Conceptualising Demand

This book addresses fundamental questions about the very idea of demand: how is it constituted, how does it change and how might it be steered?

Conceptualising Demand focuses on five core propositions: that demand is derived from social practices; that it is made and not simply met; that it is materially embedded; that it is temporally unfolding; and that it is modulated through many forms of policy and governance. In working through these claims, the book weaves concepts from the sociology of consumption, science and technology studies, policy analyses and social theories of practice together with empirical cases and new research into such topics as the rise of refrigerated foods, the emergence of online shopping and the transformation of energy demanding services.

This innovative book takes a fresh look at the very idea of demand, a concept that is often taken for granted, but that is vital for scholars and students of energy, mobility, climate change and consumption, and anyone interested in the subject.

Jenny Rinkinen is a researcher in the Consumer Society Research Centre at the University of Helsinki, Finland.

Elizabeth Shove is a Professor of Sociology at Lancaster University, UK, and was the PI of the DEMAND Research Centre.

Greg Marsden is a Professor of Transport Governance at the Institute for Transport Studies at the University of Leeds, UK.

“This is an agenda-setting book. Combining big ideas with telling examples, it shows how we need to follow the practices of daily life if we want to understand the growth of demand. Vital reading for anyone hoping to come to grips with our dangerously growing appetite for energy and mobility.”

– Frank Trentmann, *History, Birkbeck College, UK.*

“This book is a response to the urgency of low carbon transitions. It argues for approaches that go beyond energy efficiency and that explicitly focus on how demand is shaped – and can be reduced. The authors sum up insights from decades of research in a way that is accessible and inspiring for new readers and for those already familiar with social practice theory and governance.”

– Inge Røpke, *Ecological Economics, Aalborg University,
Copenhagen, Denmark.*

“*Conceptualising Demand* provides a coherent account of the social, material and historical foundations of demand, a concept which has become central to many areas of research and policy. A must-read for anyone trying to change demand in the energy or mobility sectors.”

– Yolande Strengers, *Emerging Technologies Research Lab,
Monash University, Melbourne, Australia.*

Conceptualising Demand

A Distinctive Approach to
Consumption and Practice

**Jenny Rinkinen, Elizabeth Shove
and Greg Marsden**

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1 Introduction

Most dictionaries define demand as an insistent and peremptory request, made as of right. In economics and in policy, demand refers to the need for goods or services often provided by the market. Generally, this is as far as it goes. In academic debates and in everyday life, demand is simply treated as something that exists, and as something that explains and also underpins trends in what people buy. Despite repeated reference to this term not only in economics, but also in studies of consumption, policy, innovation and technology, the concept of demand has escaped detailed and explicit critical attention.

Many discussions come close. For example, claims about the qualities and characteristics of consumer society make much of the significance and meaning of goods and services in modern social life (Baudrillard, 2016) but leave questions about what consumption is for largely untouched. In economics, demand usually figures as an abstract concept, thought of as the logical partner to supply but rarely considered beyond that. In innovation studies, interest focuses on demand as a stimulus for novelty but again careful analysis of the concept is usually missing (Godin and Lane, 2013). In different areas of policy, rising demand for energy, for health services, for transport or for resources like water (Vörösmarty et al., 2000) is interpreted as an expression of consumers' needs and desires and their willingness to pay for goods and services. Similar understandings inform and underpin welfare economics and the huge machinery of government decision-making. Together, these traditions and conventions combine to form a dominant discourse, built into economic theories, capitalist world views and contemporary accounts of how society works. Across the board, demand seems so obvious, so ubiquitous and so deeply embedded in current thinking that the idea of asking how it is constituted, how it changes and how it might be steered will strike many as

2 Introduction

being, at best, odd. Some might conclude, right away, that this is a fool's errand. We think otherwise.

Paying attention to the foundations of demand means paying attention to issues that are sidestepped in mainstream debates, but that are also fundamental to them. For example, many economic theories suppose that demand reflects prices and individual preferences. Such approaches capture just a small part of why demand changes and are largely blind to longer-term historical trajectories, or to social institutions, infrastructures and practices. As Shove and Walker (2014) argue, and as indicated within energy and transport related research and policy (Marsden et al., 2018), there is a parallel tendency to focus on matters of efficiency or security of supply rather than on basic questions about what energy and mobility are for. This results in partial but hugely influential representations of demand that inform what are often short-term, and very limited ideas about what policy makers can do to tackle challenges like those of radically reducing carbon emissions. In taking the foundations of demand for granted, and in taking them out of the equation, debates about what can be done revolve around a handful of alternative responses. In the context of consumption, carbon emissions and climate change this results in a lopsided discussion about whether technological solutions can fix the problem or whether individuals also have to cut back or deny themselves goods and services that have become synonymous with normal ways of life. Framing the problem in these terms bypasses primary questions about how expectations of normality form and change. This neglect has important consequences for policy agendas. One is that in the energy and mobility sectors, policy ambitions shrink to fit what are taken to be non-negotiable interpretations of normality. Proposed solutions consequently focus on opportunities for efficiency or 'behaviour change' within a narrow frame, leaving big questions about how present and future demands evolve out of view. This is not just an unfortunate omission. In routinely taking current ways of living as their point of reference, energy and environmental policies inadvertently *reproduce* patterns of consumption that are themselves part of the problem.

One reason for writing this book, and one reason for focusing on energy and transport is that climate change represents what is probably the most pressing social and political challenge of the day. If fossil fuel consumption is to fall at the rate and on the scale required, questions about the foundations and the future of demand will have to take centre stage. Amongst much else, this requires better understanding of

the qualities, origins and histories of demand, and of how these emerge and change over time.

In pursuing this agenda, we challenge what have become familiar responses in climate change research and policy. To be more specific, we take issue with the ways in which strategies of efficiency and decarbonisation have been divorced from issues of demand. In many countries, including the UK, efforts to reduce energy consumption and promote the transition to a lower carbon economy depend on decarbonising energy supply by making more and better use of renewable energy, or on delivering the same or more service but for less energy, for instance through the development of more efficient cars, heating and cooling systems and appliances.

It is widely recognised that the introduction of lower carbon technologies will have implications for ‘markets, infrastructures, institutions, social practices and cultural norms’ (Jenkins and Hobson, 2018: 2). Linked to this, there is an extensive literature that emphasises the ‘sociotechnical’ character of sustainable transitions and that considers the various roles that users play in these processes (Schot et al., 2016). Despite interest in the practicalities of adoption and uptake those who write about energy transitions rarely consider how infrastructures and technologies (including efficient ones) configure and transform social practices and the forms of energy demand that these engender and sustain. Again the basic dynamics of demand are largely taken for granted.

Instead, and as evident in recent ‘clean growth’ strategies, demand – here meaning the amount of energy that society needs – is treated as given. Estimates and models of future demand work in fairly predictable ways: expected changes in population, estimates of GDP and anticipated technological trajectories such as the uptake of electric vehicles are factored into equations that assume that current standards of living and present energy-demanding practices will persist unchanged (DfT, 2018b; National Grid, 2017). With these understandings in place, the question is how to meet these present and future needs whilst achieving targets for carbon reduction (Defra, 2017; UK Government, 2017b).

This is not to suggest that policy makers and researchers disregard or take no account of demand. Far from it. As indicated above, judgments about how much energy society needs are woven into forms of policy analysis, future investment, energy modelling and more. Rather, the point and also the purpose of this book is to articulate and challenge the tacit theories and understandings on which these assumptions depend.

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From this perspective, the tendency to conceptualise demand as an expression and outcome of consumer choice or as a consequence of technological efficiency is a significantly limiting feature. It is so in that discussions of demand then revolve around matters of individual behaviour or focus on peoples' values, preference and abilities to pay. This is such a familiar approach that commentators rarely give the underlying logic a second thought. For example, it is at first difficult to disagree with those who point to the many benefits of a circular economy, involving forms of sharing, recycling and reuse. Following this line of reasoning it makes sense to focus on persuading people to play their part, for instance, by recycling clothing. The drawback of such an approach is that it locates both the problem and the solution in the hands of the consumer. Very different responses would be required if trends in resource use were attributed to the massive increase in the global production and distribution of clothing in the first place (Trentmann, 2016). This is not the path that is usually taken. Instead, dominant interpretations of demand generate two also dominant types of intervention, namely raising consumer awareness, and increasing efficiency.

Thinking of demand as a consequence of the sum total of individual choices implies that it can be reduced through changes in market conditions (e.g. price), by raising awareness of the consequences or by providing information that enables people to make 'better' choices for themselves. Amongst much else, arguments like these justify efforts to engage consumers in so-called 'smart behaviour', exemplified in the energy sector by the rolling out of 'smart meters' that allow people to see their gas and electricity consumption in real time (Strengers and Hazas, 2019).

Alongside these initiatives, demand reduction policies also focus on developing and promoting more efficient cars, fridges, tumble dryers and so forth. In some respects this strategy makes sense: there are energy savings to be made. However, there are also unintended consequences, some of which are positively counter-productive. Discussions of the downsides of efficiency tend to focus on the problem of rebound. In brief the concept of rebound refers to the possibility that the money saved through buying and using a more efficient appliance might be spent in ways that increase energy consumption in another area of daily life: for instance enabling more travel, or flights abroad (Sorrell, 2007; Marsden, 2019). However, a much more basic problem is that efficiency programmes legitimise and even promote the use of resource intensive appliances. It is all very well to develop a tumble dryer that uses less energy than another existing model, but why is it

that tumble dryers are, in any case in use? Discourses of efficiency compare like with like meaning that there is never any discussion of how efficient a washing line might be, compared with a mechanical dryer. Similarly, the need for a fridge or fridge freezer (or two) is simply not part of the efficiency discussion. Nor is an understanding how global food systems have come to depend on unbroken chains of refrigeration.

In this book we argue that as long as policy makers, researchers and practitioners think of demand as an expression of individual consumer choice, as an outcome of the self-evident need for specific goods and services, or a consequence of their design they are unlikely to do more than scratch the surface. In essence, our argument is that demand depends on the range of practices enacted in society, and on the technologies, infrastructures and institutions on which these depend. All practices generate and are linked to some kind of demand whether that be for a vehicle and road infrastructure to get to work or for electricity and a kettle for making tea. From this point of view, the extent, and also the timing of energy consumption is a result of how demands for different forms of service (thermal comfort, convenience, hygiene) are built, and how these change.

In developing an account of the social basis of demand we have two ambitions. One is to bring what are usually sunken questions of history and change out into the open. The second is to demonstrate the policy relevance of engaging with the constitution of demand in this more fundamental sense.

Demand – extending the agenda

In the rest of this book we work through the theoretical and practical implications of conceptualising demand not as an expression of individual choice, but as an outcome of shifting, historically situated complexes of social practice (Shove et al., 2012).

Such a focus on the very foundations of demand is, we argue, urgently required given claims about the limits to growth (Meadows et al., 1972) in terms of population increase, agricultural production, non-renewable resource depletion, industrial output, pollution and carbon emissions. Rather than expecting that these problems can be fixed by means of efficiency improvements and other large-scale engineering, such as GMO agriculture, geoengineering or artificial intelligence, our aim is to explore opportunities for reducing the scale of these challenges not through new forms of supply, but by actively reconfiguring demand.

This is an unusual and also challenging approach. There are many good reasons why demand is so often taken for granted, and why it is so often excluded from serious debate. As we have already mentioned, dominant ideologies of neoliberal consumer society, of the state and of capitalism itself deny that demand is any other than an expression of consumer choice. In addition and from the Brundtland report onwards, there has been a consistent emphasis on wealth, growth and prosperity:

Many essential human needs can be met only through goods and services provided by industry, and the shift to sustainable development must be powered by continuing flow of wealth from industry.

(Brundtland et al., 1987: 16)

We are consequently writing in a context in which the focus on choice and growth is such that the only viable courses of action appear to be those that fit within this frame. This is consistent with ideas about the scope of legitimate government intervention, and with the ambition of ‘helping people make better choices for themselves’ (Shove, 2010). From this point of view, it is quite appropriate for climate change policy makers to encourage and promote efficiency, but quite out of order to advocate laundering less, using a clothes line or doing without a fridge. Put differently, the focus is on methods of meeting demand as it is currently constituted.

However, if we take even a short-term historical view, it is obvious that policy makers also have a hand in *making* demand. For example, many areas of daily life and many of the forms of demand that follow are directly and indirectly affected by guidelines and regulations including those relating to health and safety, efficiency standards, land and resource use, and so forth. Similarly, large-scale infrastructures and systems of provision, from electricity and gas grids through to road and rail networks, are designed and sized to enable certain ways of life. In other words, issues of demand are, implicitly at least, at the heart of many critical public policy dilemmas, such as determining appropriate levels of spending on health care, on public health provision, policing or education. In all these contexts and more, the challenges of managing demand are not fixed or stable.

Developments in some areas of everyday life generate forms of scarcity (as when more land is needed for housing) and conflict, as when air pollution increases with urban density and traffic. The practicalities and politics of response are correspondingly complicated and in both the public and the private sector there are repeated failures to grasp

changes in demand. This takes many different forms. Often there are mismatches between provision and practice, as when rail franchises are tied to infrastructures that cannot keep pace with changing patterns of commuting and travel, or when hospital buildings are designed to accommodate forms of treatment that are swiftly outdated. As the ensuing struggles indicate, the response is almost always one of adapting and modifying provision in order to meet demand, whenever it occurs and however extreme it might be. At the same time, it is obvious that definitions and meanings of appropriate service, and related systems of provision are themselves in flux. For example, some electricity utilities now sell services and not just power. Similarly, some manufacturers are deliberately seeking to extend the life cycle of their products, making use of recycled materials, ‘upscaling’ and aiming for sustained rather than increased production. In both these cases, providers are involved in making new and different forms of demand.

Despite the rhetoric, and whatever the goals that producers and policy makers might have, it is increasingly obvious that demand *does not* simply exist, ready-made. As indicated above, it is actively constituted within and outside markets, and in settings that are multiple and varied. This is an important insight but it is also just the start. In the chapters that follow we see demand as an outcome of social practices. Because of this, we take a broader-than-usual view of what is at stake. This enables us to develop an also broader-than-usual account of how demand might be steered and shaped, and of how significant challenges like those of radical carbon reduction might be approached.

We have already referred to social practices, as distinct from consumer choice and behaviour, but what do we mean when we say that demand is an outcome of practice? When we refer to social practices, we mean more than what people do at home, at work or in moving around. As outlined below, when we talk of practice, we do so in a way that is informed by, and that carries with it, a distinctive set of theoretical commitments.

In social theory, practices, as defined by Giddens (1984), exist across space and time and have lives that extend beyond any one person and beyond any one moment of enactment. As Reckwitz puts it, ‘The single individual – as a bodily and mental agent – then acts as the “carrier” (Träger) of a practice’ (Reckwitz, 2002: 250). This is an important theoretical distinction in that it locates practices, and not individuals, as the central topics of conceptualisation and analysis.

For Giddens, and for us, studies of practice overcome classic distinctions between agency and structure, emphasising ‘the essential recursiveness of social life, as constituted in social practices’ (Giddens,

1979: 5). To put it more concretely, social practices are formed and reformed through historical developments and interconnections, they are shaped by and shaping of societies, and they are entwined with configurations of space and time, as well as with infrastructures, materials and institutions (Shove, 2003; Shove et al., 2012). Equally, it is only because they are more or less persistently, and more or less consistently enacted that they endure and change. These ideas, along with the related contention that practices are *the* ‘site’ of the social (Schatzki, 2002), and that societies are none other than an immensely complex ‘plenum’ of practices have inspired a range of social theoretical debates about the constitution and the transformation of this nexus (Hui et al., 2017). These discussions underlie and inform key features of our approach to demand in quite specific ways.

Building on the core tenets of practice theory, we claim that demand is an outcome of the social, infrastructural and institutional constitution of society and that resources such as energy are consumed and transformed in accomplishing a huge range of social practices including those involved in heating, commuting, laundering, cooling and so forth. In each case, the details are not pre-given: what practices ‘require’ changes over time, at different rates and in different ways. The extent and timing of energy demands is thus a consequence of these many and multiple arrangements. It follows that increases, or decreases, in demand depend above all, on the combined trajectories of the sum total of the practices involved. Our view of demand is thus pluralistic and multidimensional. We recognise that demands are multiple and that they are made and met within and outside of markets. Demand for goods, services, and resources such as energy combine in ways that relate to the demand for what we describe as meta-services like mobility and comfort. Conceptualising demand as an outcome of complexes of social practice underlines the point that it is constantly and actively reproduced: it does not simply exist as something to be met, nor does it remain unchanged.

These starting points open the way for further analysis of the material and also the temporal constitution of social practice, and thus the shaping of demand (Schatzki, 2011). In building on these ideas, and in weaving them together, this book is organised around five propositions:

1. Demand is derived from practices
2. Demand is made, not simply met
3. Demand is materially embedded
4. Demand is temporally unfolding

5. Demand is modified and modulated, deliberately or not, via many forms of policy and governance

The chapters that follow work through these propositions in turn, doing so as a means of elaborating on the characteristics and the dynamics of demand for energy and mobility, in particular.

In developing this approach we draw from, and also challenge and critique a range of disciplines and traditions. What we have to say is anchored in an understanding of social practice (taking this to be the basis of demand), but in opening up new lines of enquiry we open the way for an influx of fresh ideas and intellectual resources from policy studies, science and technology studies and more. At the same time, there is no denying that ours is a challenging approach: it challenges the individualistic and also abstracted conceptualisations of demand on which much contemporary policy depends and it questions the kinds of responses that follow, rejecting simple narratives of efficiency, and favouring more concerted interventions that engage with the very basis of demand. Above all, it takes issue with the overly limited scope and ambition of what counts as energy, or as transport, or as climate change policy. In taking these ideas forward, we show how questions of demand – what demand is, how it changes – can be reframed, and we identify the implications of such reframing for public policy.

Before getting underway it is useful to say more about the choices we have made in bounding the topics we discuss, and the scope of our analysis.

First, we recognise that not all forms of energy or transport demand are problematic, but we share the view that resulting and aggregate levels of related carbon emissions are so now and will be even more so in the future. In thinking about which forms of demand matter, and how, commentators distinguish between ‘good’ and ‘bad’ or ‘wasteful’ and ‘useful’ types of energy consumption, often linking these definitions to interpretations of ‘necessities’ and ‘luxuries’ that are in turn associated with broader understandings of well-being at different scales (Büchs and Koch, 2019). Some discussions of sustainability start from this point, for example setting out minimum and maximum standards for consumption (Di Giulio and Fuchs, 2014).

We take a different route. Rather than making our own judgments about good and bad, our aim is to detail the connections between social practices, the forms of demand (for goods and resources and also services like mobility; care, etc.), and the organisation of provision that follow. This makes sense in that we do not take

practices, and related interpretations of wellbeing, to exist somehow independent of systems of provision, or of the materials and technologies involved. What counts as a necessity and what is seen as waste is *part of* the dynamics of practice, and as such part of what needs to be studied and observed.

Second, and as outlined above, we focus on examples relating to energy and mobility because we believe, in very general terms, that both are critical for carbon emissions and climate change. Yet there are further decisions to be made about the scope of our enquiry. The demand for energy (meaning resources like oil, electricity or gas) does not take place in a vacuum, but it is closely linked and intertwined with demand for related goods and services. In practice it is not energy, itself, that is demanded – rather it is the services that energy makes possible. Further, the services that matter are those that enable or constitute one or more social practices.

As Morley (2018) explains, transport systems, which depend on the actions and strategies of many different organisations, provide what is best conceptualised as a background or enabling condition for a range of other very varied practices: commuting to work, taking a holiday, going shopping etc. Similarly, the technologies and systems that constitute what now counts as ‘comfort’ (including the fabric of a house, clothing and heating systems) enable people to do all sorts of things: to read, sleep, cook and so on. Morley describes mobility and comfort as ‘meta services’, using this term to distinguish these encompassing forms from other more specialised relations, for instance between the energy used to power a specific device, and the service that device provides. Meta-services like comfort are never fixed entities: rather they have histories, they depend on suites of technologies, and they change when their components change. In Morley’s words:

by focusing on meta-services as more encompassing formations of convention, experience and means of provision, in which energy services like lighting and heating are usually only one amongst many components, we can better recognise the dynamic and collectively distributed nature of demand.

(Morley, 2019: 20–21)

Showing how such combinations of technologies and services change *together* represents one means of showing how demand evolves at a societal scale.

This way of thinking puts issues of increase and reduction in a new light. For example, energy efficiency measures reduce the amount of energy consumed whilst maintaining the same level of service, and the same contribution to broader concepts of meta-service. Such measures limit consumption but do not modify demand – not in the fuller sense of reconfiguring what energy is ‘for’ or the practices on which consumption depends.

Working with this broader-than-usual interpretation of demand enables us to see how the components of meta-services are arranged and rearranged, and to consider the escalation or reduction of resource use. To illustrate, there are different ways of making oneself comfortable: clothing can be part of this endeavour, or the addition of mechanical heating or cooling. Which components (clothing, or heating) figure more or less prominently and how they interact changes historically and with significant consequences for fuel consumption. The approach we take allows us to keep this shuffling in view.

This is not just a matter of recognising that the ‘same’ practice can be done in more or less resource intensive ways (Heikkurinen, 2018). It is, of course the case that swimming in the sea has different energy implications compared to swimming in a heated pool, and services such as communication, illumination, hygiene, sustenance or nourishment, mobility or transport, shelter or structure, and thermal comfort can all be achieved in a variety of ways. However, a third distinctive feature of our approach is that we resist the tendency to think about comfort, light, shelter etc. as enduring and universal forms of ‘need’, desire or function that are always present or that must be satisfied in one way or another. For us, the more interesting question is how practices such as office working, cooking or laundering evolve through and along with technologies that are themselves dependent on background infrastructures of energy and power. It is in this sense that demand is quite literally woven into the fabric of daily life. Conceptualising demand in these terms treats resources (including gas and oil, but also things like steel, sugar or coffee) not as unchanging commodities exchanged in markets driven by seemingly abstract political and economic processes, but as integral elements within living systems of practice.

Fourth, and related to this, we go beyond representations of energy demand that are, in effect, fixed on resources, taken in isolation. Rather than being off-limits, questions about the ‘ends’ of energy services – i.e. what energy resources are used for, and how this changes over time – are central. This plays out in different ways. For example, in the transport sector it is important to understand that something as apparently

stable as peak hour traffic congestion is currently comprised of a very different set of journeys and purposes than was the case a decade ago (Le Vine et al., 2017). Rather than being simply tied to price, or to consumer preference our contention is that trends like these are ‘related to social, cultural and collective histories and traditions’ linked to ‘socio-technical change and the co-evolution of infrastructures, devices, routines and habits’ along with the ‘inter-dependent practices of producers, providers, utilities and governments’ (Wilhite et al., 2000: 118). From this point of view it is not simply the demand for services or the use of resources that matters but the relationship between them. This argues for forms of analysis that consider the dynamics and also the economics not of fuel use, but of meta-services like comfort, illumination or mobility.

Finally, a word on sectors other than energy and transport. Many of the arguments we make and the positions we develop would apply as well to discussions about the demand for water, or for education, policing or health care. At the same time, there are revealing and instructive differences in how demand is conceptualised. For example, in the transport sector, demand is often said to be derived from what people do, an interpretation that fits well with the approach we take, but that hardly ever figures in discussions of energy use in buildings. Similarly, although there is no obvious equivalent in the energy world, in public health, the concept of an obesogenic environment, that is an environment that favours practices that contribute to obesity, has informed interventions that focus on infrastructures and conditions that might enable healthier patterns of diet and exercise. As these more adventurous responses remind us, social practices and related patterns of demand are not fixed for all time. Nor are they immune from policy influence. Whether they are aware of it or not, policy makers are constantly intervening in ways that shape the very foundations of demand. What is missing, and what we hope to provide, is an account of the processes involved. It is for this reason that we write about how demand is constituted, how it changes and how it might be shaped and steered.

Structure of the book

The next four chapters develop and explore the central propositions on which our distinctive approach is based.

Demand is an outcome of practice and is made and not simply met

Chapter 2 starts by describing the theoretical roots of currently dominant ways of thinking about demand and closely related notions of

need, want and desire. Having discussed the status of demand within classical economics, and in social theories of consumption we say more about what is involved in viewing it as an outcome of social practice. As we explain, the contention that demand happens through and as part of practices calls for a more detailed account of relations between materiality, practice and demand.

Demand is materially embedded

Chapter 3 takes up this challenge and explores the proposition that demand for goods and services is rooted in the material arrangements on which social practices depend, and that are in turn part of shaping what people do. In this chapter our aim is to show how infrastructures and appliances figure in the conduct of practice, in the constitution of meta-services and in how social life is held together. We use two empirical examples, the diffusion of fridge freezers and the development of online shopping, to show how sets of practices, the material arrangements on which they depend and the forms of demand that follow link and change together.

Demand is temporally unfolding

Chapter 4 is about how demand changes and varies over time. Rather than dealing with long-term changes in the constitution of practices this chapter deals with fluctuations in demand during the day and over the year. The suggestion that the timing of demand is a consequence of how social practices are synchronised and sequenced has important consequences for the energy and mobility sectors and for efforts to reduce peak loads, limit congestion and make better use of renewable forms of energy supply. The suggestion that forms of provision and supply are part and parcel of shaping and also responding to patterns of time and timing in what people do is an important part of our analysis, as is understanding of flexibility as an outcome of how complexes of social practice hang together. These ideas inspire new ways of thinking about the timing of supply and demand in energy and transport systems, and about where opportunities for intervention might lie.

Demand is modified and modulated, deliberately or not, via many forms of policy and governance

Chapter 5 investigates some of the ways in which policy influences the practices and social arrangements on which energy and mobility

demand depends. We use the case of transport policy to show how dominant paradigms and methods of framing problems and forecasts underpin forms of investment and 'solutions' that inadvertently sustain increases, rather than reductions in travel demand. We also argue that other approaches are possible. If taken to heart, the propositions set out in this book lay the foundations for policy interventions that are capable of steering demand, and of doing so in ways that are coherent and compatible with swift and significant responses to the challenges of climate change and carbon reduction.

Rather than summarising the book as a whole the final chapter highlights what is distinctive about our approach. In bringing the threads together, we explain why it is so critical that those who take demand for granted, who take it to be the logical partner to supply, or an expression of consumers' needs and desires should think again about the assumptions they make. The chapter does not provide easy policy solutions but it shows that conceptualising demand in the way that we do can help identify opportunities that are simply not on the radar in energy and transport research and policy, not as it is currently framed and formulated. This is important in that radically new concepts and strategies are urgently required if there is to be any hope of moving towards a low carbon society. This book gives a sense of what this might entail.

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