage staff from non-scientific backgrounds in the identification of plastic material type].

R3) Conservation Scientist, Victoria & Albert (V&A) Museum. [Supported heritage professionals in developing skills around plastics].

R4) Comments from General Public. [Highlighted the benefits of plastics to modern life].

R5) Director, IoT Solutions Group. [Introduced a wide range of designers to plastics manufacture].

Corroborating references

R6) HEFCE/HEMG award letter [The research contributed significantly to HEMG award].

R7) Google tracking analytics data. [Highlighted to the wider public of the benefits of plastics to modern life].

R8) i) The First Flush of Plastics, part 1 of a 3-part series, Plastic Fantastic, broadcast 21 May 2018, Radio 4: ii) Plasticphobia, a Costing the Earth programme, broadcast 24 October 2018, Radio 4. [Highlighted to the wider public of the benefits of plastics to modern life].

R9) W-rap and Plastic Vanitas publicity. [Inspired artists to appreciate the significance of plastics].

R10) <https://hoffmanncentre.chathamhouse.org/events/2018/3/reinventing-the-plastic-bottle/> - Voices on Plastic [Questioned the prevailing negative attitude to plastics offering a more balanced perspective, recognising the huge benefits to life they have realised].