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Sustainability cultures and energy research: An actor-centred interpretation of cultural theory

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ABSTRACT

The energy cultures framework has had widespread use in studies of the energy-related implications of habitual behaviour and behaviour change, and to other topics including mobility, water and carbon-related outcomes. As a heuristic that has become widely used because it helps researchers to make sense of how cultural formations influence sustainability outcomes, it is timely to explore its relationship to cultural theory. I discuss the origins and applications of the framework and elaborate its underpinning concepts about the relationship between cultural formations and sustainability outcomes. I contrast these concepts with cultural theory and conclude that the sustainability cultures approach has similar roots to practice theory, but diverges at several key points. The actor-centred articulation of cultural attributes and their outcomes, with its main focus on actors' agency in cultural change, contrasts with practice theory's view of actors as 'carriers' of routine practices. It aligns most closely with Bourdieu's habitus although more substantial theoretical enquiry is needed to explore linkages to Bourdieu's interest in praxis. Sustainability cultures offers an approach to investigating the significant cultural changes that will be required for a sustainable future.

1. Introduction

New concepts to underpin inquiries into the social world do not necessarily evolve tidily from established theories. Innovations in thinking can emerge unexpectedly from new junctures of people and the cross-fertilisation of their ideas. If they work well in helping to answer questions about the social world, a time will come when some 'backfilling' is required to explore how the new concepts fit with established theory and whether they offer any theoretical innovation. This paper undertakes such an exercise with what was originally called the energy cultures framework, first introduced into the academic literature in 2010 [1].

The concept of energy culture was developed during a seven-year research programme on energy (and later mobility) behaviours amongst households and businesses. The research funder (a government agency) wished to understand what policy interventions might achieve desired outcomes such as increased adoption of more sustainable energy and mobility technologies and more efficient energy behaviours. The interdisciplinary team, including physics, law, sociology, economics and consumer psychology, initially developed the concept of energy culture as a heuristic to support interdisciplinary inquiry [1]. The concept derived from several disciplinary bodies of knowledge held within the team. It contained ideas which could be readily grasped by all disciplines, and enabled the team members to see how their expertise could contribute to the areas of inquiry. As will be explained in Section 2, subsequent applications of the cultures framework have shown that it is fruitful in helping explain outcomes relating to energy, mobility, water and other fields of inquiry. 'Outcomes' here refers to both proximal changes such as adoption of new technologies or changing behavioural patterns and distal changes such as improved health or reduced consumption. The framework has been applied at multiple scales of inquiry, from individuals to global cities, and used for inquiries into habituation as well as transformation.

As will be elaborated, the framework has mainly been used to guide research that ultimately seeks to know why sustainability-related outcomes are or are not being achieved. I highlight this aspect because of the urgent need for social theories that can underpin the widespread transformations needed to achieve a sustainable future. For example, to decarbonise the world's energy systems by the second half of this century [2,3] will require people's active involvement in initiating and implementing change across most systems of production and consumption, not only as individuals but also in their collective lives as householders, citizens, businesses, employees, non-governmental organisations, local authorities, governments and global corporations. The low-carbon transition is thus fundamentally a societal transition, albeit inextricably tangled with technical, economic and environmental dimensions. I suggest that it is also a cultural transition, and therefore invites cultural analysis.

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Despite its somewhat unorthodox origins, the concept of energy cultures (and its more generic application to other sustainability-related topics) is arguably aligned with cultural theories in the sociological tradition. A distinguishing characteristic of cultural theories is that they seek to explain and understand actions through symbolic and cognitive structures of meaning [4], but beyond this, theories differ in the characteristics of social life they attend to. The site of the social is variously taken to be located in the mind (culturalist mentalism), in symbols and texts (culturalist textualism), in social interactions (culturalist intersubjectivism), or in practices (practice theory). In this paper I explore the extent to which the energy cultures approach aligns with cultural theories, and in particular with practice theory with which it is most often compared.

In the following sections I describe the origins and development of the energy cultures framework and its underpinning concepts, and then relate these to the concepts underpinning practice theory. I describe key differences in the approaches, methods and outcomes. I conclude by discussing how an actor-centred approach to practice (in the sense of praxis/the totality of human actions) might offer useful insights for the challenge of achieving sustainability transitions.

2. The origins of the energy cultures framework

The initial purpose in developing the energy cultures framework was to create a model that incorporated all of the potential drivers of household energy behaviour as perceived by the multidisciplinary research team described above. Disciplines had different notions of behavioural causes and even of what behaviour meant: it was variously characterised in terms of energy-related technologies (e.g. does the household have a heat-pump?), and/or in terms of a household's *use* of energy-related technologies (e.g. when do they use it?) and/or in terms of the consumer's norms (e.g. what temperature settings do they prefer and why?). The team sought to include all of these aspects within the energy cultures framework, and also to consider how these factors were interrelated. There was no intended implication that people intentionally chose become members of one or another 'energy culture' (indeed one of the problems with energy research is its invisibility to most consumers [5]). The term 'energy cultures' instead refers to those aspects of cultural formations that are causally aligned with energy-related outcomes.

The funder of the initial research had asked the team to examine why households were inefficient in their energy use, so the focus was on the energy-related outcomes of these interrelationships as well as seeking to understand how and why people might find it difficult to change. In this respect the team was also interested in exogenous factors that might affect also a household's energy behaviours including pricing and market conditions, the regulatory and policy environment, the presence or absence of infrastructure, and other factors beyond the control of the household [1,6].

The use of the term 'culture' in energy cultures originated from Lutzenhiser's *Cultural Model of Household Energy Consumption* [7] where he suggested that energy consumption was embedded in cultural processes, and that material culture interweaves with "roles, relationships, conventional understandings, rules and beliefs into the cultural practices of groups". Lutzenhiser does not appear to have developed this notion further, but for the research team it seemed to offer a useful angle for studying energy-related behaviours.

The resulting energy cultures framework, as described in some detail in Stephenson et al. [1] and its further developed in Stephenson et al. [6], was influenced by a number of social theories. From Bourdieu [8] the team was influenced by his proposal that the practices that make up social life are largely generated and regulated by habitus – persistent patterns of thought, perceptions and action, which themselves are a response to the objective conditions within which people live. This is not to say that habitus is immutable, and indeed Bourdieu discusses the possibilities of strategic action to alter habitus. For the team's purposes, the core interest lay in how, through the interplay between strategic action and agency, individuals and groups might shift from the self-replicating stasis of habitus to adopting new behaviours, beliefs, aspirations and/or material possessions, with more sustainable outcomes.

From structuration [9] the team received insights into the interplay between social structures and agency, and were particularly influenced by Giddens' notions of the fluid boundaries of agency, and how actors and social structures might each change the other. From STS literature the team considered the role that technologies play in influencing behaviours and expectations, such that 'social practices and technological artefacts shape and are shaped by one another' ([10], p. 351). From Latour [11] the team took a particular interest in the potential influence of new material objects to both reflect and re-shape cultures. The development of energy cultures was also influenced by systems thinking with its focus on causality and consequences [12,13]. Systems analysis requires the setting of boundaries around the system under investigation, and this was helpful in considering why and how the notion of culture could be bracketed to allow close investigation. The team was less overtly influenced by social practice theory as developed at that time (e.g. [14,15]) because its focus on the replication of practices such as washing, cleaning and cooking did not align with the team's interest in agency and change.

Overall, the team sought to provide a set of concepts that could enable the description and study of "cultural 'units'" ([16]: xii) in multiple contexts, the exogenous influences on these units of culture, and how these units might change over time. Culture, in the sense that it is used here, includes "not only the beliefs and values of social groups, but also their language, forms of knowledge, and common sense, as well as the material products, interactional practices and ways of life established by these" ([17]: 65). The 'cultural turn' in sociology has largely focused on exploring practices (e.g. [4,18]) and symbolism and meaning (e.g. [19–21]), but energy cultures research became interested in the broader range of cultural attributes indicated by Hays, including material and immaterial artefacts that shape and are shaped by the lives of actors.

The research sought to study how actors' cultural formations (i.e. the interactivity between these cultural features) resulted in particular outcomes of interest (e.g. relating to energy use or mobility choices or wellbeing outcomes). This framing is unlikely to correspond with the cultural models in the thought processes of the actors, but is useful for the purposes of investigating the relationships between cultural formations and outcomes.

The energy cultures framework (Fig. 1) is a heuristic which pared down the concept of culture to three core elements of material culture (meaning the actor's material possessions), practices (meaning the whole of an actor's actions and activities) and norms (including the actor's expectations and aspirations). This is not to say that other cultural characteristics were unimportant, but these three topics seemed to capture much about actors' culture that was relevant to energy outcomes, and were easily understandable to interdisciplinary teams. The internal arrows in the framework indicate that these core elements are linked and interactive. The dashed circle indicates a boundary between the actor's energy culture and exogenous influences that are largely beyond the control of the actor, while at the same time indicating that this boundary is permeable.

3. Applications of the framework to sustainability questions

The energy cultures framework has underpinned a significant body of research, both by the original research team and by others internationally, on a range of topics including (recently) domestic water demand [22], energy consumption by the elderly [23], energy efficiency in the US Navy [24], driver efficiency [25], urban freight delivery [26], household energy behaviours [27], energy poverty [28], youth mobility [29] and as the basis of a European Union Horizon 2020