

Fuelling culture: Demand

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For physicists, energy is the ability to do work. The demand for energy consequently depends on the type of work that is to be done, and on how that work is organised. This stunningly simple observation opens the way for some less than obvious lines of thought.

In borrowing the physicists' definition but making use of it in understanding the historic and ongoing dynamics of energy demand we need a really broad interpretation of 'work' – one that includes practices of sociability, of having fun, of growing up and growing old, and of eating and sleeping, along with work in the more conventional sense of production, employment and labour. Most social practices generate some form of energy 'demand', or in more technical terms, most call for some kind of conversion of resources (fuels) to provide services (such as heat, light, movement, power) that are integral to the ongoing reproduction of those practices.

Within the established literature on energy-society relations the central goal has been that of understanding and analysing the energy intensity of different societies by comparing the quantities of energy (measured in horsepower or some equivalent unit) required to achieve a set of standardised outcomes, for example, to provide heating, or lighting, etc. (White; Fouquet and Pearson; Sørensen). Studies of this kind are alike in contrasting systems that depend on human labour plus animals with those 'powered' by coal and steam, or by other types of fuel. However, there is much less agreement about how the social and political significance of such transitions should be interpreted. For example, White argues that societies progress by harnessing and more and more energy, and that it is this which allows them to move from states of 'barbarism' through to 'civilisation'. By contrast, Illich contends that social divisions and inequalities increase within societies that depend on increasingly intensive uses of energy.

Either way, debates of this sort miss the recursive relation between technologies including those involved in harnessing and converting energy and the constant transformation of the sum total of practices that constitute the 'work' – or 'culture' of which societies are made. In other words, energy demand is not simply a consequence of the efficiency with which 'the same' service is delivered. Taking a step back, energy demand depends on the entire range of practices that are, or are not, enacted in any one society (Shove, Pantzar and Watson). This range is, in part, an outcome of previous conjunctions of energy+work, conjunctions that are sedimented in knowledge and technology, and that make some forms of social action possible whilst precluding others. In this way, and in contrast to exercises in comparing demand in standard units across societies, one generation or era of energy+work sets the scene for the next. Put simply, demand has a material and a cultural history.

Accordingly, there is no simple metric that can be used to describe the transformations involved in heating a home with coal rather than with wood, or in coming to rely on gas-fired central heating. In one 'move' the home is detached from one system of provision and forms of employment (wood/coal supply and distribution, storage, stoves, skills in lighting and maintaining a fire) and

repositioned within another (gas, pipes, remote storage, new systems of billing, different skills, time and attention). The forms of work involved in delivering and using energy, as well as the forms of work that energy makes possible are simultaneously reconfigured.

In short it is impossible to take energy demand out of the life of the home, the rhythms of the day and the patterns of practice that go on within. In the example of home heating, one key move is from point sources of heat (the fire) to entire space heating – rooms change character and function; new activities – watching TV in the bedroom become pleasurable; new styles and distributions of ‘work’ are enabled. New routines of dusting and hoovering (less) and of servicing (chimney sweep, boiler maintenance) are established and time previously spent fetching and carrying fuel becomes time that is devoted to other practices. .

As this example demonstrates, energy systems do not simply provide the *means* to do work: they are also implicated in constituting the work itself and vice versa. Crucially there is no inherent direction to this relationship. For instance, portable power (in batteries) enables new distributions of practices that were previously locked into a specific location precisely because of the type of energy they required. Equally, as practices like mobile phoning and laptop computing become established they generate different patterns, and especially timings, of demand: power taken from the office is used at home and the other way round. In this instance, the link between energy and doing is wirelessly separated in space and time.

Some of these dynamic relationships are outcomes of deliberate intervention. Electricity is difficult to store and from the earliest days providers have sought to build loads and orchestrate demand to suit the ‘needs’ of the supply side (Harrison), including the need for constant operation . As Forty explains, demand for non-lighting uses (such as trams) was actively constructed by the electricity industry to fill the daylight hours (Forty). There is more of this going on that one might suspect. Building intermittent renewables into energy supply calls for intermittent practices, hence concerted attempts to shift time-negotiable ‘needs’ or forms of work to off-peak hours through peak-time pricing or via devices such as washing machines that turn themselves off and on to suit the grid.

These few observations on the constitution of demand underline the importance of what we might think of not as embodied but as ‘entwined’ energy. ‘Embodied’ energy refers to the energy that is used in making a specific item or delivering a particular service. The concept of ‘entwined’ energy refers to the fact that certain items and services structure the potential for future instances of energy demand. For example, railway systems embody energy, and also but in a different sense, act as carriers of a more complex web of arrangements encompassing the means to move, the construction of destinations, the potential for objects and people to circulate and travel – all of which generate other future possibilities. The concept of infrastructural entwining is useful in understanding how it is that past and present patterns and systems of provision (partly) generate future demand.

To summarise, we have suggested that energy demand is best understood as an outcome of how people spend their time and of what ‘work’ is done. We have also recognised that systems of energy provision are implicated in shaping the types of work and in the range of practices that are enacted in society today. On both counts, energy demand and the dynamics of social practice are inextricably interwoven.

References

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