Garment Quality and Sustainability: A User-Based Approach

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Abstract

This paper explores the role played by female perceptions of garment quality in relation to how long clothing is kept and how it is used. It considers perceptions of quality in relation to implications for sustainability in fashion. The research involves two phases of empirical data collection conducted in the UK. The first phase draws on a subset of findings from a 12-month laundry study that surveyed the use and laundering of 32 different garments across a group of 16 women. The second phase comprises a semi-structured interview study with 13 women and focuses on exploring factors that influence garment lifetimes. The central contributions of this paper are the distinctions it makes between the immediate concepts of clothing quality that are understood as "pre-use" to those more gradually developed experiences of quality learnt "during use." In use, garments are tied into user practices and as such become woven into the actions and experiences of everyday life. The length of time garments are worn and kept is more closely connected to how quality is experienced subjectively by the user than understood within objective industry-based definitions of quality. In relation to sustainability, this suggests new directions for understanding quality with emphasis on user behavior.

KEYWORDS: quality, clothing, sustainability, longevity, use

Introduction

This paper emerged from common findings within two research projects in the field of sustainable fashion that investigated how clothes are experienced during use and wear (Rigby 2016; Connor-Crabb 2018). Within both studies, it became apparent that there were a variety of ways in which quality was recognized, described, assessed and maintained by research participants as clothes were used. Participants from both studies were describing quality very differently to the industry-based standards of quality often developed to meet consumer expectations at point of purchase (De Klerk and Lubbe 2008). Here, garment quality is usually decided within the agreement between the manufacturer and retailer; quality control checks are then carried out by independent quality testing companies, the clothing manufacturer or the clothing retailer. The focus is on objective physical parameters such as fabric strength, colorfastness and wrinkle resistance (Kadolph 1998).

In relation to sustainability, the problem with this approach to quality is that it is partial: it prioritizes quality as a property that exists at a static point in time and is closely tied to

esthetics. This approach does not consider the personal, subjective and individualized ways in which clothing quality is experienced during everyday use. This is significant because quality experienced through use, or specifically "use quality," was found to be influential in the development of a positive and long-lasting relationship between the user and their garment. Quality is closely linked to user satisfaction with the garment over time and consequently how long it is used.

This research considers the characteristics of use quality, its significance, and the benefits of recognizing it within the broader discussion of fashion design for sustainability. The clothing and textiles industry have long been criticized for its environmental and social impacts directly linked to garment production and consumption (Fletcher and Grose 2011). Central to this criticism are the high quantities of clothing purchases, the reduced amount of time for which clothing is used, and the increasing volume of clothing waste (Brooks 2015). Encouraging consumers to keep clothing longer through a focus on better quality is one strategy that is often promoted to help reduce these impacts (WRAP 2017; Ellen McArthur Foundation 2017; Cooper et al. 2013; Gracey and Moon 2012). Quality is most often referred to in terms of how industry defines, measures and categorizes clothing rather than how users recognize and appreciate a garment's attributes. How clothing quality is understood by the user is a neglected area and social research is needed to address this lacuna of knowledge and enable us to understand how people value garments.

This article proposes that exploring the notion of quality from the experiences of the user is critical to advancing an understanding of garment life and formulating strategies to promote sustainability in fashion. It is exploratory in nature and intended to contribute to a wider discussion and body of fashion research (e.g. Fletcher 2016; Gwilt et al. 2015; Holroyd 2015). This paper is divided into four parts. First, it offers a general overview of literature concerning garment quality and use, as well as its significance in furthering understanding of clothing and sustainability. It then offers an overview of the methodology including methods used to collect data about clothing use, followed by the results and a discussion of key findings related to garment quality. To conclude, the research is evaluated, key arguments are summarized, and implications for the fashion industry and directions for future research are discussed.

Garment quality

Expectations for garment quality have co-evolved over time alongside changes in the way clothing is produced, consumed and used. It is no longer usual to pass garments down through generations, nor is it expected that garments should last more than a few years. We own more clothes than we ever have, we wear them less often than we used to, and we keep them for a shorter amount of time (Gracey and Moon 2012) – on average, clothing is kept just 3.3 years before it is discarded (WRAP 2017). Acceleration is a key characteristic of fast fashion (McNeill and Moore 2015) and as the tempo of consumption has increased, clothes are not made to the same level of quality, in terms of material weight, seams and construction details – there has been a

systematic “quality fade” (Cline 2012, 90). Yet good quality remains an almost universal preference for most people, reflecting user satisfaction, while in contrast, poor quality and quality failure are key reasons for user dissatisfaction with a garment (De Klerk and Lubbe 2008) – this highlights the importance of understanding user expectations. Quality is an inherent part of the social language of goods and an important part of the purchase decision-making process (ibid). Many people aspire to own high quality garments which are synonymous with luxury and indicative of high costs, fine materials and skillful making, yet lack of information on product quality when purchasing clothing is one factor which prevents the customer from making a full assessment. Despite this significance, people apply their preferences subjectively, with different social and cultural factors influencing their perceptions of quality.

Definitions of a garment’s quality, derived from practical experience and objective assessment, are not universally shared. Quality is both subjective and objective, and can refer to extrinsic and intrinsic product attributes (Swinker and Hines 2006). Quantifiable and objective measures of usability relate to intrinsic garment properties (e.g. seam strength, thermal capacity, durability, resistance to pilling), while subjective and extrinsic aspects describe symbolic judgements about the overall “look” of a piece, its perceived fashionableness or ability to address individual requirements. Further, how the notion of quality is constructed and evaluated is dependent on context. For example, in a systematic literature review on clothing quality, Day, Beverley, and Lee (2015) found that there are four dominant approaches to assessing and discussing quality: strategic operations management, strategic retail management, consumer experience and ethics. Each in turn prioritize different attributes of quality as diverse as aspects in the supply chain, logistics, retail environment, branding, fashionableness, social and environmental impact and media representation. Unsurprisingly, there is a general lack of agreement on how quality is understood amongst researchers and consumers, leading to questions on both how researchers define quality and how consumers perceive and assess quality (ibid).

Despite the broad spectrum of interpretations, the dominant approach to defining quality in the fashion industry focuses on the physical attributes of garments that can be objectively measured and set within a framework of standardization. The Textile Institute defines quality as “the totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs” (Denton and Daniels 2002, 274). Indeed, for most fashion businesses, quality assurance is a priority to help products meet consumer expectations. Consequently, industry based evaluations of quality focus on testing and evaluating a range of physical characteristics such as fabric strength, stretch, colorfastness and change, pilling, wrinkling, permeability and flammability (Kadolph 1998). While this industry-based approach to quality helps to standardize products in commercial contexts, other interpretations of quality, such as those experienced by the garment user over time fail to be recognized. This narrow view of quality limits the extent to which designers and other industry stakeholders can understand and innovate within the framework of clothing quality.

Quality, longevity, and sustainability

Fashion is well known to be a highly resource demanding, polluting and wasteful industry, with many of its practices contributing to the degradation of the natural environment and the systems that sustain life (Grose2015; Fletcher and Grose 2011). While the fashion industry grapples to find strategies to mitigate against environmental damage, efforts are constrained by the continuously increasing volume of clothing that is sold, the decreasing amount of time that clothes are used and kept, and the high amount of material waste that ensues. Fast fashion and the availability of cheap clothing have seen our wardrobes growing both larger and more transient. Fast fashion is characterized in literature by low-cost offshore production, inferior physical quality, low price points and fast turnarounds of styles, all of which leads to high volumes of clothing consumption and short periods of active use before garments are discarded (McNeill and Moore 2015; Brooks 2015; Gabrielli, Baghi, and Codeluppi 2013). The scale and speed of clothing consumption is central to the negative environmental impacts incurred.

Until recently, promoting environmental and social sustainability in fashion has focused mainly on product and supply chain innovation, such as material choices with lower environmental impacts, cleaner production methods and increasing transparency in the supply chain. Yet any savings made through improvements during garment manufacturing and production must also be assessed on how long a garment is used, otherwise resources are expended on garments seldom used. As noted by Julier (2007, 44), “the environmental value of a “green” product is only realized upon its use.” Conversely, intentions for extended garment use may be hindered through deteriorating garment quality, potentially leading to premature disposal.

While extending the amount of time that clothing is worn and used is one of the most effective approaches to reducing environmental and social impacts overall (WRAP 2017; Laitala and Klepp 2015; Gracey and Moon 2012), this approach must recognize the complex social context in which fashion and clothing behaviors exist (Fletcher 2016). The social context of fashion and clothing-related practices remains underexplored and is seldom integrated in approaches to fashion design and sustainability. Improving objective garment quality is a widely accepted strategy for increasing garment sustainability based on the assumption that better quality garments last longer. Yet this overlooks the understanding that clothing use and consumption patterns are motivated by many different types of concerns, many of which are not directly related to the characteristics of material quality but are instead subjective, intangible and exist in “social and experiential” realms (Fletcher 2012). Directing design attention towards products and product-user relationships is of little value for sustainability if it does not translate into actual changes in behavior and use. As such, viewing quality as a changeable characteristic emerging through use contributes to the argument of sustainability arising largely from behaviors and lifestyles rather than from the design of the product itself. While material form and use are closely intertwined, the complex nexus of factors determining user practices ultimately plays a more dominant role in influencing the longevity of a garment. Understanding

these factors is highly significant for fostering cultures of resourcefulness.

Connecting quality to use

Understanding how garment quality relates to use involves a deeper comprehension of clothing and wardrobe practices. Fletcher's (2016) ethnographic fashion research, Craft of Use, documents observations on garments in the context of everyday life. She argues that garment durability (recognized as longer lasting products and materials) may be facilitated by design and materiality, but it is essentially determined by an "ideology of use" (Fletcher 2012). Here, Fletcher draws attention to the social dimensions that motivate and influence the practices of use and refers to the concept of "user-ship" to describe a space from which durability emerges through the medium of performance and satisfying fashion practices (Fletcher 2012, 233–235). In this respect, sustainability strategies cannot be designed into clothes, but rather emerge through performance and ways of doing and using. Thus, Fletcher (ibid, 236) states, "durability is user-based rather than product-based, though played out in material form."

Other researchers have also explored how garments are tied into social practices. Through studying the practice of dressing, Woodward (2007) argues that choices of what to wear on an everyday basis are made as part of the process of constructing individual and social identities. This negotiation of what to wear and how to develop identity embodies the desire to be unique and creative together with the need to be safe, conforming and acceptable. At the core of this negotiating process is the critical relationship between clothes that are frequently worn (so-called identity staples) and clothes that are worn less often and gradually phased out of use (Woodward 2007, 154). This suggests that the use of clothing is deeply influenced by how users develop social constructions of their identity; therefore, clothes that consistently provide value during identity construction are kept and worn for longest. Clothes which are worn the least and have a short active life are rarely rejected due to physical quality failure, but rather because they no longer meet the needs of the user as they define and construct their identity.

Shifting the point of focus from garments to practices enables a more holistic way to engage with quality, compared with the dominant industry based approach that prioritizes quantifiable, objective, physical and intrinsic characteristics of quality. In practical terms, insights about quality through use can help inform the design of a product, or the design of systems (how products are sold, rented, maintained, disposed of, reused, recycled) with the aim of encouraging pro-environmental practices. It is key that these design decisions are based on research into quality through use i.e. how the garment is used in various contexts over time rather than relying solely on the current methods of quality testing, such as laboratory tests for fabric pilling. This approach points to the potential to extend clothing lifetimes while simultaneously providing a satisfying fashion experience for the user (Fletcher 2016). It also yields what Jackson (2008) terms a "double dividend" of reduced consumption and benefits to individual wellbeing.

Research design

The research design for this study is based on a triangulated framework, used to validate qualitative data and to provide new insights by drawing on data from multiple sources and gathered using different methods (Flick 2004). Using a triangulated framework in clothing based research increases interdisciplinary understanding of the subject (Laitala and Klepp 2017). Here, the framework is made up of two studies, which are both qualitative in nature and employ different complementary data collection methods. The first dataset draws on a subset of findings from a twelve month garment laundry study where participants self-reported using written laundry diaries. The second dataset accumulates from a wardrobe study involving semi-structured interviews. Combining the datasets amassed different types of insights creating a multidimensional perspective on quality. The empirical research was triangulated with insights from literature to provide new understanding regarding the study of garment quality. The garment laundry study and the wardrobe study are further described.

Research methods

Garment laundry study

The garment laundry study was conducted at London College of Fashion, University of the Arts London and validated by the research ethics board. A group of sixteen women were given different garments to wear and use without special treatment for twelve months. The women were recruited via social media and snowballing, from responses to participation notices placed on various online platforms, community notice boards and existing social networks. Participants were selected based on intentional correlation: after completion of a questionnaire and discussion to ensure the study garment was appropriate to their lifestyle and clothing preferences. Occupations were mixed and ages ranged from twenty to forty-three. Key participant characteristics can be seen in Table 1. Each participant was given an information sheet that explained the intention of the study and signed a consent form to be involved. The collection, storage, disclosure and use of participant data followed the Data Protection Act 1998 and the identity of each participant in the study was anonymized using a data-coding key. The study was standardized with a quarterly diary given to each participant every three months to record the use and laundry of the garment in comparison to a similar existing garment in their wardrobe. The garments acted as laundry probes (Rigby 2017), a method adapted for this study, evolved from the cultural probes method pioneered by Gaver, Dunne, and Pacenti (1999) where artifacts are given to people to elicit responses and behaviors. The aim of laundry diaries was to amass information to explore how and to what extent the design characteristics of certain garments influence the way in which they are laundered. Interestingly and with significant relevance to this paper, the study also provided additional insights into how garment quality is experienced, understood and maintained through laundry practices; it became apparent that garment quality and laundry share a mutually dependent relationship. Concluding discussions were held with participants at the end of the one-year period, and data from the study was integrated from the laundry diaries,

correspondences and discussions, providing a dual focus on elements which influenced laundry methods and elements which influenced the frequency of laundry. Full details of this research study, analysis and outcomes can be found in the thesis Fashion Design and Laundry Practices: Practice Orientated Approaches to Design for Sustainability (Rigby 2016, 101–151).

Wardrobe study

The wardrobe study (Connor-Crabb 2018) was conducted at the University of Brighton with approval from the research ethics board, and explores factors influencing garment lifetimes. This study involved

13 female customers of a small independent UK-based clothing label that focuses on local sourcing of pre-consumer waste materials and garment production. The study took place between February and August 2015. The participants were aged between 26 and 39, the median age being 32. They were anonymized and labeled with a number following the letter "U." Key participant information can be seen in Table 2. A purposive volunteer sample technique was employed to recruit participants (Robson 2002) via social media, the company blog, and leaflets in a shop stocking the brand's products. The participants were interviewed at their homes to discuss their garments by the brand as well as a number of pre-selected garments: all items by the label, one garment they have had altered/mended/made themselves or was custom-made, one garment they have owned for an extended period, a piece they frequently wear and one item they rarely or never wear. A photograph was taken of each item and factual information was noted, though the garments acted predominantly as prompts for broader discussions on clothing use.

The interview questions centered on specifics to the garment (e.g. how and why the garment was purchased and what the participant liked/disliked regarding design, care and use) and enquired about the participants' personal experiences and views regarding clothing use, fashion and sustainability (e.g. awareness of sustainability issues, how are garments maintained and laundered, whether clothes are repaired and/or altered). Flexibility was built into the interviewing process to encourage a more conversational approach and facilitated "zigzagging" within the interview (Rapport 2012). This encouraged the interviewee to discuss topics that were of interest to them in more detail, compared to a more formal structured approach (ibid). A semi-structured life world interview was adopted for this wardrobe study, as this approach aims to understand the everyday life of participants from their own perspective (Kvale and Brinkmann 2009).

The data was subsequently thematically analyzed, which allowed for meanings and themes to emerge, rather than associating the data to a particular theoretical framework (Robson 2011). After completing verbatim transcripts of the audio recordings, notes were made and themes identified to create a preliminary list of categories which share particular

characteristics and key themes (Saldaña 2011). Qualitative analysis software QSR*NVivo was used to facilitate the ordering and synthesis

of information without losing the complexity of the original data (Ormston et al. 2003). A constant comparative method was applied (Robson 2011), which meant that several iterations were conducted until saturation occurred, that is until the

incremental improvement to the knowledge can be considered minimal (Coffey and Atkinson 1996). It was taken into consideration during analysis that bias may occur when the interviewee (more or less deliberately) tells the interviewer what they want to hear, or withhold information (Kvale 2008).

Analysis

While neither study set out to explicitly investigate garment quality, both studies provided substantial insight into how quality is conceptualized as existing and experienced in relation to both laundry practices and garment lifetimes. Combining data from the garment laundry study and the wardrobe study made it possible to explore garment quality from multiple perspectives and as arising from a variety of situations, which would not have been possible from individual analysis. Pooling datasets provided an increased sample size and substantial insight through a mix of illustrative examples into how quality is safeguarded and maintained within garments and played out in different and subjective ways within the structure and routines of everyday life.

Using multiple sources of evidence with data elicited through different methods (self-reporting and direct questioning) helps to reinforce the reliability of the findings, ensuring the quality of the study (Yin 2014). While the two studies were undertaken separately and differed in several ways, their overall design was comparable. Both studies employed comparatively small sample sizes with all female participants. The studies were empirical, qualitative and experiential with the aim to understand the life world of the participants from their perspective, taking an ethnographic approach with an emphasis on description and interpretation (Atkinson and Hammersley 1994) and resulting in rich and detailed data (Snape and Spencer 2003).

The original analysis of both studies was thematic, making the qualitative data directly comparable. Garment quality emerged as a key area of interest within both studies, as it was repeatedly discussed in detail by participants, highlighting the importance of quality when considering garment longevity and laundry practices, and the potential of this subject area for further study. Due to the different focal points of the two studies, there were differences in the way data was initially labeled and grouped. For example, within the wardrobe study, key stages within a garment life-cycle (acquisition, use/maintenance, disposal/reuse) was used to structure the interviews and applied when thematically analyzing the data. Within the garment laundry study, a practice theory framework (Reckwitz 2002) was used to guide thematic groupings within analysis.

Despite these differences, the studies were found to be compatible and reconciled with relative ease. Data was integrated and new thematic groupings were formed based on the key contexts in which garment quality was documented.

In addition to the two studies that provide the main basis of this research, this paper includes a small selection of outputs from a workshop facilitated by the authors as part of the Global Fashion Conference 2018 “What’s Going On? A Discourse on Fashion, Design and Sustainability” (Rigby and Connor-Crabb 2018). Through processes of discussion, reflection, writing and image-making, the 24 participants, all delegates of this conference, were invited to consider how they understand, recognize and enjoy quality through their everyday wear and care of clothing.

Findings

Feeling quality, *interacting with quality* and *the cost of quality* emerged as the three core contexts in which garment quality was directly and indirectly discussed. *Feeling quality* relates to material tactility, performance properties and associations made with different fiber types. *Interacting with quality* describes a group of more personal interactions with quality, dependent on the lifestyle of the wearer and the clothing based practices such as laundry, care, maintenance and repair. The final area in which quality emerged relates to cost and the perceived value of a garment. An overview of statements made by participants from both studies relating to the key findings is shown in Table 3.

Feeling quality

Participants made divisions between natural and synthetic fibers, providing an immediate and easy to understand point from which to assess clothing quality. Connections were made between higher quality and value materials being made from natural fibers and lower quality and value garments being made from synthetic fibers. For example, participant U2 described how she searched specifically for second-hand garments made from cashmere, merino or lambs wool from eBay. Participant U10 associated synthetic fibers with low value. L7 commented, “I’ve noticed that unless it’s expensive, the polyester and rayon mixes don’t really last.” Conversely, garments made from synthetic materials became more desirable when they mimicked the properties of natural materials. Participant U5 preferred synthetics when they are “silky.” These statements highlight the significance of material tactility as a means to understanding preferences for quality, as further illustrated in Table 3.

Synthetic materials were discussed in relation to breathability and thermal regulation, and were found to be more acceptable when the garment had a loose cut, reducing the likelihood of becoming uncomfortably hot (L7, L4 see Table 3). U13 noted about the garment shown in Figure 1, “It’s polyester, but because it’s a loose skirt, it’s not a big deal for me.” This highlights the commonly held belief that synthetic materials are generally considered less breathable than natural materials. Despite the negatives associated with synthetic materials, participants also named material robustness, resistance to fading, pilling and creasing, and ease of care as advantages.

As part of the workshop (Rigby and Connor-Crabb 2018), participants were encouraged to capture aspects of their “best quality garment” in the form of a Haiku poem. The restricted syllable structure of the Haiku encouraged concise summaries of feelings, memories and thoughts. The notion of comfort and protection emerged as a key theme (e.g. cosy, warm, softest, fluffy, armor, shield) and fibers were also frequently mentioned (e.g. knit cashmere, felted, woollen) as demonstrated in the example included below:

Hands warm in pockets
Cool rolled up sleeves like I don’t care Blue felted comfort
Earthly, warm, wet, Wool in the rain – Wrapping me

Collectively, these comments show the significance of *wearing* materials, as a bodily experience, and how this influences conceptions of quality. The feel and performance of natural fibers were generally considered preferable to those of synthetic fibers, while synthetic fibers which mimic the characteristics of natural fibers were also viewed as positive. This suggests that subjective definitions of quality are partly formed through the experience of wearing materials on the body rather than the fiber content per se. As such, concepts of quality are often formed through a mixture of rational justifications, when seeking out specific fiber types, alongside more experientially informed factors, such as tactility and comfort. These preferences can be contradictory: participant U10, expressed her disdain for synthetics, yet during the interview it emerged that many garments she owned and had selected to discuss contained polyester or elastane, much to her own surprise.

Interacting with quality

Understanding quality through materials is easy to discuss and make sense of. Less easy to describe is how individual conceptions of quality expand and evolve from the everyday activities and garment practices of the user. Three levels of interaction were identified, distinguished by the extent to which the user is consciously influencing the quality of a garment: lifestyle, maintenance and meddling. Unintended effects on clothing quality are often the result of everyday actions, while maintenance practices such as laundry are closely linked to individual routines and active interventions are evident within "meddling."

Lifestyle

Lifestyle factors that influence conceptions of quality are unique and personal to the wearer. Typically, each wear of a garment gradually reduces its quality. Idiosyncrasies, such as clumsiness, and other daily activities such as cycling and gardening can obviously deteriorate clothing quality and increase the need to launder as evidenced in Table 3 (U4, U1, U6, U9). The levels of interaction relating to quality often overlap and are not clearly distinguishable. This is especially evident in the following example from the laundry study. L6 worked as a ceramist and wore a protective apron made from waxed cotton to prevent her regular clothes from becoming soiled (see Figure 2). Over time the protective wax coating wore off, and L6 would treat the apron with a mixture of clay and water to help retain its function. She commented, "most of the wax has come off so I make a sort of clay water paste and use it to reseal the apron. This camouflages splashes when I am working in it and also protects the apron." In this scenario, the quality of the apron is underpinned by its function as a protective garment in a ceramic studio and uniquely constructed by L6 during her continued use of it. Being a ceramist means she has access to clay and wears an apron, relating to lifestyle choices, but her deliberate actions to reseal the apron relate to the more proactive category of maintenance behaviors. Quality can thus be understood as emerging from a combination of lifestyle and user activities, in addition to being influenced by the physical properties of the garment.

Maintenance

Across the studies, garment quality was found to have a complex relationship with

maintenance and laundry. While laundering instantly cleans and freshens clothes, it has the adverse effect of degrading quality in the long term. The studies showed that the frequency and methods with which clothes are washed are closely tied into how quality is individually understood and prioritized. Preserving garment quality and safeguarding against damage and deterioration from high impact laundry processes such as machine washing and tumble-drying emerged as a significant factor influencing laundry routines. For example, participant U4 explained that she hand-washes approximately half of her clothing, as she believes that machine-washing fades colors. Layering garments to negate the need to wash certain items and preserve quality was another practice evidenced in both studies. Participant U11 described a wool dress that she had not washed in over 10 years (see Figure 3). She believed that not washing would help preserve the quality of the fabric. U2 also discussed layering long-sleeved tops under garments to reduce the need to wash outer garments. Participant L4 described using anti-bacterial sprays to reduce washing whilst another participant described steaming garments in the shower to remove odors and creases. Three participants preserved the condition of their work clothes by changing into more comfortable home clothing, which "take a beating" (U8) when worn for cooking, household chores and gardening.

In contrast to the participants' desire to reduce intensive laundry practices such as machine washing, two participants in the laundry study washed clothes to restore shape after they stretched even when they were not in need of cleaning (see B8, B1 in Table 3).

Laundry practices were not the only garment maintenance activities relating to quality. Pilling was a frequently discussed reason for garment disposal within the interview study, however only two interviewees discussed removing pilling from garments with a "bobble comb" (U3) and a razor (U10).

These maintenance and laundry practices evidence the broad range of ways that people interpret and engage with quality. They show that whilst laundry is a routine and shared practice, it is also highly individual: participants discussing similar garments indicate they would launder them differently based on different personal understanding, tolerances and experience of different laundry methods. This also suggests that quality is interpretative and that different characteristics of quality are prioritized through practices of maintenance and laundry.

Meddling

In contrast to the *lifestyle* and *maintenance* categories, *meddling* describes a more proactive role of the user to influence garment quality, one which can potentially transform a garment and its perceived level of quality. Meddling describes instances of alteration, modification and repair. A broad spectrum of meddling practices amongst the participants was evident.

Different to the gradual deterioration of garment quality through lifestyle, laundry and general use, *meddling* interventions can lead to an improvement in construction quality as evidenced by participant U13, who mends her dress nearly every time she wears it (at least once a week) as the stitching quality is low and the seams break (see Figure 4). This constant need for repair does not deter her from wearing the dress because she enjoys the process of mending it. U2 similarly considers mending "therapeutic" and has carried out visible and transformative

repairs. Within the wardrobe study all but one participant considered mending a useful and satisfying creative activity. Mending can be understood to enhance garment quality by not only repairing physical damage, but also by embedding values of care and tenderness into a piece (Pym 2017). Quality can therefore be influenced by the user's desire to mend clothing; a practice comprised of the user's knowledge, skills and values.

Perceptions on esthetics of repair were also found to influence perceived quality. U3 dislikes the look of darned clothing, while U13 repairs most her garments and states that visibly mended items can be "beautiful." Some garments are more open to being mended than others; U4 discussed her frustration with garments that are difficult to mend and stated that she considers how "open" a garment is to being mended before she purchases it (see Table 3).

Unlike sewing, dyeing clothing to restore or change color requires little additional equipment or skills. Within the wardrobe study, those with a professional background in fashion were more likely to dye their clothing, probably due to increased knowledge on fibers (for example see Table 3, U2). The majority of participants had either not considered dyeing clothing as a means to restore a garment or were concerned the outcome would not be as expected; indeed, three participants described unsuccessful outcomes. Conversely, one participant in the garment laundry study discussed how she dyed a top green from its original color of cream (see Figure 5). She reasoned that the original cream color would show dirt more easily, be impractical to wash and she would wear it more often if it was green. She commented

Did not like colour, decided to dye garment green since I find light tops stain under the arms and I am too lazy to separate colours when I wash clothing. This means that white/cream clothing quickly turns dingy grey … Unfortunately, I became distracted during the dyeing process, and did not stir the solution frequently … . This led to the garment absorbing the dye more in certain places than others, giving the top a moulted, moss like effect. I do, however, like this effect and am happy with the modified garment. I feel that I will wear it much more frequently now.

These comments show that wearer modification can increase value and quality when seen as successful, and decrease value and quality when seen as unsuccessful. Here, quality can be understood as fluid and interchangeable, influenced by modifications made by the wearer. What is significant is the *openness* of a garment; its allowance for modification. Thus, quality could be reframed by taking into consideration ease of repair, alteration or dyeing, or clothing made with consideration to user lifestyles and activities.

The cost of quality

We have discussed how perceptions and experiences of materials, and the way lifestyle and individual actions influence perceptions of quality – these practices, in turn, influence the physical characteristics of garments over time. A further dimension relating to expectations of garment quality which emerged through the data is cost. Participants equate high cost to superior quality as evidenced by the statement made by L7: "I would rather not buy something cheap and disposable … I try and get something that is at least moderate quality or good

quality. I do tend to think, how long will it last?" and similarly by U4, U6 and U12 (see Table 3).

In contrast, some participants expect low-cost garments to last, such as U9, who describes her annoyance with a dress from a fast fashion retailer which began to pill after only four washes. However, the participant also recognized that the fast fashion business model relies on high volumes of consumption and disposal and felt she would be ridiculed if she complained to the retailer.

While high quality is linked to cost on a theoretical level, on a practical level participants also discussed buying cheap garments that lasted a long time. U3 discussed a jacket she had purchased at a low price which has lasted over a decade and the realization that, "expensive doesn't always mean quality," a notion participant U10 agrees with (see Table 3). B3 finds that "if you are selective," garment quality from value retailers are comparable to more expensive high-street garments.

Assessments of quality in relation to cost (often carried out instore) are frequently based on fiber content by checking labels, tactility - as discussed by U12, "In [value chain] shops like that, the fabric just doesn't feel right." While assessments of quality in relation to cost are important when buying clothes, oftentimes the esthetics of style can take priority, making quality and objective factors less decisive. U12 discussed a sense of regret in relation to purchasing decisions made only on esthetic value.

In addition, the perceived value of a garment can influence the way it is cared for. This is exemplified by L4, who states: "If it's something much more expensive you are going to take much more care and want to maintain the quality, but if it's something that is not that good then yeah, I don't care." Though L7 explained that regardless of the initial cost, "I do need to take care of all my clothes in the same way really."

Collectively, these statements show that perceived value is one of many factors which can determine perceptions on garment quality and consequently how the item is used and cared for. While quality can be understood through price, this link is not straightforward and it is often through use over time that wearers ascertain the quality of a garment.

As part of the workshop (Rigby and Connor-Crabb 2018), participants were asked to consider a garment in their wardrobe which they regard to be high quality. They were then given a series of short tasks to help them describe their garment and how they engage with it. The garments depicted were often acquired through unconventional routes: only four garments of the twenty-four had been bought new by the wearer. Instead they were inherited from other family members, one-off pieces made especially for (or by) the wearer, gifted or bought in second hand shops. The garment shown in Figure 6, for instance, describes a coat that was once her father's. This suggests that quality is not considered something that can be bought in store or engineered through branding, but rather, something that grows and matures through the unique biography of a piece and the experience of wearing it. Perhaps this is owing to a different set of expectations when things are not bought new – garments may be perceived as more open to interpretation encouraging users to be more experimental with how they wear them.

In summary, garment quality is evaluated through individual interpretations of the physical characteristics, perceived value and tactility of clothing, and the context within which clothing is used, including everyday routines and habits relating to clothing

maintenance. These findings will now be discussed in relation to existing literature.

Discussion

This research shows not only how garments are tied into practices but more significantly how conceptions of quality are constructed, maintained and played out through a range of individual user practices. It documents how quality is relational to our everyday life experiences. While materials and fiber groups emerged as an indicator of quality, it was their performance on the body (e.g. thermal regulation, breathability and tactility) which influenced user perceptions of quality. These, in turn, impacted laundry behaviors such as how garments were washed and how often. Indeed, washing is closely linked to individual understanding of quality: similar garments are laundered in different ways, depending on the habits, routines and daily activities of the wearer. Overall, it was accepted that reducing the frequency of high impact processes such as machine-washing could help preserve the long-term quality of garments, though other factors such as perceptions of hygiene and convenience played an equally important role in maintaining short-term quality.

It is interesting to note the duality present regarding garment laundering to restore shape (i.e. to return a garment to its original quality) and the recognition that washing also reduces long-term garment quality. To maintain long-term quality, some participants avoided machine washing and described alternative practices such as hand-washing, steaming and reduced wear. It can be concluded that the ideal state of a garment is “box-fresh.”

A garment’s quality and value are commonly perceived to reduce through age, wear and laundering. Material patina and age are almost exclusively accepted and even celebrated in denim wear (e.g. Nudie Jeans Co. 2015) but seldom accepted in other garments. A new-looking garment is generally preferable over a worn item and high cost garments are more valued and linked to high quality. This is the dominant narrative that supports fashion as exclusively expressed through consumption and thus contributing to continuous economic growth; a narrative which however, also contributes to ever-increasing and unsustainable levels of resource use (Fletcher 2016).

Challenging the social norms relative to consumption and decoupling fashion from economic growth (Fletcher 2016), allows space to reassess how garment quality can be understood. Alongside innovations in materials or construction to allow a garment to age in a more desirable way, cultures and narratives of resourceful garment use, such as mending, support new conceptions of quality with potential to improve with age, rather than degrade, and support long term use. For instance: visibly mended clothes are generally viewed as socially unacceptable (Pym 2017; Gwilt 2014). However, taking inspiration from U13 who improved the quality of her dress through frequent re-stitching of its seams, a garment that has been mended could be viewed as more valuable as it has had additional time, care and resources invested and it has additionally become unique through this hand-crafted process. While mending remains a niche activity, the nearly-forgotten skills are experiencing a revival: Repair has been recently expressed in contemporary esthetics with techniques and inspiration shared through social media (Lewis-Hammond 2014); Repair Cafes and workshops are also gaining popularity (WRAP 2017). Artist Jonnet Middleton states that visible

mending can be an act of activism as “to reveal is to make political” (2014, 268). Harvey’s (2014) Department of Repair exhibitions and workshop space aimed to make repair cultures more visible and provide a platform for engagement. Despite the lack of economic incentive to repair garments in the age of low-cost fast fashion, Gwilt (2014) argues that clothing repair can bring social, cultural and personal benefits. This is supported by statements made by U13 and U2 who describe the satisfaction experienced from the process of mending. Harvey (2014, 6) concurs: “Repairing can make unexpected social connections, seams and deliberately visible repair practices act as placard, protesting obsolescence and connecting people to people, to objects and to capabilities.”

While assessments of intrinsic garment quality are an important part of the purchase decision-making process (De Klerk and Lubbe 2008; Swinker and Hines 2006), the gradual changes that occur to the extrinsic quality of a garment with each wear and wash means that a constant re-assessment by the wearer is required to determine whether a garment is suitable to be worn. The user’s social constructions of identity that take place during dressing (Woodward 2007) is particularly influential in determining how often a garment is worn.

In the field of fashion design and sustainability, there has been a growing body of research examining practices of garment use (Fletcher 2016; Fletcher and Klepp 2017). Looking at garments from the context of everyday life offers researchers an intimate and authentic perspective on how and why clothes are used and worn the way they are. This provides designers with a direct and relational understanding of the triggers and challenges of unsustainable garment use. As stated by Fletcher and Klepp (2017, 2), “For the more attention given to wardrobe methods, and the more they are taken up, the better understood fashion and clothing will become in the context of real lives, skills, ideas and priorities of wearers of clothes.” It becomes clear that a holistic view is required when designing for extended garment lifetimes to include physical characteristics, socio-cultural contexts and individual factors (Connor-Crabb, Miller, and Chapman 2016). The findings from the wardrobe and laundry study, and workshop support this view as the factors influencing how quality is understood are shown to be complex and multi-layered, reflecting the social fabric into which our clothing is inextricably woven.

This research also addresses the discrepancy that Swinker and Hines (2006) highlight between the way researchers define quality and how consumers experience garment quality. If the quality of a product is indeed assessed by “its ability to satisfy stated or implied needs” (Denton and Daniels 2002, 274), then it is essential to consider the experiences of clothing quality in use, beyond scientific laboratory testing. The authors argue that quality should not only be understood as manifest in a garment’s physical form at a static point in time but as characteristics recognized and developed through the use, wear and laundering of clothing – as clothing in the context of everyday day life. Our research findings demonstrate the need to build a more integrated understanding of clothing quality beyond commonly held product based accounts from industry.

Conclusions

This research evidences the complexity of factors and dynamics that influence garment

quality and its temporal implications on garment use. Subjective and individual assessments of garment quality influence how clothing is worn and cared for; this behavior in turn influences the physical condition of the garment over time. For example, an expensive shirt
bought for work is expected to be of high quality, is well taken care of and therefore lasts a long time. This assessment of quality, however, is not static and can change over time. The expensive shirt becomes stained and is downgraded to be worn in the garden, thus becoming soiled more often and washed more frequently. Influencing factors can vary individually and change over time (e.g. changing of life stage, situation, age, attitudes).

This paper has explored concepts of clothing quality "during use." The authors propose that this concept can be differentiated from the understanding of clothing quality "pre-use," assessed through industry standards, and therefore argue for a revised epistemology of quality in which garments are understood as pieces contextualized within the practices of everyday life. The following two classifications of quality are proposed i) objective quality, which is measurable and quantifiable "pre-use," e.g. through fabric and seam testing and ii) subjective quality, or use quality, relating to the relationships between garment quality, user behavior and perceptions "during use," which can be explored through qualitative studies.

Evidence from this research shows that these two classifications of quality are significant: the distinction recognizes that practices, experiences and actions of everyday life reveal the quality of a garment as it emerges and evolves over time. However, these characteristics inevitably vary and are more difficult to measure than the static quality attributes of a garment "pre-use."

Physical characteristics are interlaced with personal and socio-cultural factors in a complex way and reveal valuable insights about garment life extension. This paper thus contributes to the body of knowledge on clothing quality and indirectly on clothing life extension, potentially informing sustainable design practice. As this paper is exploratory in nature, future research into the implications of use-quality research is recommended. The authors recognize existing barriers to conducting longitudinal studies, though alternative means of collecting data, such as feedback events with customers or direct designer testing and feedback (Burcikova 2017), may provide insights on longer-term use quality.

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