# Title: Consumption Work in the Circular Economy: a research agenda


## Abstract

Circular Economy frameworks have become central to debates and interventions that aim to reduce global resource use and environmental despoilment. As pathways to both systemic and micro-scale transformations, there remain many challenges to making Circular Economy actionable. One such challenge is facilitating the emergence of the 'circular consumer'. Here, we are all encouraged to shift everyday practices to consume new products and services and/or participate in the 'Sharing Economy': all of which are claimed, in some prominent debates, to automatically offer more 'convenience' for the consumer. In response, this paper argues that viewing such debates through the lens of Consumption Work offers a different picture of what it takes to be, and what we need to know about, the circular consumer. Consumption Work refers to the labour integral to the purchase, use, re-use and disposal of goods and services. This paper argues that the nature and scope of such work has been underplayed in Circular Economy debates to date, and that becoming a circular consumer requires varied and unevenly distributed forms of Consumption Work, which in turn, has significant implications for the success of Circular Economy. This paper thus proposes a research agenda into this topic, outlining five, inter-related, critical issues that a Circular Economy research agenda must address, including questions of who undertakes Consumption Work; to what ends; and how its multiple forms are coordinated within and beyond the household.


## 1. Introduction: Circular Economy and Consumption Work

'Circular Economy' (CE) is now central to debates and interventions that aim to transition systems towards greater environmental sustainability. While definitions abound, CE is commonly understood as transforming inter-linked production-consumption systems to ones 'where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised' (European Commission 2015: 2). Such transformations involve step-changes to industrial processes and product design, as well as reconfigured business models—for example from 'sale and-ownership' to 'product service systems' (Mylan, 2015)—that in turn impact consumption patterns, practices and norms. Although sometimes presented as a new framework, CE has its roots in fields such as industrial ecology (e.g. Clift and Druckman, 2016); sustainable and 'cradle-to-cradle' design (McDonough and Braungart, 2002); and 'natural capitalism' (Hawken et al., 1999): fields with their own histories of debate, experimentation and implementation (Reike et al., 2018).

As such, part of the appeal of recent iterations of CE is how they bring together disparate fields into a model of comprehensive, macro-scale transformations. However, as Gregson et al. (2015: 221) note, despite 'idealized visions of the circular economy' that propose a producer-led, industrial revolution, much CE policy and practice thus far is largely one of enhanced, post-consumer waste management. Nevertheless, the European Union and China are amongst

those now aligning their 21st Century regional development and competitiveness agendas with the perceived advantages of CE (e.g. see European Commission 2015; McDowall et al, 2017). According to the European Commission (2015: 2) this will help in 'protecting businesses against scarcity of resources and volatile prices' while creating improved system efficiencies, new jobs, and greater 'social integration and cohesion'

In response to such ambitions, a rapidly growing and cross-disciplinary research literature has emerged, exploring multiple facets of CE. This journal alone has published many CE papers including research focused on Sustainable Supply Chain Management (Sadrnia et al., 2020); Circular Business Model innovation (Guldmann and Huulgaard, 2020); and country-level enactments of the CE (Ghisellini and Ulgiati, 2020). Research on the consumption and consumer-related aspects of CE has also been part of this literature but to date has constituted a smaller body of work compared to other topics (Camacho-Otero et al., 2018; Ghisellini et al., 2016; Mylan et al., 2016), an issue partially reflected in the fact that less than 20% of CE definitions include 'consumption' as a key factor in interventions (Kirchherr et al., 2017).

This latter body of work at times utilises social psychology methodologies to, for example, model relationships between environmental awareness and purchasing intentions (e.g. Panda et al., 2020). Whilst insightful, critiques of such approaches outline the problems with supposing clear relationships exist between individuals' awareness, values or attitudes, and their consumption activity: the notorious 'attitude-behaviour' or 'value-action' gap (Kollmuss and Agyeman, 2002). As such, consumers' knowledge and/intention often illuminate little about what they actually *do* (Carrington et al., 2010; Davies et al., 2002; Solér et al., 2020). In response, other social researchers have foregrounded the importance of contexts of actions, e.g. the role infrastructure plays in facilitating forms of sustainable consumption (Solér et al., 2020): as well as the actual resource management practices carried out in households (e.g. Mylan et al., 2016; Pedersen and Manhice 2020). Together, this work underscores the importance of bringing varied social theories—which focus on the relationship between life as lived, and the materials, cultures and discourses these lives are embedded in—into CE research (Holmes, 2018; Mylan, 2015; Welch and Warde, 2015).

This paper builds upon, and contributes to, this body of theoretically informed social science CE research. The main goal is to argue for the analytical value of bringing the sociological concept of Consumption Work (Wheeler and Glucksmann, 2015a) into CE research, to establish an associated and comprehensive research agenda. Briefly, Consumption Work (CW) denotes forms of labour 'necessary for the purchase, use, re-use and disposal of consumption

goods and services' (Wheeler and Glucksmann, 2015a: 37). Such now-ubiquitous labour includes, for example, cleaning, sorting and removing household recyclables; scanning barcodes at a self-service check out; building flat pack furniture; or self-installing home broadband. As such, CW is now often a non-negotiable component 'to complete and complement an economic process' (Glucksmann 2016: 879), thus highlighting how the seemingly private domain of the home and of household consumption is actually an integral part of the successful functioning of macro-economic systems.

This paper argues that the lens of CW can thus offer vital insight into how consumer-focused forms of CE require both the reconfiguration of existing modes of CW (e.g. increased domestic recycling activities) and/or the establishment of new forms of CW (e.g. repairing or sharing material assets). In turn, the ability of individuals and households to undertake such CW depend in part upon various, vital resources (e.g. time, skills, social capital), all of which are not distributed equally among populations. This paper argues that therefore the nature, scale and distribution of CE CW will have a significant impact on the successful emergence of the 'circular consumer'. Yet, to date, this argument has not received much critical attention in the published literature or broader debates. Thus there is a need for an active and focused research agenda, proposed herein.

In making these arguments this paper first explores the role ascribed to the CE consumer in some mainstream policies and debates. It then outlines the theory and application of CW, arguing for its utility in gaining fresh insight into the role of consumption in CE. Then the theory of CW is applied to examples of consumer-focused CE practices including forms of sharing and repairing. This paper then concludes by outlining a research agenda for CW and CE, which is argued to offer much-needed insight into this integral part of broader CE agendas.

## 2. Consumers and consumption in CE: from acceptance to engagement

There is a growing body of research that examines CE consumption, including its dynamics in the household sphere as part of a CE agenda (see Ghisellini et al., 2016; Hobson and Lynch, 2016; Merli et al., 2018; Mylan et al, 2016). Such a focus is vital to any sustainability agenda. For example, the Committee on Climate Change (2019) calculated that UK emissions of 8,798 kg $CO2^{e}$ per household must drop to 1,160kg if we are to reach the goal of net zero emissions by 2050: a situation that prompted the ex-UK Government Chief Scientist to note that UK lifestyles must change and that we all must 'shift ourselves away from consuming' (Harrabin 2019a: no page).

This latter point is one many researchers and commentators have made for decades (see Conca et al. 2001). Yet, consumption indicators continue to show clear resource-use increases around the world (e.g. IRP 2017), even taking into account effects of the global Covid-19 pandemic on greenhouse gas emissions (see Lenzen et al., 2020) While some advocates argue that consumption in the CE is not about consuming less but consuming differently (see below), others point out that this assertion is problematic (e.g. see Hofmann, 2019). For one, certain CE actions (e.g. creating new markets for down- and up-cycled goods) are doing little to prompt much-needed absolute demand reductions, with considerable system-level rebound effects observed (Zink and Geyer, 2017). As such, CE research to date has arguably paid too much attention to forging and promoting new business markets and models and not enough to 'slowing the loops' (Merli et al., 2018) of existing markets and models.

How, then, is the consumer conceptualised in CE thinking? One much-repeated visual representation of CE (i.e. the 'butterfly diagram': see Ellen MacArthur, 2017 Foundation) places the user/consumer as *the* central node around which resources flow and new practices emerge i.e. those of sharing, repairing and maintaining goods, and moving goods on for reuse, remanufacturing, and /or recycling (Welch et al., 2016). Yet—despite the active engagement of householders required by many of these practices, as well as the skills, knowledge and time involved—the role of the consumer in CE has been framed primarily in terms of willingness to take up and 'accept' new business models and/or products (e.g. Camacho-Otero et al., 2017; van Weelden et al, 2016). Although one can debate what the notion of 'acceptance' means here, it arguably suggests a largely passive and unproblematic engagement with the requirements of CE (Hobson, 2020). That is, one where production-consumption systems change around us all and our role is to be the recipient (or not) of these changes as part of prevailing 'green growth' approaches (Alvarado et al., 2021).

Take, for example, the work of the Ellen MacArthur Foundation, the preeminent non-governmental proponent of CE. Their report 'Opportunities for the Consumer Goods Sector (2013) arguably places consumer participation in new goods and services as something of an after-thought. Once new CE market opportunities have been identified, 'Consumer research would…be needed to better understand consumers' acceptance' (2013 :59). Although others argue that we all should be included in creating CE goods and services from their initiation e.g. participatory sustainable design (e.g. see Sinclair et al., 2018), such messages do not appear to have infiltrated high-level CE discourses. Along similar lines, Repo et al. (2018: 249) assert that there is a pressing need for EU citizens to 'become integrated in policy planning as active

players in the realm of circular economy': a situation they argue is far from the current role ascribed to the consumer in EU CE policies.

How, then, is the consumer responding to CE interventions to date? Notable CE consumer research does exist, for the most part focusing on the willingness of consumers to undertake specific CE-related consumption practices (e.g. see Borrello et al., 2017; Gaur et al., 2018), which may or may not involve new forms of CW e.g. undertaking independent research into buying a new product before purchasing it. Such work sits alongside other research that explores the numerous barriers to the collective acceptance of new products and services (e.g. see Camacho-Otero et al. 2018). Taken together, findings to date have suggested little reason to be optimistic that such approaches to more circular consumption can deliver CE ambitious goals. For example, van Weelden et al. (2016) outline how refurbished mobile phones are often rejected by consumers looking to buy a new phone due to a lack of knowledge about their availability along with concerns about the process of refurbishment (see also Hazen et al., 2017). On the same topic, Hobson et al. (2017) outline how mobile phone users express reluctance to undertake any additional form of CW when purchasing or using their phones, as well as reluctance to recycle their current phones because of data concerns.

On similar lines, single product case studies exist that outline the numerous barriers to consumer uptake of CE business models and practices (e.g. Catulli and Reed, 2017; Leider et al., 2018). These include personal characteristics, price, confidence in the offer, convenience, and knowledge (Camacho-Otero et al. 2018; Schallehn et al., 2019). Thus, it appears there are many challenges in getting the consumer on board with the CE, particularly with more 'circular' products and services being brought into already crowded and competitive markets (e.g. consumer electronics: see Hobson et al., 2018), made more challenging by the 'inherent irrationality of consumer behavior' (Planing, 2015: 7)

One potentially fruitful way of reconceptualising such challenges is to bring the concept of 'Consumption Work' (CW) into conversation with such findings, which this paper argues could help illuminate missing or under-developed facets of the CE consumer. For one, talk of new CE business models often fails to acknowledge the CW required. This may include engaging in a range of material-specific recycling practices; borrowing rather than owning items; learning how to maintain and repair possessions; and/or acquiring the knowledge to choose products on the basis of 'circular' characteristics such as 'modularity' and product longevity. As such, the CE both introduces new, and extends existing, forms of domestic labour: labour

that is often represented, ironically, as being accounted for by the concept of 'consumer convenience' in the extant literature (Wieser, 2019).

However, as the remainder of this paper will argue, labelling CE practices as convenient tells us little about how the (potentially conflicting) demands of CE impacts on everyday lives, particularly when more than one practice is brought into play e.g. does more time spent repairing goods mean less time is available for other CE-related practices? It also does little to illuminate who, where and in what ways new forms of CW are distributed through populations: a vital issue if we think that alterations to consumption practices need to be defused and normalised throughout society, to become integrated into everyone's practices. The following section develops these arguments further, expanding on the concept of CW and using examples from 'sharing economy' practices to illustrate the argument further.

## 3. Consumption Work in the Circular Economy

### 3.1: The concept of consumption work and its relevance to the Circular Economy

Since early industrialization social researchers have been keenly interested in questions of divisions of labour. Initially focusing on the workplace, research explored how the specialization of jobs and skills have far-reaching ramifications for socio-economic equality, and thus broader distributions of political agency and power. Subsequent focus has included unpaid forms of labour e.g. gender divisions within households (Glucksmann, 2000) as well as how informal economies constitute networks of communal and household reciprocity (Pahl, 1984). Miriam Glucksmann (2009, 2013, 2016) has further extended these arguments (see also Wheeler and Glucksmann 2013, 2015a, 2015b) highlighting how a key part of unpaid labour is CW. That is, the forms of labour 'necessary for the purchase, use, re-use and disposal of consumption goods and services' (2015a: 37). This labour includes consumption enacted through varying modes of provision, whether ownership or access-based.

CW is thus not about any form of domestic labour. Specifically, it concerns the work that householders 'regularly perform' which 'is integral to the completion of a process of production or service provision' (Wheeler and Glucksmann 2015a: 3). Glucksmann (2013: 11) notes how many CW activities thus go unrecognised as labour but should be classified and analysed as such given how integral CW is to 'material social reproduction' (ibid.: 13). For example, studies of environmental labour within the domestic sphere (e.g. practices such as recycling and preventing food waste) have shown that women do more of this work (e.g. Organo et al., 2013), which means that 'men and women are differently affected by sustainable consumption policy' (Middlemiss, 2018: 46). And as the forms of labour required by us all to

consume continue to shift—e.g. the rise of self-service supermarket check-outs and self-assembly furniture (Wheeler and Glucksmann, 2015a)—so do the requirements and divisions of these forms of labour. Such requirements are not just a matter of having more or less time available to spend on said tasks. They also speak to the need for consumers to have access to particular skills, knowledge and/or other resources (e.g. tools for self-assembly furniture) as well as personal attributes (confidence, willingness): all of which are not evenly distributed amongst populations.

New forms of CW include practices that are a pivotal part of CE. The labour required for domestic recycling—cleaning, sorting, and putting items on the kerb, or taking them to a recycling station—is vital to the successful functioning of contemporary waste management industries and systems (Wheeler and Glucksmann, 2015a), with their incorrect execution being one of the main challenges for the modern recycling industry (Walsh, 2019). Add to that the other consumer / user practices that CE foregrounds (e.g. repairing, reusing and sharing) and it quickly becomes apparent that the consumers' roles in the CE is far beyond that of 'acceptance' of novel products and business models. And while it can be claimed that household eco-efficient technologies and products can sidestep some of these issues, doing most of the work for the householder, research has shown non-trivial forms of 'green labour' are still involved in the operation and management of, for example 'smart' domestic technologies (Farbotko, 2018). Thus, it is arguable that without the widespread adoption of the forms of CW that the CE necessitates, the entire project becomes untenable, particularly given comments that current CE framings and policies fail to resonate with citizens (Repo et al., 2018).

To be clear, the concept of the CW is not deployed here to bemoan the unpaid labour of consumers, as an exploitative facet of current systems per se. Nor does it go to the other extreme, celebrating the multiple benefits that CE practices are often charged with ushering in, for example, through forms of 'collaborative consumption' (see Botsman and Rogers, 2011) that are claimed to create other social 'goods' (see Penz et al., 2018). Rather, its work here is that of a conceptual intervention, the empirics of which are argued to shed new and important light on the reconfiguration of divisions of labour presupposed by CE visions and models, which includes the possibilities for their successful realisation, and for unintended consequences. As the next section will explore, this argument can be illustrated well through notions of the 'sharing economy': a central focus of CE debates to date.focus of CE debates to date.

### 3.2: The consumption work of the sharing economy

The 'Sharing Economy' is argued as playing a pivotal role in CE (e.g. Ellen MacArthur Foundation, 2015) and for this reason, this paper uses it as a key probe through which to explore the implications of CW within CE. Here new practices and platforms deploy 'underutilised assets, monetised or not, in ways that improve efficiency, sustainability and community' (Rinne, 2017: no page). This can take the form of the renting out of one's spare rooms or properties (as with AirBnB), or sharing surplus food in the local community (e.g. City Harvest London, no date). Such initiatives are argued to potentially create 570 billion Euros worth of transactions by 2025 (PWC, 2017), as well as fostering novel forms of consumption and new emotional and motivational engagements (Welch et al., 2017), while creating environmental benefits through reducing resource use (Bocken et al., 2017; Homrich et al., 2018).

However, research has shown that some sharing initiatives do little to address the social and sustainability issues they claim to overcome (Schor et al., 2016; Holmes, 2018). For example, research by Holmes (2018) has illuminated how sharing endeavours, whilst temporarily diverting some waste from landfill, can also see shared resources ultimately ending up there, with added CW for intermediaries. As such, there is a need to cast a critical eye over the actual outcomes and impacts of forms of sharing, including the role that new forms of CW play (e.g. see Schor et al., 2016). And in further understanding the dynamics of CE CW, there is arguably an important analytical distinction to be made between access-based and ownership-based forms of CE consumption practice, outlined in Table 1 below (see Wieser, 2019).

Access-based CE consumption is where 'no transfer of ownership takes place' (Bardhi and Eckhardt, 2012: 881). That is, goods can be leased, which may involve individual and unlimited access (e.g. the private leasing of a car); or limited and sequential access (e.g. joining a car-sharing club); or pooling, which necessitates simultaneous access (e.g. car-pooling with shared ownership) (Tukker, 2004). By contrast, ownership-based CE practices can involve sequential sharing, such as passing along unwanted items from one owner to the next: or co-owning assets such as housing co-ownership cooperatives. Although 'individual ownership' in Table 1 in reality falls outside the purview of SE, it does form a key component of consumer-focused CE practices e.g. the care and repair of owned goods to elongate product life spans (see Cooper, 2016). As such, Table 1 aims to capture various CE and sharing-related spheres of practice such as the peer-to-peer economy, the second-hand economy, the collaborative economy, and product-service systems, to show examples of them in terms of consumer involvement.

**Table 1: Circular Economy and Sharing Economy modes of provision** (from Wieser, 2019)

| | Individual | Sequential | Simultaneous |
|---|---|---|---|

| Consumption | | | |
|---|---|---|---|
| Access | individual access (e.g. product service system, leasing, pay-per use) | sequential access (e.g. renting, borrowing) | simultaneous access (e.g. pooling) |
| Ownership | individual ownership (e.g. product service system repair, maintenance, reduce) | sequential ownership (e.g. second-hand, gift, reuse, repeat exchanges) | simultaneous ownership (e.g. co-owning) |

All of the above practices require both distinct and overlapping forms of CW. For practices in the Individual Ownership category of Table 1, some argue they involve less CW by eliminating inconveniences caused by the current poor quality and obsolescence of owned goods. That is:

'For the customer, overcoming premature obsolescence will significantly bring down total ownership costs and deliver higher convenience due to avoiding hassles associated with repairs and returns'. (Ellen MacArthur Foundation, 2013: 76).

At face value this statement appears unproblematic. However, little is known about the CW involved in buying longer-lasting products: what one assumes is being referred to in the phrase 'overcoming premature obsolescence'. Studies that have explored this area argue that 'product lifetime optimisation' consumer behaviour—across the stages of product acquisition, use, and disposal (Evans & Cooper, 2010)—is currently characterised by a lack of consumer knowledge and skills in identifying longer-lasting products. In turn, research into specific consumer practices of product care (including repair and maintenance) show that these require time, effort and competences, which can limit the involvement of some individuals. For others however, new forms of CW encourage participation, particularly when it is framed and felt as challenge and/or fun (Ackermann et al., 2018: see also Holmes, 2019). As such, assuming longer-lasting products equate with less CW overall is unproven and requires further scrutiny if it is to be a pillar of the CE.

Claims of greater convenience are also made for the access-based forms of SE. Influential multi-national consultancies such as PWC (2015) and Deloitte (2015) are amongst those who have underscored the business gains to be had from CE including comments such as:

'The sharing economy is convenient for both the consumer and the service provider. It provides consumers with convenient and cost-efficient access to resources and to access various services with a few taps on their smartphones' (Ernst & Young, 2015: 19).

Forms of leasing, renting, borrowing or pooling that are facilitated digitally are thus argued by advocates to relieve consumers from the 'burdens of ownership' (Cherry & Pidgeon, 2018). However, some researchers have turned their attention to the 'burdens of access' (Hazée et al.,

2017). Here, research has found that while not having to repair, maintain or buy new privately owned goods is looked upon favourably by some, an equal number find it time consuming to borrow or rent goods (Hirschl et al., 2003). There are also feelings of added responsibility and at times anxiety about being in possession of non-owned products, which some users feel a need to take greater (not less) care of (see Cherry and Pigeon, 2018; Fraanje and Spaargaren, 2019).

In terms of sequential access, research on renting and borrowing has identified various forms of CW that users need to do, along with how these are experienced. For example, while car-sharing reduces the labour (and cost) of appropriating and caring for a car (Bardhi & Eckhardt, 2012) there is notable planning and logistical work involved in participating in car-sharing. This can include scheduling use of the car, potentially re-arranging plans due to the relative inflexibility of car sharing; returning the car; reporting issues with vehicles; and dealing with dirty cars or low fuel (Fraanje and Spaargaren, 2019; Hazée et al., 2017). For other forms of peer-to-peer borrowing and renting, Philip et al (2015: 1318) remark that:

'renters need to browse, find and request their wanted items, contact the seller for available times and places to meet for pick-up and drop-off, arrange payment, return the item in the same condition as originally rented and also leave feedback for the provider'

In the above research, their participants lamented the efforts required to take part in peer-to-peer sharing, leading the authors to conclude that these forms of CW can be a major deterrent for users. Fraanje and Spaargaren (2019) also found, in a study of car-sharing co-operatives, that many members found the social aspects encouraged by the service-provider to be burdensome emotional labour, preferring instead more impersonal consumption. Taken together, all of the above research points towards much more going on under the surface of the 'convenience' / 'inconvenience' labels given to CW in the CE to date. Indeed, accepting claims that the CE will ease CW burdens for consumers cannot be taken at face value and thus require much closer scrutiny, with the suggestion of a potential research agenda as such detailed in the following section.s, that many members found the social aspects, encouraged by the service-provider, as burdensome emotional labour, preferring more impersonal consumption. Taken together, all of the above research points towards much more going on under the surface of the 'convenience' / 'inconvenience' labels given to CW in the CE to date. Indeed, accepting claims that the CE will ease CW burdens for consumers can no longer be taken at face value, and thus require much closer scrutiny, with the suggestion of a potential research agenda detailed in the following section

## 4. The Circular Economy and Consumption Work: a research agenda

As the previous section outlined, research already offers some insight into the importance of considering CW in the reconfiguration of consumers' practices as part of CE. Yet, more much information is still needed, and this section sets out some key questions. For one, extant knowledge of CE CW remains fragmented, in terms of both terminology and empirical focus. Existing relevant research does explore the demands of CE CW to some extent, often under the guise of different concepts such as (in)convenience, effort, domestic labour and/or co-creation. However, these different concepts make it challenging to undertake direct comparisons between examples. As such, CW has thus far not been studied systematically in the CE context, beyond Wheeler and Glucksmann's research on domestic recycling (ibid.). This is a notable gap, as supposed benefits, like added convenience, represent an important value proposition for CE proponents. And yet the actual work consumers need to undertake, to invest in new practices compared to traditional ('linear') modes of provision, remains under-explored. While CE advocates make claims of 'hassle-free' services, studies show there is often significant effort required in doing repairs, purchasing second-hand, or participating in peer-to-peer sharing. How these all add up to helping create the 'circular consumer' (or not) remains to be seen.

There are several areas of research that stem from the above point. For one—while case studies of recycling, product service systems, and sharing platforms make up the bulk of the literature—it is notable that the practices of leasing, purchasing long-lasting products, co-ownership, and pooling are understudied (Wieser, 2019). This is a clear omission, as many of these practices are heavily implicated in current CE debates and policies. For example, the EU Action Plan for the Circular Economy considers prolonging product lifetimes as an important component of the CE (European Commission, 2015), exemplified in the 2019 'Right to Repair' legislation, which is a part of this overall strategy (Ehgartner & Hirth 2019; Harrabin, 2019b). Therefore, question here include what forms of CW are involved in realising this goal; how are the prerequisites for this work (e.g. access to information) currently distributed; and what is needed, to address any barriers that additional CW might create for consumers?

As well as particular practices that require further research, various components of CW are also under-studied. For one, some consumer engagements with the CE involve degrees of skill and creativity. While research has shown these can be lacking in some areas— e.g. identifying long-lasting products at the point of purchase—other research outlines how experience over time enables consumers to feel confident and competent in engaging with particular modes of

consumption e.g. when shopping at second hand markets (Crewe & Gregson 1998). In addition, CW can entail forms of emotional work that are only partially explored in research to date. For one, some CE modes of provision appear to make consumers feel obliged to take care of, and be responsible for, the condition of goods. One example can be found in a refillable milk bottle scheme (Vaughan et al., 2007) where consumers took extra care of, and felt some stewardship towards, the reused and returned bottles even though this was not required for them to participate in the service. However, other studies report the opposite effect i.e. consumers taking less care with sequentially accessed goods (e.g. Bardhi and Eckhardt 2012). This suggests that more attention needs to be paid to variations across different modes of provisioning, and in what ways consumers (are made to) feel responsible for the goods that pass through their hands, plus the impacts all of the above have on the take-up of new practices.

One notable feature of the research to date has been how it often examines one consumption practice at a time e.g. repairing goods, renting goods, or participating in a new product service system. For there to be a fuller understanding of the scope and changes to CW if the CE is to become a domestic reality, there also needs to be explorations of how CW is coordinated across household activities, along with the temporal dimensions of such activities. We already know that the adoption of one form of domestic practice can have (sometimes undesirable) knock-on effects on others e.g. more domestic recycling often leads to less CW in other waste prevention behaviours in a household (e.g. Cox et al., 2010). Yet, we do not currently know how potential conflicts between competing CE solutions play out. Nor, how any conflicts are, or are not, resolved amongst householders. Is there a ceiling to consumers' participation in the CE? And if so, what combinations of CE practices are tenable for what types of households? And what forms of supporting infrastructures are required to foster yet more engagement, to the point where household emissions are brought down to the levels recommended by the Committee on Climate Change (ibid.)?

A key factor in addressing these questions are issues of divisions of labour. This is an area rarely included in discussions of the CE but one that the concept of CW is especially attuned to. Research on household CW does show that there is an unequal distribution of labour, especially in terms of the gendered division of domestic labour (e.g. see Glucksmann 2016 on recycling). However, there exists little knowledge about if, and how, CE CW differs from established arrangements in terms of domestic division of labour. In this respect, comparative research could provide valuable insights. Such research could take account both the gendered division of labour within CE CW activities, and how other socio-demographic factors such as

household make-up, class, employment type/patterns, race and ethnicity all influence the uptake and engagement of CE CW. In short, who is doing the CW; why; and; to what affect?

Finally, there are questions of where and how to do CW research. For one, there currently exists a limited range of extant and easily visible form of consumption-based CE practice, which would allow researchers to trace the requirements they make of consumers and their impacts. In particular, while the uptake of singular CE activities is reasonably well-documented (e.g. numbers joining car sharing schemes), less is known about how many households are undertaking multiple forms of CE practice, which would enable questions of coordination to be addressed. Furthermore, there is the methodological challenge of how to conduct research on CW that forms part of private, domestic realms, that is often habitual and conditioned by unarticulated norms (e.g. see Wonneck and Hobson, 2017). Methodologically, such research has precedents in 'practice theory' research (Halkier et al, 2011; Warde et al., 2017), which often deploys detailed qualitative, *in situ* approaches, utilising small *n* samples to understand in detail the rationales and outcomes of particular consumption practices (e.g. Gram-Hanssen, 2010). While much of this work is descriptive of current practices, research into CE CW would need to adopt a more action-research ethos (e.g. see Doyle and Davies, 2013), wherein research happens alongside householders experimenting in consciously changing their practices e.g. recruiting a small sample of households to live like 'circular citizens' for several months (see Davies and Doyle, 2015).

Finally, research into CE CW needs to move beyond the domestic sphere and space of the household, to consider engagement with consumption-based practices in other spaces. This could be individuals coming together once a month to participate in a local Repair Café, or household engagements with community-based CE business models, whether they are explicitly labelled as such. This is because some consumer-based CE practices are not bound to the home, but are rather implicated in establishing new patterns of, for example, mobility practices: practices, which in turn, influence CE CW household dynamics.

## 5. Concluding comments

In reviewing the literature relevant to CE CW, two key findings stand out. First, CE CW has so far not been studied systematically beyond Wheeler and Glucksmann's research into recycling. Extant knowledge of CE CW is therefore limited, fragmentary, and scattered throughout studies framed through concepts such as 'domestic labour' and 'co-creation', and looser terms such as 'convenience' and 'effort'. Furthermore, there are considerable gaps in

CE literature, especially in relation to CW involved in co-ownership, pooling, repeat exchanges, and avoidance of packaging. Second, it is clear that forms of provisioning associated with CE, including those most strongly associated with convenience, involve significant CW. As noted, prevailing models of CE require the reconfiguration of existing modes of CW (e.g. increased domestic recycling activities) and/or the establishment of new forms of CW (e.g. repairing, sharing): all of which are assumed, in the long-run, to make life easier or at least more pleasant and socially connected for the consumer—an assertion that is far from proven to date.

In response, this paper set out five, inter-related, critical issues that a research agenda of CE CW must address. First is the importance of the coordination of CW across household activities. For CE consumption practices to be viable at the household level such CW coordination would be vital. Given the paucity of examples of household CE activity, understanding household CE CW is currently speculative, necessitating innovative, action-oriented research. Second, there is clearly a complex relationship between CW and consumption norms. For one, 'convenience' has a central place in contemporary consumption expectations, with its enhancement often assumed by CE advocates. Yet, the actual CW involved in CE options—and well as consumers' willingness to off-set convenience against other norms (e.g. not wasting resources)—is poorly understood. Third, and relatedly, CE CW involves degrees of competence, skills and sometimes creativity. How these may be acquired, diffused and thus become routinized and habitual is an open question. Fourth, research suggests that CW is often—but not always—infused with an ethic of care—for material objects, others and/or the environment. CE research must therefore pay attention to variations across different modes of provision and populations, as to the ways in which consumers are made to feel responsible and come to express an ethics of care.

Finally, CW inherently concerns divisions of labour. There has been little engagement in CE literature to date with how labour is being moved along the supply chain in new forms of allegedly 'circular' business models: and the implications for such shifts, in terms of what is being expected of, and what is possible for, the consumer / user. Such concerns must be central to a research agenda on CE CW, if any interventions are not to exacerbate already-existing inequalities or have knock-on effects of increasing overall resource-use. In short, just as energy-intensive processes are needed to sustain the material flows of the CE, so it goes for some forms of labour: labour that sits behind, and remains obscured by, headline assumptions such as those of increased consumer convenience. Thus, to fully evaluate the core claims for

the all-round benefits of CE, understanding the complexities of CE CW needs to be part of an enlarged and critical research agenda.

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