

Waste Material Library – a Resource for Designers to Encourage Material Play

Lucy Robertson

Heriot-Watt University, UK

Abstract

Understanding material qualities and properties is imperative for designers. This paper showcases a material library built from waste material as a learning resource for designers to help consider what existing materials can be utilised in design projects. It is estimated that roughly 80% of the environmental impact a product will have in its life cycle is decided during the design stage (Graedel, Comrie and Sekutowski, 1995). Although the ultimate aim is to eliminate waste all together by creating a circular process which allows creations to either be re-used or return to the earth as food (Barber, 2019). As Katie Treggiden highlights 'we need to deal with the legacy of 200 years of "take-make-waste', 'the resources we need are no longer in the ground, but in landfill' (2020) and that 'by recategorising waste as a raw material, we can slowly start to bend that straight line (of a linear economy) around into something more circular' (ibid) changing waste from a 'fact' into a 'category' (Treggiden, 2020b)(Katie Treggiden, 2020). (Katie Treggiden, 2020b) Building on the concept of a materials library from the 'Institute of Making' this library will be based at Heriot-Watt University, School of Textiles and Design and will be documented online 'enabling users to experience at first hand the relationships between materials and tools that constitute processes of making' (The Institute of Making, 2020). Mark Miodownik reiterated the importance of materials for thinking to allow material scientists, engineers and designers to 'take them apart, to analyze them, to muck about, and to practically try out new things' in order to think through material play and generate ideas using both hands and head (Miodownik, 2013). A similar approach has been applied to garments in a study by Bigolin et al. (2022) exploring design methods to reevaluate and resignify waste materials and garments through photographic documentation, 'material inventories' and 'garment ontologies'. Using existing waste garments they explored ways of investigating the deeper material qualities and potential 'extended life cycles' (ibid). Building on this research the researcher plans to document the waste materials in through photography and video and conduct material experiments using processes such as sublimation printing and heat processes to explore initial starting points for how to use materials and create further materials from them for use in garments and products.

The waste material library project will be conducted using a Research through Design (RtD) methodology. Durrant et al. (2017) when introducing the RtD conference explained that RtD has been 'used for over 20 years within the design community as a distinct term to describe practice-based inquiry that generates

Corresponding author's email:

Lucy.Robertson@hw.ac.uk

transferable knowledge'. Like Candy (2006) states, 'Practice-based Research is an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice'. This statement suggests that practice-based research shapes the wider research and vice versa, creating a circular process. RtD explicitly acknowledges the creative phase in research (Jonas, 2015, p. 26) where the researcher utilises their practice, in this case, material documentation (through video and photography) and material play to create a learning resource and range of prototypes as a form of material research. RtD allows prototyping and the designer's insider perspective of their practice to inform research plans, activities and outcomes (Jonas, 2015, p. 31). RtD process will be applied to this research to answer two initial research questions:

1. How can we build a learning resource of materials to inform the consideration of waste at the beginning of design projects?
2. What initial prototypes/ further materials can be created through applying making processes to the materials?

Once the library has been built (initial containing around 100 waste materials) this will continue to be added to as an ongoing process. The library will then be available as a learning resource across the School of Textiles and Design courses initially explored by students through the MA Fashion and Textiles course as a way to consider a range of materials and processed using waste. This use of the library will form stage 2 of the research and provide further findings of the benefits a material library can provide designers.

Keywords: waste, materials, play, sustainability.

DOI: 10.57649/GFC.978-989-54263

ISBN: 978-989-54263-3-1

References

Barber, A. (2019) 'Conscious, ethical and cruelty-free: a guide to the language of sustainable fashion', *The Guardian*, 19 December. Available at: <https://www.theguardian.com/fashion/2019/dec/19/conscious-ethical-and-cruelty-free-a-guide-to-the-language-of-sustainable-fashion> (Accessed: 15 June 2022).

Bigolin, R. et al. (2022) 'Material Inventories and Garment Ontologies: Advancing Upcycling Methods in Fashion Practice', *Sustainability*, 14(5), p. 2906. doi:10.3390/su14052906.

Candy, L. (2006) 'Practice Based Research: A Guide'. Creativity & Cognition Studios University of Technology, Sydney. Available at: <https://www.creativityandcognition.com/resources/PBR%20Guide-1.1-2006.pdf> (Accessed: 10 October 2018).

Durrant, A.C. et al. (2017) 'Research Through Design: Twenty-First Century Makers and Materialities', *Design Issues*, 33(3), pp. 3–10. doi:10.1162/DESI_a_00447.

Graedel, T.E., Comrie, P. and Sekutowski, J.C. (1995) 'Green product design', *AT&T Technical Journal*, 74, pp. 17–25.

Jonas, W. (2015) 'A CYBERNETIC MODEL OF DESIGN RESEARCH', in *The Routledge companion to design research*. Oxon: Routledge, pp. 23–37.

Miodownik, M. (2013) 'The Institute of Making', *Materials Today*, 16(12), pp. 458–459. doi:10.1016/j.mattod.2013.11.004.

The Institute of Making (2020) About - Materials Library, Institute of Making. Available at: <https://www.instituteofmaking.org.uk/materials-library/about> (Accessed: 15 June 2022).

Treggiden, Katie (2020) The resources we need are no longer in the ground, but in landfill, *Dezeen*. Available at: <https://www.dezeen.com/2020/10/28/circular-economy-katie-treggiden-wasted-when-trash-becomes-treasure/> (Accessed: 15 June 2022).

Treggiden, Katie (2020b) *Wasted: When Trash Becomes Treasure*. Thames & Hudson. Available at: https://books.google.co.uk/books?id=GWp_zQEACAAJ.