Shove, E. (2015) 'Linking low carbon policy and social practice' in Strengers, Y. and Maller, C. (Eds), *Social Practices, Intervention and Sustainability: Beyond behaviour change*, London: Routledge. P31-45.

Linking low carbon policy and social practice

Elizabeth Shove: Department of Sociology/DEMAND research centre, FASS Building, Lancaster University, Lancaster LA1 4YD

Email: e.shove@lancaster.ac.uk

Introduction

In recent years there has been considerable debate about the policy relevance of efforts to move 'beyond behaviour change' and develop strategies inspired by an understanding of how social practices emerge, persist, develop and disappear (Shove 2010; Shove & Spurling 2013; Spurling, McMeekin et al. 2013). When viewed as a type of social theory, theories of practice have a number of distinctive features, the most obvious of which is that they take the lives and trajectories of social practices as the central unit of analysis and enquiry. This basic move establishes the ground for further investigations into, for instance, the 'elements' of which practices are composed, their material anchoring, their history, their relation to other practices, and related processes of erosion, accumulation, recruitment and defection. In terms of academic debate and understanding, it is not too difficult to see what practice theories have to offer, or to show how they draw from and relate to other theoretical traditions (Reckwitz 2002; Shove, Pantzar et al. 2012; Nicolini 2013).

It appears to be rather harder to explain what practice theories might contribute to policy making in general, or to climate change policy in particular. There are various possible interpretations. At one extreme, it would be possible to argue that so much of contemporary policy making, across so many fields and countries, is so thoroughly imbued with behavioural and economic models and related understandings of choice and change that theories of practice are simply incommensurable. As such they have no place at all in policy making, at least not as it is currently configured. By implication, practice theories could be of enormous value to policy, but only if policy ambitions, strategies and methods were to take practices as the topic and target of intervention. Chatterton (2011) takes a different approach, arguing that social practice theory represents a useful addition to the repertoire of behavioural and economic options available to policy makers, extending the list of strategies from which to pick and mix. Meanwhile, others, such as Jackson (2005), suggest that the main effect is to enhance existing models, reminding analysts to put somewhat greater emphasis on 'social norms' as behavioural drivers. As these comments indicate, there are significant differences of opinion about what a theoretical focus on practices entails, and about the compatibility or otherwise of rival paradigms (Shove 2011; Whitmarsh, O'Neill et al. 2011).

One common feature is that discussions of the policy relevance of practice theory are routinely framed with reference to already established methods of conceptualising and responding to the

problem of persuading people to adopt lower carbon solutions. Given the title of this chapter, 'linking low carbon policy and social practice', readers might well expect a text that contributes to this literature and that demonstrates the benefits of taking social practice rather than individual behaviour as the topic of policy intervention and analysis. Sure enough, the editors of this book described the task ahead in just these terms, and invited me and other contributors to consider the following questions:

- Can we intervene in, or govern, social life from a social practice theoretical perspective (rather than behavioural or other perspectives)?
- How do/can we intervene in, or govern, social life from a social practice theoretical perspective? And what are the possible outcomes and benefits for sustainability?
- How can we predict or anticipate the outcomes of intervening in practices if they are inherently dynamic and uncontrollable?

Reading between the lines, these questions reflect a somewhat instrumental view of theory, and a rather narrow interpretation of policy relevance. Theories are expected to guide interventions, it is assumed that some theories might have 'better' outcomes (for sustainability) than others and advocates of one theoretical perspective are therefore pitted against those in favour of a different approach. In all cases some value is placed on the ability to predict and anticipate, and in all cases the questions refer to 'we' – the presumed agents of intervention.

Rather than being sucked into such a discussion, I want to turn the topic around. Instead of explaining why climate change policy should take practice theory seriously and detailing what that might involve, I suggest that a more interesting and perhaps more useful strategy is to show how climate change policy *is in any case* embroiled in the persistence and transformation of what people do. In the rest of the chapter I explore the relevance and potential of such an approach with reference to UK climate change policy. This is an illustrative exercise, not a comprehensive or exhaustive one, and many of the issues discussed below would apply to climate change policy in other countries, and to other areas of public policy.

A first and obvious point to make is that in the UK, as elsewhere, climate change policy is evidently not informed by theories of social practice; nor is there any ambition to change what people do. As UK government documents repeatedly underline, the goal is to reduce carbon emissions *without changing current standards of living*. More precisely, the government's strategy depends on developing and adopting a range of technologies and infrastructures (for example, district heating, electric vehicles, smart grids) thought capable of sustaining present ways of life but with much lower carbon emissions than at present. It is true that the success of such approaches depends on consumers' willingness to substitute lower carbon technologies for those they use today and that these behavioural modifications are required *in order to preserve the status quo*. So what are the practice-related implications of policies that are designed to achieve carbon targets *without* significantly modifying the range of practices on which current standards of living depend?

One way of finding out is to review a selection of policy documents – the UK Carbon Plan (H.M. Government 2011) and supporting material, including *Pathways to 2050* (Department of Energy

and Climate Change [DECC] 2010), with the aim of articulating the templates of present and future practice that they reproduce and carry. I use some of this material in developing three related observations. The first is that all interventions, including those designed to maintain present standards of living, are of consequence for the emergence, persistence and disappearance of different practices. The second is that technological innovations depend on innovations in practice. By way of example, I focus on the plan to introduce ultra low emission vehicles (ULEV) and electric or hybrid electric cars. Swapping UHEVs (ultra high emission vehicles – i.e. 'normal' petrol-fuelled cars) for ULEVs is presented as a matter of substitution, but as I explain, this can only occur through some kind of transition in practice. Third, I suggest that climate change policy is *uniquely* sensitive to the rhythms of social practice of which daily life is made – a point I develop with reference to the prospect of introducing 'smarter' methods of balancing electricity supply and demand in real time.

These exercises demonstrate the relevance and importance of concepts and theories of practice not as rivals to incumbent models of behavioural/technological change, but as key resources in a more significant debate about how policy has effect, and about what it might mean to live in a very much lower carbon society. Having deliberately resisted the invitation to show how practice theory might be mobilised within policy (to inform methods of intervention, analysis, prediction or evaluation), I conclude with some rather more general remarks on the role of social theory in climate change and other kinds of policy.

The UK's Carbon Plan

In 2011 the UK government set out a plan for halving 'greenhouse gas emissions, on 1990 levels, by the mid-2020s' (H.M. Government 2011: 1) and for putting the UK on course to meet the target of an 80% reduction by 2050. The plan is extremely clear about what needs to be done. To quote:

> Energy efficiency will have to increase dramatically across all sectors. The oil and gas used to drive cars, heat buildings and power industry will, in large part, need to be replaced by electricity, sustainable bioenergy, or hydrogen. Electricity will need to be decarbonised through renewable and nuclear power, and the use of carbon capture and storage (CCS). The electricity grid will be larger and smarter at balancing demand and supply. (H.M. Government 2011: 4)

It is plain that this package of measures has been designed, from the start, to have little or no impact on present standards of living. Crucially, the 'plan shows that the UK can move to a sustainable low carbon economy without sacrificing living standards, but by investing in new cars, power stations and buildings' (H.M. Government 2011: 12). Although obvious, it is important to notice that the prospect of meeting emissions targets by changing or challenging everyday practice is ruled out of court. Instead, present ways of life constitute a stable benchmark around which future supply systems are to be designed.

Given that the problem is framed in these terms, the way forward depends on the rapid development and adoption of technologies that reduce the need for energy (efficiency measures), that help decarbonise the electricity system and then increase reliance on electric power. Whilst this might look like a thoroughly technocratic vision, the Carbon Plan recognises that major

reductions in 'per capita energy demand' will only occur if people embrace 'low carbon behaviour changes and smart new technologies such as heating controls' and if they recognise 'the financial benefits of taking up energy efficiency opportunities' (H.M. Government 2011: 17). In other words, consumers will have to adopt a range of new technologies if the plan is to succeed and if standards of living are to be maintained. Proposed means of delivering the necessary changes in behaviour are consistent with the government's wider commitment to 'encourage, support and enable people to make better choices for themselves' (H.M. Government 2010: 8), and with a reliance on economic and psychological models of human action.

In conceptualising the climate change problem as one that can be solved through technological innovation and diffusion the Carbon Plan bypasses the issue of whether present standards of living could or should be called into question. Given that such standards are positioned outside the frame of policy and debate, the scope of the behaviour which climate change policy seeks to change is correspondingly limited. The central *behavioural* challenges consequently boil down to those of persuading people to do things like install insulation, lower the thermostat by one or two degrees, purchase electric vehicles, sign up for district heating schemes and accept an influx of heat pumps. In effect, it is at these few points that consumers are thought capable of facilitating or confounding the government's strategy. That said, it would be wrong to conclude that the Plan has no broader vision of what life might be like in a lower carbon society, or that it has no bearing on the ongoing trajectories of social practice. As described below, climate change policy reproduces and perpetuates a distinctive – and some might argue, a distinctively resource intensive – vision of daily life. Brief discussion of DECC's *Pathways to 2050* provides some insight into how this works.

Reproducing current practice: *Pathways to 2050*

The Department of Energy and Climate Change has produced a range of models, reports and policy documents in support of the Carbon Plan. *Pathways to 2050* is one of the more important of these in that it compares various routes through which carbon targets might be achieved. In the context of the present discussion it is instructive to review these scenarios and identify working assumptions about how, and how widely, 'demand', and the practices on which it depends, might vary. The six scenarios outlined in the report represent a range of possibilities. The Pathways document does not consider whether any one scenario is more likely than another, but by implication all are plausible.

All scenarios suppose that over the next 40 years the population will grow by 25%, the number of households by 50% and GDP by almost 200% (DECC 2010: 34). Each scenario then represents a different set of assumptions both about the carbon intensity of energy supply and about the energy demand associated with lighting and appliances, transport, industry and heating and cooling. Based on these analyses, estimates of the total energy consumed in 2050 range from 10% above to 45% below that used in 2007.

Because the scenarios are organised around sectors (e.g. lighting and appliances; heating and cooling etc), it is rarely possible to distinguish between specific visions of the various practices that

are lumped together. For example, while estimates of the potential demand for domestic hot water range from a 50% increase through to a 50% decrease compared to 2007, there is no indication as to whether this relates to habits of laundry, to personal bathing or a combination of the two. Instead, explanations of a potential *increase* simply assume that economic growth will lead 'to an increased use of hot water, and a greater number of hot water using appliances' (DECC 2010: 99). There is no clue as to what these appliances might be, how this extra hot water might actually be used, or why hot water consumption and economic growth should be so closely aligned. Meanwhile, assessments of the potential for *reducing* hot water consumption focus on the scope for eliminating waste and promoting efficiency, but not on what this means for the conduct of different hot-water-dependent practices. In this context, a 50% decrease in hot water consumption is thus 'thought to be the limit that could be achieved with greater consumer awareness of hot water efficiency, and more water efficient fittings' (DECC 2010: 102) and, by implication, *without* modifying normal practice.

Somewhat different reasoning is evident in relation to domestic space heating and cooling. Again the Pathways report compares four possible levels of demand, each associated with either an increase or a decrease in heating compared to the winter average of 17.5ºC in 2007.[1] The least energy consuming level supposes an average temperature of 16ºC (on the grounds that this is the minimum to keep people safe). At the other end of the scale, the most energy consuming level supposes 20ºC, on the grounds that heating is not required beyond this point. Representations of cooling provide further insight into the concepts of comfort around which the analyses are organised. The text which explains why the most energy consuming possibility supposes 100% domestic air conditioning runs as follows: 'it is assumed that every household in the UK has air conditioning by 2050, in response to increased wealth' (DECC 2010: 99), and further that cooling is used to keep temperatures at or below 23.5ºC. Such a statement implies and in a sense legitimises the conclusion that there is a latent 'need' for cooling that is currently thwarted by cost. In these ways the Pathways document reproduces a fairly narrow interpretation of what indoor climates might be like, now and in the future.

With hot water, and with heating and cooling, the basic picture is one in which the range of plausible scenarios is limited by a tacit understanding of the bounds of normal practice, and in which there is a sense that within these limits people use more energy (e.g. for hot water, or air conditioning) when they can afford it. Other areas of energy demand and of daily life appear to be much less well defined. There has been a six-fold increase in consumer electronics since the 1970s (DECC 2010: 49), and technologies and practices of leisure and home entertainment continue to co-evolve, generating new ways of using electricity and of spending time. In theory, scenario methods could be used to represent alternative trajectories, but in specifying possible levels of change, *Pathways to 2050* makes no mention of how consumer electronic-dependent practices might develop. Instead, estimates of future demand reflect different assumptions about the technical efficiency of already known devices and appliances. The least energy consuming possibility is consequently based on the assumption that when 'replacing our consumer

[1] The four levels also make different assumptions about the uptake of insulation and draft proofing.

electronics and home computing products, we could adopt only the best practice products until 2050' (DECC 2010: 55).

In characterising scenarios with reference to technologies and sectors (heating, appliances, lighting etc), *Pathways to 2050* focuses on the material infrastructure, but not on the range of practices that are thereby enabled. Because this method precludes any serious consideration of how heating, laundering or watching TV are currently configured or how they might evolve, the analysis leads to what becomes an inevitable conclusion: that 'Electricity supply needs to be decarbonised, while supply may need to double' (DECC 2010: 34). This finding, which is in part a consequence of how the problem has been framed, is of huge significance for the electricity industry and for nuclear power in particular.

In supporting some kinds of investment and not others, documents like *Pathways to 2050* sustain a web of interconnected practices that is so taken for granted that it never figures as a topic in its own right. Instead, infrastructures and lower carbon systems of provision are designed to enable the ongoing reproduction of these (and not other) ways of life.

The Carbon Plan and related documents, including *Pathways to 2050*, are organised around the working assumption that what people do and how they live their lives will stay largely the same over the next forty years or so. However, as discussed in the next section, the strategies that follow require, and may also generate quite significant change in the patterns and practices of daily life.

Implications for future practice: Decarbonising electricity

The UK's Carbon Plan concludes that a lower carbon future depends on increasing energy efficiency, decarbonising energy supply and introducing 'new cars, power stations and buildings'. This is no small task, and the Carbon Plan recognises that the 'scale of investment required in the electricity network is unprecedented' if the government is to ensure that the grid is 'able to deliver' (H.M. Government 2011: 82) – here meaning able to deliver the power required to maintain the status quo.

The question is whether such infrastructure developments are themselves important 'in practice' and hence in sustaining or challenging existing standards of living. As discussed below, practices and infrastructures connect, and with electricity in particular, supply and demand are closely interwoven. Insofar as cars and buildings are implicated in what people do, low carbon policies are likely to have unintended consequences for the range of practices enacted in society, for how these change and for how complexes and bundles of practice form. At this point it makes sense to take a closer look at exactly what the Carbon Plan involves.

In many respects the UK's Carbon Plan is a plan for electricity. This is made clear in the executive summary, which emphasises the need to replace oil and gas with decarbonised electricity, and to develop a larger electricity grid that is 'smarter at balancing demand and supply' (H.M. Government 2011: 4).

In thinking about how this Plan might work in (and for) practice it is useful to reflect on the relation between the provision of electric power and the organisation and conduct of daily life. Those who have studied the early days of the electricity industry describe a *closely coupled* process in which power supplies and electricity-dependent practices developed in tandem (Forty 1986; Hughes 1993 [1983]). Power companies actively promoted innovations in technology (cookers, fridges, toasters, vacuum cleaners) and hence in cooking and cleaning, in order to level peaks in demand associated with the other primary uses, which were initially transport (trams) and lighting. The details are different today, but two basic features remain. First, providing and consuming electric power depends on an interconnected network of technologies (kettles, power sockets, distribution systems, power stations, electric vehicles, distributed generation, district heating systems, industrial demand etc) and institutions (families, utilities, employers etc). Second, because supply and demand have to be matched in real time, the daily and seasonal performance of practices that underpin demand is absolutely crucial. In this respect, the provision of electric power is closely related both to the reproduction of individual practices and to how complexes and bundles of practice are sequenced, synchronised and scheduled during the day and over the year.

Let us now turn back to the Carbon Plan, and to the features of the decarbonised electricity system that is envisaged. To quote:

> In electricity, the three parts to our portfolio are renewable power, nuclear power, and coal- and gas-fired power stations fitted with carbon capture and storage. In transport, ultra-low emission vehicles including fully electric, plug-in hybrid, and fuel cell powered cars are being developed. In buildings, the technologies will include air- or ground-source heat pumps, and using heat from power stations. Both of these are solutions proven by their use in other countries. (H.M. Government 2011: 5)

The idea that cars will be powered by decarbonised electricity rather than oil is an integral part of this scheme. Some commentators contend that if this vision of substitution is to come true, pure and hybrid electric vehicles will have to match the performance of 'proper' petrol-driven cars. According to a recent report by the Energy Technologies Institute, this means that they should be capable of making a two-hour journey on a motorway on a cold winter night, with lights and heating system on full blast (Energy Technologies Institute 2013: 36). This working understanding of 'a car' is entwined with related understandings of driving, journeys and destinations. Strategies which reproduce 'the car' – so defined – help keep these other understandings in place.

This is not the only possible interpretation either of 'a car', or of motorised mobility. Rather than mimicking the capabilities of a standard car, another possibility is to develop ULEVs that are more limited in range but that might have a place in relation to specific sets of practices, places and destinations. It is already the case that cars come in different shapes and sizes and that newer models tend to be used for longer journeys than older ones. Actively developing a more differentiated system and promoting a wider range of more and less 'capable' ULEVs would likely have some impact on the spatial and temporal organisation of daily life.

More immediately, the widespread adoption of ULEVs depends on tinkering with the micro scheduling of daily activities – this is so in that fuelling/charging an electric vehicle takes longer

than the minute or two that it takes to fill up at a pump. The precise scheduling of 'driving' and 'charging' is not something that can be modified in isolation since it relates to the social synchronisation of the many other practices in which people are engaged: in Lefebvre's (2004) terms, it is bound up with the rhythm of society as a whole.

Whatever form it takes, the project of electrifying mobility is likely to have direct and indirect implications for many social practices, and for related patterns of spatial order and societal synchronisation. Equally importantly, the potential for introducing such arrangements, and thereby realising policy ambitions, depends on whether and how existing complexes of practice might be reconfigured in response. This partly depends on the parallel future (or not) of current arrangements including those that support and sustain the standard petrol-driven car, along with the garages, petrol stations, supply networks and related infrastructures that keep this system in place. In short, it is impossible to consider the positioning and role of ULEVs in isolation: how they relate to UHEVs, and to other forms of mobility and to the reproduction of practices in space and time, is absolutely crucial.

Since policy making is *not* informed by an understanding of social practices and how they change, these issues are not topics of analysis and debate. Instead, attention focuses on acquisition (how to persuade people to buy electric cars) rather than use, and on overcoming features (barriers) that make electric vehicles either 'more than' or 'less than' a 'normal' car – all of which is in keeping with the dominant philosophy of technological substitution. As summarised in the Carbon Plan:

> Barriers to ULEV uptake include costs of ownership including insurance; consumer acceptability, for example over the range of battery electric vehicles, or payload requirements for vans; availability, and cost of natural resources such as lithium and rare earth metals; and the appropriate infrastructure for different ULEV technologies, providing adequate re-charging access and speed. Our strategy is designed to tackle these barriers as detailed at paragraph 2.92. Nevertheless uncertainties around when these barriers will come down could mean mass ULEV uptake is delayed into the 2030s. (H.M. Government 2011: 53)

This way of framing the problem overlooks the point that 'uptake' is an active and creative process of embedding, modifying and adapting existing routines and patterns of daily life (Silverstone 1993). More than that, it is a process in which the contours of existing social practices are redefined, and through which new ways of living – even new standards of living – emerge. In sticking firm to a model of technological substitution and consumer choice the Carbon Plan is blind to the more systemic, more collective and endlessly dynamic features of social practice on which its own success and failure arguably depends.

Much the same applies to the Carbon Plan's ambition to decarbonise electricity supply.

Rhythms of social practice and of energy supply

According to the Carbon Plan, decarbonising electricity supply means greater reliance on nuclear power and on renewables, especially wind. This, together with the proposal to use more (decarbonised) electricity, and to do so for a greater range of practices, means that it will be

increasingly difficult to keep electricity supply and demand in balance. A recent report on demand side response (DSR) in the domestic sector consequently concludes that:

> The importance of DSR is likely to increase as the UK moves to a low-carbon economy. Low-carbon demand-side technologies such as electric vehicles and electric heat pumps may increase both the size of daily peaks in demand and the proportion of demand that can be flexible. At the same time, the need for demand side flexibility is likely to increase as more electricity generation comes from low-carbon technologies, which often have more variable and less predictable output. (Frontier Economics and Sustainability First 2012: 3)

Current thinking is that these challenges can be handled through 'smarter' management of the grid, and of when electricity is consumed within homes and businesses. The 'smart meter' is a critical part of this vision, along with the prospect of tariffs that encourage off-peak demand (Strengers 2013). Such schemes suppose that consumers can and will respond to price 'signals', and that they are both willing and able to modify the timing of what they do.

This overlooks the extent to which daily rhythms are socially, and not individually, orchestrated (Zerubavel 1979; Southerton 2003). In some cases, and perhaps in many, the temporal ordering of the day is such that there is little or no scope for reorganising the details of what happens when. In these situations, smart metering and/or real time pricing is of no consequence for the timing of social practices, or of the energy demands associated with these practices.

Understanding the potential for rescheduling the timing of energy demand arguably depends on much better understanding of the social ordering and orchestration of daily life, and of how this is shaped by a raft of non-energy policies, including those that have to do with working and opening hours, or with institutional arrangements of one kind or another. To give a simple example, the daily load profile of electricity demand demonstrates the persistent significance of standardised working hours – a patterning that generates spikes and peaks of demand when people return home, and in the morning before they set off for work. This diurnal rhythm is a consequence of the sequential ordering of social practices that is in part held in place by a variety of institutional arrangements, some of which are rooted in, and reproduced through different types and forms of public policy. Modifying such arrangements on any scale evidently calls for more than a 'thin' account of behavioural options. In addition, and perhaps more importantly, understanding how these and other rhythms work is crucial if policy makers are to avoid overestimating the temporal flexibility of demand, and of consequently compromising the project of decarbonising supply.

Since decarbonising supply increases the time-sensitivity of the electricity system as a whole, systems of provision are more closely coupled to the dynamics and timings of practice – to who does what, where and when – than ever before. Ironically this means that the Carbon Plan and the policies that follow are *uniquely* sensitive to the spatial and temporal organisation of social practice.

Linking climate change policy and practice

At the start of this chapter I explained my reluctance to get drawn into a debate about the relative merits of practice-based, as opposed to behavioural, methods of persuading people to adopt and use low-carbon technologies. One of the difficulties of engaging in such discussions is that any response perpetuates an already constricted agenda. Rather than fitting concepts of practice into a slot pre-defined by questions of behaviour change, and rather than going along with a view of social theory as something that should translate, quite directly, into guidance for action and frameworks or 'toolkits' for intervention, I have sought to show how climate change policy plays out within and through the dynamics of social practice.

At this point it is useful to take stock of what this exercise has revealed. Does it help address the questions around which this book is organised, and is it of any relevance to those involved in developing climate change, or any other form of public policy?

In the UK, as elsewhere, methods of estimating future energy demand define and reproduce templates and ranges of 'normal' practice. These visions and assumptions are real in their effects, having direct impact on infrastructure investment and strategies of supply. In this context, an understanding of how social practices are reproduced is of value in highlighting the extent to which policy has a hand in perpetuating the conditions on which certain ways of life, or sets of practices, depend. This is especially significant in that policy makers frequently deny any such responsibility, instead favouring models of behaviour, or of technological adoption, in which citizens and consumers figure as the primary agents of change. The conclusion that policy is unavoidably implicated in the dynamics of social practice may not be particularly welcome, especially not in situations in which the political ambition is to help people make better choices for themselves. However, it does have some bearing on the first question that the editors pose: that is, 'Can we intervene in, or govern, social life from a social practice theoretical perspective?' On this point the answer is unquestionably 'yes': like it or not, all interventions (including non interventions!) constitute interventions in practice.

As illustrated above, thinking through the practice-related implications of climate change policy helps identify some of the blind spots that arise from current understandings of technological substitution and adoption and of the behavioural changes that this entails. I have suggested that such blind spots (for example, the failure to understand how material infrastructures and complexes of social practice constitute each other) obscure precisely those features of social practice that matter for the likely realisation, or not, of policy ambitions like those of introducing ULEVs. The conclusion that climate change policies are situated in a world already shaped by past interventions and that technological 'solutions' are thoroughly enmeshed in ongoing bundles and complexes of practice makes sense, but is it of any policy relevance?

The response is complicated in that the blind spots which understandings of social practice reveal do not arise by accident – they are a necessary and perhaps inevitable outcome of the policy process and of the behavioural/technocratic theories and models on which that process depends. Failure to fully engage with the point that interventions are positioned within and between

existing social practices is consequently something to be expected, and is not something that is likely to be overcome or 'corrected' anytime soon.

For the editors and readers of this book, this points to a related question: would a 'social practice theoretical perspective' have any distinctive benefits and outcomes for sustainability? In response it is plausible to suggest that an understanding of how practices co-evolve might underpin types of intervention that get to the heart of the problem and that are therefore more effective than other possible methods. For example, rather than promoting electric vehicles it might make better sense to identify and actively promote sets of practices into which electric mobility might fit. Similarly, rather than developing and promoting smart meters, the challenges of balancing energy supply and demand could be addressed at a societal scale by exploiting the many ways in which public policy (education, employment, etc) has a bearing on daily and seasonal rhythms of practice and hence the timing of demand. The difficulty here is that strategies like this would call for styles of cross-sectoral policy making, and for forms of intervention that go well beyond the bounds of legitimate policy involvement, as presently defined. This leads to a rather complicated conclusion: taking social practices as the central topic of policy making and analysis probably does have distinctive benefits. However, these benefits are unlikely to be realised because of the way in which climate change policy is currently organised.

The editors' final question – how can we predict or anticipate the outcomes of intervening in practices if they are inherently dynamic and uncontrollable? – is much easier to answer. From a practice theory point of view, it is impossible to predict how new and existing practices might develop. This does not mean that there is no point in seeking to intervene. As indicated above, the chances of effective intervention are probably higher if such interventions are grounded in some general understanding of how practices change, but there are absolutely no guarantees of success. This raises a further challenge: if climate change policy is to be informed by practice theory, it will be necessary to abandon certain illusions of agency, and related expectations of predictability, cause, impact and effect (Rip 2006). Again, this is an unlikely prospect.

In conclusion, the policy relevance of practice theory remains ambivalent. On the one hand, it is only by focusing on the lives and trajectories of social practices, and on the formation and dissolution of bundles and complexes of practice, that we can 'see' and begin to conceptualise the ways in which low-carbon policies, and all the other policies that have an impact on the carbon intensity of what people do, are positioned within the constantly changing fabric of daily life. On the other hand, it is impossible to identify ways of using or mobilising the observations and insights that follow within the policy making process as it is currently configured.

Although practice-theoretical concepts are unlikely to have much of a home *within* climate change policy, they are nonetheless useful in showing how favoured interventions relate to the ongoing reproduction and transformation of daily life. In arguing that this is an important contribution in its own right, I am at the same time arguing for a more subtle understanding of the relation between social theory and public policy. It is tempting to suppose that relevant social science is that which delivers insights that feed and fuel current policy agendas. This is not always so. In this chapter I have suggested that practice theories are of value (but not instant relevance) precisely because

they are paradigmatically at odds with the models of behaviour change and technological innovation on which at much climate change policy depends. To argue otherwise, and to persist with the project of moulding practice theory into some policy-amenable form, is to miss the point, and to misunderstand what makes practice theories distinctive, and distinctively valuable.

Acknowledgements

This work was undertaken as part of the DEMAND Research Centre (www.demand.ac.uk) supported by the Engineering and Physical Sciences Research Council [grant number EP/K011723/1] as part of the RCUK Energy Programme and by EDF as part of the R&D ECLEER programme.

References

Chatterton, T. (2011) 'An introduction to thinking about "energy behaviour": a multi-model approach', London: Department of Energy and Climate Change.

Department of Energy and Climate Change (2010) *2050 Pathway Analysis*, HMSO: Department of Energy and Climate Change.

Energy Technologies Institute (2013) 'Transport: An affordable transition to sustainable and secure energy for light vehicles in the UK'.

Forty, A. (1986) *Objects of Desire: Design and society, 1750–1980*, London: Thames & Hudson.

Frontier Economics and Sustainability First (2012) 'Demand side response in the domestic sector, a literature review'.

H.M. Government (2010) 'The Coalition: our programme for government', from www.gov.uk/government/uploads/system/uploads/attachment_data/file/78977/coalition_programme_for_government.pdf.

H.M. Government (2011) *The Carbon Plan: Delivering our low carbon future*, London: HMSO.

Hughes, T. (1993 [1983]) *Networks of Power: Electrification in Western Society, 1880–1930*, Baltimore, MD: Johns Hopkins University.

Jackson, T. (2005) 'Motivating Sustainable Consumption', retrieved 26.6.09, from www.sd-research.org.uk/post.php?p=126.

Lefebvre, H. (2004) *Rhythmanalysis: Space, time, and everyday life*, London: Continuum.

Nicolini, D. (2013) *Practice Theory, Work and Organization: An introduction*, Oxford: Oxford University Press.

Reckwitz, A. (2002) 'Toward a theory of social practices: A development in culturalist theorizing', *European Journal of Social Theory*, 5(2): 243–63.

Rip, A. (2006) 'A co-evolutionary approach to reflexive governance and its ironies', in J.P. Voss, D. Bauknecht and R. Kemp, *Reflexive Governance for Sustainable Development*, Cheltenham: Edward Elgar: 82–100.

Shove, E. (2010) 'Beyond the ABC: Climate change policy and theories of social change', *Environment and Planning A*, 42(6): 1273–85.

——— (2011) 'On the difference between chalk and cheese? A response to Whitmarsh et al.'s comments on "Beyond the ABC: climate change policy and theories of social change"', *Environment and Planning A*, 43(2): 262–64.

Shove, E. and Spurling, N. (eds) (2013) *Sustainable Practices: Social theory and climate change*, London: Routledge.

Shove, E., Pantzar, M. et al. (2012) *The Dynamics of Social Practice: Everyday life and how it changes*, London: Sage.

Silverstone, R. (1993) 'Time, information and communication technologies and the household', *Time and Society*, 2(3): 283–311.

Southerton, D. (2003) '"Squeezing time" – Allocating practices, coordinating networks and scheduling society', *Time & Society*, 12(1): 5–25.

Spurling, N., McMeekin, A. et al. (2013) 'Interventions in practice', from www.sprg.ac.uk.

Strengers, Y. (2013) *Smart Energy Technologies in Everyday Life: Smart Utopia?*, Palgrave Macmillan.

Whitmarsh, L., O'Neill, S. et al. (2011) 'Climate change or social change? Debate within, amongst, and beyond disciplines', *Environment and Planning A*, 43(2): 258–61.

Zerubavel, E. (1979) *Patterns of Time in Hospital Life: A sociological perspective*, Chicago: University of Chicago Press.