



# **A Review of literature and research on public attitudes, perceptions and behaviour relating to remanufactured, repaired and reused products**

**Report for the Centre for Remanufacturing and Reuse**

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# **Review of literature and research on public attitudes, perceptions and behaviour relating to remanufactured, repaired and reused products**

## **1 Introduction**

This report presents the findings of a review of literature and research relating to public perceptions of remanufactured, repaired and reused products. It focuses on literature from the UK, but also draws in perspectives internationally, from review activities focusing on Finland and Japan. Attention focused primarily on academic literature, but also sought out relevant industry and market research reports.

The importance of extending the useful life of products has been increasingly recognised as part of a rapidly shifting agenda of waste management and resource efficiency, substantially in reaction to environmental concerns. There is a well established body of literature on public attitudes, values, behaviours and practices that fall within this broader agenda, but focusing primarily around domestic recycling. Meanwhile, the developing literature on remanufacturing comes overwhelmingly from a conventional production-oriented perspective in which the consumer figures only minimally.

There is, then, an apparent gap between existing research which engages with people's attitudes and practices in relation to the materials efficiency agenda on the one hand, and the burgeoning knowledge of remanufacturing processes on the other. Given that remanufacturing and reuse depend on establishing systems which cycle through processes of production, exchange and consumption and back to either production or exchange, this gap is significant.

This review aims to identify existing research and insights which begin to address this gap, both as a process of consolidating and making more readily available existing work, and as a basis for identifying priorities for future work.

Section 2 gives an overview of relevant literature organised in relation to the framing categories (defined below) of remanufacturing, repair and reuse. Section 3 draws out and discusses the significant themes that emerge from across this literature. Section 4 draws together and considers that evidence which has been found that could point towards social patterns in attitudes towards reused products. Section 5 summarises the findings of the review, which provides a basis for the consideration in section 6 of priorities for future research.

## 1.1 Definition of key terms

Part of the challenge in reviewing approaches and insights that have been applied to themes of remanufacture, repair and reuse is the flexibility with which these terms are used, and the extent to which other terms are used synonymously. The focus of this review is framed by the definitions of these terms developed by Parker (2007: 6):

**Reuse** is “a generic term covering all operations where an end-of-life (EoL) product is put back into service, essentially in the same form, with or without repair or remediation” (Parker 2007: 6).

Reuse is distinct from recycling because in the latter EoL products are processed to be used as raw materials in the production of new products.

The other two terms fall within this generic category, as representing specific processes of reuse.

**Repair** is defined as “the correction of specified faults in a product” (Parker 2007: 16) of an EoL product before it is put back into service.

Repair therefore typically involves the replacement of evidently defective parts, representing less intervention, and usually a lower quality product, than:

**Remanufacture**, “the process of recovering an EoL product, and carrying out required restoration to return it to at least OEM [Original Equipment Manufacturer] original performance condition with a resultant product warranty that at least equals that of a comparable new product” (Parker 2007: 16)

While these terms have provided the frame of reference for the review, the patchy nature of relevant literature and research, and the continuing fluidity of use of different terms to describe reuse processes, means little literature fits neatly within these the boundaries set by these terms. The next section (2) established the range of relevant literature in relation to these terms. However, the substantive discussion of the literature (section 3) cuts across the terms to draw out relevant themes in considering how people relate to reused products.

## 2 Placing the public in discussions of remanufactured, repaired and reused products

### 2.1 Remanufacturing

Remanufacturing is a considerable element of the UK economy, estimated to have a value of £5 billion and to represent UK-wide savings of 270,000 tonnes of raw materials and 800,000 tonnes of CO<sub>2</sub> (Parker and Butler 2007). The development of remanufacturing has overwhelmingly been in Business to Business (B2B) commodity relationships, with Xerox and Caterpillar frequent exemplars of innovative business approaches. Business to Consumer (B2C) relationships have been far less dynamic in embracing remanufacturing. Apart from isolated examples, remanufacturing for end consumers has remained in restricted product categories, such as retreaded tyres, ink and toner cartridges and single-use cameras.

This review has found only very limited literature that has any empirical focus on consumers which relates directly to remanufactured goods as defined above. Relevant work has focused on retreaded tyres (Fletcher et al. 2003; AEA Technology plc nd); and to single-use cameras and toner/ink cartridges (Lofthouse and Bhamra 2006). That the difficulty of finding more literature was a result of its absence rather than limited searching was borne out by these references themselves. Fletcher et al (2003), after a comprehensive literature search, found an absence of work on attitudes and perceptions of retreads; and Lofthouse and Bhamra found that 'there is little evidence of investigation into consumer perceptions of refills or refillable packaging' (2006). A fast developing literature on product design for remanufacturing comes closer to engagement with end consumers (Sundin 2004; Gray and Charter 2007), but this review has found very little within this literature which has any systematic empirical engagement with consumers.

The dominant framing of consumers in relation to remanufactured goods is to identify the challenges remanufacturers face in coping with end-consumers' concerns for fashion and status, and inescapable negative associations of second hand goods for consumers (Resource Recovery Forum 2004; King et al. 2006; Parker 2007; Parker and Butler 2007). As discussion of literature on second hand consumption will show, there is considerable evidence of a more complex and nuanced relationship of consumers to goods than is captured by such generic concerns.

### 2.2 Repair

Repaired goods in circuits of re-use attract the smallest specific literature. Repair is generally a far simpler process than remanufacture and is generally understood as part of marginal aspects of the economy. It therefore attracts less interest from system designers or management scientists. Meanwhile, very little literature addresses public perceptions of repaired goods as potential purchases. Most research relevant to repair has focused on multi-objective social enterprises which repair or refurbish<sup>1</sup> domestic appliances – typically white goods and computer

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<sup>1</sup> 'refurbishment' as a defined term lies between repair and remanufacture, involving more than fixing apparent faults, but less than it takes to return a product to at least as new performance.

equipment – usually for sale or donation to relatively deprived households (CRR 2007).

One telephone survey of 1015 adults in Great Britain asked respondents about purchase of reconditioned/second-hand electrical appliances and found that 2% of people claim to buy them 'all the time', whilst 86% have only done so on the odd occasion, rarely or not at all (Brook Lyndhurst 2004). The same survey found that 15% think that buying second-hand/reconditioned electrical appliances would make a 'lot of difference' to environmental impact, whereas 51% thought it would not. The report does not suggest reasons for these opinions, but it is worth noting that assessments of the steadily increasing efficiency of many appliances, notably refrigeration and washing appliances, means that only relatively new machines are worth repairing or remanufacturing on environmental grounds (CRR 2007).

There is slightly more research on people's readiness to repair their own goods. Consideration of this literature opens up ambiguity in the definitions of repair and reuse above. Does possession of the product have to pass from the owner to an intermediary (second hand appliance shop, for example) to count as a repaired good being reused? If a person considers a broken product repairable when someone else might consider it waste, is it then an End of Life product? Regardless of the answer to these questions, literature on people's attitudes to both repair and reuse of their own possessions is of relevance to understanding public attitudes towards repaired and reused products, and consequently are considered in this report.

Barr and Gilg (2001; 2005; Barr 2007) report on a representative survey of self-reported recycling, reuse and reduction behaviour and attitudes. Amongst questions on reuse, respondents were asked if they 'try to repair things before buying new'. Almost 70% of respondents claimed that they either 'always' or 'usually' do so, with just 3% claiming they 'never' did so (Barr et al. 2001, from figure 3).

King et al (2006) cite a survey which found that 68% of respondents cited cost as a reason why they did not get items repaired. Research in Japan on home electric appliances found that, even where respondents wanted to repair goods, they were defeated by 'social systems', with respondents most frequently citing the relative expense of repair, when weighed against the cost of a new product as an impediment (Tasaki et al. 2004, figure 4). In both countries, the declining relative cost of buying new appliances has counted against repair.

### **2.3 Reuse**

According to an ICM telephone survey of UK homeowners for esure, 1 in every 7 objects in the average UK home is from a second-hand source (esure 2006). The survey found that family and friends were the most widespread source of second-hand goods, followed by charity shops and car boot sales, with almost 3% of respondents picking up discarded goods from skips (esure 2006). The survey identified bric-a-brac, ornaments, glassware and crockery, followed by furniture, as the most likely household items to be second hand; with electrical items, particularly white goods, the least likely.

As a generic category, 'reuse' encompasses diverse phenomena and a much greater range of literature concerned with consumers attitudes and practices in relation to goods falls under this heading. The themes emerging from this literature form the

basis of section 3 below. This subsection aims to give an overview of the range of forms of reuse addressed by existing research.

### **2.3.i Second hand exchange**

**Second Hand Retail Outlets** High street second hand retail outlets are the most visible sources of second hand goods. According to a study conducted by the Association of Charity Shops, 69% of the UK population has bought from a charity shop (Association of Charity Shops 2006). Japan's Economic Planning Agency noted a considerable increase in second hand retail outlets in the late 90s (Economic Planning Agency 2000). Charity shops have been the focus of some consumption-oriented social science research which demonstrates the complex range of motives and values that converge in charity shops and the goods they sell (Gregson et al. 2002), and similarly in the distinctive spaces of independent retro and vintage clothing outlets.

**Social Enterprises** Organisations which provide repaired domestic goods, particularly the multi-objective social enterprises mentioned above, are frequently also conduits of reused goods which do not undergo repair, notably items of household furniture. Some research has been carried out into attitudes of those who acquire furniture through these schemes, as well as the motives of the people who donate to them (Bulkeley et al. 2005; Association of Charity Shops 2006; Granström 2006).

#### **Online exchange**

Online exchange, particularly eBay,<sup>TM</sup> is of obvious importance as part of contemporary secondary markets. However, existing academic literature is dominated by economists using the unconventional form of exchange, including mechanisms for public customer feedback, to explore dynamics of trust in a highly mediated exchange where the conventional bases for trust in a trading relationship are limited or absent (Ba and Pavlou 2002; Melnik and Alm 2002; Dellarocas 2003). Nissanoff (2006) discusses online exchange as part of a radical vision of current and future changes in how consumers relate to goods. His book is very accessible, but has weak foundations for its predictions of a consumer economy based on leasing and intentionally temporary ownership of goods based on C2C (consumer to consumer) reuse through online exchange, often facilitated by commercial mediators (like his own company, Portero). Nevertheless, Nissanoff clearly articulates a number of issues, particularly around ownership and trust, which emerge as significant in considering remanufacturing and reuse.

A distinctive form of online exchange, Freecycle<sup>TM</sup> is a network of geographically defined online communities through which participants advertise offers and wants for goods with no expectation of money or any other form of direct reciprocity, and one published study explores the phenomenon in the US (Nelson et al. 2007).

**'Alternative' spaces of exchange** A small number of social scientists, primarily Cultural Geographers, have produced a significant body of work on relatively informal spaces of exchange, notably car boot sales (Gregson and Crewe 1997; Gregson and Crewe 1997; Williams 2002; Williams and Paddock 2003) and second hand fairs (Chantelat and Vignal 2002). As discussed below, work in this area provides some of the most incisive insights into issues for consumers around second hand goods.

**Informal exchange networks** Finally, as indicated by the esure survey, direct passing on of goods within personal social networks is a dominant means of

exchange of second hand goods, albeit in a relationship unmediated by institutions, commercial organisations or the exchange of money. These informal and unmediated routes of exchange have attracted some interest, again revealing insights into the role of products in people's everyday lives and relationships that are obscure to analyses that see reuse as overwhelmingly a market phenomenon defined by purchase decisions (Gregson and Beale 2004).

### ***2.3.ii Reuse within an ongoing service relationship***

Refillable containers represent an interesting phenomenon of reuse, as they offer insights to the sort of ongoing, 'closed loop', relationship between consumer and producer that is required for various progressive models of reuse, remanufacturing and servicisation. Lofthouse and Bhamra (2006) report an attitudes study on refillable containers, revealing the complex factors that converge in the acceptability of refill based services. From a very different perspective, Vaughan, Cook and Trawick (2007) discuss an in-depth study of the milk bottle, and the social and technical relationships which determine its value, as a means through which to reflect on the 'sociology of reuse'.

### ***2.3.iii Reuse of existing products and packaging***

Consideration of reuse can extend to people reusing possessions beyond their first use, or indeed choosing products that lend themselves to multiple uses over more disposable alternatives.

In their articles Barr and Gilg (2001; 2005; Barr 2007) report on reuse in addition to repair, specifically asking respondents about reuse of paper, glass bottles and jars and plastic containers, as well as washing and reusing dishcloths. A majority of respondents claimed that they do each of these either 'often' or 'always' (the authors do not reflect on the reliability of self-reported behaviour). What is most interesting from their analysis is the different bases for reuse actions in comparison to the bases for recycling behaviour.

Shipton (2005) takes a more detailed look at the reuse of packaging, focusing on the specific uses to which different packaging is put, and the potential for design to enable packaging to find useful secondary applications, either through designed-in purposes, or through designs which enable peoples' creativity in finding new uses.

Reflecting their increasing political currency, there is a relatively large amount of work on plastic carrier bags. This is not restricted to the UK. Japan's Ministry of the Environment (Ministry of the Environment Japan 2007) reported that "60 % of those surveyed have their own shopping bags, showing that the practice of utilizing reusable shopping bags has become popular to some extent." The survey also found substantially more support (46.4%) than opposition (28.9%) for charging for carrier bags.

A major study of plastic carrier bag use in the UK, carried out for WRAP, revealed the complex relations and practices that lie behind the often quoted statistics of single-use plastic bag consumption (Andrew Irving Associates 2005). A key finding was that "the term 'single use bags' is something of a misnomer" (vi) with the vast majority of respondents claiming to use carrier bags for subsequent purposes such as rubbish disposal or carrying sports kit. Through a combination of omnibus survey,

observation and focus group discussions, the researchers demonstrated how consumption, use and re-use of plastic bags is embedded in the systems, routines and norms of shopping environments, from the free availability and expectation of use at supermarket checkouts to concerns about suspicion of shoplifting if leaving a clothes shop with a purchase not in a carrier bag from that shop. They also showed how something as mundane as a carrier bag is nevertheless caught up in issues of identity, status and display. A report of analysis of a trial bag-for-life (B4L) promotion campaign in the UK also found significant contextual determinants of the reuse of carrier bags (Falcon 2006).

## **2.4 Related topics**

### ***2.4.i Recycling and buying recycled***

As part of an extensive literature on domestic recycling, there is a significant amount of work considering consumer attitudes to buying recycled products (Bei and Simpson 1995; Koch and Domina 1997; Kishino et al. 1999; Anstine 2000; Grasso et al. 2000; Hanyu et al. 2000; Pira International nd). As discussed below, this literature has relevance to understanding attitudes towards remanufactured and reused goods, first because of the complex and dynamic role of values and attitudes, as against broader social and technical factors, in enabling the progressive normalisation of particular forms of practice (household recycling); secondly because of the gap consistently found between peoples' preparedness to recycle and their preparedness to 'close the loop' by buying recycled products, with potential implications for how consumers can be located in cyclical relations of production and consumption.

### ***2.4.ii Product lifespan, obsolescence and care***

Research concerned with the ongoing relationship between people and the products/artefacts they use has relevant insights for approaching remanufacturing and reuse. Cooper (2005) reports on research with consumers on expectations and attitudes towards the longevity of household appliances, revealing issues about the effective technical life of products, but also of technical and aesthetic obsolescence, that has direct implications for understanding potential barriers to acceptance of reused, repaired and remanufactured technologies.

More generally, a developing theme in cultural approaches to the roles of things in everyday life is to emphasise ongoing relations of care for at least some sorts of artefacts in some situations. This can express itself in apparently widespread concern that things like one's domestic appliances and furniture should find a second use (Bulkeley et al. 2005; Cooper 2005; Gregson et al. 2007), through to consideration of hobbyist groups who invest substantial time, energy, money and skill in the maintenance of particular objects (Jalas 2006). These ethics of product care are posited either as a means of resistance for people against dominant, consumerist, 'throw-away culture', or alternatively as a counter-narrative undermining simplistic characterisations of the disposable society (Gregson and Crewe 2003; Gregson et al. 2007). Ethics of care for material possessions have clear implications for understanding the possible roles of consumers in enabling the processes necessary for cyclical relations of production and consumption.

### 3 Cross-cutting themes

This section considers a number of cross cutting themes that emerge from the literature summarised in section 2.

#### 3.1 Environment and waste

The key driver for the political prioritisation of remanufacturing and reuse is environmental concern. Evidence for how far concerns over environmental impact are significant in attitudes towards reuse is very varied, apparently depending as much on the framing and methods of research and modes of questioning as on the characteristics of either respondents or commodities being considered. In short, it appears that if people are asked about the environment they will voice strong concern. If, however, they are talked with about why they buy reused goods, the environment will figure considerably less prominently, if at all.

Research focused upon recycling offers ways in to this theme. First, the rapid (relative) normalisation of domestic recycling over recent years indicates the dimensions of changing practices relevant to materials efficiency. Until the late 1990s, surveys of people's recycling behaviour found that active recycling correlated strongly with an individual's environmental concern. With the rapid expansion of recycling facilities, and with them social norms and expectations of recycling, recycling is now considerably more likely to be correlated with situational factors such as the easy availability of recycling facilities (such as kerb-side collection). The dynamics of recycling therefore demonstrate how public perceptions, attitudes and values are themselves dynamic, and have a varying relationship to what people actually do, depending on the infrastructures and systems of which they are a part.

Recent studies which have explored the relations between participation in recycling and the buying of recycled products or the reuse of products, have consistently found gaps which can be interpreted as following from the de-linking of doing recycling from strong levels of environmental commitment. From his large scale survey in Exeter, Barr reports that reuse (of paper, packaging, etc) is "predicted by underlying environmental values, knowledge, and concern-based variables" whilst, in contrast, participation in recycling was "characterized as highly normative behavior" (2007: 1).

In relation to the purchase of recycled products, Anstine (2000) reports on a survey of consumer willingness to pay for recycled garbage bags in New Jersey, lamenting the lack of evidence for people being prepared to 'close the loop' between their active recycling and their consumption. Hanyu et al (2000), from a large scale survey in Japan, found a similar disjuncture between recycling and buying recycled (using the example of toilet paper), with recycling behaviour being determined by the waste collection system in place along with payment systems, whilst willingness to buy recycled toilet paper was associated with individual environmental attitudes.

Coming from a framing of research in terms of resource efficiency and sustainability, reuse behaviour seems, then, strongly associated with environmental values. However, a very different picture emerges from research that looks at the purchase of second hand goods and participation in alternative forms of second-hand consumption. For example, the Association of Charity Shops Survey found that only 5-6% of donors and buyers referred to environmental matters at all as a reason for

giving or buying from charity shops, concluding that 'few people appear to connect reuse to environmental values' (Association of Charity Shops 2006: 2).

Gregson and Crewe (2003) discuss how they began their fieldwork on second hand consumption expecting to encounter talk of green consumerism and commitment to maximising the value of resources, at least amongst 'critical' middle class respondents. Whilst they did come across environmental and green concerns in relation to buying second hand, it was a minor part of more complex accounts of why people buy second hand, as discussed in the coming sub-sections.

### **3.2 Price**

Unsurprisingly, the fact that remanufactured, repaired and reused goods are relatively cheap is the dominant issue in mainstream accounts of why people buy them. The importance of price is borne out repeatedly, but playing out differently according to the multiple dimensions that can converge in different situations of reuse.

The dynamics of markets in remanufactured goods clearly vary depending on their relative price advantage in comparison with new goods. Debo (2005) suggests that remanufactured goods have intrinsically less value for consumers than new. Consequently, global industrial restructuring and the real-terms declining cost of products (particularly relatively complex technologies that typically lend themselves to remanufacturing) has counted against the development of remanufacturing (Resource Recovery Forum 2004; CRR 2007; Parker and Butler 2007). This is borne out too in relation to retreaded tyres, where the historic price advantage of retreads has been undermined by the collapse in new tyre prices (AEA Technology plc nd).

Expectations of low price of remanufactured and reused products carries through to refillable packaging with low relative price of refills, as against new products, one of the attributes cited as part of a good or very good experience of refillable products (Lofthouse and Bhamra 2006). Similarly, a study of business models for 'Product Service Systems' suggested a key reason for consumers buying in to services systems such as pay-per-use is to access products which the consumer could not otherwise afford (Adams et al. 2005).

Surveys and studies of second hand retailers and consumers confirm the fundamental importance of relative cheapness for the vast majority of second hand purchases (Association of Charity Shops 2006; CRR 2007). That this theme has cross-cultural currency is indicated by a number of research reports. For example, a survey of consumers' use and perceptions of second hand retail outlets by Japan's Economic Planning Agency (2000), found that cheapness was the dominant reason given for expected future purchase, particularly for clothes, children's wear and toys.

The relevance of price to understanding the reuse of goods is not limited to specific products being cheaper than new alternatives. Price can be deliberately deployed to encourage reuse, for example encouraging reuse of carrier bags by charging for new ones (Andrew Irving Associates 2005). Conversely, attitudinal surveys indicate that consumers are, in principle, generally willing to pay extra for products with relative environmental benefit. However, specific studies of actual behaviour indicate otherwise. For example, Anstine's study (2000) of kitchen garbage bags with recycled content found that consumers were not willing to pay extra for the environmental benefit they represented.

The fact that reused products tend to be cheaper than new lends itself to assumptions that it is the relatively deprived that will end up purchasing them. In general terms, such assumptions have some support from available data. For example, Granström (2006) reports that amongst users of the furniture reuse scheme she studied, a majority would prefer to buy new, but are prevented by financial circumstances. Studies of reuse and remanufacturing of white goods indicate that supply is predominantly shaped around social enterprises and charities providing for the relatively deprived (CRR 2007).

Nevertheless, a significant literature has developed over recent years which indicate the complexities of valuation that arise in different situations of exchange of reused goods. In particular, in-depth qualitative studies of second hand retail outlets, and less formal spaces of exchange such as car boot sales, has shown the wide range of influences and relations that converge in how different products, in different situations of exchange and in relation to people of varying social location, are assigned meanings and value.

A key dimension of variation relates to very different meanings of second hand goods visible across variations of social position. A basic distinction is visible in the range of second hand outlets in the UK, with jumble sales and some 'low-end' charity shops representing thrift necessitated by situation, through to independent retro and vintage commercial outlets which clearly cater for discretionary purchases, including for the relatively affluent. Similarly in the US, there is a strong distinction between Thrift Shops, run by not for profit bodies and high-end consignment shops (which give the original owners a cut of the final price) where affluent families might go for prom dresses and the like (O'Donnell and Hughes 2007).

Interviews with purchasers at car boot sales show the many reasons that people can have for purchasing second hand beyond financial necessity, highlighting how second hand exchange can be about fun, sociality and the considered pursuit of distinctive style (Gregson and Crewe 1997; 2003). However, based on 120 face to face interviews in socio-economically distinct areas of Leicester, Williams (2002; Williams and Paddock 2003) argues that this reassessment of second hand exchange has validity only in relation to the relatively affluent. Interviews with the relatively deprived found economic necessity to remain the main motivation for using informal and second-hand means of acquisition.

### **3.3 The meanings of second hand**

This subsection explores some of the key dimensions of variation in the meanings and valuations of second hand goods that emerge from this range of work on secondary exchange.

#### ***3.3.i The stigma of second hand***

In assessments of barriers to consumer acceptance of remanufactured and reused products, there is commonly an assumption of social stigma attaching to second hand goods. The extent to which this is true varies according to the products concerned and the social position and attitudes of specific consumers. For second hand products most associated with charitable means of distribution (white goods, furniture), fears of social stigma appear more likely, especially for people who are most concerned to not appear to need charity. Ruth Lane, currently conducting research on second hand consumption in Australia, reports that "some people

who've experienced poverty in the past say they always buy new now because they associate second hand goods with poverty” (personal comment, February 2008).

However, the ICM survey of homeowners for esure specifically asked about embarrassment about buying second hand and found that just 14% of respondents would feel ‘very’ embarrassed and 7% ‘slightly’ embarrassed to tell friends they had bought an item second hand, concluding that “for the vast majority there is no longer a stigma attached to buying items previously owned by others” (esure 2006). There are also indications that second hand clothes are becoming more acceptable in the US. As reported by O’Donnell and Hughes, (2007), the National Association of Resale & Thrift Shops estimates that sales in the second-hand industry have risen by around 5% per annum over the last decade, and according to America’s Research Group, up to 15% of people shop at resale or consignment shops at least once a year.

### ***3.3.ii Second hand goods as positive resources for identity construction***

These findings are consistent with research which highlights the positive potential that can be found in second hand goods. Second hand goods, particularly those which lend themselves to displaying identity, such as clothes, furnishings and ornaments, can offer distinctive positive properties for consumers. Gregson and Crewe (2003) argue that, for many car boot sale purchasers, second hand goods can be appropriated for reasons parallel to the purchase of high status new goods, such as for the pursuit of distinctiveness, uniqueness and individuality. This clearly carries through into motivations for the purchase of antiques, where the signs of previous ownership and use can become part of what is valued. At the same time, second hand goods can be part of the construction of a deliberately anti-consumerist, anti-corporate or otherwise ethically driven consumption identity. Finally, second hand can provide a means of being part of the mainstream by giving access to high street brands and designer labels to those who otherwise could not afford, or wish to pay, full prices in the high street.

### ***3.3.iii Boundaries of acceptability of second hand goods***

Qualitative work with consumers also highlights boundaries of acceptability that attach to certain reused products. Gregson and Crewe (2003) report that interviews with customers of charity shops revealed how evidence of contact with the bodies of previous owners affects people’s readiness to purchase items. Respondents spoke of how they rejected particular items because of evidence of ‘contamination’ by previous bodies. Universally, respondents reported they would not buy underwear second hand, and many added nightwear and bedding to the list. Similarly, in her study of furniture reuse schemes, Granström (2006) found mattresses to be the least popular second hand furniture, largely due to the degree of contact with somebody else’s body. Boundaries of adequate cleanliness carry through to other situations of reuse, for example reluctance to reuse supermarket bags that have contained fresh foods for new clothes (Andrew Irving Associates 2005).

## **3.4 Alternative spaces of exchange and resistance**

The emphasis of much of the literature which seeks to reassess the social location of second hand goods focuses upon ‘alternative’ spaces of exchange. What constitutes the alternative is not always clear, but essentially it covers forms of exchange which do not involve new goods from conventional retail outlets. The specificity of spaces of second hand exchange are especially significant for Gregson and Crewe (1998), who

emphasise the very different forms of sociality that occur between sellers and buyers at car boot sales, the flexibility of pricing structures, and the possibilities of surprise and spontaneity, as intrinsic parts of the appeal of second hand exchange.

This raises apparent difficulties for the transference of insights on second hand goods to the mainstreaming of reuse through conventional retail outlets. Indeed, the one published study of the online exchange forum Freecycle,<sup>TM</sup> locates people participating as 'downshiffters' pursuing anti-materialistic values (Nelson et al. 2007). However, Gregson and Crewe (2003) report that anti-consumerist motives were evident in a very small minority of respondents, and that such motives were subordinate to essentially mainstream consumerist priorities, with second hand exchange providing a means of getting more stuff, or higher status stuff, for a given budget.

### **3.5 Trust**

The specifics of situations of exchange also offer a way in to considering themes of trust, which emerge in a number of ways across the literature. Significant issues of trust arise in part because of the 'alternative' spaces in which much second hand exchange takes place. Part of what defines these alternative spaces is the absence of the companies, brands and permanent premises which provide much of the trust underpinning conventional retail. Chantelat and Vignal (2002) discuss the multiple means of constructing consumer confidence and trust in second hand products. They focus on 'Trocathlon', biennial second hand sports good fairs hosted by Decathlon stores in France, particularly exploring the role of the store itself, and its staff, as intermediaries in transactions between buyer and seller. They emphasise the importance of the specifics of social interaction, between seller and intermediary and between intermediary and buyer, in building the trust necessary to enable successful exchanges. Crewe and Gregson (1998) argue that trust is engendered at car boot sales through ongoing personal relationships and social networks between sellers and buyers. Vaughan et al (2007) suggest that developing cyclical relations of reuse between producer and consumer enhances trust, by engendering an ongoing reciprocal relation.

Nissanoff (2006) discusses the development of systems to negotiate and optimise issues of trust in online exchange, particularly in eBay. From means of providing and viewing customer feedback on sellers through to the active policing of transactions by eBay, the effort and resources invested in maintaining trust in C2C online exchange is indicative of the difficulties that arise in buyer-seller relations where the conventional bases of trust are absent.

Granström (2006) highlights the importance of the reputation of the organisation behind the furniture reuse scheme as the basis for trust of both donors and recipients. However, she also mentions the significance of regulation, specifically fire safety certification in promoting use. This raises issues of trust in products themselves, rather than in the specificity of relations of exchange. Particularly with the sort of complex products that lend themselves to remanufacturing, the reliability of the product cannot usually be assessed by a potential purchaser. Even when it comes to relatively straightforward remanufactured products there is evidence of limited trust. Fletcher et al. found that over 80% of their respondents believed retreaded tyres to be less safe than new tyres, and almost the same proportion said they would never buy a retread (Fletcher et al. 2003). The centrality of consumer trust in the promotion of remanufactured goods is recognised by definitions of

remanufacturing which specifically include the provision of a warranty at least equivalent to that provided for a new product (Parker and Butler 2007).

### **3.6 Reuse as part of socio-technical systems**

Research on second hand consumption seems to have difficulty of breaking out of the linear models of production and consumption which have dominated the economy with which they have developed. Studies overwhelmingly focus on reasons for acquisition (or not) of reused goods; and, to a much more limited extent, the uses to which they are put. Remanufacturing and reuse of products demands the development of effective cycling of goods back into circuits of reuse. Arguably, consumers have to be understood as parts of the systems through which these cycles can be established and maintained and so research needs to confront how consumption practices are embedded within socio-technical systems which can either promote or militate against re-use, with limited space for consumer attitudes to play a role.

Vaughan et al (2007) argue that attention is required to the socio-technical systems that enable or prevent effective reuse. Their study focuses upon the socio-technical shift away from delivered bottled milk, associated with the development of domestic refrigeration, of supermarkets and associated supply chains, and with such technological and infrastructural developments, changes in consumer practices and expectations of freshness, convenience, packaging and disposal. From in depth interviews with users of a doorstep milk delivery service, the authors identify the complex range of motivations that converge in the decision to use the service, including: convenience of delivery and easy management of milk supply; the avoidance of practical and moral difficulties of recycling or disposal; the properties of the milk bottle as symbolic of community and as means of establishing and maintaining relationships with others involving reciprocity and care, in contrast to the supermarket.

Whilst not based on such detailed exploration, Lofthouse and Bhamra's study of refillable packaging more generally highlighted similar socio-technical issues in relation to deposit bottle schemes. For example, they cite one respondent who indicates that doorstep recycling prevents the use of reusable bottles. The authors point out that deposit systems seem old fashioned in the UK, but cite Platt and Rowe (2002), stating that in Finland 98% of soft drinks and beer packaging is refillable, indicating the flexibility of consumer practices depending in part on the systems of which they are part. Lofthouse and Bhamra also consider the implications for coordination and convenience for consumers in becoming part of certain systems of reuse, with the levels of organisation, planning and time commitment required for successful use of refill systems a significant barrier for some respondents. Conversely, some remanufacturing and reuse loops, such as single use cameras and refill systems which facilitate stocking-up, enhance convenience for the consumer (Lofthouse and Bhamra 2006).

A further issue of the ways in which reuse can embed a consumer within a system is the extent to which buying-in to a reuse or remanufacturing system binds the consumer to their choice for longer than they might wish. This is again picked up by Lofthouse and Bhamra (2006), with some respondents voicing fears that in buying-in to a system, first, they reduce their own latitude for future choices, likely in the face of changing opportunities; and second, that they are exposed to system failure, such as through a company collapsing, or simply deciding to stop supplying refills. Similar

themes are picked up by Cooper (2005) in his exploration of consumer attitudes towards product longevity, with a substantial minority of respondents deterred from more durable products by a fear of technologies becoming out of date (with men significantly more concerned than women about technological obsolescence).

### **3.7 Ownership and servicisation**

Across literature surveyed for this report, there is very little evidence of consideration of the ownership of products. It seems generally taken for granted that consumers will own the products they use. However, progress of remanufacturing in B2B systems has been in significant part achieved by moving to a service or leasing model, where the user pays for the service provided by the product rather than for the product itself. As the product remains the property and responsibility of the service provider, economic incentives for ensuring optimum longevity and efficiency of the product are more transparent. While a large number of case studies are available on successful 'servicisation' of B2B systems, there are very limited examples of B2C systems. Cooper (2005) articulates the argument for such servicisation in relation to product lifespans, but it is not something considered in relation to results from his research with consumers. Parker and Butler (2007) outline Sony's remanufacturing model for the repair of PlayStation® consoles in the UK (whereby customers sending in a faulty console get a previously remanufactured console back in return), but this is not followed through to engage with consumer experiences. Adams et al. (2005) include a brief discussion of a trial pay-per-wash laundry scheme implemented by Electrolux, but again with no evidence of significant engagement with users experience of the scheme.

Issues of ownership are central to Nissanoff's identification of eBay as indicative of the revolutionary development of an 'ecosystem' of C2C reuse: "Maximising the utilities of the secondary marketplace will require...a change in the way we think about ownership and about our attachment to the goods we buy." (2006: 13). This change is required to ensure liquidity of secondary markets as used goods are passed into exchange whilst still retaining high value.

### **3.8 Ethics of care**

The responsibilities that people recognise towards possessions, is a theme generally submerged by dominant accounts of a consumerist and materialistic society, but brought to light by authors in a number of ways. 3.1 above considered the role of environmental responsibilities, but ethics of care towards possessions and the impacts they entail are more complex and nuanced than is captured by environmental concern. Gregson and Crewe (2003) argue that passing goods on to a further use, whether through sale or donation, is partly about the responsibility people feel to durable possessions in which they recognise persistent embedded value. They suggest that a conservative ethics of care was a significant part of respondents' accounts of why they participated in second hand exchange, an ethics with only tenuous connections to the environmental or social implications of buying new. Similarly, Cooper (2005) found a sense of responsibility to possessions, with respondents commonly reporting the desire that items they dispose of should go to some further good use.

While statistics of waste cast a long shadow over any optimism for such an ethics of care prevailing, these findings are encouraging for hopes of the progress of reuse

and remanufacturing. However, an extension of this attachment to and ongoing valuation of possessions also has some potentially negative implications for the cycling of goods. Recent research by Gregson and colleagues (Gregson 2006; Gregson et al. 2007) has highlighted the extent to which products that have fallen out of routine household use are hoarded in cupboards, attics and garages. For many products, particularly fast-developing technologies, secondary exchange has to happen quickly for any value to be recovered; a couple of years in a cupboard can be enough to erode the remaining value of an item.

## 4 Are there social patterns in attitudes towards reused goods?

Overall, the field of reused goods is too complex, and existing research on attitudes within it too patchy, for any clear conclusions about social patterns in attitudes to be drawn. It is useful to summarise some existing research and observations, but with the caveat that generalisations about systematic social differences cannot be made from the evidence so far available.

### 4.1 Socio-economic status

Clearly, so far as reused and remanufactured goods are cheaper than new, there is an alignment between buying reused goods and being relatively poor. The continuing validity of this relationship is borne out by a number of studies with relatively deprived consumers. For example, Williams reports that

“economic necessity remains the principal reason [for using alternative retail channels] amongst lower-income urban populations who view their reliance on such channels ... as a sign of their exclusion from mainstream consumption practices” (2002: 1897).

However, the picture of variation in attitudes to reused products according to social status is far more complex than this. To begin with, declining real-terms costs of many new commodities, notably clothes and home appliances, has reduced the price advantage of reused goods and brought new goods more within the reach of the relatively deprived. Secondly, a range of quantitative studies has shown that the majority of users of alternative retail channels would not be considered as socially marginalised (Williams 2002), with affluent social groups making up a substantial proportion of purchasers at both car boot sales (Stone et al. 1996) and charity shops (Mintel 1997; Mintel 2000; Williams 2002). The use of second hand retail outlets through choice rather than necessity opens up the range of different meanings and valuations that different second hand goods can have, as discussed in section 3 above. The ability to recognise the positive potential of second hand goods is, however, not independent of social status. As Williams (2002) found, it is the relatively affluent who enjoy using alternative retail outlets. Further, many of the positive motivations for buying second hand identified by Gregson and Crewe (1997; 2003), such as the pursuit of individuality and distinction, are related to social status. Whilst not dependent on financial wealth, it can take a certain amount of ‘cultural capital’ – associated with higher levels of education and social background – to be prepared to engage creatively with second hand retail environments.

### 4.2 Age/life-stage

No clear patterns emerge with any certainty from data relating attitudes or practices to age, as the following studies indicate. First, the Brook Lyndhurst survey found that people over 65 years of age are more likely report that they buy reconditioned/second hand appliances, as well as recycle and reduce car usage for environmental reasons (Brook Lyndhurst 2004). Secondly, the large scale research on carrier bags found that purchase of Bags for Life (B4Ls) was highest in the 45+

age groups and lowest in under-25s. The regular use of B4Ls was also identified with older shoppers or with larger households (Andrew Irving Associates 2005). Finally the Association of Charity Shops found that the 25-44 age range is the most likely to buy from charity shops and furniture reuse organisations (Association of Charity Shops 2006).

With age and life-stage, then, there are no easy correlations with attitudes to reuse or remanufacturing. It seems likely that key variables that can impact on reuse will vary with age. For example, older people may have more affinity with ideas of thrift and resource efficiency, enduring from their own or their parents' experience of relative scarcity. Meanwhile, young families are more likely to buy reused furniture and appliances due to limited resources. However, this small number of studies indicates that attitudes are specific to the sorts of commodities being considered and the motives people might have for buying and using them. The study of carrier bags, through qualitative research, went beyond identification of particular likelihoods of reuse for different age groups. The report suggests that higher levels of bag reuse in the 45+ age group reflected higher levels of organisation, routinisation of shopping and having spatial organisation at home so bags were at hand, for example kept in the car (Andrew Irving Associates 2005). These findings were broadly supported by Falcon (2006) who found bag reuse was commonest for medium sized (2-5 bags) and 'possibly planned' shopping trips; and that older age group are more likely to undertake medium-sized shopping trips. Such detailed findings reveal the limitations of looking for any simple correlations between age and attitudes to reuse, as understanding actual consumption practices depends on exploring their specificity.

### **4.3 Gender**

Again, evidence is much too limited to draw any general conclusions, and distinctions based on gender in this literature seem likely to be reducible to broader norms of gender roles. For example, the large carrier bags study found that women are much more likely than men to purchase B4Ls (Andrew Irving Associates 2005). This seems unsurprising when B4L purchase is found to be related to the size and routinisation of the shopping trip, given conventional divisions of labour within households. The Association of Charity Shops (2006) found that women are more likely than men to buy from charity shops, but men are more likely than women to buy from furniture reuse organisations. Again, this can be seen to align with broader gendered divisions of responsibility rather than any systematic difference in attitudes to reuse.

### **4.4 Regional difference**

Surprisingly, some of the stronger indications of systematic social patterns in relation to reuse is in regional difference within the UK. The ICM survey for esure found that more than twice as many people in the North of England (30%) and in Scotland (28%) as in the South East of England (13%) would be embarrassed to admit to buying second hand (esure 2006). B4L purchase is lowest in the North East (26%) compared to Greater London (38%) and Wales (41%) (Andrew Irving Associates 2005). Meanwhile, drivers in the North of the UK have a higher impression of, and rate of purchase, of retreaded tyres (AEA Technology plc nd) and, according to the ICM poll, have seen the biggest increase in the number of second-hand items in their home over the last five years. It is tempting to speculate on the patterns underlying these regional differences, but the data are clearly too patchy to support any valid explanation.

## 5 Conclusions

The key conclusion that can clearly be drawn from this review is that existing research on public attitudes, perceptions and behaviour relating to remanufactured, repaired and reused products is inadequate for meeting the challenges of promoting such products as part of a sustainability agenda.

The relative lack of directly relevant research reflects the marginal and largely submerged character of secondary exchange. Indeed, much of the literature covered in this review arises from research largely motivated by the marginal character of second hand exchange, which has attracted researchers keen to generate fresh insights into consumption. Accounts have therefore served to emphasise the distinctiveness of reuse from the mainstream of retail and consumption. This raises challenges for the mainstreaming of reuse. Given evidence that it is primarily a resort of necessity for those with limited means, or alternatively is engaged with precisely because of features of second hand exchange that place it outside of the mainstream – messiness, surprises, possibilities for the unique, the incredible bargain – what are the possibilities of moving remanufactured and reused goods into the mainstream of exchange and consumption? However, Gregson and Crewe specifically seek to limit the extent to which their account can be seen as placing second-hand economies as an ‘alternative’ economy:

“we would argue that the expansion of the second-hand market and its proliferation in various sites in the UK through the 1990s has meant that second-hand has become more closely entwined with exchange and consumption in the first cycle.”

(Gregson and Crewe 2003: 197-198)

Further, the above discussion has shown that both quantitative and qualitative research has revealed insights into attitudes, valuations and practices relating to remanufactured and reused goods that can guide further research, and action, to promote such goods. As discussed in section 4, from existing literature based on quantitative research, some credible patterns in how people relate to reused goods do emerge at the very general level. Essentially, there are those who feel compelled to buy second hand but wish that they did not have to. Then there are those who can choose whether or not to buy reused, for whom a decision to do so can reflect a wide range of motivations, from the economical and creative pursuit of otherwise mainstream purposes of consumption, through the enjoyment of second hand purchase to the pursuit of politically motivated anti-corporatist or environmentally responsible consumption. Beyond this very general level, the data currently available does more to support the position that attitudes and practices relating to reused goods are deeply situational, rather than to reveal any systematic social patterns.

It is in appreciating the context of such attitudes and practices that more in-depth, qualitative work has value. Existing work, as discussed in section 3, has revealed the wide range of factors which can converge into situations of second hand exchange. Patterns of attitudes and practices in relation to remanufactured and reused goods therefore vary widely depending on the type of product, the situation of exchange, the social location, attitudes and values of the consumer, and so on. The fact that something is second hand plays out radically differently for an antique sideboard from a reputable dealer than it does for a pair of jeans in a low-end charity shop. While both a refilled inkjet cartridge and a fully reconditioned and warranted plasma-screen television may be classed as remanufactured products, a consumer will

inevitably relate to them, in terms of assessing value and risk, in completely different ways. In each of these situations, issues of price, the symbolic meanings of second hand, the spaces of exchange and attendant issues of trust, converge in unique configurations.

Consequently, overall understanding of how the public relate to remanufactured and reused goods can only be developed with targeted research into strategically chosen examples of the consumption of reused and remanufactured products. Similarly, initiatives to develop markets for reused and remanufactured goods need to focus on specific products and product categories, carefully chosen for intervention, based on good appreciation of the complex situations of exchange and use into which they must pass.

## 6 Priorities for future work

The lack of existing large scale quantitative data on attitudes towards remanufactured and reused goods should not be taken to mean that a survey should be commissioned on this general topic. Classifications of products which are convenient for environmental policy and for operations management, such as that of 'remanufactured', do not necessarily have any stable or transparent meaning for people being surveyed about what they think about what they buy. As stressed above, understanding of public attitudes towards remanufactured and reused goods requires targeted research on strategically chosen examples that will give insights into key issues around consumer acceptance of reused goods.

The limited literature on public attitudes towards remanufactured goods is no doubt largely explained by the lack of empirical opportunities, given low awareness of, and limited opportunities to purchase, remanufactured goods. However, there appear to be more opportunities than have been taken, with only a handful of studies considering how consumers relate to single-use cameras, refilled ink cartridge and retreaded tyres. Product categories such as these, where remanufacturing is already established, offer relatively straightforward opportunities for advancing understanding. Similarly, more radical B2C product service systems should be sought out for exploration where they are available. Such studies would help to redress the balance of work on reused goods from their current emphasis on informal and alternative means of exchange.

Research on consumers' location and roles within product service systems would also begin to fill a major gap in existing research. Only a couple of the studies reviewed above researched consumers as located within ongoing systemic relationships of reuse or remanufacturing – one on milk bottles (Vaughan et al. 2007) and on refillable packages more generally (Lofthouse and Bhamra 2006). Overall, existing research on consumers is framed by a linear model of production and consumption. Consumers are framed as purchasers, often as rational economic agents making utility maximising choices. However, within circuits of reuse and remanufacture, consumers have to be accommodated and enrolled as part of the overall systems that enable the cycling of products.

Within existing remanufacturing literature, there is a divide seen between B2B relationships, where servicisation is relatively feasible, and B2C relationships where

the potential for servicisation is seen to be limited by the hedonic and aesthetic motivations of private consumers, as against the utilitarian and economically rationalist motivations of business users. Research into existing B2C product service systems should critically explore the potential for extending service systems for private consumers. Rather than starting from ownership of a product, research is needed to understand what services consumers accomplish through those products. Such 'services' can include aesthetic and symbolic ends as well as the utilitarian, but a holistic understanding of why consumers have and use particular products is needed before the potential for servicisation can be fully assessed. Existing product service systems should be explored even where they have only partial overlap with the environmental and resource efficiency concerns behind the promotion of remanufacturing. For example, the rapid development and normalisation of contract mobile phone packages offers insights into how consumers experience service-oriented relationships, and to commodities which they do not own in a conventional sense.

Overall there is a need for a substantial programme of research engaging constructively with consumers, if knowledge it to be available to enable the mainstreaming of reuse and remanufacturing. As well as exploiting existing opportunities presented by established remanufactured products and the service relationships of which they are part, research should also follow the impacts of new initiatives and interventions to promote secondary markets. There is certainly scope for conventional surveys of attitudes, in relation to carefully chosen examples and issues that will be meaningful to respondents. However, the greater priority in establishing the new models of producer-consumer relationships is to gain holistic understanding of how people fit within and relate to the socio-technical systems of remanufacturing and reuse.

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## Glossary of Abbreviations

<b>B2B</b>	Business to Business
<b>B2C</b>	Business to Consumer
<b>B4L</b>	Bag for Life – typically a large strong plastic bag sold at supermarket checkouts with guaranteed free replacement.
<b>C2C</b>	Consumer to Consumer
<b>CRR</b>	Centre for Remanufacture & Reuse
<b>EoL</b>	End of Life
<b>OEM</b>	Original Equipment Manufacturer
<b>WRAP</b>	Waste and Resources Action Plan