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Community knowledge networks: an action-orientated approach to energy research

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The Climate Change Act 2008 commits the UK to reducing carbon emissions by 80% of 1990 levels by 2050. With household emissions constituting more than a quarter of current total energy use in the UK, energy practices in the home have taken on increased policy attention. In this paper, we argue that the UK government's approach is founded upon a variant of methodological individualism that assumes that providing greater energy information to individuals will effect behaviour change in relation to energy use. Such an approach is potentially limited in its effectiveness and does not afford appropriate recognition to all those affected by energy policy. In contrast to this approach, we set out an alternative perspective, a community knowledge networks approach to energy and justice which recognises the contexts and relationships in which people live and use energy. Such an approach emphasises situated knowledge and practices in order to gain a greater understanding of how individuals and communities use energy, but, importantly, offers a means for affording greater recognitional justice to different social groups.

Keywords: energy; justice; community; knowledge; networks

Introduction

The 2008 Climate Change Act committed the UK government to attaining at least an 80% reduction in carbon emissions by 2050, using 1990 levels as a baseline. With domestic energy use constituting more than a quarter of total energy demand in the UK, policy attention has turned to ways of managing demand at the scale of the household. One response from the UK government has been directed at improving the energy efficiency of the housing stock through the provision of financial incentives (such as improved loft insulation or even micro-generation), or through regulatory interventions such as requiring that all new build housing is “zero carbon” by 2016 (Walker 2008, Seyfang 2010), though this target was subsequently softened in 2011 by the Coalition Government. In addition, the government has focused on the provision of policy energy “services” (and grants/subsidies) for individuals/households to adopt energy-saving measures/home improvements such as loft insulation. Another response has been concerned with changing the behaviour of citizens, principally through the provision of energy information such as smart meters, (energy) information websites,

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home energy ratings, and so on. While individual and household change can provide an effective “behavioural wedge” to reducing emissions in the near term (Dietz *et al.* 2009) most of these interventions have been directed simply at supplying more information to individuals, making certain critical assumptions about their responses to such stimuli. It is this latter approach that this paper examines. We argue that the methodological individualism underpinning the government’s approach is both potentially ineffective and liable to being unjust since it ignores the broader set of social relations, social practices, and different types of knowledge in which action is situated (Pykett 2012).

In response to the government approach, this paper sets out an alternative, “community knowledge networks” (CKNs) approach to energy and justice. By focusing on *community*, we recognise the broader social contexts and relationships in which individuals and households use energy. By using the word *knowledge* rather than information, we reject the “deficit view” of individuals as empty vessels in need of “fact in order to act”, and instead examine the complex processes and relations through which individuals come to know about energy. Relatedly, we use the words “actions” and “practices” rather than “behaviour” because this is consistent with a knowledge approach (Tuomela 2002, Shove 2010). By investigating *knowledge networks*, we move away from the idea that top-down information provision is what is needed to make people “change their behaviour”. Instead we recognise the fact that people already possess alternative forms of knowledge (for example tacit knowledge) about energy practices in everyday life. Arguably, if new knowledge about energy use (and ultimately how to reduce carbon emissions) is to be cultivated, and made meaningful and durable, in people’s lives, then it is going to have to be done by using existing networks that they trust and that are grounded in their own contexts and relationships (Gilchrist 2009, Morgan 2011). At one level, therefore, our approach offers an analytical framework for understanding the extent to which social interaction matters in (re)structuring energy practices. At another level, we advocate an action-orientated approach to energy research that can facilitate more effective action and strategies for circulating information about energy that are appropriate to different types of community.

In what follows, we set out the rationale for our CKN approach along with the key concepts which inform our research on how energy knowledge circulates in communities and on how community-appropriate and socially just strategies can be developed for achieving changes in energy demand and ultimately carbon emissions. In the first part of the paper, we characterise the government’s dominant policy approach as an “information deficit model” of behaviour change (hereafter, “deficit model”), which we argue is undergirded by methodological individualism. In the second part, we outline the CKN approach and unpack its constitutive concepts, particular issues related to definitions of “community” (and place), different types of knowledge, and the role of social networks in structuring action. Some general conclusions are then offered.

“Deficit model” behaviour change

The “deficit model” is informed by a perspective that links attitudes, behaviour and choice (“ABC”) in ways that presume that the determinants of pro-environmental behaviour are found in an interaction between the values and attitudes of individuals and the broader contextual factors in which they are located (Shove 2010, pp. 1274–1275). According to this model, people need simply to be filled with the appropriate information in order to “behave” in more appropriate, or eco-responsible, ways. The idea is that, “there is a deficit in public knowledge and understanding of environmental issues which needs to be ‘filled’ by expert knowledge . . . before individuals will accept their own responsibilities and acknowledge the need to change

aspects of their lifestyles” (Burgess *et al.* 1998, p. 1446). As Shove (2010) observes, this approach places considerable faith in the assumption that with “better information or more appropriate incentives [...] people could choose to adopt ‘pro-environmental behaviours’”. Some have suggested that this is the dominant model within government, especially when it comes to science-orientated issues (Trench 2008, Perri 6 *et al.* 2010). Indeed, we argue that the UK government’s approach under the “deficit model” can be characterised as one that is fundamentally wedded to traditional neo-classical *homo economicus* methodological individualism,¹ placing the individual (and the relations between them, such as households) at the centre of explaining (and effecting) different forms of “behaviour”. Indeed, it is an approach which has close affinities to rational choice concepts of information processing and individual choice. What such an approach neglects, we contend, is the importance of “place, space and interaction in shaping human behaviour” (Miller 1992, p. 23).

In the field of energy policy, Devine-Wright (2007) argues that the centralised energy generation system in the UK “produces” an energy public that is, “overwhelmingly characterised by deficits: of interest, knowledge, rationality and environmental, and social responsibility” (p. 69). Policy-makers tend to ascribe this “irrationality” to the “deficit” of the general public as a whole, but more specifically it is individuals and households who are perceived as lacking what they need to behave appropriately. Hence, a key concern for government has been to commission ever more data to determine how top-down policy interventions alter behaviour at the individual (and household) scale. This view was reinforced in 2009 by the Public Accounts Committee (HC 228 2008–2009) of the House of Commons which stated that government departments “are not gathering enough data from real homes to evaluate the impact of programmes on consumer behaviour and household energy efficiency”. This perception produces a vicious circle in which a disengaged public remains disengaged because decision-makers feel they (the public) lack the resources (often couched in informational terms) required for effective engagement instead of dealing with structures that inhibit transitions to more sustainable energy pathways.

The “deficit model” in practice

Viewed through the lens of environmental justice (Schlosberg 2007), the deficit model offers two broad spheres in which action is exhorted. In the first, the state is viewed as the agent through which access to environmental justice is pursued via facilitating greater *access to information*, and another in which *responsibility* for enacting environmental justice is “downloaded” to the individual. Both spheres rest on the dominant conviction that the principal agents of change are either states or individuals. A good example of the first sphere is the Aarhus Convention, signed by 35 states and the European Community in 1998 (Aarhus Convention 1998).² The Convention guarantees citizens access to information, public participation and, it is assumed, justice in environmental matters. It is aimed principally at public authorities, though private organisations with public responsibilities relating to the environment also come under the Convention’s remit. Signatories to the Convention are expected to cover both the “active” and “reactive” elements of information provision, i.e. they must respond to demands for information made by citizens as well as ensure that an effective regime of collecting, updating, and releasing information is in place (Wates 2005, p. 3).³ In the Convention, improved information provision is intimately tied in with the other two objectives of public participation and environmental justice. This is because, first, informed citizens will participate more effectively (i.e. make better decisions) and, second, “access to justice” is itself viewed in terms of redress when information provision is regarded as inadequate (Wates 2005, p. 6). Overall, the link between

information provision, environmental protection, and human well-being is made explicit in the Convention's preamble where it is recognised that "every person has the right to live in an environment adequate to his or her health and well-being" and that "to be able to assert this right and observe this duty, citizens must have access to information, be entitled to participate in decision-making and have access to justice in environmental matters" (Aarhus Convention 1998: preamble). In sum, Aarhus is the apogee of the state- and information-based approach to environment and justice.

An alternative to state-led approaches comes from the second sphere, the "downloaded responsibility" forms of individual action. This approach seeks to get already receptive/active citizens to take action within their everyday lives by providing information (e.g. information on carbon footprinting) and helpful tips (e.g. "ride a bike, plant a tree. . ." (Maniates 2001)). The assumption here is, quite simply, that if they knew better, they would act better. An example of this comes from the 10:10 campaign, launched in the UK by campaigner and film director Franny Armstrong. The idea was to reduce carbon emissions by 10% by the end of 2010, on the grounds that this was a more identifiable – and thus achievable – target than the government's 80% reduction by 2050. While the campaign was (and is) also aimed at organisations and businesses, the campaigning pitch is to the individual emitter of greenhouse gases:

It's easy to get overwhelmed by something as big and scary as climate change, but it doesn't have to be like this. What if we resolved to cut our carbon by 10% in a year? Not a bad start. Then what if we get everyone we know to do the same? Then what if the companies we work for got involved? And our children's schools? How about city councils? Post offices. Football clubs. Factories. (10:10 website)

It is clear that the "we" here refers to individual people; so at the base of this telephone tree approach to behaviour change is the individual person, enjoined to reduce her or his carbon emissions by 10% and thereby to lead the rest of us, by example, towards sustainability. Some two years after the UK campaign was launched, over 70,000 people, 3000 businesses, 1500 schools, colleges, and universities, and 1500 organisations have signed up (10:10 website), but the campaign is notably coy as to how much carbon has been saved. There is no independent audit of the participants, and indeed no need for them to self-report. Our aim is not to assess the campaign or the Convention but to question the effectiveness information provision and "downloaded responsibility" approaches within the broader "deficit" perspective. What is of interest to us is that the role of communities and social relationships within the deficit model is unclear. As a model infused with rational choice assumptions of individual rationality and guided by the instrumental goal of changing individual behaviour, it is not surprising that the role of social interaction gets overlooked. With the CKN approach, we do not seek to marginalise notions of rationality; rather, we seek to offer complementary insights into how individuals and households acquire information/knowledge and make energy decisions within the context of communities and networks.

Energy and communities

One key shift in the energy policy regime over the last decade has come in the form of a greater focus on increasing the range of "community-based" forms of energy reduction and generation (Hain *et al.* 2005, Walker *et al.* 2007, Catney *et al.* 2012). When launching his "Big Society" initiative in July 2010, the UK Prime Minister David Cameron made two short references to giving communities powers to "generate their own energy" (Cameron

2010). As a partial follow-up to this, the Climate Change minister Greg Barker launched a new initiative in November 2010 for community energy projects. Barker wrote that:

Community energy is a perfect expression of the transformative power of the Big Society. With the right combination of incentives and freedoms, community groups, businesses and organisations can get together to build a cleaner, greener future. They can generate their own heat and electricity, and their own profits, and as a by-product, help the UK to save energy and help to cut carbon emissions. (Department of Energy and Climate Change 2010)

However, despite the community rhetoric, this initiative looks very similar to the information-provision approach which we are calling into question. Fundamentally, it takes the form of a website offering information from independent sources on generating low carbon energy on a community scale. Despite the fanfare, little is being offered here materially, other than information about how communities could develop these projects. There is very little of use to those interested in addressing the structural barriers to community-level action on energy or to building a more sustainable “greener future” for all.

While we present an outline of an analytical and action-orientated approach based on the community scale in the rest of this paper, we have no desire to fetishise “community” as the answer to the problem of energy and justice. We argue that there are dangers in assuming communities can step up and provide energy reduction solutions when the state is unable, or unwilling, to play a key role beyond information provision and residual forms of pump-priming to the already most active communities (see also Catney *et al.* 2012). Our CKN approach is founded on the hypothesis that some communities are better equipped than others to meet energy challenges due to their economic and organisational resources and social capital; hence, the need for a contextual approach that is informed by recognitional justice. Our aims are therefore to investigate the role that community knowledge networks can play in changing individual and household energy practices, the factors that obstruct and release knowledge flows, and the degree to which knowledge (as distinct from information) can contribute to energy justice at the community level.

Community knowledge networks

In contrast to the deficit model, the CKN approach entails exploring, both theoretically and empirically, the role of knowledge networks in reducing energy consumption. It draws attention to the role social interaction plays in shaping practices, but also ways in which these can be identified and, perhaps, mobilised to enable overall changes in energy use.

Our current working definition of CKNs is “the constellation of people, organisations, material objects, information, practices and relations through which knowledge is shared and articulated within communities and between their members”. CKNs might include and consist of the media, local groups, organisations, and businesses, with events and other information sources as “nodes” (or sites of interaction) in the networks that community members encounter in their daily lives. For Gilchrist (2009, p. 48), such nodes are “where connections are made either through individuals or organisational units”. She goes on to elaborate on how some nodes are more critical than others to the functioning of CKNs and have greater potential – or what she refers to as “soft spots” (Gilchrist 2009, p. 48) – for changing relationships and practices. Indeed, various studies have pointed to the potential that community-level projects can play in creating social pressure for individual-level change (Young and Middlemiss 2012, pp. 744–745). CKNs might be

relatively formal and visible, or more informal, involving personal relationships and word-of-mouth. Exploring CKNs also requires an investigation not just into what they are, but also how they function – the avenues, means, and methods through which knowledge is created, shaped, and dispersed (or held up) in communities.

The most systematic application of a similar network approach can be found in medical sociology. While there are clear differences between epidemiology and energy use, there are also some useful similarities. Both fields share a broad concern with interactions between events (that is the incidence of ill health and or fuel poverty), the extent to which such events are recognised as problems (with both areas potentially involving degrees of denial), and the interaction of different forms of knowledge (i.e. scientific expertise and lay knowledge). Medical sociology has recognised the extent to which health problems, which are often individually experienced, are at the same time framed, shaped, and often addressed through social interaction (for example with family members, health professionals, co-workers, and so on).

In this literature, the “socio-spatial knowledge networks” approach, devised by Cravey *et al.* (2001),⁴ is closest to that proposed here. This approach was based on research into chronic disease prevention for socially deprived people living in a rural community. Knowledge networks were analysed as they related to the social relationships through which people acquired information about the causal links between disease causation and treatment in North Carolina. The approach adopted sought to employ a “micro-geographic” approach, which connected people to the institutions and [geographic] sites that acted as “sources of *knowledge* and *knowledge* dissemination” (Cravey *et al.* 2001, p. 1764; emphasis added; Gesler *et al.* 2006, p. 451). They noted the importance of the circulation of people around communities, through workplaces, social clubs, and common community institutions, as well as the importance of family and kinship for information sharing.

Cravey *et al.* wanted to connect individual beliefs held by people on specific diseases to the social relations through which individuals interact and the resulting spatial patterns of information flow. It was recognised that such socio-spatial interactions do not necessarily take place in highly place-bound containers but could be stretched out across vast areas (Gesler *et al.* 2006, p. 451). The nature, character, and spatial extent of social ties are differential, often patterned by the particular social composition (age, ethnicity, class, and gender) of an area. Like Cravey *et al.* (2001) and Gesler *et al.* (2006), we are concerned with analysing how shared systems of meanings and practices are formed and embedded in communities with respect to energy use. Where these authors were concerned with health, our concern is with analysing energy practices and the circulation of new forms of knowledge on a community scale.

The assumption guiding the authors cited above is that the institutions and sites – or “nodal points” – most familiar and trusted to people are more likely to be effective channels of dissemination of new forms of *information* about disease prevention than traditional (that is information deficit) public health campaigns. No clear distinction is drawn, however, between “knowledge” and “information”. For example, they state that they wanted to identify “knowledge networks”, but then refer to “information networks” (Cravey *et al.* 2001, p. 1765, Gesler *et al.* 2006, p. 450) as if the words can be used interchangeably. As discussed below, these terms are not synonyms; researchers must remain sensitive to the analytic gap between them and, furthermore, the recognitional justice implications involved in this distinction

First, however, we will outline previous attempts to analyse community-based knowledge networks, pointing to deficiencies in terms of how community and knowledge/information are conceived, before outlining our alternative approach to methodologically

individualised, informational deficit models. It is, hence, critical that these two key elements – community and knowledge/information – are elaborated in order to clarify how a CKN approach could analyse the circulation of knowledge for new energy practices. It is to these we now turn.

Community

The idea of community scale and conceptualisations of community have long been of interest to social scientists (Smith 1999, Whipple and Nyce 2007), although community is notoriously difficult to define (Holland 2004). Concepts of community have traditionally been founded on the notion of geographical or physical proximity or “a group of people with something in common” (Middlemiss 2011, p. 266), such as shared languages, needs, practices, and/or interests (Pescosolido and Rubin 2000). As a unit of analysis, a community can be described in different ways, but demographic, social, and economic features within a bounded geographical area are most often used as descriptors (Ozanne and Anderson 2010). Indeed, importantly for us, communities are also defined by their social networks, which are a critical element of Wellman’s (2001, p. 228) definition of “community” as “networks of interpersonal ties that provide sociability, support, information, a sense of belonging and social identity” (also see Pescosolido 2006, pp. 210–211). Wellman (2001), like a number of geographical and sociological analysts of community, disrupts the easy elision of community with locality/neighbourhood. Such approaches emphasise the extent to which an individual’s social ties are increasingly disembedded from locality as technological innovation (for example the rise of the internet and social networking) and other processes associated with modernity increasingly compress time–space distances (Giddens 1990). Such processes, it is claimed, potentially reduce the significance of locality as a defining aspect of community.

In place of locality or neighbourhood-centred notions of community, alternative accounts stress the extent to which they are based upon a sense of group belonging. These “imagined” communities (Anderson 1983) demonstrate that the ties that bind members of a community need not necessarily be ones of proximity, but rather of propinquity (also see Hall *et al.* 1984). Such analyses have pointed to the need to be sensitive to how different definitions and ideas of community can coexist; people may situate themselves as “members of a geographical community, of an ‘imagined’ community and of other constitutive communities” (Patterson *et al.* 2011, p. 342). Such communities can be intangible and fluid, they can transcend time and space to involve the past and present, as an intermingling of different people, places, and experiences. Moreover, these ideas coexist in people’s sense of identity and their sense of belonging to myriad communities they might be part of, and this is the basis of networks and the knowledge flow around them.

Despite the force of these critiques of and alternate approaches to “community”, there is a need to recognise the extent to which locality retains significance. While research has shown that people are increasingly utilising information and communications technology (ICT) based forms of communication, evidence from the USA has found that face-to-face contact remains an important part of social life (Mok *et al.* 2010). Furthermore, it has been claimed that the salience of locality is differentially distributed across society. As Pinkster (2007, p. 2588) notes:

While it is widely acknowledged that people’s activity patterns and most of their social interactions surpass the neighbourhood level, it has been shown that this is less the case for unskilled, low-income residents. . .

Important for our purposes, community and locality are experienced differently by different social groups. It is claimed that low-income groups' ties tend to be more locally based since they are likely to have fewer resources and to be less socially and geographically mobile than other groups in society (Pinkster 2009, p. 215). This resonates with Morgan's (2004) and Storper and Venables' (2004) criticism of approaches in the context of economic geography that overstate the "death of geography" and neglect the extent to which proximity in learning processes still matters. Face-to-face encounters remain an important part of learning processes, particularly for economically and socially disadvantaged groups.

In addition, such learning processes do not play out in an institutional vacuum (Pescosolido 1992). As Newman and Clarke (2009) and Pollitt (2012) stress, institutions such as public services are important elements of "place-making", acting as channels through which aspects of public culture are sustained and reproduced. Hence, we argue for an approach which retains recognition of the enduring (albeit attenuating) role that locality has in community. Phillipson (2012) has argued that while social ties increasingly spill out beyond discrete geographical areas, loyalties, and identities are often still defined by this scale, particularly for older people and some ethnic minority groups. Similarly, Crow (2012) has noted the resurfacing of community studies (and re-studies) as an indication that the micro-scale of locality-based research can still yield insights into aspects of social change, albeit with the caveat that researchers should seek to develop innovative methodologies to do more than merely offer description. We contend that a CKN approach needs to recognise the stretching of social relations (people and social ties) across wider spatial scales, but they must also retain an appreciation of the extent to which locality remains important in terms of face-to-face interactions, the position of institutional "nodal points" as facilitators and shapers of knowledge at the (spatial) community scale, and the enduring (though potentially weakening) attachment that people have to locality as community.

A further rationale for the locality-orientated focus of our research is the current policy and academic attention given to the "community" (that is local-geographical) scale in energy policy (Walker 2007, Cass *et al.* 2010). As we stated earlier, we focus on "community" because of the shortcomings of an individualist approach to energy, and on community knowledge networks because the top-down model of information transfer has been largely ineffective in changing the energy consumption practices, particularly of the "hardest to reach" social groups. This failure is in part due to a recognition that individual attitudes do not translate easily into action and "behaviour" (Shove 2010). While there is a need to be cautious about exhortations for self-actualised communities to pursue renewable energy schemes without a clear framework to help "less active" communities, locality remains an important arena in which to understand how communities engage with energy and how different sets of practices could be encouraged.

Knowledge

Our critique of the "deficit model" approach takes issue with the limited form of methodological individualism underpinning governmental and, it might be argued, much of the academic literature. In contrast, we point to Burgess *et al.*'s view (1998) that,

a growing number of studies show [that] the reception of environmental communications and their "effectiveness" in delivering change in people's attitudes and values, is highly contingent on many factors, not least the local social and cultural contexts in which people live . . . Hopes

are fading of achieving dramatic changes in individual lifestyles simply on the basis of “more” or “better” information. (pp. 1446–1447)

Therefore, there is a need to incorporate understandings of situated knowledge in projects for energy sustainability, both because it is local people who best understand the social and cultural contexts in which they live, and because they should be included as a matter of justice: “lay publics are expert in their own lifeworlds, making rational judgments based on an authority acquired through tacit or local knowledge” (Burgess *et al.* 1998, p. 1447). Their comparative study of Nottingham (UK) and Eindhoven (the Netherlands) showed that citizens in both places,

rejected reliance on the “exhortation model” of top-down, mass communication as the main way forward towards creating more sustainable societies, acknowledging instead the need for public, private, and voluntary sector organisations to match their own practices to their environmental rhetoric. (Burgess *et al.* 1998, p. 1457)

Bearing the critiques of the deficit model in mind, and drawing on insights from Ikujiro Nonaka, we distinguish between information and knowledge, in the following way: “information is a flow of messages, while knowledge is created and organized by the very flow of information, anchored on the commitment and beliefs of its holder” (Nonaka 1994, p. 15). “Knowledge” suggests a multi-directional flow of information, processed and at least in part possessed by those through whom it flows. This contrasts importantly with the unreconstructed idea of “information as such”, redolent of government-sponsored advertisements that seem more likely to provoke weary resignation than changed behaviour.

“Knowledge” itself is a complex and multi-dimensional term, of course. For example, distinctions can be made between declarative and procedural knowledge, with the former often described as “knowing that” (Ryle 1949) or “knowledge about” (James 1950) and the latter referring to “knowing how” (Ryle 1949). Another common distinction is drawn between tacit and explicit knowledge, where the distinction rests on the idea that people can know more than they can say (Polanyi 1966). Tacit knowledge may be resistant to codification or articulation because the knower is not fully conscious of their knowledge, or because the available linguistic resources are not adequate to represent it. For this reason, most theorists find that it is very hard to research tacit knowledge because it is personal and contextual (Gertler 2003). Some such as Duguid (2005) argues that what is unsaid may not necessarily be “unsayable” but people may just need the right incentives and opportunities to articulate their knowledge. As we argue below, there is a need to recognise the difficulty in researching taken-for-granted or unrecognised practices.

A critical concern for the CKN approach is the mobility of knowledge. Knowledge can also be described as “leaky” (Liebeskind 1996) or “sticky” (von Hippel 1994). Leaky is a term used to refer to knowledge that flows easily between people and contexts, while sticky refers to knowledge that does not travel easily beyond its original context. This is clearly an important distinction when it comes to analysing flows of knowledge around networks as we wish to do. The role of social networks can be identified as crucial in facilitating – or indeed, inhibiting – the cultivation of alternative practices. Knowledge may stick or flow for epistemic and ethical reasons.

Knowledge as practice

The idea of “knowledge as practice” (Hansen *et al.* 2002, see also Wenger 1998) is particularly pertinent for analysing the role of CKNs in reducing energy consumption This

approach focuses on how people, through practice, continuously create and recreate knowledge, and how they establish their capabilities over time within specific contexts:

By understanding knowledge as practice, we want to emphasise that knowledge is connected to practice in terms of “knowing how”, e.g. a capacity to act in specific contexts. When we ask about the environmental knowledge of people or industrial actors, we do not ask if they can cite the environmental encyclopædia, but if they are able to use knowledge about the environment to green their activities. (Søndergård *et al.* 2004, p. 8)

Taking a similar approach, Johnson (1989) argues for a new conception of “personal practical knowledge”. This is knowledge “that grows out of ones personal experience and is the very means of transformation of that experience. It both emerges from and restructures our world” (p. 364). Scribner (1986) describes the related concept of “practical thinking”; problem-solving techniques which depend on an intimate knowledge of a situation rather than abstract rules.

As we see it, any community energy project which aims effectively to restructure practices in different local contexts hence needs to start from the insight that environmental knowledge is not universal and objective, but rather is negotiated and situated (Upham *et al.* 2009). Such processes of knowledge and learning by individuals, organisations, and communities are always rooted in a context of interaction and are acquired through participation in some form of communities of practice (Gherardi and Nicolini 2000, pp. 331–332). Indeed, the CKN approach sketched here has some overlap with the literature on communities of practice in that it is focused on collaborative approaches to problem-solving. It is also based on the conditions for creating a “social fabric for learning”, emphasises the importance of identity in participation, articulates a network perspective on “knowledge filtering”, and shares a concern with distinguishing between information and knowledge (Wenger *et al.* 2002, pp. 7–9).

The nature of knowledge produced through these processes of negotiation are always in the process of being reproduced and re-negotiated, thus making all green knowledge “dynamic and provisional” (Gherardi and Nicolini 2000, p. 332). We argue that the act of successfully making and implementing particular energy consumption strategies is a process of interaction and negotiation between forms of knowledge, social networks, and contrasting cultural frames. Recognising the negotiated, “hybridized” and social acceptability of different forms of knowledge is essential if any form of intervention is to be successful. It has often been assumed by academics and policy-makers alike that pre-existing practices embedded in communities act as barriers to the effective transmission and diffusion of new environmental knowledge (cf. Amin and Cohendet 2004, Søndergård *et al.* 2004). Future research needs to explore whether pre-existing practices might be harnessed to make new environmental knowledge more durable. For example, in deprived communities, self-interested practices targeted at reducing energy bills could dovetail with broader community-wide environment agendas.

One key issue here is how social practices should be investigated. There is a danger that interviews with individuals and communities alone will fail to represent the complex realities and the “unspeakable” aspects of their practices (Hitchings 2012). By their very nature, practices are the product of long-term processes of socialisation (or habitus) that often obscure these from critical self-examination (Hitchings 2012, p. 62). However, Hitchings (2012, pp. 65–66) does not argue for discarding interviews as a method for analysing practices; rather, we need to recognise and be sensitive to the variegated capacities to be critically reflexive. Research designs need to develop participatory approaches which explore which methods are most appropriate for making practices “sayable”.

Effective environmental knowledge transfer is therefore not simply a question of “passing information, but also a constitutive process; specific knowledge systems, actor coalitions and cognitive structures are coproduced through practice” (Wenger 1998, p. 283, Søndergård *et al.* 2004, p. 6). We argue that the cultivation of more environmentally sustainable energy practices requires a detailed analysis of the actors, nodal points, and communication channels through which knowledge circulates in and between networks, along with the strategies and interventions that are used to develop knowledge networks and make them influential and sustainable.

Conclusion

In this paper, we have criticised approaches that treat knowledge simply as information. We have questioned the notion that people are empty vessels waiting to be filled with energy-related information, and endorse the view that effective energy policy must be embedded in existing networks of knowledge and practice, ideally in “communities” or at least a local scale that is meaningful to individuals and households. If knowledge is understood simply as information, and therefore declarative and explicit, then it would seem that it could be accessed relatively easily through conventional methodologies such as surveys. However, if knowledge is understood as procedural, tacit, relational, and practised, then more sophisticated methodologies may be required. Just as experience and observation are used to pass on tacit knowledge between members of a community (Gertler 2003), so are in-depth, experiential, and participatory techniques required if researchers wish to access this knowledge. This is what the CKN approach proposes to do.

As has been noted by other researchers working at the community-locality scale (Crow 2012, Phillipson 2012), the need to develop innovative methodological approaches to better capture the panoply of forms of knowledge and social learning, the dynamics of social interaction, and the extent to which practices towards energy change are critical if such a scale of analysis is to be valid. The authors are currently engaged with an on-going project that is attempting to put the ideas set out in this paper into action.⁵

While this paper and our research are concerned with proposing an alternative, more grounded, approach to energy research, we are also concerned with contributing to a growing literature focused on developing a more justice-orientated perspective towards energy. Justice is normally conceived in terms of the fair distribution of “goods” and “bads”. Thus, we might think of justice as being about the distribution of wealth, opportunity or political power. There has been a lively debate in the environmental justice literature over whether this is an adequate framing of the issue (Dobson 1998, 2003, Agyeman *et al.* 2003; Schlosberg 2007). It is certainly possible to see environmental justice in terms of the (mal)distribution of environmental goods such as fresh water and environmental bads such as pollution. But, as Schlosberg (2007) has argued, without attention to the underlying *causes* of maldistribution, the focus on social justice as simply a matter of deciding what fairness of the distribution of goods and bads consists of is inadequate. Building on ground-breaking work by Young (1990), among others, Schlosberg argues that justice must include the notion of “recognition”, since “*lack of recognition in the social and political realms, demonstrated by various forms of insults, degradation, and devaluation at both the individual and cultural level, inflicts damage to oppressed individuals and communities*” (Schlosberg 2007, p. 14, emphasis in the original). His in-depth analysis of justice-as-recognition leads him to identify three dimensions of misrecognition: “First is a general practice of cultural domination; second is a practice of nonrecognition, which is the equivalent of being rendered invisible; and third is disrespect, or being routinely maligned or

disparaged in stereotypic public and cultural representations” (Schlosberg 2007, p. 18). These insights inform our approach because it demands a conceptual and methodological approach that is aware of the possibility of cultural domination, that makes visible the previously invisible, and that tries to avoid maligning and stereotypical representations of how different social groups, such as “the energy poor”, use energy.

With this in mind, we have explained how the principle of recognition is central to the CKNs approach: it seeks to *recognise* the knowledge that people already hold and the networks and practices in which they are already engaged. We are putting this approach into practice in a community-based energy research project, with the aim of demonstrating how its potential will be not only more effective in promoting changes in individual and household energy use but also will be more inclusive and justice-orientated than dominant policy approaches which stress that individuals are merely “lacking in information”. It is hoped that our research will provide an alternative to the individualised, knowledge-deficit, information-led approach that currently dominates the policy scene.

Notes

1. As Hodgson’s (2007) analysis shows, this concept is fraught with ambiguities, often conflating ontological and methodological *explanantia*.
2. Although the Convention deals with access to justice in *environmental* matters, what it has to say about information, public participation, and justice is *inter alia* applicable to energy issues too.
3. The definition of “information” can be found in Article 2 para 4 of the Aarhus Convention (1998).
4. See also Skelly *et al.* (2002) and Gesler *et al.* (2004, 2006).
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