# Chapter 9
# Energy and Social Practice: From Abstractions to Dynamic Processes

**Elizabeth Shove**

**Abstract** Energy policies are typically organised around the supply, management and reduction of energy conceptualised as a singular resource and measured in standardised units like KWh or Mtoe. This kind of abstraction enables national and international institutions to collect and compare data on per capita consumption, the effect of efficiency measures, progress towards emissions targets and the like. The problem is that such approaches treat energy, and energy consumers, as topics of analysis in their own right, stripped from the historically and culturally specific situations in which demand arises. In this chapter I make the case for seeing energy demand as something that is intimately related to the conduct of social practices, and thus inseparable from the spatial and temporal ordering of society, and from the infrastructures and institutions involved. I argue that better understanding of the dynamic and recursive relation between supply, demand and social practice is both necessary and important, particularly given the increasing significance of renewable energy and related challenges of matching peaks in provision with those of consumption. This way of thinking has policy implications. Rather than seeking to maintain present ways of life (but with lower carbon energy supplies), I suggest that the longer term goal could and should be that of imagining and promoting technologies, practices and socio-temporal orders that are compatible with greater reliance on renewables and reduced demand, accepting that this is likely to entail the emergence of ways of living that are really very different from those with which we are familiar today.

## Introduction

How energy is known, measured and understood is hugely important for the development of carbon reduction policies and for strategies adopted in pursuit of these goals. In collecting and analysing data on the production and consumption of

E. Shove (✉)
DEMAND Centre/Department of Sociology, Lancaster University,
Lancaster LA1 4YD, UK
e-mail: e.shove@lancaster.ac.uk

 
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energy, national and international organisations work with a limited palette of standardised metrics, the most common of which are Million Tonnes of oil equivalent (Mtoe), or million tonnes of carbon emissions. Units like these make it possible to aggregate and to thereby ‘see’ the extent of the problem and to quantify and evaluate the impact of steps taken in response. The paradox is that these arguably necessary methods and approaches prevent researchers and policy makers from engaging effectively with the multiple dynamics of energy demand or with the fundamentally different characteristics of renewable rather than fossil fuels.

There is nothing new in the suggestion that theories, methods and paradigms are inherently selective: in highlighting certain features they inevitably obscure others. It is also not surprising to discover that concepts and measures are products of their time: in the energy field, it is no accident that ‘oil equivalent’ is the common point of reference. As described below, historical reliance on fossil fuel has a bearing on the terms and parameters of energy-related analysis, and on conceptualisations of energy as a singular resource that can be allocated, managed and depleted.

It is now so thoroughly normal to represent and account for energy in these terms that it is easy to overlook the work that lies behind the production of pie charts showing energy use by sector, of Sankey diagrams depicting the movement of energy from sources of supply through to end use and consumption or forms of input–output accounting like those used in attributing carbon emissions to nation states (Scott and Barrett 2015). It is nonetheless important to remember that producing figures like these depends on abstracting ‘energy’ from the range of technologies and practices in which it is enmeshed and from the multiple settings and moments in which it is produced, distributed, transformed and used.

Methods of knowing and managing energy that depend on techniques of abstraction, standardisation and equivalence tend to preclude close analysis of how, when and where energy demands are made and reproduced. These time-less, or time-independent representations relate to the tendency to think of energy as a quantifiable resource and as something that can be stored and used at a later date, as is the case with fossil fuels. Such ‘purifying’ (Latour 2012) moves make it difficult to engage with fluctuations in the timing, duration and sequencing of the various practices that underpin energy demand. These are especially limiting features when thinking about a future in which renewables have a much more significant role than they do today. Developing this idea, any really substantial movement away from fossil fuels almost certainly implies correspondingly substantial shifts away from resource-based views of energy and from related concepts of efficiency and consumption. Put differently, greater reliance on renewables calls for a major overhauling not only of infrastructures and systems of provision, but also of how energy is defined and understood. In effect a more sophisticated account of energy as a feature of the situated and dynamic enactment of social practices is a precondition for comprehending and shaping the timing and the dynamics of supply *and* demand (Shove and Walker 2014).

In exploring these themes, the first part of the chapter discusses the tendency to treat representations of energy as if they had meaning in their own right. The second part considers methods of reconceptualising the place of energy-and-practice within society.

## Abstracting Energy

In the span of human history, energy has only recently been isolated and described in the way that it is today. It was not until the 1840s that previously important theories about vital forces gave way to a handful of interlinked ideas which established 'energy' as a common point of reference, enabling further distinctions to be drawn, for instance, between potential, thermal and kinetic forms. The laws of thermodynamics are part of this tradition, as are understandings of how energy is transmitted, converted and 'lost'. Alongside and as part of these theoretical developments, standard units (e.g. the Joule) replaced what were previously localised, variable and situated forms of knowledge about horse power, manpower, candle power, etc.

In the physical and natural sciences, and in policy, energy is now known and discussed in the singular and in terms that are removed from many and varied moments and sites of 'use'. This is reflected in widespread reliance on what have become thoroughly routinized methods of measuring energy and of estimating carbon emissions. Units like Million Tonnes of oil equivalent (Mtoe)[1] are used to represent and summarise different forms of energy provision and consumption. The carbon consequences of a plethora of energy-and-emissions-related activities are rendered comparable in much the same way, being described in standard units of tonnes, or millions of tonnes of $CO_2$. It is usual to assume that assessments of this kind record and capture relevant trends on a global scale, and in a sense they do. It is nonetheless important to recognise the 'performative' character of such calculations and the forms of averaging and aggregation involved.

By performative I mean that measurement and calculation have an active role in shaping and framing what count as relevant questions and lines of enquiry: they do not simply reflect what is going on in the world. They also constitute and sustain understandings of problems and of potential solutions. Contemporary techniques typically reproduce an understanding of energy as a finite resource: specifically, as *oil* equivalent. As discussed in the next part of the chapter, such representations underpin ideas about efficiency and consumption which percolate through national and international policy agendas.

[1]One tonne of oil equivalent represents the energy content of a metric tonne of crude oil.

## *Energy Efficiency*

Increasing efficiency, for instance of a light bulb or a car engine, depends on knowing, with some precision, how much energy is required to produce a specific result: to deliver a certain amount of light or to enable a standard car to travel a certain distance under certain conditions. Amongst other things, measuring energy input and comparing the outcome depends on defining, stabilising and quantifying 'relevant' features such as levels and qualities of light or aspects of a car's performance. The limits and boundaries that are needed to evaluate efficiency also limit and bound the scope of efficiency-oriented programmes. This works in different ways.

Since measures of efficiency depend on comparing things which purport to deliver the same service, changes in the meaning of 'service' are consequently out of view. In practical terms, this means that if items like fridge freezers increase in size or if they offer additional facilities (ice making, etc.), new protocols are required to ensure that their efficiency is fairly assessed and compared to other equivalent models. Because the focus is on efficiency, not on energy consumption, trajectories of product development are out of scope.

A second related point is that measures of efficiency work with, and thus reproduce particular understandings of what a car is, or of what a freezer should do. Focusing on efficiency tends to obscure the recursive and somewhat longer term co-evolution of technologies and practices. To give a different example, lighting technologies are implicated in constructing and reproducing ideas about what constitutes good or acceptable standards and qualities of light: these qualities are then treated as fixed points of reference when evaluating the relative efficiency of different bulbs and fittings.

Methods of identifying and enhancing efficiency are designed to isolate and abstract the 'energy' from the ongoing conduct (and transformation) of social practices of which more and less 'efficient' technologies are a part. This result is to emphasise technological substitution and equivalence of delivery, forgetting that things like cars, washing machines and heating systems have histories that are themselves bound up with the provision and consumption of energy. As a result, and precisely because they depend on stripping energy out of context, efficiency agendas side-line questions of change which are arguably crucial for any understanding of demand.

In measuring efficiency the meaning of useful work[2] is stabilised and taken for granted: all that counts are the means—i.e. the standardised units of energy—through which this work is done. This separation of means and ends is doubly problematic in that it disguises the extent to which definitions of service (necessarily black boxed in assessments of efficiency) are shaped by the technologies involved. The International Energy Agency's (IEA) suggestion that 'energy efficiency' should be thought of as a 'fuel' alongside others like coal, gas and oil (and

[2]Physicists define energy as 'the means to do useful work'.

measured in Mtoe avoided) compounds these problems, entailing a further level of abstraction by treating energy that is not used (because of efficiency measures) as some kind of virtual supply.

## *Representing Efficiency as a Fuel*

In 2013 the IEA published its first Energy Efficiency Market Report which 'sits alongside IEA market reports for oil, gas, coal and renewable energy, highlighting its place as a major energy resource'.[3] Producing this assessment required considerable methodological ingenuity, including setting baselines from which to estimate the energy that might have been used had efficiency measures not been introduced,[4] touching on issues of rebound (in which money saved by installing efficiency measures might be used in ways that increase energy consumption elsewhere), and grappling with the complexity of estimating 'cumulative' avoided energy.[5] Having established methods of calculating avoided energy, and having assessed the costs of installing energy efficiency measures, the report's authors go on to calculate what are described as 'reserves' of energy efficiency—namely the catalogue of presently cost effective efficiency measures that have yet to be taken. As described, 'the sum of these opportunities at today's price levels can be considered to be our "reserves" of avoided energy use. These reserves are analogous to the world's stated reserves of oil or gas.' (International Energy Agency 2013: 30).

Estimates of the extent of efficiency-as-fuel are bewilderingly huge. To quote: 'Between 1974 and 2010, cumulative avoided energy consumption due to energy efficiency in these IEA member countries amounted to over 1350 EJ (32 billion toe).' (International Energy Agency 2013: 55). Such estimates are also bewildering in the sense that they peg definitions of service (that is of what energy + technologies are expected to deliver in terms of heating, cooling, speed, etc.) to a fixed point (1974) and evaluate efficiency in delivering them, but without acknowledging that expectations of heat, cool, speed, etc. evolve. This is, perhaps, an extreme example but the step-by-step logic of calculating the use of efficiency-as-fuel in units of avoided Mtoe is entirely consistent with dominant methods of conceptualising energy in ways that lift it out of the flow of social practice and out of related patterns of social, cultural and technological change.

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[3] http://www.iea.org/publications/freepublications/publication/energy-efficiency-market-report-2013.html.

[4] Examples include better building insulation, more efficient appliances, light bulbs, etc.

[5] Here, the challenge is to quantify the energy not used In the year following the baseline (i.e. when the energy efficiency measure was introduced), and in all subsequent years of the expected lifetime of the 'measure'—whatever that might be.

## *Energy Consumption and Energy Consumers*

The standardising language of energy goes hand in hand with an also 'flattened' account of consumer behaviour. Representing people as 'energy consumers' rather than as commuters, home owners or chefs prevents further analysis of how patterns of energy consumption follow from the enactment of practices as diverse as those of commuting or having dinner. Instead, all feature as similar if not equivalent instances of energy consumption. The same applies in the field of transport, a sector in which it is usual to compare and quantify passenger kilometres travelled.[6] As with units like Mtoe, any one passenger kilometre travelled is equivalent to the next. Given that it is normal to describe journeys in these terms, policy analyses rarely differentiate between trips to the supermarket or to school: as a result there is often no way of knowing whether diverse mobility dependent practices are evolving in similar or in radically different ways.

Instead, energy consuming behaviours are discussed as if people were also standardised 'units', and as if moments of consumption were, for all practical and analytic purposes, identical. Consistent with this view, initiatives designed to modify energy-related 'behaviour' routinely suppose that trends and patterns are outcomes of a handful of generic behavioural drivers, typically including attitudes towards energy/environment and price (Chatterton 2011).

In all of these, the figure of 'the energy consumer' is multiply removed from the flux of day to day life. Not only is he or she taken to consume 'energy' rather than mobility, heat, entertainment etc., not only is there no historical or situated account of the technologies and practices involved in travelling or keeping warm, there is also no recognition of how such practices change and vary or how they come to be shared across space and time. Instead, increases and decreases in energy use are thought to reflect narrowly defined commitments to energy conservation or carbon reduction (Shove 2010), or the price of fuel.

Different discourses, starting from physics but extending into policy, economics and behavioural science/psychology, reinforce and amplify each other, creating an impression that 'energy' exists as a topic in its own right and that energy is something that people save, consume and waste. Policies grounded in these ideas separate 'energy' from the multiple historically and culturally specific practicalities of demand. They work with a view of energy that is indeed 'oil' equivalent as regards processes of using (up), storage and consistency; they take no account of when consumption happens (units and moments of consumption are equivalent); and they prise 'energy' apart from other forms of consumption, material culture, technology and practice. As such they are quite unsuited to the problems of organising and handling energy which is *not* oil equivalent.

[6]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/489894/tsgb-2015.pdf.

## Renewing Ideas

The share of renewable energy in global power generation is expected to rise to over 26% by 2020.[7] At first sight, variable renewables like solar and wind power represent useful, low carbon additions to existing energy sources, and it is in these terms that their actual and potential contribution is generally understood. For example, the IEA reports that 'In 2013, world total primary energy supply (TPES) was 13,555 million tonnes of oil equivalent (Mtoe) of which 13.5%, or 1829 Mtoe, was produced from renewable energy sources'.[8]

Despite this description, renewables are not 'oil equivalent': they are not depleted or stored in the same way, the scale of the 'resource' cannot be estimated in the same terms, and there are distinctive and important variations in the timing and location of harvesting or 'production'. Since there are significant losses involved in converting renewable energy into forms that can be transported over any distance, or stored on any scale there is a distinctive immediacy to the relation between supply and demand.

These features do not prevent analysts from aggregating and averaging renewable energy as if it were fossil fuel (see above). But it is obvious that information about the average annual output of a nation's wind turbines is of limited value for those who are trying to manage and use wind energy on a daily basis. Sometimes turbines produce a lot of power, sometimes not, and to complicate matters, output varies from one location to the next.

As one might expect, efforts are being made to 'tame' renewable energy, whether by slotting it into a world of existing policy, provision and practice or by making it fit established conventions of representation and analysis. In this context it is no wonder that there is so much emphasis on developing energy storage, including batteries and electric vehicles, and in using smart grids to help cope with awkward variations in supply.[9]

This is not the only way to go. Rather than reproducing a fossil fuel mentality, a more ambitious and also more challenging response is to re-conceptualise energy—or to be more precise, to re-conceptualise the relation between energy and social practice—and to do so in terms that are capable of capturing and characterising fluctuations, ranges and variations in the extent and quality of supply and demand across different spatial and temporal registers. Although inspired by the distinctive features of renewables, and especially matters of intermittency and timing, the ideas outlined below entail a more deep-seated revision of the terms in which energy-society relations are understood. Amongst other things, such an approach

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[7] http://www.iea.org/aboutus/faqs/renewableenergy/.

[8] http://www.iea.org/publications/freepublications/publication/RENTEXT2015_PARTIIExcerpt.pdf.

[9] Significant fluctuations in supply only count as a problem in a context in which producers and consumers are used to thinking about energy as a uniform, oil equivalent resource, and in which there is an expectation of continuous, uniform and stable supply all year round.

situates the pursuit of efficiency and helps overcome the limitations of a narrow interest in energy consuming behaviour. More fundamentally it involves reversing the tendency to abstract energy or to see it as a separable subject. Instead, energy (supply and demand) is understood within and as part of a more comprehensive analysis of the dynamics of social practice. The following paragraphs give a sense of what such a conceptual renewal might involve, starting with a discussion of the temporal relation between supply and demand.

## *Renewing Representations of Time and Energy*

One of the problems of radically increasing the share of renewable energy is that in a country like the UK, peaks of provision do not correspond to peaks of demand. This begs the question of how and why moments of peak demand come to be as they are, and of whether they might shift. At first sight, these are not questions about energy: rather they are about the range of social practices enacted in society and related aspects of timing, duration, sequencing and synchronisation.

This is not the place to rehearse the ways in which 'time' and especially clock-times have been conceptualised but as Glennie and Thrift explain, time, like energy, 'comprises a number of concepts, devices and practices' (Glennie and Thrift 2009: 9). Amongst other things, this means that understandings of time vary and evolve. Contemporary interpretations of time as a measurable, finite but also abstract resource have a short history, and one that has also revolved around the production of standards, units and notions of equivalence. These parallel histories combine in that methods of defining and managing the problems of matching supply to demand in 'real time' revolve around typically 'detached' understandings both of time and of energy.

Smart grids and smart appliances are, for example designed to influence the timing of energy demand. These and other such strategies suppose that householders and organisations are free to rearrange the standardised currencies of time, energy and money at will, adapting the timing of energy-demanding practices to fit the tariffs of the day. The hope, here, is that these techniques will make it possible to bring the awkward ebb and flow of renewable energy into line. That is, bring it into line with a set of temporal patterns that are themselves outcomes of an historic reliance on fossil fuels.

The fact that energy-time management is a tricky business, and that it is often difficult and sometimes impossible to 'shift' the sequences of daily life is not simply indicative of the fact that social practices are interconnected, coordinated and synchronised. The further point is that energy-time management strategies are designed around a concept of time which is as abstract and as reified as that of energy. These standardised representations have only limited purchase on the flow of daily life in part because the practicalities of timing and scheduling are not in some sense 'outside' the realm of practice, but are outcomes of it (Shove 2009). To put it more directly, social rhythms and meanings and experiences of time reflect and are reproduced through conventions like those of family life, the week and the weekend, and the special characteristics of Friday night (Zerubavel 1982). From this point of view time, like energy, cannot be extracted from the plenum of practice.

To elaborate, arrangements like 'the week-end' or the evening meal are not natural, they do not arise by accident, nor do they develop in ways that are independent from technologies, infrastructures and resources. To give one obvious example, the widespread provision of electric lighting transformed the length and standardisation of the working day. In addition, systems of provision along with infrastructures of power and of transport are typically designed and sized to cope with 'peak' demand. The existence and the persistence of a standard 9 am–5 pm working day is thus multiply woven into present regimes of energy provision.

Efforts to embed renewables into existing systems and societal rhythms currently seek to mimic and maintain forms of energy-society relations that are grounded in an understanding of energy as a temporally stable and reliable resource. Anything else spells trouble. In particular it spells trouble for established metrics and methods of measuring and representing 'energy', none of which make reference to the relational timing of supply and demand. This is curious in that matters of timing are massively important, not for the IEA or national energy agencies, but for companies involved in energy markets.

One response, and one way of bringing the intermittency of renewables into a modified version of normally 'timeless' ways of thinking about energy is to continue working with standardised units of energy but to value and qualify them differently depending on exactly when they are produced and used. A KW at peak time (KWAPT) is thus not the same as a KW outside of peak time (KWOPT). Widespread use of new units like KWAPTs and KWOPs would depend on the production of a standardised, internationally recognised method of assessing the fluctuating and changing relations between energy supplies and patterns of demand. Should such measures exist they would complicate global estimates of energy supply currently represented in temporally 'flat' units of Mtoe, but would share many of the same characteristics. In effect they would fold a standardised time dimension into already familiar processes of averaging, aggregating and managing.

Another more radical alternative would be to develop a thoroughly relational and a thoroughly situated understanding of energy-in-use and of energy-in-time that might actively foster the re-emergence of complexes of social practice and temporal orders more closely attuned to the seasons and the ebb and flow of renewable resources. Should they exist, methods of representing relations between energy-and-the-timing-of-social-practice could not be aggregated or averaged like Mtoe, or like KWAPs and KWOPs. Whilst this has obvious disadvantages, especially given the needs and ambitions of national and international organisations, it would provide an arguably more meaningful representation of the various socio-technical arrangements in and through which energy is, in fact, produced, transformed and used. These suggestions have further consequences (a) for understanding 'efficiency', or to be more precise, for analysing the recursive relation between technologies and practices, and (b) for comprehending the dynamics of energy demand in terms that go beyond limited accounts of energy consumers and their behaviour.

## *Renewing Ideas About Energy Efficiency*

Normal methods of evaluating energy efficiency depend on quite specific forms of abstraction and boundary-making. Are there ways of reconceptualising relations between energy (resources), appliances and practices so as to reveal and perhaps influence their interaction? One way of thinking about this question, and hence of recovering the possibility of conceptualising the dynamics of energy demand, is to reconsider the scope of analysis. For example, rather than stripping energy out of context, and rather than focusing on vehicle efficiency in isolation, it would be possible consider the energy involved in commuting to work. At a minimum, such an exercise would draw attention to issues of distance as well as to modes of transport. Extending the boundary of what is included in a judgement of efficiency—e.g. not the performance of a car engine, but patterns of commuting—would most likely inspire new forms of policy response and investment.

A second option is to work with different terms and units of comparison. As explained above, present methods of assessing efficiency depend on comparing like with like. As such they disguise trends over time. What is needed is a method of highlighting points of non-equivalence and folding these into a more ‘rolling’ or dynamic mapping not only of how services are provided, but also of how they change.

According to Kris De Decker, the current Citroen C1 does about the same number of miles per gallon (mpg) as a 2CV from the 1950s.[10] Whilst the C1’s engine is much more ‘efficient’ in technical terms, it is used to drive a vehicle that is heavier, that has windows that wind down, and that has all the features one would expect of a car today. The mpg would increase significantly if manufacturers were to put a modern engine inside an old 2CV, but the result would not correspond to what now counts as a ‘car’. As already mentioned, focusing on engine efficiency alone, and insisting on comparability, e.g. between the C1 and other similar cars reveals nothing about how the ‘yardstick’—in this case the meaning of a car—evolves. Somehow what is required, but also missing, is a means of representing changing relations between energy-and-service that is sensitive to the recursive and dynamic relation between technologies, expectations and practices. It is important not to resort to simplistic notions of function, but it is also liberating to think of how one might compare the energy involved in drying clothes on a washing line as compared with a tumble dryer. The obvious objection that these are not ‘the same’ is itself part of the story: as I say the challenge is in part one of reintroducing an

[10] http://www.lowtechmagazine.com/2008/06/citroen-2cv.html.

account of difference and of incomparability in order to 'see' the changing roles of energy in society. Whatever else, thought experiments of this kind underline the point that energy is not used 'raw': resources, devices and infrastructures are always interlinked and are, in turn, inseparable from what it is that people do, how they do it, and how this changes.

## *Renewing Ideas About Energy Consumers*

Fossil fuel-based policies and analyses treat energy as a commodity and as a resource. Energy is consequently thought of as something that people 'consume'. Quite different issues come into view if energy is reconceptualised as part of what people do. This is not just a semantic point. The proposition that people do not use energy for its own sake but always and only as part of accomplishing social practices at home, at work or in moving around highlights the need for an account of energy demand as an outcome of social/technical processes, not as an expression of consumer choice.

The significance of reconceptualising 'consumption' in these terms becomes obvious when thinking about what it might mean to match demand to more intermittent and more variable forms of renewable energy supply. As already mentioned, peaks and troughs in demand are outcomes of the collective, not personal, scheduling of different areas of daily life. Whilst it is difficult, but not impossible, to imagine a situation in which working hours were seasonally adjusted, or in which certain activities were commonly re-scheduled depending on the weather (and thus related to the generation of renewable energy), it is quite out of the question to think of such developments as expressions of individual choice.

More ordinarily, and because energy is not dis-embedded or separated from items like cars, freezers or tumble dryers, people do not in any meaningful sense 'consume' energy. In essence this means that any representation of the dynamics of demand is, at the same time, a representation of changing practices. The issue here is that aggregate trends in energy consumption reveal nothing about the detail of exactly which energy-demanding practices are moving, in which direction, at what rate and with what consequences for other interconnected areas of daily life. This argues for methods of analysis and policy-making which set a concern with 'energy consumption' and with the 'energy consumer' aside in order to identify and distinguish between the processes and relationships at play, for example, in relation to driving as opposed to freezing or drying. Rather than trying to isolate a handful of generic factors that propel energy consumption (as if these pertained in all historical contexts, cultures and contexts) such a strategy would favour a range of different enquiries, focusing on how specific conjunctions of technology-and-practice circulate (as is the case with air-conditioning and cooling), or on how food chains have come to rely on a global network of home freezers.

Finally, it is important to recognise that social practices influence each other, forming what have been described as loosely connected bundles or more closely interdependent complexes (Shove et al. 2012). Time use data provides traces of some of these relations. For example, studies of what people are doing at different times of day show that a much higher percentage of French people stop for lunch than is the case in Finland, for example. This collective habit represents a form of societal synchronisation that has knock-on consequences for the timing and scheduling of other activities (Shove 2009).

Energy-dependent practices are linked in various other ways, including via shared reliance on infrastructures of power. Compared with devices and appliances, which are often practice-specific (a toaster, a freezer), infrastructures like an electric grid enable the powering of many practices at once. Figuring out how energy is situated in society is thus a matter of figuring out how resources, appliances and infrastructures work together and what these conjunctions mean not only for the lives of individual practices but also for the emergence and disappearance of different forms of inter-practice connectivity. The terms of such an analysis have yet to be worked out, but it is in any case evident that it is a mistake to think of 'energy' consumption as a category in its own right, or to think of consumers as separate decision-making units.

## Renewing Agendas in 'Energy' Research and Policy

This chapter has outlined and polarised two very different ways of knowing energy: one that proceeds by abstracting, the other by embedding.

For the time being, the first approach constitutes what amounts to a dominant paradigm reproduced in research agendas, journal articles, reports and policies around the world. Techniques that enable global assessments of trends and opportunities for decarbonisation consequently depend on (a) stripping 'energy' out of the situations in which it is 'made' and used and (b) conceptualising it as an oil equivalent resource. The understandings that follow feed into compatible, but yet more distanced or abstracted ideas about efficiency, consumption and behaviour. The result is a total package of thinking that hangs together but that is progressively disconnected from what people do. As discussed in other chapters in this volume, renewable energy has the potential to upset the entire apple cart.

So far the response has been to look for ways of overcoming or obliterating the practical and theoretical challenges posed by renewable sources. This is likely to continue. However, there are already signs that the dominant paradigm is starting to creak at the seams. Some utilities are developing business models that depend on the provision of 'energy services' not resources as such. This depends on a much finer grain analysis of what energy is 'for' and on a more direct and obvious involvement in when and how energy is used. Real-time tariffs, designed as means of handling peaks in supply and demand, have new and different roles as the share of variable renewables increases. At some point it may be truly meaningless to try to describe energy without reference to social–temporal rhythms of generation and use.

Likewise, the efficiency agenda, to date a mainstay of energy policy is subject to a number of increasingly powerful critiques. These generally revolve around issues of rebound, suggesting that efficiencies are likely to be counterproductive in the longer run. But the limitations of side-lining more fundamental changes in what energy is used for over time are also coming into view. There are obvious political advantages in promoting efficiency—who could object to the idea of using less to achieve the same?—and equally obvious risks in broaching issues of how expectations change and of whether conventions and practices can or should be steered. But sticking to the seemingly 'safe' ground of efficiency is itself an intervention: effectively stabilising and reproducing specific interpretations of 'need' (e.g. of what makes a car, what a freezer should do). Meanwhile, efforts to modify consumer behaviour (as defined above) putter along, disregarding major developments in the spatial and temporal ordering and organisation of daily life, and instead showing up as marginal (e.g. 5–10%) reductions in energy use, as measured against a fictionally stable benchmark.

Would it really make sense to scrap all talk of Mtoe or Joules and start from scratch? And if so what might an alternative involve? Ironically, some clues are to be found in physicists' definition of energy as the means to do useful work. Work can, of course, be reduced to a small movement, or to a shift in temperature, but there is scope for developing a more historical and sociologically sophisticated interpretation of the concept of 'useful work', and of the practices that constitute it. Emphasising this part of the definition, i.e. the useful work, not the means, reintroduces the possibility of appreciating that energy has no abstract meaning, but is instead always part of some practical undertaking—some form of practice or 'work' broadly defined. Such a move would make it possible to recognise that interpretations of 'use' develop and change alongside the means of provision.

I am not sure I can imagine an international agency of useful work, not least because the practices that constitute 'useful work' have localised and differentiated dynamics, though some aspects may indeed be international. However, it is not too difficult to think about what new style 'energy' policies might entail at other scales. For a start and as indicated by the quotation marks, they would not be confined to departments of energy. Instead, such strategies would recognise that many different areas of policy-making have a hand in configuring and shaping trajectories of practices and practice complexes that matter for the timing of what people do and for the technologies and resources on which those doings depend. In other words, the development of a paradigm anchored in practice depends on taking the 'energy'—as an abstract and reified concept—out of energy policy. Research and policy would no longer focus on identifying opportunities for substitution (e.g. with renewables), efficiency or marginal behaviour change, all geared around present practices and ways of life. Instead, agendas and programmes would form around the challenge of imagining and establishing configurations of technologies, practices and socio-temporal orders that would be compatible with greater reliance on renewables and with reduced demand, accepting that the result might involve the emergence of ways of living that are really very different from those with which we are familiar today.

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