A Waste of Energy? Traversing the Moral Landscape of Energy Consumption in the UK

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Introduction

In 1934, the Electrical Association for Women published *The Electrical Handbook for Women.* The book was part of a series that included '*Teach yourself: Household Electricity*' (Haslett and Edwards 1939), '*Electricity and Home Appliances*' (Owen and Pickford 1953) and '*Electric Cooking Craft' (Pickford, n.d).* These publications were intended to educate women about the phenomenon of electricity at a time of optimism about the potential of energy as a technology of social transformation. The editor of the handbook, Caroline Haslett, explained in 1934,

> "we are coming to an age when the spiritual and higher side of life will have freer development, and this is only possible when women are liberated from soul-destroying drudgery…The schoolgirl is growing up familiar with this new power which once frightened her mother, and many hundreds of girls are finding in its development interesting and well-paid jobs." (Sprenger and Webb 1993:60).

The Electrical Handbook aimed to help with this transition from fear to possibility by providing its female readers with a comprehensive and rigorously researched understanding of electricity and its potential role in the home. A remarkably progressive book to modern eyes, it included chapters on electric circuits,

electrical measurements and calculations, currents, different forms of electricity supply as well as uses of electricity in the home and the dangers of electric shock.

Electricity in the 1930s was celebrated as a means of making homes cleaner and healthier, by removing dust and germs that had been highlighted by the 19th century concern with public health. Electrical expertise was understood to be key to the successful incorporation of new electrical appliances into domestic spaces. By 1956, and the sixth, completely revised edition of the handbook, the back cover of the book celebrated the self-evident importance of electrical housecraft in bringing about home modernisation, cleanliness and 'relieving household drudgery', stating that "women's knowledge of the potentialities of electricity and their appreciation of technical possibilities make a valuable contribution to modern living standards" (Haslett 1956). This was a time when energy, and electricity in particular held the promise of a brighter, cleaner future.

Fast-forward to 21st century Britain and daily experiences of energy use look strikingly different. Government funded organisations like the Energy Saving Trust have expended great effort in recent years in shifting people's attention away from the 'potentialities' and 'technical possibilities' of electricity, to focus instead on energy as something that suffers from being wasted. Energy companies now provide UK citizens with smart meters and energy monitoring displays to help people know how much energy they are using and how they could use it more efficiently. Meanwhile, institutionally, the same companies are partnering with local and national government to provide funds to insulate people's houses and replace their boilers to make not only them, but their appliances and environments, less wasteful of energy resources. No

longer then, does the use of electricity in everyday activities conjure primarily a future of automation, emancipation and cleanliness. Instead, contemporary public campaigns about energy and electricity have transformed energy from a force to be learnt about, mastered and harnessed to productive ends, into an excessive material relationship that seems to be escaping from the control of individuals and institutions. The use of electricity for mundane tasks is less a cause for celebration, than a cause for concern, a moral terrain upon which worries about the excesses of consumption are focused.

This chapter takes this apparent shift in the daily experience of energy use as an entry point for analysing the experiences of living in what we might call 'a world laid waste'. By ethnographically analysing work to reduce energy consumption in the city of Manchester in the UK, it considers the broader transformations that have occurred which have enabled energy to shift from an object of desire to a problem of wasting. Wasting is an accusation that is not just contained in energy discourses but is mobilised in a much wider set of claims about the causes and consequences of social change. In these claims, society becomes seen as threatened and undermined by time-wasters, money wasters and indeed just 'wasters'. Just as Mary Douglas (1966) famously drew attention to the way in which pollution taboos operated as a culturally specific practice of social differentiation, so too I suggest that we need to understand accusations of waste in a similar light. If pollution is not determined by its materiality but is rather "matter out of place", we might expect that waste has a similar relational quality that derives from the social circumstances of its appearance. Those who have written about the history of waste (e.g. Strasser 1999, Packard 1960) and those who have analysed how class distinctions operate on the basis of value judgments about

who counts as valuable and who can become stripped of value and thus cast as a kind of social waste (Glucksberg 2014; Skeggs, 1997) remind us that the act of disposing and throwing away is not a neutral ahistorical human quality but rather relational process whereby what counts as waste is socially and historically constituted.

In this chapter, I focus on the transformation of energy from potentiality to waste in order to extend our understanding of the relational dynamics upon which contemporary accusations of wasting rely. Accusations of wasting offer us a way of gaining a handle on the dynamics of moral economy that structure relations between citizens, corporations and states in what this volume terms a 'world laid waste'. In this world, what does it mean to waste something rather than to use it? What kinds of subjects do we find wasting things and what kinds of things lend themselves to being wasted? How does something become waste-able and who or what determines when something is being wasted? How are the moral, ethical and political implications of wasting different entities established? And what can an understanding of wasting tell us about historical and future trajectories of social change that might be realised with emerging energetic futures?

Preventing Energy Waste

In Manchester City Council, Dominic has become notorious for his militant attitude against energy wasting. Having spent most of his career working for environmental pressure groups, his current role is that of a local authority official charged with the task of improving the environmental performance of both the council and the city of Manchester, UK, that it serves. Numerous people who work for the council tell me

about Dominic's distain for electric heaters. In the draughty offices of the town hall building, heaters are a must for many officers and councillors, but Dominic, who leads what is known in the council as the Green Team, interrogates anyone he sees using an electric fan heater, making them feel guilty about using what he sees as excessive heat. It is December and minus two degrees Celsius outside and I am attending a routine town hall meeting with Dominic's team about central government changes to local authority funding. The chairs have been lined up in rows and there at the front of the room in pride of place is a tall heater, glowing red. When Dominic sees it he is livid and demands it is removed. He says to the people who have been setting the room up that his team would rather sit in hats and gloves and coats for the meeting - and indeed this is what most people end up doing.

During several months of ethnographic fieldwork that I conducted in the local authority, it becomes clear that it is not just electric heaters that Dominic is fixated on. Walking around the council offices, signs of Dominic's Green Team's influence are everywhere. As might be expected, the open plan office space of the team itself is decorated with posters and directives about saving energy and reducing waste. But the appeals made by the Green Team for other employees to stop wasting are evident across the organisation. One afternoon I visit some of the administrative offices of the city council to speak to the customer services team. One of the members of the Green Team had suggested I speak to customer services, as they won the city council's green champion award, something that customer service employees are not surprised about as they say they are used to working to targets! They show me why they think they won. The doors, kitchen walls and lift shafts are all covered with printed A4 posters with directives like "Take the Stairs and Save Energy", "Last one Out? Turn off the

lights'', and appeals for people to change their everyday practices: "ever thought of car sharing?…spare a thought for your environment', "Do you really need this print job?", and "are you using double sided printing where possible?" Their enthusiasm for the campaign and its success is palpable but I leave the offices a little unsettled by the gusto with which the project to save energy has been taken up.

The city council is not alone in stressing the importance of energy efficiency. In large commercial organisations and small businesses as well, similar activities are underway to reduce energy use. These have focused on both transforming the material make-up of buildings, and by altering the way in which people live in and inhabit those buildings. Driven in part by national and international directives such as the EU Energy Performance in Buildings Directive and the EU Energy Services Directive, sustainability has become a key focus of buildings management in other public sector organisations like universities (Soares et al 2015)[i] and hospitals (Buanomano et al 2014), transport hubs like airports (Robert-Hughes 2015) and buildings owned by commercial property management firms (e.g. Hewson and Abi-Ghanem 2009). These organisations have invested huge amounts of money in new windows, insulation and new kinds of doors to retain the heat of their buildings. At the same time, smaller companies have been encouraged too to begin to think about business in terms of efficiency of resource use, lured by accreditation schemes developed by charities and not-for profit organisations to support small businesses in becoming more energy efficient (Power, 1997; Mallaburn and Eyre 2014).

I wondered at first whether it was the pervasiveness of a corporate and institutional take-up of this appeal to energy saving that lay at the heart of the unease that I felt at

the enthusiasm for behaviour change, culture change and pushing people to alter their behaviours in governmental and corporate settings. It was not so much that I saw this as a case of 'greenwashing' (Greer and Bruno 1996). Indeed, those who were trying to inculcate energy saving measures into these organisational and institutional practices themselves often had the sense that they were pushing back against a dominant culture of excessive energy use that was tied to practices of mass consumption, financialisation and marketisation. Rather, without being necessarily critical of what people were trying to achieve, I found myself surprised by the extent to which people within organisations who were promoting energy saving were comfortable with the instructive manner in which they were telling people to alter their material relationships with things and objects around them. Was this, I wondered, a new form of disciplinary power perpetuated by the hierarchical relations of bureaucratic and corporate organisation? One thing that rendered this conclusion problematic was that the managers of companies and the political chiefs of bureaucracies were just as subject to these measures as other employees. Perhaps what we were seeing here was less a new practice of institutional control and rather a more pervasive discourse of biopower (Foucault, 2008) or even energopower (Boyer 2014)? Wasting certainly seemed to be outside the realms of critical discussion and yet was enacted as a particular form of power over bodies. Whilst questions proliferated about the best way to achieve the end of reducing energy waste, there was little discussion about wasting itself and the normative assumptions it seemed to carry about practices of consumption. The impetus to act seemed to displace the need for a critical analytics of consumption practices[ii].

This impetus to save energy in fact went far beyond the walls of corporate and bureaucratic institutions. Whilst employers were instructing employees how to act within the semi-public space of an office, similar instructional practices around energy were also taking place in people's homes. One way in which the domestic side of energy use has been taken up in the UK has been through the development of demonstrational show homes where people might be educated, and urged in as strong a message as possible to alter their homes and their practices to be less wasteful (Marres 2013). Manchester was no exception, with several eco show-homes having been built in Manchester in the past 10 years. Each of these homes are regularly opened to the public in an explicit attempt to educate owners of domestic homes – both private owners and landlords – about the benefits of energy efficiency.

Julie worked for Manchester city council and she showed me around a show home that had been built by the Energy Saving Trust in a working class area of East Manchester. The house comprised two knocked-through terraced buildings in an area just east of the city centre near to a former colliery, a gas works and the appropriately named road called 'Energy Street'. Spread over two floors, the house was an uncanny mix of museum, instructional facility and home. The walls were filled with information boards, instructions, directions and newspaper clippings of eminent and international visitors. Each of the rooms was a mixture of in-situ energy saving technologies – such as a low-water flush toilet and light well in the bathroom to allow natural light to come into the room through a tunnel in the roof; and examples of other kinds of energy saving technologies that people might find more appropriate for the homes that they were thinking of improving.

Visitors to these ecohomes included residents, landlords, housing association representatives and policy makers. In this particular demonstration house, visitors were first taken into a room where they were shown a Department for Energy and Climate Change public information video about the effects of a future that would be facing them if people were not to enter into the practice of giving up on excessive energy use. Here was a perfect instantiation of the central message to be communicated by this and other the ecohomes about the problem with wastefulness. All of the measures presented in the house – from modular recycling bins, to energy saving light bulbs, insulation, a wormery, a bike shed and a green roof – were presented as techniques by which people could be inculcated into an overarching moral compass about the need to give up their excessive use of objects and resources. Moreover, as with the instructions to save energy in institutional settings, posters and instructional displays were added to the objects in the house, from questions like: "*Do you know how much heat you are losing if you have double glazed windows?"* to posters explaining "what you can do" and "what you can save".

These stickers and posters had the effect of turning mundane objects like lightbulbs and insulation foam from technical devices into highly moralised objects. Asking people to save energy through these devices involved that they were drawn into a very particular relationship with energy, whereby practices that would otherwise have been cast in a different register – consumption oriented towards comfort, familial relations, generosity, thrift – became recast as a practice of waste-avoidance[iii].

This is particularly clear if we compare these contemporary show homes with the historical example of a show home that was built in 1930 by the Electrical

Association for Women (EAW) - the same organisation that published Carline Haslett's handbook. In 1935, the all-electric house was built by the EAW in Bristol as a way of demonstrating to middle class women and to architects and homeowners the benefits of electricity for labour-saving in the home[iv]. The aim of the all-electric house was to help women see how 'electrical housecraft' could help them rationally manage the household, at a time when domestic staff were becoming increasingly rare in middle class households. The all-electric house aimed to capitalise on the capacity of electricity to replace human labour. In the all-electric house, as in the Electrical Handbook for Women, energy was conceived as "the capacity to do work"[v]. It was not a finite resource to be saved but rather something that could be channelled to alternative ends. Energy was labour expended, and less work meant more time for other activities (also see Cowan 1983; Shove 2003).

If the all-electric house appealed to the need for the middle class consumer to be relieved from the exhaustion of embodied energy use, then the eco show-home inculcated a rather different relationship with energy. Instead of focusing on the production of social distinction on the basis of one's ability to to channel the expenditure of energy from bodies to machines, in the eco show-home the message was that people needed to better manage the unnecessary and excessive energy demands of their material belongings.

How then to think about the implicit moral relationship that was being suggested through these attempts at energy efficiency? One thing that seems clear is that people were explicitly being asked to reduce their use of electricity for a deferred social benefit relating to environmental impact. There are clear resonances between this

dimension of energy saving and other kinds of practices which anthropologists have described as forms of 'sacrifice' taken in its broadest sense. For example, in a special issue that revisits the usefulness of the concept of sacrifice for anthropology, Mayblin and Course (2011) define sacrifice as the idea that "something or someone new can be created by the irreversible giving up of something else" (2011: 109). If we take the plea to save energy to be oriented primarily to producing specific environmental ends or social ends, then a certain kind of sacrificial logic seems to be at play here. The dual register of the poster that asked first "what can you do" to save energy and then "what can you save" as a result, and the persistence of images of trees, sunshine and countryside that often accompany energy saving requests, might be read as playing into a sacrificial quality of energy saving whereby by giving up on one thing, something else might be created (Mayblin and Course 2011: 109).

Interestingly though, in discussions about energy efficiency, conceiving it as a relation of sacrifice was frequently explicitly denied. Perhaps because of the way in which the language of sacrifice draws attention to the explicit moralised nature of the request to save energy, many were at pains to stress that giving up energy should not in fact be thought of as a sacrificial act. Energy advice websites that I viewed at the time stressed explicitly that change "is not sacrifice"[vi], and that 'you can reduce your energy bill without cost or sacrifice[vii]', meanwhile a 'behaviour-change' pamphlet produced by a consortium of energy advisors and housing association members talked not about the need to get people to sacrifice their energy by using less, but rather about the importance of '*incentivisation'*, of provoking in people a sense of '*prestige*/keeping up with the Jones', '*facilitation* and not instruction', and

encouragement of "households that are not sustainable, to *aspire* to this way of life" (LCEA Behaviour Change Retrofit Group 2011, emphasis added).

If avoiding using energy was explicitly not cast as a sacrificial act, but yet still seemed to carry a degree of moral instruction in the plea to reduce energy use for some kind of greater good, then how else might we understand the implicit moral relationship implied in accusations that non-energy efficient behaviours were wasteful? Even if not a matter of sacrifice, asking people to give something up was still a complex political proposition with an implicit set of moral meanings. One answer to this I suggest comes from turning our attention from the ideas that people have about energy that are inscribed discursively in instructional pamphlets, notices and posters, to the infrastructural mechanisms through which energy saving is actually pursued.

Fabric First

One of the common ways to talk about energy efficiency amongst those working to reduce energy use both in corporate/bureaucratic settings and in domestic settings was to talk about the importance of beginning the work of energy efficiency not with moral arguments but rather with technical solutions. This was sometimes called a "fabric first" approach to energy efficiency. The idea of the fabric first approach was that the easiest and least controversial energy savings could be gained by changing the material make up of buildings themselves rather than worrying about people. Changing the material infrastructure – the thickness of walls, the kinds of windows, and the thermal properties of buildings – would provide energy efficiency without people who used the buildings ideally even recognising that these changes were even

happening. The fabric first approach would enable the desired reductions in energy then, seemingly without any of the moral problems implied by a more sacrificial act of doing without.

However, as recent work in the anthropology of infrastructure reminds us, we should be vigilant about claims that technical solutions do not entail moral judgements or social effects (Ferguson 2012). There are now a large number of ethnographic studies on infrastructural systems that demonstrate that infrastructures are replete with all kinds of social and moral judgements about conduct (Larkin 2013; Harvey and Knox 2015; Harvey et al. 2017). Much of this work has centred on the kinds of sociality that emerge as part and parcel of infrastructural arrangements that operate on the basis of neoliberal ideas of relations between people, markets and finance. In a study with many resonances to my own, Catherine Fennel (2011) explores, for example, the visceral and embodied experiences that Chicago residents have of living in different kinds of housing as they are moved from tenements with centralised heating to new kinds of houses with individualised heating controls. Fennel illustrates how these sensory/political experiences become mobilised as a way of diagnosing relationships of citizenship, subjectivity and care. In the rather different setting of post-soviet Russian, Stephen Collier (2011) has also demonstrated how the social and moral ideas inscribed into the design of infrastructures like heating networks, are so powerful that they can even resist the spread of alternative kinds of moral subjectivities. Collier explores how moral and political ideas built into soviet heating design come to the fore as attempts are made to turn energy provision into a more individualised resource under a broad project of neo-liberalisating infrastructure provision in post-soviet Russia. Also, exploring the relationship between neoliberalism and infrastructure,

Von Schnitzler's (2008) work on water meters in South Africa shows what happens to experiences of citizenship and subjectivity when infrastructures are put in place that have been designed with explicitly neoliberal principles in mind. Each of these studies demonstrates how we can discern the grounds for a moralised set of relations with energy and other resources, not just by looking at what people are instructed to do and the terms in which this instruction is articulated, but by interrogating what kinds of relations these distributed, material, infrastructural systems end up setting into play.

In the following section I turn my attention then to some of the more infrastructural qualities of energy saving to explore what this might tell us about the morality of wasting. I explore a specific example of one way in which energy saving was attempted in the UK. Unpacking this example provides us with another angle to understand the moral imperative implied in not wasting energy. Through this example, I explore how the impetus to reduce rather than extend consumption was managed in practice. I then consider what the prospects of this relationship to energy might be as we move into a different energetic future. In conclusion, I bring the discussion back to the broader questions of what this particular example might tell us about a contemporary moral economy of wastefulness.

Get Me Toasty - Moral Contours of Waste

To explore these infrastructural dynamics I turn to an initiative that the local authority was supporting at the time of my fieldwork that was called 'Get Me Toasty'. The campaign was run by many of the same officers employed by the city council as the eco home, providing another way of extending work being done to save energy within

council buildings, out to the rest of the city. The catch phase to ‘get me Toasty’ referenced the British expression ‘to be nice and toasty’, meaning to be warm and comfortable. The campaign was headed up by a Mascot called Mr Toast (fig 1).

Fig 1: Mr Toast

The aim of the campaign was to turn the attention of Manchester residents to the problem of excessive or uncontrolled energy use by using Mr Toast to communicate the importance of energy efficiency and to alert people to the means by which they could access resources to better insulate their home.

Personified by the jaunty character of Mr Toast, Keep Me Toasty was in fact the public face of a rather less alluringly-titled UK-wide energy policy called the Energy Company Obligation, or ECO. ECO was launched in 2010 as an arrangement that required the six largest energy companies in the UK to provide funds to help householders with improving the energy efficiency of their homes. This was just the latest in a series of energy company obligations in the UK, the first of which was introduced in 1994.

The UK was the first country in Europe to impose such obligations on energy companies. Statutory Obligations, or SOs, were first introduced after the liberalisation of the energy market in the UK in 1994 and required the largest energy companies to ensure energy efficiency at the level of household consumption. According to Rosenow (2012) the form of efficiency written into SOs was an extension of the principles that had led to market liberalisation of the energy sector in the first place. Opening up the energy market to private providers had been done with the intention that competition would drive down prices by improving organisational efficiency. This followed the principle of 'Least-Cost-Planning'[viii], which argued that where it is cheaper to save a unit of energy rather than supplying it, companies should opt for the former (Sant, 1979).

Following the principle of Least Cost Planning, economists also recognised that this principle of energy efficiency had to extend beyond competition between businesses into the actual consumption of electricity. Household consumption, in economic terms, was deemed outside the sphere of competition and therefore to ensure that households also extended the general principle of increased efficiency in the provision of energy supply, market regulation was needed. SOs were a way of ensuring that energy companies took responsibility not only for efficiency in operations and supply chains but also in managing and making more efficient the household consumption of energy.

Calls for households to be aware of energy and to inculcate a principle of efficiency are not entirely new. Going back to the mid 20th century, during energy shortages householders were often asked to try to reduce their use of electricity (Sprenger and Webb 1993: 57). At this time the infrastructure of the national grid was relatively new, having only been completed in 1934, and this, combined with wartime energy shortages, produced a concern that excessive use of energy in the home might compromise national security. In the 1970s events like the OPEC oil crisis put similar strain on energy resources. In a 1977 speech known as the cardigan speech, US president Jimmy Carter set out a policy response to energy shortages in the USA with measures that he said would "*demand that we make sacrifices and changes in our lives*"[ix]. Under conditions of energy shortages the language of sacrifice was interestingly deployed to describe the relationship between citizens and the state that such an energy crisis necessitated. However the calls to save energy in the 1990s and 2000s have, as we have seen, been framed by a rather different politics. In the case of the energy company obligation, the call to save energy was focused on a particular

relationship between the consumer, the state and the energy company which, as its title implies, depended not on sacrifice but a rather different kind of relationship focused on a dynamic of obligation.

The specific way in which the SOs worked was that the state stipulated that large energy suppliers should reach certain targets in achieving domestic energy efficiency. Energy companies were not obliged to bring about an overall reduction in energy use in the domestic sector, but were rather expected to implement 'measures' of different kinds that would, over time, reduce the rate at which energy was consumed. These measures included support for the installation of loft and cavity wall insulation, subsidies on the sale of insulation measures, and more recently additional energy saving technologies such as air-source heat pumps and micro-renewables.

Through the energy company obligations then, energy companies were required to engage consumers not just as a market to be sold energy to, but also as excessive consumers of energy. This somewhat paradoxical situation where private corporations were being expected to encourage consumers to consume less of the good that they were selling was sustained by the threat of big penalties - up to 10% of the gross profits of the largest energy suppliers – and by the ability to increase consumer bills in order to pay for these measures.

If we see the principle of energy efficiency as being a concern with how to get companies to reduce excesses in energy use in the interests of the nation rather than a morally charged request to enter into a relationship of sacrifice, then we can begin to understand some of the unease that people felt with the notion that giving up energy

should be a sacrificial act. Here, the ascetic imperative of giving up aspects of energy use, which we could have associated with sacrifice, was in fact being articulated via the language of obligation. Rather than sacrificing excesses in energy consumption to the ends of efficiency, energy companies were asked to recast this act as a rational response to obligations imposed on them by the state. In the case of the energy companies, they were made to feel the force of the obligation through the threat of penalties and/or the capacity to recoup any losses by increasing energy bills in a way that would help justify the fairness of the obligation that they were being placed under. Understood in relation to principles of efficiency, and oriented to the ends of securing a national energy supply, the sacrificial overtones of giving something up were replaced by a relationship of responsibility and the apportioning of benefits across the state, society, corporations and the customer.

Since 1994 SOs have become an ever more significant means through which government can regulate the energy sector. Statistics provided by Rosenow show that the amount of energy saved through these measures increased eighty-fold between 1994 and 2012, but also that energy bills have also increased significantly in this same period (Rosenow 2012: 375). But for our discussion today perhaps the most significant shift that has taken place has been a change in the stated reasons why efficiency is being pursued.

When SOs were first introduced, they were measured in terms of money saved. This aligned well with the ambition to improve the efficiency of the energy sector through privatisation. However in 2002, an important change in the SO occurred when the system of measuring adherence to the scheme changed from watts and terawatts to

megatonnes of CO_2. This change in the unit of measurement signalled an important shift from a concern with the *amount* of energy being consumed, to a concern with the *type* of energy being consumed, with interesting repercussions for our consideration of the relations at play in accusations of energy wasting.

If under the principles of energy efficiency oriented to the ends of market efficiency the obligation to reduce energy use was justified by other forms of compensation that ensured that something could be given up without overall loss, in the case of energy saving for environmental reasons the principle of statutory obligation came to be extended to incorporate a broader moral obligation regarding ecological futures. If energy companies were simply being efficient in the earlier iterations of the SO, in later iterations the same actions were extended from being an obligation to the state and the nation to an obligation to consumers as inhabitants of a planet under threat. The energy company obligation was no longer just about providing a good price and a good service to consumers, but was also about how to distribute the energy reductions necessary to lead to a sustainable environmental future for all.

The Mr Toasty campaign was the public facing image of the latest manifestation of these SOs, the Energy Company Obligation. ECO was introduced in 2010 alongside another scheme called the Green Deal (note the name!). What was particularly interesting about the Green Deal was that the work of bringing about energy efficiency that we observed in ECO was now being extended to householders themselves. Whilst ECO obliged energy companies to continue to subsidise energy saving measures for low-income households, the Green Deal subsidy was to take the form of a loan that would be offered to householders over a 25-year period to enable

them to install more extensive insulation and micro-renewable technologies than had previously been available. Here the aim was that the obligation that energy companies had borne to improve the efficiency of privately owned homes would be reduced to compensate for only the poorest customers. In the case of home-owning customers, they were to take over the responsibility for reducing energy from these companies. The form that this responsibility would take was based on a purely financial assessment of the benefits of energy saving for each individual household over a period of 25 years. Homeowners would receive loans to improve the energy efficiency of their homes and a guarantee was made that these loans would be able to be paid back entirely with the savings made through reduced energy use over the period of the loan itself. Most people, it was argued, would actually profit over time from the loan that they took out.

Here we can start to see how the request to save energy was being disarticulated from the idea that this relationship might be one of sacrifice. As with the energy companies who were asked to reduce emissions, so consumers were also being asked to produce ways of reducing emissions that produced either the moral fulfilment of a relationship of obligation without the loss that sacrifice would usually entail, or personal benefits that would entirely disguise the idea that anything was being given up at all. Pursuing this capacity to give things up without loss of freedom, access or material belongings – indeed without seeing them as being given up at all - has become a central way of managing social relations in such a way as to be able to deal with scarcity, efficiency and the morality of using without wasting.

With this particular way of approaching energy reduction, it was frustrating to those who were trying to put in place the financial, regulatory and material infrastructures of energy-saving that people in fact often failed to participate properly in this process. If the first stage of trying to reduce energy revolved around a building's 'fabric', a subsequent phase came in the form of 'behaviour change' that tried to address the difficulties associated with behaviours that threatened to undo the effects of material interventions. I spent considerable time talking to, and accompanying, those working to introduce energy reduction measured, and these discussions repeatedly revealed that the implementation of measures was fraught with difficulties. Automated systems that controlled the opening and closing of windows and the turning on and off of lights in corporate buildings were often unpopular and if possible overridden; meanwhile there were a litany of reasons why people had problems with other forms of energy reduction, from the headache-inducing effects of new forms of lighting, to the gendered differences in expectations about how warm one needed to be in an office environment. A recognition of the need to change not only the material fabric of buildings but also the social behaviours of people working in those buildings became established as a kind of compensation for the inability of material interventions to fully achieve the desired effects because people kept getting in the way. The aim of inculcating a moral sensibility among employees was a way of bridging the gap between the rational win-win twinning of cost and energy reduction, and the seemingly endless varieties of ways in which people re-organised themselves in relation to the materiality of the buildings they worked in.

With this in mind, we can return now to the initial unease that I felt with the seemingly disciplinary practice of inculcating behaviour change to the ends of energy

efficiency. Cast as a relationship not of sacrifice but of an obligation to participate in social relations in a way that both takes account of others whilst experiencing no financial loss for oneself, the aim of changing people's behaviour around energy was seen as a entirely reasonable and logical. Psychologists working in this area talk of the 'value-action' gap, as a response to the seemingly perplexing and illogical phenomenon that people can wholeheartedly agree with morally positive practices (saving energy, reducing waste etc), but fail to actually act in their everyday lives in ways that are consistent with these beliefs (e.g. Lorenzioni et al 2007). The value-action gap seems to ignore the possibility that not doing something that might benefit you is an inherent part of the way in which people live their lives. If there is a moral judgment at play, it seems to be as much a judgment about the failure to be a reasonable, consistent and rational actor, as it is a judgment about the moral virtue of some kind of ascetic relationship to energy. If there was something that seemed to remained unquestioned in attempts to get people to save energy, it was less their commitment to broad environmental processes (it was possible to understand how people might find it difficult to relate everyday practices to extended effects), and rather the foundational idea that people should be happy with and act appropriately when faced with a win-win situation (save energy, save money). To fail to do *this* was the grounds upon which one might fail to be a morally reliable person. Thus it was that one person working at the council told me of a friend with an 18 year old son who would taunt his mother by standing by the light switch, turning the light on and off and chanting, "one polar bear dead, another polar bear dead, another polar bear dead…" and so on.

I started this chapter with a question about the politics of living in a world laid waste. I asked what we might make of the political impetus behind overt instructions about the need to save energy. By discussing the case of the Get Me Toasty campaign, I have demonstrated that people's confidence in inculcating energy saving behaviour lay not primarily in a desire to govern populations or force them to sacrifice their energy use for some greater good, but rather in more mundane but no less moralised demands that asked people to be reasonable, consistent and rational in response to what are framed as a win-win ways of saving energy. Attempts to help people save electricity were pursued because it was seen as morally unproblematic to give something up which would not be actually lost in the long run in order to achieve a particular end. What *was* morally problematic was when people refused to acknowledge their obligation to participate in this way of conceiving of energy. That this kind of relationship was cast explicitly as an obligation in the case of energy companies is helpful for reflecting on whether the same kind of relationship of obligation is being implied in other more interpersonal relations. Rather than seeing accusations of waste as a method of bringing about self-discipline prompted by fear of reprisals, this focus on obligation shows that wasting is entangled in more opaque questions about what constitutes transgressive behaviour in the face of financial reasoning.

This has broader implications for the way in which we might think about the act of wasting more generally. If moral accusations around wasting are not just about some kind of ascetic benefit accrued from giving something up, but also entail negative moral judgments towards those who fail to embrace the position that not wasting is no problem at all, then it means that those who hold onto things when there is no rational

reason to do so transgress contemporary moral norms. That we find similar social responses to both 'wasters' and 'hoarders' seems to support this position. Both wasters and horders transgress moral norms by exhibiting an inappropriate desire to have things when it would be better for them not to have them. By focusing specifically on infrastructure I have suggested a potential answer to the question with which I started of how the moral, ethical and political implications of wasting different entities come to be established. It is to the other question I posed, regarding what an understanding of wasting might tell us about future trajectories of social change that might be realised with emerging energetic futures, that I turn in my conclusion.

Conclusions

I have explored in this chapter how we might address a politics of wasting, but in the spirit of the volume I also want to finish on a note about hope. We are living through a time of transition to renewable energy sources. If there is hope in this story, it must revolve around the implications that this transition will have for the mundane relations that people will have with energy and electricity in the future. Whilst material relations do not straightforwardly determine social practice, as we have seen they do have an important constitutive part to play in the making of social relationships. As energy systems change, the possibilities for how energy can be engaged is also transformed (Mitchell 2009). In the era when the Women's Electrical Handbook was published, energy was the power that was driving an optimistic technological future. Whilst energy sources did have their negative consequences – the smog caused by the use of coal, and the new dangers associated with nuclear

energy – the transformation of energy into the standardised form of electricity opened up a technological revolution that seemed full of possibilities. In the *Electrical Handbook for Women* electricity was a technological means of realising the hope for a better and easier world. Energy in the *Electrical Handbook for Women* was a source of potential, the conversion of energy from one form into another. Energy was not a quantity to be lost, but a 'packet' waiting to be released. If energy at the time of the EAW publication was a source of hope, it was so because electricity was conceived of as form of doing work that could substitute for the work of human beings. The association of energy with work and the possibility of bringing the work of electricity into the realm of women's labour was transformative.

At present, renewables do not offer a way of relating to energy outside the moral compass of conservation, efficiency and the hope for giving up without loss. Renewable energy sources are currently only a small part of the total energy mix of countries like the UK. One of the biggest challenges facing energy network operators like the National Grid (the body which manages the supply of gas and electricity in the UK), is the consistency of energy supply, with fears that when environmental conditions are such that renewable energy sources are weak – due to cloud, dark, lack of wind, etc - demand is likely to outstrip supply. If this has had any effect on energy relations it has been to add temporality to the question of energy wasting. However, there are signs of a more expansive relation with energy in these discussions, where what becomes valued is less an overall reduction in the use of energy and rather an openness to be flexible in the face of undulating energy supply. Thus efforts are now afoot to imagine such infrastructural forms as 'community power stations', where customers would be rewarded with lower energy prices in exchange for more flexible

and responsive uses of energy at times of peak demand. Another sign of a more expansive relation with energy might also come with the development of micro-renewables. The invention of household solar panels, air source heat pumps and miniature wind turbines opens up the possibility of making people not only energy users but also net energy producers. This would surely seal the fate of any kind of sacrificial understanding of relations with energy. If citizens and householders become net-producers of energy, this might also offer a model of hope for moving out of a world laid waste oriented around the politics of obligation, rationality and economic calculation, into a new political terrain where individuals and householders are wired directly into environmental infrastructures that they themselves form a part of. Nevertheless, I want to conclude with a note of caution.

Saving energy is touted as a universal concern, but the practicalities of actually implementing energy saving programmes means it has been those who are more deeply entangled with infrastructures of social provision who are identified, through their houses or their practices, as those who should be the main targets for energy reduction strategies. In Britain, the structures of home ownership and energy provision have meant that energy saving has taken on a class dimension. Where private home owners were encouraged to sign up to loans to make energy efficiency improvements, lower-income households have been part of the scheme fronted by Mr Toast, called ECO - the twin of the Green Deal – whereby their homes are insulated whether they like it or not. The recent demise of the Green Deal puts greater emphasis on the housing and infrastructure of working class households, who arguably have the lowest energy usage. In a world laid waste, it seems it is the poorest who suffer the implicit accusation that they are wasters, unable to fulfil the relationship of obligation

into which they have been cast as either individuals or inhabitants of substandard housing.

As we move forward into new energy arrangements where productivity, modulation or flexibility rather than conservation, efficiency and waste avoidance are primary, we must be attentive to the way in which these ambitions are actualised in material projects of political participation. As we have seen in this paper, methods of governmentality are deeply entangled with bureaucratic, institutional and material infrastructures. It is in the details of these infrastructural relationships that we should expect to see the formation and transformation of political relations, and the implicit moral terrain upon which judgements get made about the value and status of individual practices in relation to energy and their capacity to effect change.

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[i] There is even whole journal dedicated to the study of sustainability in universities: The International Journal of Sustainability in Higher Education

[ii] See Knox (2016) for more discussion about the impetus to act in climate mitigation.

[iii]See Bulkeley and Gregson 2009 for a discussion of a similar dynamic in relation to household waste recycling.

[iv] References to the all-electric home can be found in Pursell 1999, and Sprenger and Webb 1999:55. There is also information and photos of the house contained on the website at the University of Westminster: https://sites.google.com/a/staff.westminster.ac.uk/electricity-for-women/home/the-labour-saving-home (last accessed 7th January 2016).

[v] https://sites.google.com/a/staff.westminster.ac.uk/electricity-for-women/home/the-labour-saving-home

[vi] http://www.penobscotsolar.com/energy.php Last accessed 5/1/2016

[vii] http://lifehacker.com/5953039/how-to-reduce-your-energy-bill-with-no-cost-or-sacrifice Last Accessed 5/1/2016

[viii] According to Nelson and Shakow (1995) Least Cost Planning is a form of public sector infrastructure planning that aims to be a "full cost model, which attempts to account for all costs, internal and external, public and private, monetized and non-monetized." (1995:21)

[ix] http://www.pbs.org/wgbh/americanexperience/features/primary-resources/carter-energy/