



Original research article

An ethnography of energy demand and working from home: Exploring the affective dimensions of social practice in the United Kingdom



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ABSTRACT

The practice of working from home has become widespread in developed countries, and the numbers of regular home workers are steadily increasing. There are potentially positive implications for energy consumption associated with home working, but these depend on myriad variables. This qualitative study, based on interviews with regular home workers, provides a more in-depth perspective on how and why energy is used compared with quantitative models of household consumption. Ethnographic research data is analysed using insights from practice theory. Placing the practice at the heart of analysis, it explores meanings, materials and competences involved in home working, and attends to the affective experiences of practitioners. Considering working from home as an integrative practice, it explores how dispersed practices are incorporated into individual performances, bringing about affective satisfaction. Findings show that the practice of working from home is characterised by themes of comfort, control and flexibility, with implications for energy demand. It is argued that the synthesis of practice theory and affect can provide valuable insights for energy research. The paper discusses the implications for demand reduction, demand shifting and ‘smart’ controls, with reference to the role of employers, researchers, policy makers and home workers themselves.

1. Introduction

The practice of working from home has become widespread throughout the ‘knowledge economy’ of Europe and North America and is steadily increasing in both developed and developing countries, led by the expansion of internet access [1–3]. In the UK, more than 25% (7.7 million) of those in employment reported in 2014 that they sometimes work from home as part of their main job, while 4.2 million (13.9%) reported their home as their main place of work, an increase of 2.8 percentage points since 1998 [4,5]. Motivations for individuals working from home include eradicating the commute, facilitating flexible child-care arrangements, aiding concentration and mental health benefits [6,7], while opportunities for employers include increased productivity and energy savings [8].

Achieving reductions in energy consumption in domestic and commercial buildings is a universal priority for policy makers. Focusing on the practice of home working represents an opportunity in this regard, with potential savings of up to 1.4 tCO₂e per year per home-based employee, according to UK estimates [8]. Further, reducing energy demand from small and medium sized enterprises (SMEs) is a significant policy challenge: with nearly 60% of all SMEs based in domestic premises, achieving energy reductions through supporting

efficient home working practice offers a way of addressing this sector of the economy while potentially avoiding politically unpalatable ‘red-tape’ for small enterprises.

However, data on energy consumption associated with the practice is subject to uncertainty due to the difficulty of separating consumption data from other domestic practices, being outside the scope of corporate energy portfolios, and with a significant proportion of home-based businesses undeclared due to legal and tax concerns and therefore ‘invisible’ to public authorities [9]. Efforts to quantify the environmental impacts of home working have been made in technical and transport focused literature [10–14]. On the one hand, when substituting for a commute, working from home can represent significant energy and emissions savings [14]. On the other, the heating and lighting of a domestic space in addition to an unused desk at work, or the use of technologies such as cloud computing services can lead to increased energy consumption and environmental impact [8,10]. In attempting to calculate a net balance of energy demand, key factors include the mode, length and energy intensity of the commute; the ability of employers to manage desk-space flexibly; and the technologies and practices involved in heating and lighting the home space [13]. Whilst many empirical studies find net energy and emissions reductions associated with home working [10,12–14], considerable methodological difficul-

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ties and the highly contingent nature of the practice prevent generalisations about its benefits [15].

Several calls have been made in this journal for research which tries to understand the messy dynamics of energy demand within the home, seeking greater analytical depth than quantitative models permit [16,17]. Stern [18] points out that as actors in the energy system, householders have multiple roles, requiring a range of research approaches. Home workers span several of Stern's categories, as domestic consumers of energy, participants of institutions and as practitioners whose activities have implications for the wider energy system. Seeking to capture their hybrid practice, this paper develops an account based on ethnographic data, placing home working at the 'heart of enquiry' [19]. The three-element model of practice theory provides a theoretical framework for investigating elements of working from home and the role of energy [20,21]. The analysis also draws on discourses of affect to provide insights into the experiential nature of the practice [22–24]. This approach offers a number of valuable insights. First, it encourages an in-depth look at how constituent elements of practice circulate through repetitive performances to form and continually configure practice entities. Second, it expands the field of enquiry to account for the *interaction* between bundles of practices, highlighting the 'affectively satisfying' effects of incorporating 'dispersed practices' into home working [25]. This allows characteristic themes associated with working from home to be identified, providing insights into the energy consuming behaviours of home workers. These themes emerge through findings which describe achieving comfort when working from home, the exertion of control over material assemblages, and the performance of flexibility through the space-times of practice. Finally, these insights have ramifications for efforts to reduce demand and encourage demand-side flexibility: challenges for energy systems in transition throughout the world. In accordance with this expansive approach, this paper is guided by two broad research questions: 1) what are the characteristics of working from home as a practice? 2) what are the implications for energy demand?

The rest of the paper is structured in five parts. The next section describes the insights provided by practice theory as it has been applied in studies of energy consumption in the domestic setting. The concept of affect is introduced and links are drawn with a practice perspective. Section 3 outlines the methods used for this study and its analytical approach alongside a discussion of the challenges of researching practices. In Section 4, findings are structured according to characteristic themes which emerge from empirical data. The first part of the discussion in Section 5 develops insights from the theoretical approach employed, before outlining implications for energy systems and identifying possible areas for further research. The conclusion argues that practice theory and affect together offer a fruitful theoretical framework, with implications for researchers, employers and policy makers.

2. A practice theory perspective on working from home

Practice theory has its roots in philosophy [26], but has been widely adopted by sociologists [21] in seeking to understand how widespread, everyday practices are established and maintained. The practice perspective decentres the individual as the unit for social analysis [27], instead, developing a model of 'distributed agency' [28] which highlights the ways in which 'elements' such as meanings, materials, skills, technologies, rules and embodied knowledge configure everyday social practices [29,30]. With a shift in emphasis away from the individual as the principle agent of consumption [31], this theoretical framework has been widely applied within social scientific studies of energy demand [19,21,29]. Practice theory expands the field of enquiry beyond a narrow emphasis on individual choice, identifying the role of physical elements such as technology, materials and building design in mediating everyday energy-consuming practices [19,21]. It also encourages research into how social and cultural meanings and forms of embodied and intellectual knowledge are reproduced through everyday

activity. Practice theory has been widely employed in studies of energy consumption in the household, for example in efforts to understand quantitative observations regarding the diversity of energy demand patterns within even identical houses [29]. Empirical studies since the 'practice turn' have analysed elements of practice within the household including lighting [32]; the use of appliances, technologies and interfaces [33,34] and thermal comfort [29,35,36].

A small number of studies in energy research have examined workplace practices using practice theory, identifying insights into energy consumption by looking beyond the user as the unit of analysis. Garabuau-Moussaoui [37] argues that building 'occupants' are constructed as actors within a 'technology script' by a combination of corporate, architectural and social logics, finding that an attention to practices helps to uncover the material, social and ideological elements of comfort in the workplace. Similarly, whereas studies of organisational energy demand conventionally focus on the corporate entity and individual users, Janda [38] argues for a 'building communities' approach, identifying the potential for change in energy management practices through a focus on social – rather than technical – potential. Also focusing on practices rather than organisational units, Powells et al. [39] find potential for active network management amongst SMEs. Despite its growing incidence and significance for energy demand however, no studies since the 'practice turn' have addressed the practice of working from home.

This paper builds on three theoretical constructs developed in the literature to guide analysis of empirical data. Firstly, it follows a number of recent publications adopting the 'three element model' as a means of clustering elements of practice [20,40]. Led by the work of Elizabeth Shove, this approach groups elements of practice into meanings, materials and competences. These categories assist with analysis of qualitative research findings, helping to uncover the complex characteristics of practice [20,21].

Secondly, it draws on Schatzki's account which describes the field of practice in two dimensions [41]. In the 'organisational dimension', the constellation of elements constitute the 'practice-as-entity': a relational network existing in the realm of potential. This constellation is 'integrated' through performance, which takes place in the 'activity dimension'. Practice entities become recursively reconfigured through repetitive performance, as new elements are recruited and others discarded. These two dimensions help to highlight how practices are influenced by spatial and temporal settings, as performances are conducted in different material environments and interwoven with other practices. This paper explores how the characteristics of working practices change as work is brought into the domestic setting. It follows a number of studies which have sought to identify the characteristics and changing dynamics of practice, for example in the development of digital photography [42]; the spread of Nordic walking [20], or everyday mobility [43].

A third theoretical construct used in this paper is Schatzki's distinction between *integrative* and *dispersed* practices [26]. Dispersed practices are small scale activities such as following rules [31], tinkering [36] or consuming energy through appliances' standby mode [33]. They can be conducted without context and incorporated into more complex social practices, taking on different meanings. Integrative practices are broader activities including business practices, shopping or cooking. In Schatzki's account [26], these practices have their own 'teleo-affective structure', which is to say they hold meaning and significance both for the performers of practice and in the wider social world. This distinction has been used effectively by Cass and Faulconbridge [43] to delve into the integrative practice of mobility, into which a variety of dispersed practices such as listening to music and navigating are incorporated. The authors argue that these purposive incorporations produce 'affective satisfaction' in otherwise mundane patterns of mobility, such as commuting. This paper applies this construct to the practice of working from home: an integrative practice increasingly performed, reproduced and reconfigured in millions of

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