THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Gender, households and sustainability

Citation for published version:
Murphy, J & Parry, S 2021, 'Gender, households and sustainability: Disentangling and re-entangling with the help of 'work' and 'care'', *Environment and Planning E: Nature and Space* .
https://doi.org/10.1177/2514848620948432

Digital Object Identifier (DOI):
10.1177/2514848620948432

Link:
Link to publication record in Edinburgh Research Explorer

Document Version:
Publisher's PDF, also known as Version of record

Published In:
Environment and Planning E: Nature and Space

General rights
Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 24. Sep. 2021

Check for updates

Article

Nature and Space

Gender, households and sustainability: Disentangling and re-entangling with the help of 'work' and 'care'

EPE: Nature and Space
0(0) 1–22
© The Author(s) 2020

Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/2514848620948432
journals.sagepub.com/home/ene

Joseph Murphy
Independent scholar

Sarah Parry
University of Edinburgh, UK

Abstract

In rich, developed countries, many stakeholders are focusing on households as settings where progress can be made on environmental and sustainability issues. Related research, policies and interventions, however, tend to ignore gender dynamics, thus treating them as irrelevant, or exploit them to achieve sustainability goals. We challenge this regressive treatment and show how household sustainability can be progressive in relation to gender and sustainability simultaneously – doubly progressive. Specifically, we ask: How do gender and sustainability intersect in households? What are the normative implications of these intersections? To answer these questions, we disentangle the perspectives of 'work' and 'care', drawing on feminist and gender scholarship, and explore both in the domestic setting by focusing on sustainable technologies and sustainable consumption. In this way, the twin normative agendas of equality of work and expansion of care emerge as ways of linking gender and sustainability in households. Our conclusion considers tensions and overlaps between work and care to identify how they can be re-entangled. We argue that re-entangling work and care requires holding them in dynamic tension with care being the context for work and in this way a doubly progressive approach to household sustainability emerges.

Keywords

Gender, work, care, sustainable households, progressive

Corresponding author:
Sarah Parry, Science, Technology and Innovation Studies, School of Social and Political Science, University of Edinburgh, Old Surgeons' Hall, High School Yards, Edinburgh EH1 1LZ, UK.
Email: Sarah.Parry@ed.ac.uk

Introduction

Sometimes, it is helpful if readers know how a paper began its life. In this case, it began when the authors joined a UK-based research group exploring (un)sustainable behaviours from a social practices perspective.[1] Whereas many other approaches assume that behaviours are the product of rational, autonomous, individual choices or deeply held values, the social practices perspective locates them in complex nexuses of skills, materials and meanings (Shove et al., 2012). Because of the group's orientation many of its projects focused on households in developed countries and were ambitious in relation to theory and practice. However, they also tended to assume that households are gender-neutral when it comes to issues around environment and sustainability.[2] We found this perplexing given the wealth of social science research demonstrating how gender dynamics help to shape almost everything that takes place in households.

In fact, the assumption that gender has little or nothing to do with environmental and sustainability issues in the richest countries exists across a broad swath of scholarship (MacGregor, 2010b). Much of this is technical or managerial and as a result is weak on many aspects of the social. However, even that which does engage with the social aspects of environment and sustainability tends to focus on such things as race and class rather than gender (Buckingham and Kulkur, 2009; Middlemiss et al., 2019; Webb et al., 2016). For their part, those engaging with gender have often focused on matters such as the construction of knowledge about climate change, the disproportionate impact of climate change on women and the role of women as environmental activists (Agarwal, 2000; Gaard, 2015; Kaijser and Kronsell, 2014; MacGregor, 2006, 2010b). This is important scholarship yet in developed countries gender and environment/sustainability are linked every day in households and this domain requires further exploration.

This background helps to situate our paper. We are motivated by the general belief that progressive transformations are required in relation to gender and environment/sustainability and that these are intertwined (e.g. Gaard, 2017; Sturgeon, 1997). In this paper, we focus on the household as one setting where such transformations are needed. Thus, we ask: How do gender and sustainability intersect in households? What are the normative implications of these intersections? To answer these questions, we disentangle the perspectives of 'work' and 'care', drawing on feminist and gender scholarship, and extend both in relation to sustainability. To make progress on household (un)sustainability, we focus on two key areas, technologies and consumption in the domestic setting (see below), whilst recognizing interactions and overlaps between these.[3]

Before proceeding further, we will define key terms. For our purposes, 'gender' refers to the (re)production of masculinities and femininities, including such things as status, identities, norms, roles and relationships. 'Household' and 'home' are used interchangeably to refer to a single dwelling occupied by one or more people and a social institution. We use 'environment' to refer to the physical/material world and related challenges, whereas 'sustainability' encompasses these and a wider range of related social, ethical and political concerns. Household sustainability, therefore, involves diverse activities that seek to reduce the environmental impact of what goes on in homes and/or to contribute to sustainability in broader terms from this location. However, because our focus is primarily gender we do not interrogate the complexities of whether particular activities are/are not sustainable.

The following section describes the mainstream sustainable households agenda. We show that contributions tend to ignore gender dynamics, thus treating them as irrelevant, or exploit them to achieve sustainability goals. This raises the challenge of how to replace

conservative and regressive interventions with ones which are progressive in relation to gender and sustainability simultaneously – doubly progressive.[4] The third section introduces the 'work' perspective on gender dynamics in households and the next section extends this in relation to sustainability. Sections that follow do the same for the 'care' perspective. In the next section, we situate the discussion of household sustainability, work and care, in the context of the prevailing political economy of social reproduction. This gives us a more critical standpoint from which to view households and helps us to avoid a decontextualized analysis. After disentangling work and care, then we emphasize the importance of equality of work and expansion of care as twin normative agendas. Our conclusion considers areas of tension and overlap between these agendas in order to take up the challenge of how they can be re-entangled. We argue that re-entangling work and care requires holding them in dynamic tension where care should be the context for work, and in this way a doubly progressive approach to household sustainability emerges.

Households and sustainability

Over recent years, 'households' have become a key focus for action on environmental and sustainability issues in the richest countries. Explanations for this are many and varied but the story can be traced back to the 1992 UN Conference on Environment and Development (UNCED) where over 100 heads of states and governments endorsed sustainable development as an objective. Two arguments with implications for the wealthiest countries gained traction at this conference and are worth recalling: (i) sustainability requires changes to consumption and lifestyles in developed countries and (ii) in addition to national and international levels, sustainability requires local level action.

Following UNCED, these arguments were translated into policy and practice in specific ways. Most importantly for our purposes, lifestyles and the local were equated with what individuals do and what goes on in individualized households. This helps to explain not only the emergence of the household sustainability agenda but also the focus on technologies and consumption in the domestic setting. The first includes such things as roof-top solar panels, cavity wall insulation, low-energy light bulbs, air and ground source heat-pumps, biomass boilers and log burners. The second includes the purchase of all the above and other products, particularly food-stuffs, as well as household activities like recycling and composting. The boundary between technologies and consumption is indistinct but the categories are nevertheless widely used and helpful and we deploy them later.

There are many reasons why 'lifestyles', 'local' and 'households' were elided after 1992 but one important overarching influence was the political economic context of neoliberal globalization. As early as the mid-1990s, for example, Hinchliffe (1996) argued that:

> [the fetishizing of market forces and consumer sovereignty] ... resulted in the 'local' being largely equated with the 'individual' or the private consumer. Thus, rather than helping the earth beginning in the 'neighbourhood' or the 'community', it began in the 'home'. (Hinchliffe, 1996: 56)

'Place' is another geographical designation which fell out of favour in part for the same reason.

Whilst the focus on household sustainability can be critiqued it has nevertheless provided an important focus for research (e.g. Farbotko, 2018; Gibson et al., 2013; Gorman-Murray and Lane, 2011).[5] The corpus of valuable work includes intersectional analyses that differentiate 'responsibility' to act according to structural inequalities such as class and race (e.g.

Middlemiss, 2010). Other research engages with the fact that resource use in households is driven by social and socio-technical relations which are dynamic and difficult to generalize (Burningham, 2017; Burningham and Venn, 2020). Scholarship like this has opened spaces to consider the 'circumstances enabling families and personal relationships to be part of the solution to "environmental" issues, rather than [being] part of the problem' (Jamieson, 2016: 336).[6]

That said, many of the contributions to the household sustainability agenda are also problematic. For example, there is a rich seam of research focusing on new energy technologies and the (re)production of social norms in households (e.g. Naus et al., 2014; Walker et al., 2015). These studies are to be applauded in that they engage with the social dimensions of technology. However, they also tend to rely on generic or universalizing categories like 'users', 'inhabitants' (Walker et al., 2015: 495–497) and 'residents' (Naus et al., 2014: 437). In this way, they largely ignore or obfuscate gender, as well as other intersectional social categories.

Other contributions to the household sustainability agenda are worse in that they actively exploit gender. For example, Sunikka-Blank et al. (2018) advocate designing policies in ways that 'harness gender' to achieve household energy objectives. At one point the authors argue that '... women seem to be an underused resource in energy policies' (Sunikka-Blank et al., 2018: 115; also Druckman et al., 2012; Elnakat and Gomez, 2015; Tjørring et al., 2018). Similarly, Brough et al. (2016) are concerned that men avoid green behaviours because products and practices like using cloth bags are coded feminine. Rather than challenge the content of masculine or feminine stereotypes, they suggest 'masculine affirmation and masculine branding' (2016: 580) to encourage more men to adopt green behaviours.

Such exploitation of gender is also widespread in business where 'environmentally friendly' products often use gender norms instrumentally (Hawkins, 2012). As research on microwaves and shavers shows, products developed for men foreground their technical aspects whilst those targeting women foreground aesthetics (Cockburn and Ormrod, 1993; van Oost, 2003). However, as we show below, whilst prevailing social norms around men, women, masculinity and femininity can be designed into technology, both materially and symbolically (see Faulkner, 2001), this does not necessarily determine how they are used and/or their users.

What impacts do contributions to the household sustainability agenda which ignore or exploit gender have? Reflecting on two environmental campaigns which target women, MacGregor (2010b: 135) begins to identify the problem: 'Rather than questioning the traditional gender division of labour... [the] campaigns accept and affirm the gendered status quo – and want to put it [to] good green use'.

In general, contributions that exploit gender norms are likely to be conservative at best and regressive at worst in relation gender. For instance, returning to the topic of energy, smart meters may make the distribution of domestic labour more unequal by adding energy management to women's household practices (e.g. Tjørring et al., 2018). Such conservative and regressive interventions suggest the need for an alternative: a way of approaching household sustainability which is progressive in relation to gender and sustainability simultaneously – doubly progressive. In this context, we move on to explore work and care in the domestic setting.

Gender, households and work

Many of the most important contributions to feminist and gender research which focus on households begin with a deceptively simple intellectual step: the recasting of household tasks

as work. This can be traced back to economists writing in the 1930s who argued that households should be understood as sites of productive economic activity (see Beneria, 1999). They made this argument in the light of social and economic changes which put paid and unpaid productive activities '... into much closer and obvious comparison with each other' (Himmelweit, 1995: 6), particularly women cleaning and looking after children outside the home as paid employment. From the 1960s onwards, trailblazing feminist scholar-activists built on this foundation and argued that work is done beyond *and* within the home.

More so than anything else, gender–household–work scholarship focuses on the distribution of tasks (Doucet, 2015). The key insight, which is reproduced time and again in developed countries around the world, is that women spend more time doing unpaid domestic work than men, although this can be in situations where men and women living together spend the same amount of time in total working (including work which is paid and unpaid, within and beyond the home). That said, the pattern is not fixed. For example, using data from the US covering the period 1965–2010, Bianchi et al. (2012) show that women are spending less time on household tasks (16.2 h/week down from 30 h/week) than they did and more time in paid employment (almost an hour-for-hour trade). Simultaneously, men are spending more time doing household tasks (10 h/week up from 4.9 h/week), particularly outdoor chores, do-it-yourself (DIY) and childcare.[7]

Describing the distribution of work is valuable but we also need to understand related processes, and a number of scholars have highlighted the role of technology (Cockburn and Ormrod, 1993; Wajcman, 2015). Ruth Schwartz Cowan (1983, see also Jackson, 1992) made a seminal contribution in this area with a history of housework focused on 'labour saving' devices. Rather than accept the claims made by manufacturers for much of the post-war period, Cowan interrogated domestic realities and showed that new cleaning technologies can be accompanied by other changes which nullify labour saving benefits. In this case, new technologies were accompanied by new norms around cleanliness which lead to increased frequency of cleaning tasks to meet the higher standards – 'more work for mother' (Cowan, 1983).

In addition to norms associated with technology and living, housework (re)reproduces heteronorms (Goldberg, 2013), such as labelling care work feminine and DIY masculine. Cox's (2013: 582) comparison of different commoditized forms of housework in New Zealand – handyman and housekeeper – illustrates this and its consequences:

> [Handymen] were not faced with the worst of the poor pay and conditions that characterise the lot of domestic workers, nor was their labour overlooked by those they worked for as is often the case for those carrying out housework and childcare, be they paid or unpaid.

In this case, paid employment mirrors unpaid house work illustrating how the gendering of unpaid labour has wider implications for pay, status and fulfilment (Wajcman, 2015: 111–135).

At the boundaries of the concept of work, it is important also to consider the distinction between work and leisure. One aspect of this is the tendency to define what women do at home as work and what men do as leisure; something that can map onto experiences of the home as spheres of work or leisure respectively (Wajcman, 2015: 118). In general, this is hard to defend. Consequently, recent scholarship defines work more broadly, including things like DIY (see Cox, 2013; Moisio et al., 2013) and 'digital housekeeping' (Kennedy et al., 2015). Moreover, class-based analyses of men's housework in the U.S. offer more nuanced insights: working-class men are likely to experience DIY-related activities as work,

whilst for middle-class men it is more often leisure (Moisio et al., 2013). Hence, the doing of household tasks is intimately linked to the doing of identity for *all* members of a household. And by bringing men and masculinities into the frame of analysis, we enhance our understanding of *gender* (rather than women) and household activities.

Whilst the distribution of work between men and women is important it is also important to emphasize that family formations are diverse and dynamic (Doucet, 2015; Goldberg, 2013; Gorman-Murray, 2008). This moves us beyond a simplistic, fixed classificatory system of housework as feminine or masculine. Households can be comprised of groups of adults, same sex couples, families with no children, mothers who work and stay-at-home dads, children who never leave or return home after being away, people who 'sofa surf' for extended periods and so on. Clearly, the familiar household of a heterosexual couple with two children is only one of many forms. Household formations are also dynamic with such things as employment, parenthood and retirement interacting with who does what in complex ways over time (Goldberg, 2013; Jamieson, 2016).

What, then, is the progressive gender politics of household work? Building on the above, one answer is making visible that which would otherwise be hidden: the unequal division of labour in the home and the gendering of household tasks as feminine or masculine (e.g. Oakley, 1974). Beyond this is equality between women and men in relation to work done in households. However, this can be pursued in different ways and there is disagreement on the detail. For example, wages for housework, equal distribution of all tasks, equal distribution of total hours worked and/or role specialization but where all have viable identities including status and respect. The challenge is all the greater because progress (or lack of it) within the home, and the shape progress takes, is linked to gender (in)equality outside the home, most obviously with regard to paid employment and economic independence (Jackson, 1992: 156; see also Bianchi et al., 2012). Sustainability intersects with work because it will require substantial changes in household activities – different and additional (Farbotko, 2018; Gibson et al., 2013).

Work and sustainability

Conceiving of household tasks as work is one way to introduce gender into household sustainability and several researchers have made progress in this way. In this section, focusing on sustainable technologies and sustainable consumption, we distil some key insights from this work. In doing so, we are guided by Kennedy and Kmec (2018) who argue that there is a need to move beyond descriptive accounts of the gender gap in household environmental behaviours, towards explanations rooted in social context (see also Organo et al., 2013). Most obviously, we seek to go beyond merely observing that household sustainability means more work and this will tend to be done by women – although this is often the case (see, e.g. Carlsson-Kanyama and Lindén, 2007; Dzialo, 2017; Latchmore et al., 2018; Vinyeta et al., 2015).

Given the general association between technology and masculinity, it is not surprising that sustainable technologies in the domestic setting often have significant implications for what men do at home. Strengers and Nicholls (2018), for example, analyse 21st-century 'smart homes' in Australia – a term that covers aesthetics and sustainability. Because smart technologies, in the area of energy saving for example, are already masculinized, they argue that installation and use may result in '*more work for father*' (Strengers and Nicholls, 2018: 78, emphasis original). In doing so, they knowingly rework Cowan's (1983) 'more work for mother'. Organo et al. (2013), in another Australian study, focus on the building of vegetable beds and reach a similar conclusion. Such arguments challenge us to engage with the

changing distribution of domestic work for women *and* men associated with sustainability, although, currently, the latter receives limited attention.

Yet the relationship between who does what and the integration of sustainable technologies into homes is complex. Offenberger and Nentwich (2009, 2010) reveal this in relation to wood-based heating systems in Germany – biomass boilers, log burners. These can lead to more work for women or men, or both, for complex reasons. More work falls to women when they are installed in living areas which are feminized spaces. More work falls to men when they are installed in outhouses which are masculinized spaces (see also Jalas and Rinkenen, 2016). In addition, the technologies themselves are coded feminine (stress on aesthetics and home heating with technical competence downplayed) and masculine (stress on functionality and facilities management with technical competence emphasized) in ways that imply and construct users and locations accordingly.

These studies require us to extend our engagement with feminist science and technology studies. A foundational insight in this tradition is that 'domestic artifacts, like other technologies, are both socially constructed and society shaping' (Wajcman, 2015: 122). This means that we must understand how sustainability impacts on the dynamic relationship between pre-existing gendered routines/distribution of housework *and* the way in which gender is designed into technologies and infrastructures, thereby prefiguring users in gendered ways (Cockburn and Ormrod, 1993; Faulkner, 2001; van Oost, 2003; Wajcman, 2015). That said, technologies do not determine use/users. Indeed, the meanings of technologies and corresponding work can be redefined. Thus, understanding the potential of domestic sustainable technologies to disrupt or reproduce gendered divisions of labour is important.

Sustainable consumption is another area where the link between gender and household sustainability has been explored through the concept of work. The conclusion is that sustainable consumption invariably increases '... the unpaid workload for women, as environmental problems are moved to private life, making women more responsible for the "3 Rs" of reducing, reusing and recycling' (Reed and Mitchell, 2003: 325; also Buckingham and Kulkur, 2009; Dzialo, 2017; Hawkins, 2012; Sandilands, 1993). In relation to sustainable consumption, therefore, and in comparison with sustainable technologies, we do not see household sustainability changing the distribution of domestic work. In fact, the reverse is true; more often than not the existing distribution is reproduced and further embedded.

Why is this the case? Beyond the fact that women continue to be largely responsible for purchasing and day-to-day reproduction of households, meaning that additional work associated with sustainability often falls to them, the link between sustainable consumption and childcare is particularly important. Cairns et al.'s (2013) analysis of Canadian mothers' efforts to achieve the ideal of the 'organic child', for example, emphasizes the additional work and resources required (time, money and emotions). Through ethical food shopping, women who are 'good' mothers are responsible for protecting both their child's body and the planet from harmful pollutants. These ethical food discourses, like campaigns in the UK encouraging new mothers to adopt reusable nappies (Buckingham and Kulkur, 2009), subject women-as-mothers to collective pressures and obligations that are '... more pronounced than those facing just the intensive mother' (Atkinson, 2014: 564).

This shows that gender scholarship which interprets household tasks as work has much to offer our understanding of household sustainability. It is not, however, unproblematic. Most importantly, the key intellectual move – recasting of household tasks as work – remains contentious. First, it leaves intact capitalist notions that worthwhile human activity only takes place in the paid economy (Tronto, 2013: 86). Second, the underpinning politics of justice engenders a tendency to generate 'false universalisms' (Noddings, 1999: 19) regarding the progressive politics of gender and housework. Hooks ([1984] 2015: 105), for example,

has critiqued feminist thinking about work (paid and unpaid) as reflecting a white, bourgeois class bias, particularly arguments suggesting women '... need to get outside the home and work — to cease being "just" housewives' (see also Jackson, 1992). Instead, she argues ([1984] 2015: 105), '... it would be a significant and meaningful gesture of power and resistance for women to learn to value the work they do, whether paid or unpaid'. We therefore echo Himmelweit's (1995: 2) caution that, although the 'discovery of "unpaid work"' was important, '... something also was lost: the ability to give value to the personal and relational aspects of much domestic activity'. This takes us from work to care.

Gender, households and care

A second way that feminist and gender research can contribute to the household sustainability agenda is through the concept of care. Feminist scholarship on care insists on the importance of concrete, everyday engagement with care particularly at the household scale; and in our current times of social and ecological crises, calls to care more for people and planet feel increasingly important. In this section, we pause to reflect on the history and contours of care scholarship in order to highlight key insights, before moving on to explore how these are relevant to household sustainability.

Care has been a focus for feminist scholarship for over 35 years and various branches have grown (see Lynch, 2007 for references to wider literature). All care theorists agree that care is worthy of serious scholarly consideration. Many suggest that it is a prerequisite for survival and a virtue. This is captured in Fisher and Tronto's (1990: 40) widely cited definition:

> ... [care is] everything that we do to maintain, continue and repair 'our world' so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all that we seek to interweave in a complex, life sustaining web.

The starting point for understanding care in this sense is relationality in terms of its ontology, reasoning and other-centred norms. From this perspective everyone is a nexus of dependent and interdependent relationships.[8] This relational thinking can be contrasted with atomistic ontologies which underpin other areas of scholarship and various kinds of reasoning based on abstract, universal principles (Gilligan, 1982). Regarding household tasks, for example, the care perspective does not focus on equality of distribution but instead highlights the content of caring relations.

A key argument in feminist care research is that caring relations emerge in lived, social contexts (Puig de la Bellacasa, 2017; Tronto, 1993, 1995, 2013). This is important for several reasons. It begins by making visible the (un)caring relations of all. In the context of feminist politics, this avoids the trap of essentializing the link between women and care within or beyond the home – doing so would contribute to the reproduction of hegemonic femininity in contradistinction to hegemonic masculinity (Connell, 2002; Cox, 2013; Pease, 2019). More broadly, however, emphasizing the social shaping of care establishes it as a socially produced phenomenon and something everyone – at least in theory – is capable of (Hultman and Pulé, 2018; Lynch, 2007; Tronto, 1995). Amongst other things, this gives us a way of understanding how neoliberalized care results in thin, impoverished caring relations (Tronto, 2013).

The household is central to care because it is a key site of affective care relations – or their absence (Lynch, 2007). Caring relationships between people co-habiting are the most obvious example. However, the caring relations of the household are much more wide ranging

and far reaching. As Jamieson (2016: 339) has emphasized, '...families and informal networks of care are not separated off from wider social worlds as they perform their functions of creating and sustaining 'individuals'...'. Thus human–human care extends in a myriad of ways beyond the boundaries of households into communities, and beyond the boundaries of nation-states where people reside.

In addition to human–human care, scholars have explored affective relations between human and more-than-human life. Research linking people and pets is an example (e.g. Gillespie and Lawson, 2017; Haraway, 2008). This work is important not least because of the way it transgresses the human/more-than-human life boundary and challenges the anthropocentrism which characterizes most explorations of care in households (Plumwood, 2002). Relations across the human and more-than-human life divide are not (or need not be) restricted to pets, however. As Puig de la Bellacasa's (2017: 169–215) exploration of human care for soil through permaculture practices illustrates, such relations can extend to those between people and all aspects of life and living communities.

Beyond human to human and human to more-than-human life relations, are those connecting humans and household technologies and infrastructures. Pols and Moser (2009), for example, focus on health technologies in the Netherlands and compare a robot dog (Aibo) designed to be a fun and playful companion and a robot cat (I-cat) designed to complete tasks on request and offer comfort and service. The authors note a significant difference of 'affective appeal' to elderly users with a chronic illness: 'The robot dog, once embraced, is more affectively motivating and valuable to use than the robot cat. Mrs Jones loves Aibo. I-cat will, at best, be appreciated' (Pols and Moser, 2009: 169).

Less positively, Puig de la Bellacasa (2011) focuses on household assistant technologies and notes how they can erode care. She highlights the perfunctory way that some people interact with their assistants and more subtly 'how assistant technologies confirm certain everyday tasks as superfluous compared with the valuation of "autonomous agency"' (Puig de la Bellacasa, 2011: 93). In ways like these, affective relations can be (un)made as people interact with technologies (see also Martin et al., 2015).

These examples and arguments take us to the progressive potential of care for households and other settings. The expansion of care as a normative agenda – or, to link Tronto and Puig de la Bellacasa, more and better care – has at least three interrelated aspects: make relations which already exist more caring by changing their content, thicken existing caring relations by adding additional dimensions and extend caring relations to who/what is currently neglected. Taken for granted associations between gender and care must also be unsettled to revalorize the care/caring of all (see Hultman and Pulé 2018). This involves paying increased attention to interdependency and collective responsibility (including human to more-than-human life), by all, which in practice requires increased resources: time, money and emotions. Tsing (2012), in seeking ways forward from the perspective of an anthropologist concerned about networks of global capitalism, makes the case for love and care along these lines. Whilst recognizing potential problems and pitfalls she argues that care can mean forming/joining 'under-the-radar' alliances and coalitions, through which people act together in solidarity with other people and more-than-human life leading to change.

Care and sustainability

Care offers an alternative way to integrate gender into household sustainability. In this section, we return to the key areas of sustainable technologies and consumption and explore this opportunity. Understanding people and more-than-human others as 'constantly

enmeshed in relationships of care' (Tronto, 1995: 142) enables a re-reading of household activities and opens spaces for new forms of interventions, particularly by connecting what appear to be individual, private actions with collective actions (Puig de la Bellacasa, 2017: 160).

A starting point is to observe that design matters. Strengers (2014) draws attention to this with a simple but powerful question aimed at designers of smart homes – 'Are you designing for Resource Man?' 'Resource Man' is the ideal-type rational, autonomous, masculine energy consumer some innovators design for and in doing so help to (re)produce.[9] As an alternative Strengers (2014) proposes designing for 'mess', 'slow time' and diverse humans/ non-humans. Building on the discussion of care and technology in the previous section, we would argue that designing for 'affective appeal' is another way to expand care within the household (Pols and Moser, 2009).

'Resource Man' also tells us something about designing in/out connections between households and what lies beyond their boundaries. Central to this is the difference between self-sufficiency that focuses on individual or household needs and relational cooperative and collective provisioning. Many sustainable 'smart' technologies emphasize not just the autonomous individual but also the self-sufficient household – albeit one connected to long supply chains and large technical systems. Thus, caring relations are limited to 'one's own', denying mutual vulnerability and wider connections (Puig de la Bellacasa, 2011; Tronto, 2013). Care, however, points towards building relationships beyond as well as within the home. Community owned co-provisioning infrastructure, such as district biomass heating and renewable energy micro-grids, might be examples of more sustainable infrastructural options if we focus on care and relationality (see Murphy and Smith, 2013; Seyfang, 2010).

Beyond design, it is important to focus on how men and women care for and through technologies and infrastructures, or fail to. For example, Cox's (2013) research in New Zealand shows that for men DIY can be an expression of care *and* masculinity, and 'this version of masculinity makes caring for family and friends in certain ways more possible or desirable' (2013: 587, see also Moisio et al., 2013). Thus, projects completed by men, like building vegetable beds (Organo et al., 2013) and maintaining biomass boilers (Offenberger and Nentwich, 2010), can be part of how household sustainability and masculinity can be remade at the same time.

More publicly, Buckingham (2005) focuses on women in London (UK) using allotments and their style of gardening; they tend to use fewer industrial chemicals, draw on the help of a broader array of people and generate more reciprocal arrangements. Significantly, as their numbers increase, this style can transform allotmenting communities overall. In addition to suggesting how care and caring can be de-feminized – this is how we all garden, not just how women garden – such remaking of allotmenting norms involves inviting others to build social and environmental relations (see O'Shaughnessy and Kennedy, 2010 on 'relational activism'; Puig de la Bellacasa, 2017 on permaculture).

Turning to the linkages between care and sustainable consumption the idea of care as virtuous and relational comes through strongly in research which focuses on mothers. Care, here, involves women caring for children in ways that are good for young people and the planet. An example from a Canadian study is 'precautionary consumption' (MacKendrick, 2014) to avoid exposing children to toxins (Cairns et al., 2013). Some women describe such consumption as offering '. . . a source of identity and pride as a caring mother' (Cairns et al., 2013: 109). This can be the case even in contexts where domestic activities are distributed inequitably suggesting that progressive gender politics must link work and care in a subtle way.

Beyond relatively familiar possibilities like this lie more radical ways of linking care and sustainable consumption. Dombroski (2016: 632–633) illustrates this in her research into families in Australia practicing nappy-free infant hygiene to reduce the consumption of nappies and associated energy. She begins by asking why women involved in sustainable consumption are not '. . . understood as environmental activists of everyday practice?' Then, working with her reinterpretation of nappy-free infant hygiene as everyday environmental and social activism, she goes on to observe how it also has implications for what both men and women do, thus incorporating a progressive gender politics to open up the possibility of de-feminizing care (see also Hultman and Pulé, 2018).

Whilst recognizing the scope for positive links between care and sustainable consumption we must not be naïve. Hawkins (2012) emphasizes this in research on marketing campaigns in Canada which encourage women to buy particular food products and in so doing materially benefit women in developing countries.[10] Such campaigns build on essentialized understandings of women as carers and show how care and sustainable consumption can be neoliberalized. As Hawkins (2012: 755) points out, in this situation, the environment and sustainability agendas make women responsible in new ways (see also Latchmore et al., 2018; Vinyeta et al., 2015 on indigenous communities in Canada and the United States). Paying attention to the content of careful sustainable consumption helps researchers to avoid simplistic readings of the gender-care-consumption nexus as straightforwardly positive or negative (see Tronto, 1993, 1994, 2013).

Through care, therefore, we arrive at a different and valuable understanding of households with respect to sustainability. However, as with the concept of work, we must be aware of the pitfalls. Most obviously, it matters who cares. It is not possible or desirable to simply ignore questions of equality in favour of relationality. Vigilance is required here not least because of the tendency to naturalize the link between care, women and environment (MacGregor, 2006, 2010b). In fact, there are a multitude of problems, including the potential to coerce care-receivers, the exhaustion of care-givers and the ways it can work with neoliberalism. But, as Tronto (1995) reminds us, by training our attention to the concrete, we can go some way to attenuate these limitations.

Social reproduction, gender and sustainability

So far, we have focused on the internal dynamics of households. More specifically, we have used the concepts of work and care, and the themes of technology and consumption, to understand gender and sustainability in this setting. Households, however, do not exist in a vacuum. Rather, they are part of a global system of social reproduction and any discussion of gender, households and sustainability that fails to explore this is incomplete. In this section, therefore, we focus on insights that situate households in the prevailing political economy in order to move towards a progressive agenda (in our discussion and conclusion) for gender and sustainability in households.

It has long been observed that capitalism relies on households as much as markets and factories. This is the case because households are sites of consumption, and, more broadly, social reproduction – not least of current and future workers and consumers. In addition, feminists have emphasized that women around the world undertake a disproportionate number of the essential tasks associated with social reproduction and that they are poorly rewarded for doing so – economically and socially. Tasks which commonly fall in the category of care/caring provide the most obvious examples. Indeed, as Harcourt and Bauhardt (2018) stress, it is remarkable how little value is afforded to care.

One of the most important critical responses to this, pioneered by Marxist feminists like Silvia Federici from the 1970s onwards, is to link care and work/labour and in some cases to entirely reframe care as work (see Federici, 2012). Terms like 'care work' and the 'labour of social reproduction' (Mellor, 2019) are used for this purpose and illustrate the approach. For example, as Luxton argued some years ago, '... women's work in the home is one of the most important and necessary labour processes of industrial capitalist society' (Luxton, 1980: 13). Goals derived from this approach include 'wages for housework' and/or that the gender division of reproductive labour should be overcome entirely.[11]

Today, much pro/feminist and gender scholarship and activism has shifted focus from labour to identity – from the politics of distribution to the politics of recognition (Fraser, 2007) – but political economy still matters. This is particularly evident with neoliberalism where there are two aspects of concern. First, related privatizations and wider economic restructuring benefit some and burden others, and the additional burdens often fall on women because of the care they provide. Thus, the politics of labour still matters even as some scholars and activists shift focus to identity. Second, because neoliberalism promotes individualism and consumerism it is well placed to absorb and profit from the politics of identity. Indeed, the shift in focus has the additional benefit of helping to marginalize labour as a concern. For these reasons, those concerned about gender justice must engage with maldistribution and misrecognition (Fraser, 2007).

Not surprisingly then, whilst it is consistent with neoliberalism to frame sustainability as an issue for households, consumers and the private sphere (Farbotko, 2018; Hinchliffe, 1996), it is problematic in relation to gender. It can involve shifting the costs of capitalism, such as waste management, to a domain where no economic value is placed on household activities as profits accumulate elsewhere (Wheeler and Glucksmann, 2015). When this happens, as MacGregor (2010b: 134) notes, the traditional division of labour means that unfair asymmetries are likely between men and women. But identities are also involved. We have discussed examples above where women as carers and men as non-carers are being constituted and mobilized for profit in the name of sustainability (Brough et al., 2016; Hawkins, 2012).

These observations illustrate that any discussion of gender, households and sustainability must be placed in the context of political economy. This is necessary not only to understand the dynamics which are operating today, and to avoid naïve treatment of concepts like work and care, but also to conceive of plausible alternative political economies. Elements of the latter can be illustrated through two different feminist visions of sustainability that situate the internal dynamics of households in their wider political economy of social reproduction.

One approach to the challenge of linking gender and sustainability is illustrated by MacGregor's (2010a, 2010b) call for 'feminist ecological citizenship':

> ... my position [is] that *feminist ecological citizenship* is a more promising and more radical language for articulating the goals of ecofeminist politics than the language of care... In agreement with feminist moral philosophers (e.g. Tronto 1993), I argue that, in the context of a white male-dominated society that constructs and enforces women's capacity to care, ecofeminism should not romanticize but *politicize* this capacity... An ecofeminist approach to citizenship... ought to recognize care as a form of work and a moral orientation that has been feminized and privatized in Western societies and that must be distributed fairly within and between societies if gender equality and sustainability are to be realized. (MacGregor, 2010a: 22, emphasis original)

This approach emphasizes care as unfairly distributed work *and* as a moral orientation shaped in a particular way. Thus, whilst it prioritizes the politics of equality it also recognizes the politics of relationality.

An alternative vision is provided by Gibson-Graham's (2011) 'feminist project of belonging'. Their call for 'more than human regional development' is arrived at by developing the moral and political aspects of care geographically. Gibson-Graham (2011: 4) hope to transform capitalism via 'diverse pathways of becoming in different places and regions' particularly by building relationships between people and place, humans and non-humans, humans and technologies/infrastructures.[12] This involves practical activities like local and distributed production and consumption of food and energy, local water management, new currencies and forms of (non-)economic transaction. More broadly, however, it involves an 'affect of love and an ethic of care' (Gibson-Graham, 2011: 3). This vision is exciting but they say nothing about (in)equality in relation to labour, even though implementing it will take work, particularly at the household and community levels.

Discussion: disentangling

The Households and Sustainability section showed that action to promote household sustainability often ignores or exploits gender. Such action, therefore, can be conservative or regressive in relation to gender politics. In this section, we clarify this problem and begin to identify an alternative. To do this, we answer the questions we posed at the outset: How do gender and sustainability intersect in households? What are the normative implications of these intersections? This can be understood as a process of disentangling gender and sustainability using the concepts of work and care.

The intersection of gender and household sustainability as work

Household work is productive activity forming part of the wider economy. Today, although the gap is less than it was, research shows that women still tend to do more household work than men. Reasons for this include unequal distribution of work between men and women within and beyond the home, gendered coding of different tasks and roles in homes, and sometimes research fails to see what men do at home because it is categorized as leisure. In addition, household work tends to not be directly compensated and has lower status than work done beyond the home.

Work is also a key intersection between gender and sustainability in households. Household sustainability more often than not means more domestic work in total (Mellor, 2019). In this context, there are many ways in which sustainability can reproduce or further embed the existing division of labour. This is particularly the case where childcare, consumption and sustainability meet (e.g. Cairns et al., 2013). However, household sustainability may also bring about change. Conventional associations between men and technology, for example, mean that the deployment of sustainable technologies in homes can lead to 'more work for father' (Strengers and Nicholls, 2018).

What are the normative implications of this intersection? Equality of work is the overarching normative ambition associated with this perspective but it can be achieved in different ways which may be linked e.g. compensation, reassigning and restatusing. Thus, changes in the name of household sustainability which act against these are likely to be regressive in relation to gender even if they are progressive in relation to sustainability. This happens, for example, when gendered responsibilization means that sustainable childcare is allocated to women with no other accompanying changes (Buckingham and Kulkur, 2009; Cairns et al., 2013; Dzialo, 2017; Hawkins, 2012; Reed and Mitchell, 2003; Sandilands, 1993). Given how little thought tends to be given to gender it is not surprising that feminist analyses in general have been scathing regarding the impact of sustainability on

women's work in households (e.g. Farbotko, 2018; Kennedy and Kmec, 2018; Organo et al., 2013).

In contrast, we would argue that changes which, in addition to improving household sustainability, reward the worker financially, encourage more even distribution of labour, and, perhaps most importantly, contribute to enhancing the status of an activity could be doubly progressive. Rather than just reallocating new work so that overall there is a rebalancing there may also be opportunities to rebundle existing work with the help of technology; for example, perhaps monitoring the energy consumption of a smart fridge could lead to the redistribution of responsibility for shopping. As illustrated by childcare, however, a central challenge is the gendering of tasks. In addition to recasting looking after children as also masculine, environmental responsibility must also be rendered as part of masculinity (Hultman and Pulé, 2018; Pease, 2019). If this happens then men adopting reusable nappies and organic baby foods become possible (Dombroski, 2016).

The intersection of gender and household sustainability as care

Although work is important, care – as something ethical–political rather than an identity – is an alternative way to understand household dynamics. This concept revalorizes affective relations and interdependence between and beyond humans, in contrast to instrumental relations and autonomous ontologies. Whilst often understood as feminine, and women on the whole do more caring, care is socially produced and so is something everyone can do – at least in theory.

Care, then, is a second way in which gender and sustainability intersect in households. Because care is produced rather than given we have argued that the design of sustainable technologies and infrastructures is particularly important. Some designs build relations, interdependence and affect whilst others erode or devalue them. Another powerful link between household sustainability and care exists in consumption which is undertaken to nurture children and family, life and community, place and region. This is where concern for health, environment and others can change purchasing decisions and behaviours.

Expansion of care is the broad normative ambition of those working on care and we have argued that this can be achieved in three interrelated ways: make relations which already exist more caring by changing their content, thicken existing caring relations by adding additional dimensions and extend caring relations to who/what is currently neglected. The example of women allotmenting illustrates what this might mean in practice (Buckingham, 2005) including an increase in reciprocal and non-instrumental arrangements between plot holders, emphasis on collective community action and increased concern for ecology illustrated by reduced use of chemicals. We have emphasized this example particularly because allotments and allotmenting in this way bridge the divide between individuals/individual households and community understood in social and ecological terms (similarly see Hanson, 2010, on gender and mobility).

Unfortunately, many changes associated with the household sustainability agenda lead in the opposite (regressive) direction. This is illustrated by household sustainable energy technologies which are designed for 'Resource Man' and smart technologies which create semi-autonomous houses controlled remotely by energy corporations (Puig de la Bellacasa, 2011; Strengers, 2014). Pro/feminist analyses of caring for the environment through household activities such as green consumption marketing have illuminated the feminized nature of expanding care: devalued and naturalized, often invoking women as a resource for environmentalism (Hawkins, 2012; MacGregor, 2006, 2010a, 2010b; MacKendrick, 2014). Masculinized environmental care, in contrast, is diminished through associations between

femininity, the home and green behaviours (Brough et al., 2016; Hultman and Pulé, 2018; Pease, 2019) or obscured, particularly when classified as leisure or work (Cox, 2013; Moisio et al., 2013; Organo et al., 2013; Tronto, 2013).

That said, with care in mind, the household sustainability agenda is an opportunity for doubly progressive interventions. After all, household sustainability opens up a new frontier where caring relations can be (re)built. A doubly progressive agenda when entered through the 'different door' (Gilligan, 1982) of care invites us to do nothing short of reimagining and politicizing gender norms of care, and relations between people and more-than-human worlds (Puig de la Bellacasa, 2017; Tronto, 2013). Focusing on concrete, everyday engagement of care steers us *towards* the complexities of care. Examples of this rest in feminist research highlighting the role of women in catalysing new caring relations that recast *all* involved as communities, collectives or networks, including relations with more-than-human worlds (e.g. Buckingham, 2005; Latchmore et al., 2018; Puig de la Bellacasa, 2017). When understood as a radical tool (Tsing, 2012) in this way care can help households to be part of the solution – to be sites where patterns of care are (re)learned and creatively enacted (e.g. Jamieson, 2016).

In this paper, we have been seeking a vision of the household which is progressive in relation to gender and sustainability simultaneously – doubly progressive. Treating work and care separately takes us some way towards this in that they show us what doubly progressive means at two key intersections. They also create a problem, however, in that they do not rise to the normative challenge in the same way. Having established how each separately contributes to our understanding of gender and sustainability, we now turn to the challenge of developing a more complete account.

Conclusion: re-entangling

In many ways, this paper has been a process of disentangling. To understand how gender and sustainability intersect in households, we have focused on work and care and have spent much of the time separating these to clarify the contribution each can make. However, we are now at the point where we need to re-entangle them. To do this, we will focus on tensions and overlaps, as well as the political economic context of social reproduction within which households are situated.

Many tensions exist between the agendas of work and care including in relation to household sustainability.[13] For example, sustainable household tasks, even when equitably allocated, will not necessarily expand care in desirable ways. Indeed, equitable allocation might reduce care; crudely, if a task done in a caring way is reallocated to someone who is less caring. Similarly, the care perspective emphasizes building relations between people, place, community, more-than-human life and so on, but the progressive gender politics of work is women's equality with men within the home and in the workplace. These are not aligned in terms of goal and scope, and conflict is possible.[14] In practice, then, protecting ones 'own' family from harmful pollutants through ethical food shopping – even if responsibility is redistributed – need not build collectivities, engender caring relations locally or globally or challenge human-centred ontologies. Instead, this can re-embed notions of autonomous individuals living in autonomous houses, thus delimiting care (see also Puig de la Bellacasa, 2017). Understanding how these tensions play out across diverse household formations will provide further insights into the pressure points.

There are, however, also many overlaps and points of connection between the progressive agendas of work and care which household sustainability might encompass. These are found where change brings about more equal work and expansion of care. Dombroski (2016)

reveals this in her study of parents choosing nappy-free infant hygiene to reduce environmental impact. This illustrates the potential to redistribute childcare and at the same time build relations and collectivities, between men and women (as parents), locally and globally, and with more-than-human worlds (Gibson-Graham, 2011). That said, such change cannot be conceived of merely as individualized choice but more accurately represents the connection between private actions and collective ones through 'everyday activism' (Dombroski, 2016). Identifying instances of overlap between the progressive agendas of work and care is only the beginning, however, further challenges include examining the limitations of building collectivities across intersectional social categories with gender such as class, race, national context and more-than-human worlds (Kaijser and Kronsell, 2014).

This leads us to the problem of political economy. As we argued at the outset, the pursuit of sustainability through the household is to a significant extent a neoliberal response to social and environmental challenges (Hinchliffe, 1996). And because inequities of work and recasting of care are features of neoliberalism we should not be surprised that related interventions at best ignore gender dynamics and in many cases are regressive. Thus, progressive change requires connecting everyday activism in households with political economic understanding and restructuring (see Gibson-Graham, 2011). This requires institutionalizing support throughout social and political structures, not least to free up the resources necessary for expanding caring relations (e.g. time, money and emotions) such as reducing the working week (see Schor, 2010). As Tronto (2013: 69; see also Federici, 2012) says, the change required to recalibrate the gendered meaning attached to all of our caring activities is '. . . so great a change that it can probably be called the next phase of democratic revolution'.

Significantly, although neoliberalism favours households as a social unit (only second to the consumer), the home also has considerable potential as a site for radical change. To appreciate this, we can return to the challenge posed by Hooks ([1984] 2015: 105): to value what we do inside and outside of the home (see also Himmelweit, 1995). While we privilege economic activity outside of the home, then we generate what Tronto (2013) calls 'free passes' out of taking seriously our responsibility to care and instead legitimize the commoditization of 'the dirty work' of care, often outsourced to women of colour and other minorities (see also Mellor, 2019). Yet the challenge of expanding caring relations to reconcile the social and environmental dimensions of sustainable living calls us all back to the home (and other places), to do more caring.

How then, should we re-entangle work and care to understand gender and sustainability in households? We argue, perhaps unfashionably, against collapsing work into care, care into work or offering new neologisms. On the contrary, we celebrate both debates which have substantial and diverse literatures and different normative goals. The diversity of household formations and possibilities of enacting sustainability militates against any one-size fits all model of work and care.[15] As an alternative, in relation to household sustainability, we seek to use both together, holding them in dynamic tension. In this way, we want to join – in both the sense of contributing to and linking – both conversations of those exploring what Farbotko (2018; see also Gibson et al., 2013; Gorman-Murray and Lane, 2011) calls 'domestic environmental labour' and those elaborating an ethic of care as relevant to gender and sustainability in our homes (e.g. Dombroski, 2016; Plumwood, 2002; Puig de la Bellacasa, 2017; Tronto, 2013). That said, we believe that care offers the most radical potential. The equitable distribution of household activities is important but it needs to be pursued in a context of care if we are to make progress towards sustainability in households.

Highlights

- Interventions to promote household sustainability tend to ignore or exploit gender dynamics to achieve sustainability goals
- Interventions to promote household sustainability should be progressive in relation to both gender and sustainability simultaneously
- Equality of work and expansion of care as normative agendas can be used to integrate gender into household sustainability
- A new approach to household sustainability emerges when expansion of care becomes the context for equality of work

Acknowledgements

We thank the anonymous reviewers for their generous engagement with our ideas, and the following colleagues for their comments on earlier drafts of this paper: Nina Hallowell, Lucie Middlemiss and Mandy de Wilde.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. The Sustainable Practices Research Group.
2. Middlemiss et al. (2019: 4–5) argue that the lack of engagement with gender, race and ethnicity by this group/approach is explained in part by the shift from focusing on individual decision making to complex social processes. This created a barrier, they suggest, to engaging with '. . .the characteristics of individual bodies. . .'. Interestingly, the group/approach also tended to bypass questions of power and political economy (see Soron, 2019).
3. See Farbotko (2018: Chapter 1) and Gibson et al. (2013) on the diversity of sustainable activities in the home.
4. We are grateful that one reviewer asked us to say if we are feminists or not, requiring us to think more carefully about this, but for various reasons we do not self-define as 'feminist', 'environmentalist' or similar. We find 'feminist' as a personal identifier problematic for many reasons including the diversity of standpoints falling under this label and the limited attention feminism has paid to men and masculinity – at least historically (Waling, 2019). 'Environmentalist' has similar limitations including a diversity of positions and in some cases failure to sufficiently engage with the social dimensions of environmental change and need for development in some locations. That said, we agree with both terms when they suggest a coming together of scholarship and activism. In this paper, we think it is better that the character of our progressive politics emerges through argument. We explore our gendered selves in relation to our own (un)sustainable household in a separate article.
5. Households are estimated to be responsible for 40–72% of each nation's greenhouse gas emissions, with developed countries being disproportionately higher than in developing countries (Committee on Climate Change, 2016; Dubois et al., 2019; Weidenhofer et al., 2018).

6. Ellsworth-Krebs et al. (2015) provide a useful review of household energy research, identifying two approaches. The 'house' approach is dominated by techno-economic thinking and focuses on the physical/material characteristics and implications of buildings/related infrastructure. Research in this tradition is largely asocial. The 'home' approach, in contrast, engages with social as well as physical/material issues. In this approach, 'building users take on an active role' (Ellsworth-Krebs et al., 2015: 102).
7. The authors argue that '...changes in the gender division of childcare—or lack thereof—may have become central to future gains for women vis-à-vis men in the labor force' (Bianchi et al., 2012: 58; see also Coltrane, 2009; Hook, 2017; Lyonette and Crompton, 2015).
8. Fisher and Tronto (1990) break care down into four phases of care: caring about, taking care of, giving and receiving care.
9. However, even in relation to their own success criteria, technologies designed along these lines can deliver less than expected, and at the same time they miss wider opportunities. Bell et al. (2015: 105) discuss technologies 'doomed to fail' when the human–technology relations they inscribe fail to map onto household dynamics (e.g. Tjørring et al., 2018).
10. For example, through clean water or mosquito nets.
11. In the 1970s, Federici played a central role in the Wages for Housework campaign.
12. This idea raises the problem of place essentialism which one of us has discussed in detail elsewhere (Murphy, 2011, 2013).
13. Others have similarly addressed the tensions between justice and care perspectives, and difficulties in resolving them, e.g. health care provision (Botes, 2000), disability (Beckett, 2007), education (Noddings, 1999) or their adequacy as a moral theory (Clements, [1996] 2018).
14. Kaijser and Kronsell (2014: 424) point out a further tension between feminist and environmental politics. The politics of household work is underpinned by an understanding of gender equality '...as *women's* equality *with men*, to be achieved largely through higher economic status and equal wages' (Kaijser and Kronsell, 2014: 424, emphasis original). Achieving equality through growth and consumption impacts on environmental resources too (Kaijser and Kronsell, 2014: 424). This generates tensions between the politics of work and care.
15. See Hanson (2010) for a parallel discussion of gender and mobility, including the need for linking multiple contextualized findings to create generalizable statements – what she calls a 'contextualized meta-analysis' (2010: 18).

References

Agarwal B (2000) Conceptualising environmental collective action: Why gender matters. *Cambridge Journal of Economics* 24, 283–310.

Atkinson L (2014) Green moms: The social construction of a green mothering identity via environmental advertising appeals. *Consumption Markets & Culture* 17(6): 553–572.

Beckett C (2007) Women, disability, care: Good neighbours or uneasy bedfellows? *Critical Social Policy* 27(3): 360–380.

Bell S, Judson E, Bulkeley H, et al. (2015) Sociality and electricity in the United Kingdom: The influence of household dynamics on everyday consumption. *Energy Research & Social Science* 9: 98–106.

Beneria L (1999) The enduring debate over unpaid labour. *International Labour Review* 138(3): 287–309.

Bianchi SM, Sayer LC, Milkie MA, et al. (2012) Housework: Who did, does or will do it, and how much does it matter? *Social Forces* 91(1): 55–63.

Botes A (2000) A comparison between the ethics of justice and the ethics of care. *Journal of Advanced Nursing* 32(5): 1071–1075.

Brough AR, Wilkie JEB, Ma J, et al. (2016) Is eco-friendly unmanly? The green-feminine stereotype and its effect on sustainable consumption. *Journal of Consumer Research* 43: 567–582.

Buckingham S (2005) Women (re)construct the plot: The regen(d)eration of urban food growing. *Area* 37(2): 171–179.

Buckingham S and Kulkur R (2009) Gendered geographies of environmental justice. *Antipode* 42(4): 659–683.
Burningham K (2017) The significance of relationships. *Nature Energy* 2: 914–915.
Burningham K and Venn S (2020) Are lifecourse transitions opportunities for moving to more sustainable consumption? *Journal of Consumer Culture* 20(1): 101–121.
Cairns K, Johnstone J and MacKendrick N (2013) Feeding the 'organic child': Mothering through ethical consumption. *Journal of Consumer Culture* 13(2): 97–118.
Carlsson-Kanyama A and Lindén A (2007) Energy efficiency in residences – Challenges for women and men in the North. *Energy Policy* 35: 2163–2172.
Clements G ([1996] 2018) *Care, Autonomy and Justice: Feminism and the Ethic of Care*. London: Routledge.
Cockburn C and Ormrod S (1993) *Gender and Domestic Technologies: Technology in the Making*. London/Newbury Park: Sage.
Coltrane S (2009) Fatherhood, gender and work–family policies. In: Gornick JC and Meyers KK (eds) *Gender Equality: Transforming Family Divisions of Labor*. London: Verso, pp.385–409.
Committee on Climate Change (2016) The fifth carbon budget. Available at: https://www.theccc.org.uk/wp-content/uploads/2016/07/5CB-Infographic-FINAL-.pdf (accessed 28 August 2019).
Connell RW (2002) *Gender*. Cambridge: Polity Press.
Cowan RS (1983) *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*. New York: Basic Books.
Cox R (2013) The complications of 'hiring a hubby': Gender relations and the commoditisation of home maintenance in New Zealand. *Social and Cultural Geography* 14(5): 575–590.
Dombroski K (2016) Hybrid activist collectives: Reframing mothers' environmental and caring labour. *International Journal of Sociology and Social Policy* 36(9/10): 629–646.
Doucet A (2015) Parental responsibilities: Dilemmas of measurement and gender equality. *Journal of Marriage and Family* 77(February): 224–242.
Druckman A, Buck I, Hayward B, et al. (2012) Time, gender and carbon: A study of the carbon implications of British adults' use of time. *Ecological Economics* 84: 153–163.
Dubois G, Sovacool B, Aall C, et al. (2019) It starts at home? Climate policies targeting household consumption and behavioral decisions are key to low-carbon futures. *Energy Research and Social Science* 52: 144–158.
Dzialo L (2017) The feminization of environmental responsibility: A quantitative, cross-national analysis. *Environmental Sociology* 3(4): 427–437.
Ellsworth-Krebs K, Reid L and Hunter CJ (2015) Home-ing in on domestic energy research: "House," "home," and the importance of ontology. *Energy Research & Social Science* 6: 100–108.
Elnakat A and Gomez JD (2015) Energy engenderment: An industrialized perspective assessing the importance of engaging women in residential energy consumption management. *Energy Policy* 82: 166–177.
Farbotko C (2018) *Domestic Environmental Labour: An Ecofeminist Perspective on Making Homes Greener*. London: Routledge.
Faulkner W (2001) The technology question in feminism: A view from feminist technology studies. *Women's Studies International Forum* 24(1): 79–95.
Federici S (2012) The unfinished feminist revolution. *The Commoner* 15: 185–192.
Fisher B and Tronto JC (1990) Towards a feminist theory of caring. In: EK Abel and Nelson MK (eds) *Circles of Care: Work and Identity in Women's Lives*. Albany: State University of New York Press, pp.35–62.
Fraser N (2007) Feminist politics in the age of recognition: A two-dimensional approach to gender justice. *Studies in Social Justice* 1(1): 23–35.
Gaard G (2015) Ecofeminism and climate change. *Women's Studies International Forum* 29: 20–33.
Gaard G (2017) *Critical Ecofeminism*. Lanham: Lexington Books.
Gibson C, Farbotko C, Gill N, et al. (2013) *Household Sustainability: Challenges and Dilemmas in Everyday Life*. Cheltenham, UK: Edward Elgar.
Gibson-Graham JK (2011) A feminist project of belonging for the Anthropocene. *Gender Place & Culture* 18(1): 1–21.

Gillespie K and Lawson V (2017) 'My dog is my home': Multispecies care and poverty politics in Los Angeles, California and Austin. Texas *Gender, Place and Culture* 24(6): 774–793.
Gilligan C (1982) *In a Different Voice*. Cambridge: Harvard University Press.
Goldberg AE (2013) "Doing" and "undoing" gender: The meaning and division of housework in same-sex couples. *Journal of Family Theory & Review* 5: 85–104.
Gorman-Murray A (2008) Masculinity and the home: A critical review and conceptual framework. *Australian Geographer* 39(3): 367–379.
Gorman-Murray A and Lane R (eds) (2011) *Material Geographies of Household Sustainability*. London: Routledge.
Hanson S (2010) Gender and mobility: New approaches for informing sustainability. *Gender, Place & Culture* 17(1): 5–23.
Haraway D (2008) *When Species Meet*. London: University of Minnesota Press.
Harcourt C and Bauhardt W (2018) Introduction: Conversations on care in feminist political economy and ecology. In: Bauhardt W and Harcourt C (eds) *Feminist Political Ecology and the Economics of Care: In Search of Economic Alternatives*. London: Routledge, pp.1–15.
Hawkins R (2012) Shopping to save lives: Gender and environment theories meet ethical consumption. *Geoforum* 43: 750–759.
Himmelweit S (1995) The discovery of "unpaid work": The social consequences of the expansion of "work". *Feminist Economics* 1(2): 1–19.
Hinchliffe S (1996) Helping the earth begins at home: The social construction of socio-environmental responsibilities. *Global Environmental Change* 6(1): 53–62.
Hook JL (2017) Women's housework: New tests of time and money. *Journal of Marriage and Family* 79: 178–198.
Hooks B ([1984] 2015) *Feminist Theory: From Margin to Centre*. Abingdon, Oxon: Routledge.
Hultman M and Pulé PM (2018) *Ecological Masculinities: Theoretical Foundations and Practical Guidance*. London: Routledge.
Jackson S (1992) Towards a historical sociology of housework: A materialist feminist analysis. *Women's Studies International Forum* 15(2): 153–172.
Jalas M and Rinkenen J (2016) Stacking wood and staying warm: Time, temporality and housework around domestic heating systems. *Journal of Consumer Culture* 16(1): 43–60.
Jamieson L (2016) Families, relationships and 'environment': (Un)sustainability, climate change and biodiversity loss. *Families Relationships and Societies* 5(3): 35–355.
Kaijser A and Kronsell A (2014) Climate change through the lens of intersectionality. *Environmental Politics* 23(3): 417–433.
Kennedy EH and Kmec J (2018) Reinterpreting the gender gap in household pro-environmental behavior. *Environmental Sociology* 4(3): 299–310.
Kennedy J, Nansen B, Arnold M, et al. (2015) Digital housekeepers and domestic expertise in the networked home. *Convergence: The International Journal of Research into New Media Technologies* 21(4): 408–422.
Latchmore T, Schuster-Wallace CJ, Longboat DR, et al. (2018) Critical elements for local water security in Canada: A narrative review. *Journal of Water and Health* 16(6): 893–903.
Luxton M (1980) *More Than a Labour of Love: Three Generations of Women's Work in the Home*. Toronto: The Women's Press.
Lynch K (2007) Love labour as a distinct and non-commodifiable form of care labour. *The Sociological Review* 55(3): 550–570.
Lyonette C and Crompton R (2015) Sharing the load? Partners' relative earnings and the division of domestic labour. *Work, Employment and Society* 29(1): 23–40.
MacGregor S (2006) *Beyond Mothering Earth: Ecological Citizenship and the Politics of Care*. Vancouver: University of British Columbia Press.
MacGregor S (2010a) Earthcare or feminist ecological citizenship? *Femina Politica* 1: 22–31.
MacGregor S (2010b) A stranger silence still: The need for feminist social research on climate change. *Sociological Review* 57(2): 124–140.
MacKendrick N (2014) More work for mother: Chemical body burdens as a maternal responsibility. *Gender and Society* 28(5): 705–728.

Martin A, Myers N and Viseu A (2015) The politics of care in technoscience. *Social Studies of Science* 45(5): 625–641.
Mellor M (2019) An eco-feminist proposal. *New Left Review* 116: 189–200.
Middlemiss L (2010) Reframing individual responsibility for sustainable consumption: Lessons from environmental justice and ecological citizenship. *Environmental Values* 19: 147–167.
Middlemiss L, Isenhour C and Martiskainen M (2019) Introduction: Power, politics and (un)sustainable consumption. In: Isenhour C, Martiskainen M and Middlesmiss L (eds) *Power and Politics in Sustainable Consumption Research and Practice*. London: Routledge, pp.1–17.
Moisio R, Arnould EJ and Gentry JW (2013) Productive consumption in the class-mediated construction of domestic masculinity: Do-It-Yourself (DIY) home improvement in men's identity work. *Journal of Consumer Research* 40: 298–316.
Murphy J (2011) From place to exile. *Transactions of the Institute of British Geographers* 36(4): 473–478.
Murphy J (2013) Place and exile: Resource conflicts and sustainability in Gaelic Ireland and Scotland. *Local Environment: The International Journal of Justice and Sustainability* 18(7–8): 801–816.
Murphy J and Smith A (2013) Understanding transition-periphery dynamics: Renewable Energy in the Highlands and Islands of Scotland. *Environment and Planning A* 45: 691–709.
Naus J, Spaargaren G, van Vliet BJM, et al. (2014) Smart grids, information flows and emerging domestic energy practices. *Energy Policy* 68: 436–446.
Noddings N (1999) Care, justice and equity. In: Katz MS, Noddings N and Strike KA (eds) *Justice and Caring. The Search for Common Ground in Education*. London: Teachers College Press, pp.7–20.
Oakley A (1974) *The Sociology of Housework*. London: Martin Robertson.
Offenberger U and Nentwich JC (2009) Sustainable technologies? Home heating and the co-construction of gender, technology and sustainability. *Kvinder, Køn and Forskning* 3–4: 83–87.
Offenberger U and Nentwich JC (2010) *Intertwined practices of gender and technology: The case of sustainable home heating*. Working paper no. 11 within the project: Soziale, ökologische und ökonomische Dimensionen eines nachhaltigen Energiekonsums in Wohngebäuden Funded under the BMBF Programme "Vom Wissen zum Handeln – Neue Wege zum nachhaltigen Konsum".
Organo V, Head L and Waitt G (2013) Who does the work in sustainable households? A time and gender analysis in New South Wales, Australia. *Gender, Place and Culture* 20: 559–577.
O'Shaughnessy S and Kennedy EH (2010) Relational activism: Reimagining women's environmental work as cultural change. *The Canadian Journal of Sociology* 35 (4): 551–572.
Pease B (2019) Recreating men's relationship with nature: Towards a profeminist environmentalism. *Men and Masculinities* 22 (1): 113–123.
Plumwood V (2002) *Environmental Culture: The Ecological Crisis of Reason*. London: Routledge.
Pols J and Moser I (2009) Cold technologies versus warm care? On affective and social relations with and through care technologies. *ALTER, European Journal of Disability Research* 3: 159–178.
Puig de la Bellacasa M (2011) Matters of care in technoscience: Assembling neglected things. *Social Studies of Science* 41(1): 85–106.
Puig de la Bellacasa M (2017) *Matters of Care: Speculative Ethics in More Than Human Worlds*. London: University of Minnesota Press.
Reed MG and Mitchell B (2003) Gendering environmental geography. *The Canadian Geographer/Le Géographe canadien* 47(3): 318–337.
Sandilands C (1993) On 'green consumerism': Environmental privatization and 'family values'. *Canadian Women's Studies/Les Cahiers de la Femme* 13(3): 45–47.
Schor JB (2010) *Plenitude: The New Economics of True Wealth*. New York, Penguin Books.
Seyfang G (2010) Community action for sustainable housing: Building a low-carbon future. *Energy Policy* 38: 7624–7633.
Shove E, Pantzar M and Watson M (2012) *The Dynamics of Social Practice: Everyday Life and How It Changes*. London: Sage.
Soron D (2019) Practice does not make perfect: Sustainable consumption, practice theory, and the question of power. In: Isenhour C, Martiskainen M and Middlesmiss L (eds) *Power and Politics in Sustainable Consumption Research and Practice*. London: Routledge, pp.45–61.

Strengers Y (2014) Smart energy in everyday life: Are you designing for Resource Man? *Interactions* July–August: 24–31.
Strengers Y and Nicholls L (2018) Aesthetic pleasures and gendered tech-work in the 21st-century smart home. *Media International Australia* 166(1): 70–80.
Sturgeon N (1997) *Ecofeminist Natures: Race, Gender, Feminist Theory and Political Action*. London: Routledge.
Sunikka-Blank M, Galvin R and Behar C (2018) Harnessing social class, taste and gender for more effective policies. *Building Research & Information* 46(1): 114–126.
Tjørring L, Jensen CL, Hansen LG, et al. (2018) Increasing the flexibility of electricity consumption in private households: Does gender matter? *Energy Policy* 118: 9–18.
Tronto JC (1993) *Moral Boundaries: A Political Argument for an Ethic of Care*. New York: Routledge.
Tronto JC (1995) Care as a basis for radical political judgments. *Hypatia* 10(2): 141–149.
Tronto JC (2013) *Caring Democracy: Markets, Equality and Justice*. New York: NYU Press.
Tsing A (2012) Empire's salvage heart: Why diversity matters in the global political economy. *Focaal – Journal of Global and Historical Anthropology* 64: 36–50.
Van Oost E (2003) Materialized gender: How shavers configure the users' femininity and masculinity. In: Oudshoorn N and Pinch T (eds) *How Users Matter. The Co-Construction of Users and Technologies*. London: The MIT Press, pp.193–208.
Vinyeta K, Powys Whyte K and Lynn K (2015) *Climate change through an intersectional lens: Gendered vulnerability and resilience in indigenous communities in the United States*. Forest Service General Technical Report. PNW-GTR-923. OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
Wajcman J (2015) *Pressed for Time: The Acceleration of Life in Digital Capitalism*. London: University of Chicago Press.
Waling A (2019) Rethinking masculinity studies: Feminism, masculinity, and poststructural accounts of agency and emotional reflexivity. *Journal of Men's Studies* 27(1) 89–107
Walker G, Karvonen A and Guy S (2015) Zero carbon homes and zero carbon living: Sociomaterial interdependencies in carbon governance. *Transactions* 40: 494–506.
Webb J, Hawkey D, McCrone D, et al. (2016) House, home and transforming energy in a cold climate. *Families, Relationships and Societies* 5(3): 411–429.
Weidenhofer D, Smetschka B, Akenji L, et al. (2018) Household time use, carbon footprints, and urban form: A review of the potential contributions of everyday living to the 1.5°C climate target. *Current Opinion in Environmental Sustainability* 30: 7–17.
Wheeler K and Glucksmann M (2015) 'It's kind of saving them a job isn't it?' The consumption work of household recycling. *The Sociological Review* 63: 551–569.