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Mundane Matters: Laundry, Design and Sustainability

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Abstract

Laundry is known to be a highly resource demanding and polluting practice. Many approaches to reducing impacts from laundry do not recognize the diverse reasons why laundry is carried out. Drawing on a subset of findings from a longitudinal laundry study this paper considers design opportunities to challenge laundry behaviours.

Introduction

Hidden away from public view and set within the privacy of the home, laundry has been consistently documented as a highly resource demanding stage in a garment's lifecycle (Allwood *et al.*, 2006; Fletcher, 1999; Franklin Associates, 1993). Major impacts arise from burning fossil fuels to generate the electricity needed to heat the water and air in washing machines and tumble dryers (Maden *et al.*, 2007). Further to this, laundering clothes is a direct cause of microfiber pollution in aquatic environments (Bruce, *et al.*, 2016). While the challenges of laundry have become more widely documented in recent years (WRAP, 2012), in the field of fashion and textiles design research, laundry remains a largely underexplored area with exception to Fletcher (2008:74-92; 2001; 1999) and Earley and Fletcher (2003).

In considering the role of design in support of a circular economy and principles of resource efficiency, this paper considers some of the challenges and opportunities in designing to mitigate against impacts from laundry. It does so through examining how the routines and behaviours which help to construct laundry practices are influenced by garment design. In particular, it draws from a one-year laundry study to explore elements that influence laundering frequency and elements that influence laundry processes and methods.

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Mundane Matters

Laundry is a mundane, habitual and highly routinized social practice. At the same time, it is an inconspicuous act of resource consumption that occurs in the private and domestic realm. As a collective activity, it annually uses up massive quantities of finite resources such as energy and consumes valuable fresh water, and in the process, contributes towards greenhouse gas emissions, global warming and climate change. Within a garment's lifecycle, continual washing and drying is estimated to account for 25% of the overall carbon footprint (WRAP, 2012). Beyond resource use, laundering can also be linked to a range of other environmental impacts such as solid and hazardous waste generation, air and water pollution including eutrophication, toxicity impacts and biodiversity loss (Bain *et al.*, 2009:6).

Of particular significance to resource flows, a growing body of research has shown that clothes washing also causes massive scale microfiber pollution in oceans and other aquatic environments across the globe (Browne, *et al.*, 2011). Synthetic microfibers (a subcategory of microplastics) derived from materials such as polyester, nylon, acrylic etc., are drawn out of clothing during washing machine cycles and then travel to waste water treatment plants where a large amount are removed but a significant proportion flow into marine habitats (Browne, *et al.*, 2011). A single polyester jacket can shed between 26 mg to 4,300 mg of microfibers per wash, depending on the wash cycle, jacket type and garment age (Bruce, *et al.*, 2016:40). Amongst other reasons, this is significant because synthetic microfibers are easily able to enter the food chain due to their size.

In addition to the embodied impacts of laundering as a process, it is also implicitly connected to overall garment quality, durability and lifespan (WRAP, 2015). How a garment is cared for, for example, how it is washed, sorted and separated from other garments, what temperature it is washed at and how it is dried all have varying degrees of impact on not just the fibre quality of a garment, but also the colour fade and overall shape and structure of the garment during active use. The more a garment is washed, the more exposed it is to degradation. Highest damage risks come from when garments are not sorted and separated appropriately, and when garments are put into inappropriate cycles. However, despite the risk of damage, most people do not spend much time sorting their laundry. An Ipsos MORI survey of 7,086 adults in the UK found that only 28% always sort their washing between those that require a longer wash and those that do not and only 36% always sort between hot and cold washes (WRAP, 2012).

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As a social practice, the scale of impact from clothes washing is closely connected to individual laundry routines and behaviours within the home, however previous research into reducing impacts from laundry has been cautious to directly explore this due to complexities in social behaviours (Bain, *et al.*, 2009). As such, many initiatives that seek to reduce impacts from laundry focus on technology efficiency and small scale changes in behaviour - rather than possibilities for challenging the more deeply rooted social and cultural reconstructions that laundry is understood to represent (Shove, 2003). From the perspective of fashion and textiles design, options to challenge laundry behaviour on deeper social and cultural levels emerge when laundry practices are better understood in terms of the reasons why people launder.

In research on laundry conventions and cleanliness, Jack (2013) concluded from a study in which 31 people were tasked to go without washing their jeans for three months, that shifting collective conventions is more effective for making environmental savings than challenging individual routines. Jack (2013:20) found that alternative laundry practices developed as the new routines of not washing set in and further noted that recognition should be given to 'individuals ability to embrace awareness and reflexivity in the reproduction of consumption practices'. Further to this, in a different piece of research that focuses on sustainable clothing design, Laitala and Boks (2012) argue that there is great potential for designing clothing to encourage more sustainable use and laundry, however more innovation is required into clothing design and research on attitudes, values and motives linked to laundry behaviour.

Longitudinal laundry study

Reducing the frequency of laundry by wearing clothes for longer between washes would help to reduce resource consumption and the associated impacts (Bruce, *et al.*, 2016; WRAP, 2012). To further understand how fashion and textiles design can challenge the construction of laundry practices and related behaviours, further research into the connection between garment design and laundry behaviour is needed. A one-year laundry study was set up to explore how and to what extent the design characteristics of eight garments, as visualised in Table 1 and referred to as laundry probes, influenced the way in which they were laundered. The eight garment designs were developed from previous research by the author (Rigby, 2010) and duplicated to create two sets as a basis for comparison. The study involved sixteen female participants, eight located in Bristol and eight located in

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London. The participants were asked to wear the study garments as and when they wished without special consideration or treatment, and to record the use and laundry of each in a diary whilst also comparing it to a similar garment they already owned. The participants were recruited from responses to notices placed in online platforms, community noticeboards and existing networks, and selected after completion of a questionnaire to ensure the study garment they would be given was appropriate to their lifestyle and clothing preferences. Each participant was given an information sheet about the study which explained the intention to understand more about laundry behaviour, however the specifics of linking laundry behaviours to sustainable design were not mentioned to avoid bias in behaviour. The identity of each participant in the study was anonymised through the use of a data coding key. The results discussed here draw on a subset of findings from the study where there is a dual focus on elements that influenced laundry frequency and elements that influenced laundry processes and methods. A qualitative and empirical approach to analysis is used to enable focus on the experiential and sociocultural aspects of laundry as a practice which are less accessible through quantitative and statistical analysis.

Sensing cleanliness

Physical elements as motivators to launder were chiefly associated with senses, i.e. when the garments appeared visibly dirty or developed an odour. Freshening garments emerged as one of the key motivators to launder; it was connected to confidence and satisfaction. This is in keeping with wider laundry behaviours beyond the study, in which research shows that 75% of adults put items in the wash to freshen them, even if not visibly dirty (Caines, 2011). Whilst this is unsurprising, it is significant to note that despite how often a garment was worn, when garments did not appear dirty because soiling was hidden by colour, texture or grain of the material, and when they did not develop odours, perhaps because they were not in direct body contact, laundry was less likely to be performed. Responses to sensory perceptions were underpinned by feelings, as B5 commented ‘when it didn’t look dirty I felt better about not washing it’. This indicates that how cleanliness in clothing is understood is subjective and relational to how garments are perceived. It also suggests that it is a concept which evolves and redevelops across cultures and generations. This is supported by the view of Douglas (1966:8) who states ‘our idea of dirt is compounded of two things, care for hygiene and respect for conventions. The rules of hygiene change, of course, with changes in our state of knowledge’.

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Image	Description	Image	Description
	Navy blue sleeveless shirt with a centre front opening made from waxed cotton.		Cream three quarter length sleeve top made from merino wool jersey.
	Navy blue apron with adjustable popper fastening, made from wax cotton.		Navy blue trousers, dropped crotch point and relaxed fit on waist, made from merino wool serge and half silk habotai lining.
	Black skirt short in length with a concealed pocket and elasticated waistband, made from wool tweed and lining with silk habotai.		Cream hand knit tank top made from Wensleydale wool.
	Navy blue and black wrap around cardigan made from boiled wool jersey with a ribbon made from duchess silk satin, raglan sleeves.		Black three quarter length dress with cotton funnel neck, made from duchess silk satin and lining with silk habotai.

Table 1: Laundry probes

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Aesthetics and longevity

During the study, laundry was not only influenced by concepts of cleanliness - the aesthetic of a garment also played a large part in how often it was laundered. For example, when a garment was no longer physically pleasing because it had stretched, a seam had twisted or bodily imprints were left in the material, it was more likely to be washed because it looked 'not quite right'. Participant B8 commented, 'sometimes I just washed it when it stretched a bit and I wanted to make it feel tight again', while participant B1 noted, 'I wash it mainly because it loses shape more so than anything else. I know it sounds weird but I don't like it when garments begin to sag in places. In this top it begins to sag in the elbows and through the width of the body...'. Participants laundered to remove traces of use and restore their garments to near original condition. In contrast, when garments did not appear 'worn' and retained their aesthetic they were less likely to be washed. Similar findings were reported by Gwilt *et al.* (2015:128) in a recent survey with focus on practices of care where garment maintenance was found to be influenced by a desire to keep garments in their original conditions. This suggests scope for designers to focus on working with materials, styles and silhouettes that resist stretch and preserve the original shape and fit of the garment.

Perception and Association

Motivators for laundry processes were easier to understand than motivators for laundry frequency because they are more pragmatic and rooted in convenience, and mainly responded to the physical elements of the garments. Fibre properties and material characteristics of a garment was one of the chief physical motivators to instigate or avoid particular laundry processes. In the study, the garments made from waxed cotton (aprons and shirts) and the sateen silk dress were most obviously affected by this. They were unsuitable for machine washing and tumble drying as the shirt and apron had a wax coating, and the dress was made from delicate silk, and during the year they were not machine washed. Indeed, they also *looked* unsuitable for machine washing. The materials they were made from looked specific and occasional and less likely to be used for casual every day dress.

Yet in contrast to this, the wool skirts in the study were also unsuitable for machine washing because of the particular quality and weave of the wool they were made from. However, the material looked less occasional and more suited to casual every day wear, and participant L2 did machine wash it, which she explained that this was linked to habit. Likewise, participant B8 machine washed a wool jersey cardigan which was hand wash only.

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It was made from wool jersey and was also more suited to every day dress than occasional dress. Yet, it is likely that if these materials looked more occasional, as did the waxed cotton garments and silk dress, the participants would have made a clearer mental distinction between more suitable laundry processes, and would have been inclined to not machine wash them and to seek alternative methods. As in the cases of the participants who were given the wax cotton garments and silk dresses, their alternative laundry routines for these garments led to lower impact laundry routines in relation to the study garments. This insight from the study evidences that the way in which materials and textiles are perceived and associated plays a significant part in the way garments are laundered. This makes a case for further research into the relationship between garments, the materials they are made from, how materials are perceived and how material perception is linked to laundry knowledge. It also highlights opportunities for designers to innovate around perceptions of material types of encourage alternative laundry practices. As discussed earlier, Jack (2013) found credit should be given to the ability of alternative laundry practices to develop when existing routines are challenged.

Conclusions

Transitioning towards a circular economy requires systemic changes in the way resources are managed and used in the fashion and textiles industry. Clothes laundry plays a significant part in this scenario as an inconspicuous yet highly resource demanding practice. Despite this, research into how designers can address this issue has been limited and many approaches to reducing impacts from laundry do not recognise the diverse range of social reasons why laundry is carried out. This paper has taken a closer look at laundry practices and shows that when laundry is understood in a one-dimensional sense as a process for removing dirt and odour, strategies to reduce environmental impact can overlook some of the major elements that shape laundry practices and influence laundry behaviour. Likewise, in focusing exclusively on the consequences of laundering in terms of impacts, attention bypasses the nuanced details of human behaviour and the reasons why laundry routines evolve in environmentally significant directions (Shove, 2003). Thus, the way in which laundry is conceptualised bears great influence over the tactics taken that seek to reduce impact, and by extension approaches towards design for sustainability.

To conclude, this paper has discussed three key areas where designers can engage more closely with laundry behaviours to develop design ideas that

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are more relational to laundry as an integrated and embodied social practice. In the first instance, it has highlighted that cleanliness of clothing is individually constructed and closely connected to the design of a particular garment. This suggests opportunities for designers to work to challenge conventions associated with cleanliness. For example, the idea of using design to intervene in laundry practices was explored by Earley and Fletcher in the 5 Ways Project (Earley and Fletcher, 2003). They developed the No Wash top which was designed to never be laundered and responded to laundry as a cultural convention. The No Wash top conceptualised a design idea for sustainability and challenged notions of cleanliness and appropriately clean clothing.

Secondly, this paper has discussed how laundry behaviours are influenced by a desire to remove evidence of wear and use, and to preserve a sense of newness. Here there exists potential for designers to innovate around aesthetics which retain the original shape, finish and fit of a garment, or in contrast, to innovate around aesthetics which constantly change through use. This could be achieved through greater use of materials that develop a patina through use, for example using wax finishes on certain garments, or it could be developed through more experimental techniques in pattern cutting everyday garments that respond to movement. Finally, this paper has discussed material perception and how this is linked to laundry knowledge. It has shown how laundry practices are influenced by how a material is understood, and how laundry 'know-how' becomes part of laundry practices. In doing so, this insight provides further opportunities for designers and retailers to innovate around perceptions of material types to encourage alternative laundry practices. This might involve focused communication campaigns beyond care labelling to engage customers more closely with the materials that their clothes are made from. Future research is recommended into areas that seek to understand more about complex laundry behaviours and how design might be used to further challenge laundry conventions.

References

- Allwood, J., Laursen, S., Malvido De Rodriguez, C., & Bocken, N. P. (2006) *Well Dressed? The Present and Future Sustainability of Clothing and Textiles in the United Kingdom*. Cambridge: University of Cambridge Institute of Manufacturing.
- Bain, J., Beton, A., Schulze, A., Dowling, M., Holdway, R. and Owens, J. (2009) *Reducing the Environmental Impact of Clothes Cleaning*. London: Defra.

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- Browne, M., Crump, P., Niven, S., Teuten, E., Tonkin, A., Galloway, T. and Thompson, R. (2011) 'Accumulations of Microplastic on Shorelines Worldwide: Sources and Sinks', *Environmental Science & Technology*, 45(21), pp. 9175-9179.
- Bruce, N., Hartline, N., Karba, S., Ruff, B., Sonar, S. and Holden, P. (2016) 'Microfiber Pollution and the Apparel Industry', University of California Santa Barbara, Bren School of Environmental Science & Management. [Online]
http://brenmicroplastics.weebly.com/uploads/5/1/7/0/51702815/bren-patagonia_final_report.pdf (Accessed 4.9.2016).
- Caines, R. (2011). *Laundry Habits – UK – November 2011*. Mintel. [online].
http://academic.mintel.com/sinatra/oxygen_academic/search_results/show&/display/id=575171 (Accessed 4.9.2016).
- Douglas, M. (1966) *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*, London: Routledge & Kegan Paul.
- Earley, R. and Fletcher, K. (2003) *5 Ways*. Available at:
<http://www.5ways.info/docs/intro/intro.htm> (Accessed: 4.9.2016).
- Fletcher, K. (1999) 'Clean and Green?', *EcoDesign*, 7, 34-36.
- Fletcher, K. and Goggin, P. (2001) 'The Dominant Stances on Ecodesign: A Critique', *Design Issues*, 17(3), pp. 15-25.
- Fletcher, K. (2008) *Sustainable Fashion and Textiles: Design journeys*. London: Earthscan.
- Franklin Associates. (1993) *Resource and Environmental Profile Analysis of a Manufactured Apparel Product: Women's Knit Polyester Blouse*. Washington DC: American Fiber Manufacturers Association.
- Gwilt, A., Leaver, J., Fisher, M. and Young, G (2015). 'Understanding the Caring Practices of Users', *Product Lifetimes and The Environment: Conference Proceedings*. Nottingham Trent University, Nottingham, 17-19 June, 2015. Nottingham: Nottingham Trent University: CADBE. 125-129.
- Jack, T. (2013) 'Nobody was Dirty: Intervening in Inconspicuous Consumption of Laundry Routines', *Journal of Consumer Culture*, 13(3), pp. 406-421.
- Laitala, K. and Boks, C. (2012) 'Sustainable Clothing Design: Use Matters', *Journal of Design Research*, 10(1/2), pp. 121-139.
- Madsen, J., Perumalpillai, B., Selby, S. and Aumônier, S. (2007) *Mapping of Evidence on Sustainable Development Impacts that Occur in the Life Cycles of Clothing: A Report to the Department for Environment, Food and Rural Affairs*. London: Defra.
- Rigby, E. (2010). *Clean by Design. Investigating the Relationship Between Design, Consumer Behaviour and Laundry: A Social and Practical Study*. Masters dissertation. London College of Fashion, University of the Arts London.
- Shove, E. (2003) *Comfort, Cleanliness and Convenience: The social organization of normality*. New York: Berg.
- WRAP (2012) *Valuing Our Clothes: The Evidence Base* [Online]. Available at:
<http://www.wrap.org.uk/sites/files/wrap/VoC%20FINAL%20online%202012%2007%2011.pdf> (Accessed: 4.9.2016).

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WRAP (2015) *Clothing Durability Report* [Online]. Available at:
<http://www.wrap.org.uk/sites/files/wrap/Clothing-Durability-Report-final.pdf> (Accessed: 4.9.2016).

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