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GOVERNANCE OF RESOURCE EFFICIENCY: INSIGHTS FROM CULTURAL THEORY

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ABSTRACT

Resource demand management initiatives are designed based upon implicit understandings of power and knowledge distribution between formal institutions and resource users. Employing an interpretive account of cultural theory, resource governance modes are developed in order to explore the differing assumptions held by, and means of action employed by, a set of three consecutive domestic resource efficiency initiatives. This framework is advocated as it enables highly pertinent questions to be asked relating to resource ownership and collective responsibilities. It is argued that by better understanding how domestic resource use practices are reproduced and change, and by encouraging public debate about how our water and energy systems should operate, society can begin to alleviate the demands placed upon water and energy systems. However, links between the three initiatives highlight how sectoral segmentation (associated with large-scale utility provision) and limited funding opportunities, frequently determine the shape of domestic resource governance.

KEYWORDS

Cultural theory, resource governance, resource efficiency, water demand, energy demand

3S STRANDS

Sustainable Consumption, Policy and Governance

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INTRODUCTION: RESEARCHING THE GOVERNANCE OF RESOURCE EFFICIENCY INITIATIVES

Resource efficiency initiatives have emerged as a new form of utility management in recent years. Driven by continuing increases in resource demand, rising concerns about financial and environmental costs of further utility provision, and increased computerised control, responses to infrastructure challenges in developed countries have seen 'predict and provide' give way to a 'new logic of production and consumption' combining efficient resource provision with activities to address demand (Guy *et al.,* 2001; Strengers, 2011). Initiatives that are variously titled 'demand management', 'resource conservation', or 'resource efficiency' (the term that we adopt) seek to bring about a reduction in resource consumption through technological upgrades and/or changing behaviours. Crucially, this amelioration of resource use is sought through interaction with consumers and/or the suppliers of household infrastructure and services. In this respect resource efficiency involves a profound change in resource governance. Rather than the isolated and expert-led process of 'providing', new resource efficiency initiatives involve different relationships in which those organising utility provision interact with consumers and their suppliers of household goods and services to encourage less consumptive means of living.

How should we understand this shift in the role of governance organisations from provider to interactive facilitator? More particularly, how do we understand the variations between resource initiatives? The aim of this paper is to introduce one theoretical tool for understanding resource efficiency initiatives and to provide a systematic evaluation of its usefulness.

The selected theoretical tool is cultural theory. Cultural theory is an anthropological theory developed to explore how societies make decisions about collective risks. Our initial choice to use cultural theory arose for three reasons. First, cultural theory asks crucial questions about resource ownership and collective responsibilities that we see as highly pertinent to resource efficiency initiatives. Second, resource provision *is* a collective risk management problem: the motivation for resource efficiency arises from the perceived collective risks of unmitigated consumption (shortages and environmental damage). Third, we see cultural theory as a useful theoretical tool in need of application from an interpretive perspective, in counter-distinction to many narrow and positivist ways in which it has been used to date.

We begin by introducing cultural theory, expanding upon why we consider it a useful tool for studying resource efficiency initiatives, and developing a framework and methodology for applying cultural theory in an interpretive way. We draw upon the changing governance structures associated with water resources provision in the UK to illustrate the merit of using 'modes of governance' (developed from the four solidarities of cultural theory) to understand resource management initiatives. We then use cultural theory to broadly assess the assumptions behind what was said and done as part of three water and energy efficiency initiatives conducted in Ashford, Kent (England) during 2008-10. Framed by cultural theory, we undertake a detailed empirical analysis of one of these initiatives, 'Savings at Home'. We conclude by reflecting upon the usefulness of cultural theory in providing a language and approach to consider and direct resource efficiency initiatives in research and policy-making.

CULTURAL THEORY

Our interest in cultural theory arose because it asks two important questions that can help to contrast different resource efficiency initiatives.

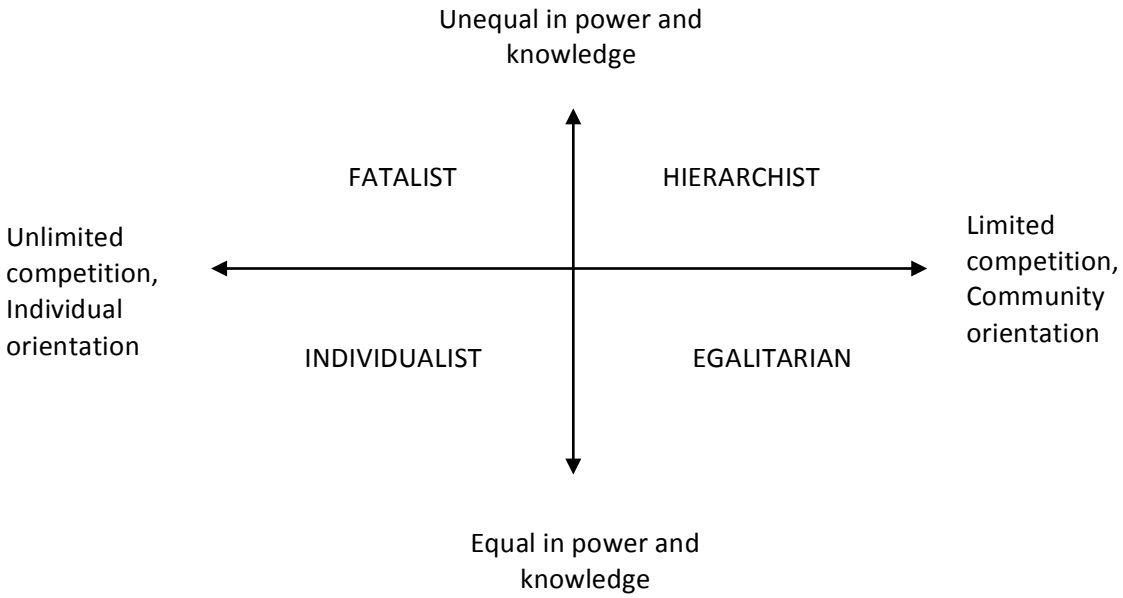
The first 'resource ownership' question examines the important issue of whether energy and water are seen as communal resources or as commodities. Resources are more communal if ownership of the infrastructure is in state or municipal hands, if distribution of scarce resources relates to need not to price, and if the consumer price relates to ability to pay. Contrawise, resources are considered more as commodities if they are distributed through privately owned profit-earning infrastructure at a cost-related price to the highest paying customers. Whether environmental sustainability benefits when water and energy are presented as commodities or communal resources is contested. Some commentators and policy initiatives highlight the benefits of commodity status because they perceive that users will make more sustainable consumption decisions if individual incentives align with communal needs (OFWAT, 2011). Others stress how the infrastructure, incentives and understandings about fair resource distribution and pricing develop communally (Shove, 2003). Moreover, perceived exploitation under a commodity system, for example accusations of poor infrastructure management by 'fat cat utilities', can take away from people's motivation to contribute to sustainable outcomes (Haughten, 1998).

The second question addressed by cultural theory considers the role of resource users in addressing resource management issues. One perspective highlights how the public are passive in the receipt of water and energy; this viewpoint stresses the extent to which product regulations, social norms and infrastructure provision structure individuals' resource use 'choices' (Spaargaren, 2004). An alternative view highlights how the public have a central role to play in reducing total resource demand. This role is exercised through people's political preferences about whether and how new resources are obtained, through their selection of household infrastructure as well as in their choices about how and when to use resources. The model of resource provision that dominated the twentieth century treated the public as passive, content to delegate decision-making to governance institutions (Guy *et al.* 2001). Critics suggest, however, that the provision of water, gas and electricity 'on tap' to passive consumers has caused resource user practices to move into the increasingly consumptive sphere of unconscious habit and raised expectations of access and quality (Shove, 2003; Southerton *et al.*, 2004).

These discussions of resource ownership and public engagement highlight choices available to governance organisations when designing resource management initiatives. Is it the individual benefits of the initiative that are to be stressed, or is it the communal gains? Likewise, is the resource user addressed as active or passive in resource management? Our commodity-communal resource question can be seen as subset of a bigger question about whether people are treated as individual decision makers or as citizens of a larger unit. Likewise, our passive-active question corresponds to wider issues about whether knowledge is held by an elite or the construction of knowledge is shared. Such questions were previously explored by Douglas and Wildavski, who introduced cultural theory as a means to understand how societies undertake collective actions (Douglas and Wildavski, 1982; Douglas, 1985). Cultural theory has been widely used to discuss

governance (Rydin *et al*., 2004; Entwistle, 2010) and environmental risk management (Baxter and Greenlaw, 2005; Tansey, 2004), but has been less frequently applied to other areas of environmental politics (Gyawali and Dixit, 2001; Seyfang, 2007). According to cultural theory, there are four primary ways of organising, perceiving and justifying social relations (termed 'solidarities'): the hierarchist, the egalitarian, the individualist, and the fatalist (Douglas *et al.*, 2003) as depicted on Figure 1. Perspectives on whether water and energy are communal resources or commodities can be seen as represented on the horizontal 'group' axis, while perspectives on the extent to which users are engaged with resource management correspond to the vertical 'grid' axis. The combination of the *x* and *y* axes can help our understanding of the relative positions, aspirations and approaches of different resource initiatives.

Figure 1. The Four 'Solidarities' of Cultural Theory (adapted from Thompson, 2008)



When transposed to the understanding of resource governance the four solidarities of cultural theory translate into four alternative modes of governance (Table 1) through which the texts and practices associated with a resource management initiative can be understood.

Table 1: Resource governance modes

Governance mode	*Approach*
Hierarchist	Governance organisations* oversee resource supply and needs, making rules, and organising technological and educational investment to ensure wise resource use. Individuals and firms follow rules and advice.
Individualist	Governance organisations* provide incentives and information to enable efficient resource use. Individuals and firms actively manage resource use for self-interest in light of information and incentives provided.
Egalitarian	Governance organisations, firms and individuals actively negotiate and cooperate to implement greater communal resource efficiency.
Fatalist	Humans are self-interested, therefore, governance organisations have minimal influence and individuals and firms make individual choices and arrangements for resource use with little consideration of communal scarcity, inequalities or impacts on others.

* 'Governance organisations': government bodies, regulators, utility providers and campaigning groups who offer oversight with respect to resource supply and use.

We agree with Douglas and Wildavski (1982) and Thompson (2008) that inherent contradictions in each approach drive an inevitable and dynamic process of shifting management emphases through time. Rather than using the approaches as absolute categories into which individuals or initiatives must be classified, we follow Tansey (2004) in applying cultural theory on an interpretive basis in which the different solidarities provide a route to understand the relative emphasis of different governance processes. Importantly, this interpretive application of cultural theory would expect texts and practices to align with more than one mode of governance and to change over time.

RESOURCE GOVERNANCE IN CONTEXT

In this section we begin by using the resource governance modes to understand an exemplar of historic resource governance changes. The historical sketch offers a context for the subsequent discussion of contemporary resource efficiency debates. Highlighting our own normative position, we then generate a conceptual framework for understanding how the resource governance modes support the interpretation of resource efficiency initiatives.

Changing processes of water supply in England illustrate how resource governance modes have shifted through time. In the medieval England there were a mixture of governance modes: charity supported conduits bringing water to cities; landowners' equal legal rights required local co-operation; water-carriers sold water on urban streets; while wells and springs provided individual water sources (Strang, 2004; Mortimer, 2009). Through the eighteenth and nineteenth centuries urbanisation drove the development of large(r) private and municipal water supply systems (Bakker, 2003; Geels *et al.*, 2004), and new uses, such as toilets and bathrooms, emerged and became

normalised (Worsley, 2011: 125-36 and 151-7). Positive associations between water supply and prosperity meant rising demand was met by an unquestioning expansion of supply, with decisions about where and how supply should be sourced delegated to a technical elite (Guy *et al.*, 2001; Bakker, 2003; Taylor *et al.*, 2009). In cultural theory terms, we see this top-down approach to utility management as hierarchist.

Towards the end of the twentieth century, a combination of fiscal constraint and rising environmental standards brought the hierarchist 'predict and provide' approach into question (Guy *et al*., 2001; Bakker, 2003). Bakker (2003) describes the emergence of 'market environmentalism' in which regulations drove up environmental standards amongst companies competing in a 'market' for regulators' regard. Concerns about future water demand were met by a combination of regulations and technical controls, characterised by Sharp (2006) as 'welfare based' measures, and other 'market-based measures', incentivising individual and household restraint. Corresponding to hierarchical and individualist modes respectively, these different approaches to resource efficiency can be contextualised with reference to contemporary debates. Shove (2003, 2010), Southerton and colleagues (2004), Sofoulis (2005), Strengers (2008a and b, 2011), Walker and Devine-Wright (2008), Lejano (2008) and Chappells and Medd (2008) all critique hierarchist as well as individualist initiatives for failing to provide room for the socio-technical system - made up of infrastructure, formal institutions and informal expectations and social norms - to be explored and questioned. An emphasis on mutual understanding and negotiation between scientific / utility stakeholders and the public means that these theorists (many of whom, write from a social practices perspective) can all be seen as implying support for egalitarian approaches.

The egalitarian critique argues that the hierarchist governance mode hard-wires resource dependency into our homes through water, gas and electricity infrastructure (Shove, 2003). Compounded by a stream of new resource-reliant products, this infrastructure communicates that resources are (almost) infinitely available (Shove, 2003; Southerton *et al*., 2004; Sofoulis, 2005) and has been a key element in escalating resource use. Recently, the same hierarchist perspective has taken on a green tinge in the imposition of 'fix and forget' technologies that stealthily force resource efficiency on households via manufacturing requirements or building standards. Though efficiency gains for each instance of a practice are achieved, concerns relate to diminished consumer experiences (Critchley and Phipps, 2007) the removal of pre-installed 'efficient' appliances by resource users (Knamiller and Sharp, 2009), and the potential for greater appliance use cancelling out resource gains from efficiency (Strengers, 2008a; Chappells and Medd, 2008). Other hierarchist measures involve the episodic imposition of resource use rules during periods of shortage – for example, a hosepipe ban at times of water stress. For Sofoulis (2005) such rules are a paradox; an infrastructure system in which resources are implicitly infinite suddenly blames the user for excessive consumption.

Individualist initiatives are seen as equally problematic. Characterised by Shove (2010) as an 'ABC approach', these initiatives seek to influence individuals' attitudes (A), so that behaviours (B) are chosen (C) which are less environmentally damaging. According to the egalitarian view, ABC initiatives focus on a narrow set of financial or knowledge factors as motivating the individual in their daily choice to consume (Shove, 2003; Southerton *et al*., 2004). While habits and social norms may be given token recognition in some ABC accounts, they are generally seen as external drivers of

behaviours rather than recognised as resource use practices that are learnt, developed and changed communally (Shove, 2010). Consumers experiencing ABC initiatives have questioned associated assumptions, for example, that they undertake resource-wasting behaviours (Knamiller and Sharp, 2009).

Instead of hierarchist or individualist initiatives, egalitarian theorists highlight the need for approaches that involve both a communal understanding of resource responsibilities and in-depth engagement with provider and citizen contexts (Lejano, 2008; Shove, 2010). Though they have not been framed as 'egalitarian initiatives' to date, these characteristics manifest through three shared elements. First, such initiatives are often developed and promoted through existing social networks. Whether mainstream (initiated from outside) or 'grassroots' (Seyfang and Smith, 2007), initiatives' use of existing community networks enable efforts to be moulded to suit local conditions, while the trust embedded in the networks offers a route through which initiatives have had impacts (Lejano, 2008). Second, egalitarian initiatives emphasise the communal nature of resources by highlighting interdependencies between groups of individuals and the stocks of, or production of, resources (Lejano, 2008; Strengers, 2008a). For example, shortages may be understood through emotional connections to valued aspects of the local landscape (Sefton and Sharp, 2007), or through citizen involvement in decentralised production processes (Chappells and Medd, 2008; Walker and Devine-Wright, 2008). Third, the work of the initiative acts to stimulate diverse interactions and learning processes between all parties (Lejano, 2008: 492). Following Giddens (1984), Strengers (2008b) and Sefton and Sharp (2007) emphasise that conversation is key in bringing citizens' routinized habits into discursive consciousness. Communication also occurs in the reverse direction, however; initiative organisers learn how household resource efficiency can more effectively be supported in a process of 'co-management' (Strengers, 2012). Insofar as such listening and learning is not shown, the gap between the initiative's caring rhetoric and their actions threatens trust relationships.

These discussions enable characteristics of different types of resource efficiency initiative to be identified (see Table 2, Conceptual Framework). Strictly speaking, neither fatalist nor hierarchist approaches are likely to lead to household-oriented resource efficiency initiative – the belief in the passivity of the public would suggest such efforts were irrelevant. Nevertheless, we have included hierarchist initiatives in Table 2 because, as noted above, there are significant attempts to encourage households to (actively) change their household equipment in order that subsequent use can be (passively) resource saving. A fatalist philosophy would however argue against any external intervention in resource distribution methods, so have been excluded from Table 2.

Table 2: Conceptual framework of resource efficiency initiatives

	Hierarchist	Individualist	Egalitarian
Goals & mechanisms	Changed rules, new infrastructure or new household technology reduces resources used by households	Reduce households' resource-using behaviour through information and incentives	Changing infrastructure, household technology and behaviour and negotiating and learning to achieve resource efficiency.
Identification of households	Households within prioritised areas are selected by governance organisations	Contacted by governance organisations	Utilise trusted networks maximising person-to-person contact
Engagement of households	Engagement as part of state supported, welfare-related initiative. Following initial action, householders' passive involvement assumed	Incentivised through individual financial savings and/or better knowledge, with secondary emphasis on help for environment	Requested to be involved as good for local environment & community, with secondary emphasis on individual savings
Monitoring	Aggregate resource use	Aggregate and household resource use	Resource use but also household and worker perceptions of initiative

This section has demonstrated how resource governance modes can help in interpreting the history of resource use, as well as illuminating contemporary resource efficiency debates. A general observation is that whilst hierarchist and individualist approaches seek universal and one off solutions to problems, the egalitarian approach anticipates a variety of locally different problem framings and 'solutions'. This suggests that while the costs of developing and implementing initiatives influenced by hierarchist or individualist thinking may be cheaper, egalitarian initiatives could offer more opportunities for local processes of negotiation and discussion with potential benefits in terms of appropriateness and long-term success.

In the sections that follow we use cultural theory's resource governance modes to investigate resource efficiency initiatives in Ashford, Kent.

INTERVENTIONS FOR RESOURCE EFFICIENCY IN KENT, UK

In the UK, the challenge of reducing domestic resource use is particularly pertinent in the south-east of England. This area is already water stressed, while economic growth and planned expansion of key areas are anticipated to create further challenges for all infrastructure provision (Furey, 2007; Office of the Deputy Prime Minister, 2006). For example, the focus of two of the following initiatives

– the town of Ashford in Kent - was earmarked as a prime location for residential and commercial growth in 2001, and is expected to double in size before 2026 (Halcrow, 2002). Whilst significant effort has been focused upon ensuring resource efficiency in new homes in Kent, our concern here is with a set of three consecutive initiatives that aimed to address water and (in the case of the latter two initiatives) energy efficiency in existing properties through retrofitting and behavioural interventions.

Initiated by Kent County Council (KCC) together with partners, South East Water (SEW), the Environment Agency (EA), and Ashford Borough Council (ABC), in 2008 the first of the three initiatives, 'Savings on Tap: Water savings for existing homes' (SoT) sought to reduce water use through retrofit. The initiative centred upon installation of water efficiency measures and provision of water-saving advice to households in Washford Farm, a residential area to the south of Ashford, characterised by 1970's and 1980's two and three bedroom properties in private ownership. The initiative also offered to conduct simple plumbing works to fix any water leaks.

Second, in 2009 a follow-up initiative combined water and energy retrofit processes in two relatively prosperous residential districts of north-east Ashford. Led by 'Ashford's Future' (a semi-private development corporation supporting infrastructure for new development of Ashford between 2003 and 2011) 'Savings at Home' (SaH) involved a coalition of utility providers and local government. The target districts, Kennington and Bybrook, were selected on the basis of anticipated carbon-savings from fitting structural measures, such as cavity-wall insulation and loft-insulation. The consultants, Creative Environmental Networks (CEN), were contracted to deliver the programme, while utility companies supplied technical measures.

Third, in light of the experiences with the SaH retrofit pilot and the rising strategic importance of domestic energy efficiency, the 'Kent area based retro-fitting programme' (KRP) was commissioned by KCC and the Kent Forum (all Kent local authorities). The initiative secured provision of measures through utility companies (SEW and Scottish and Southern Energy (SSE)) and involved psychologists at the University of Kent designing a targeted communications and engagement programme which was then conducted by CEN. Adopting a geographically phased delivery approach, the 'Kent Retrofit Programme' aimed to pool public sector financial resources to stimulate integrated 'whole home' structural energy and water efficiency measures, and to maximise grant funding by residents. Consultants, 'In Touch' provided the home visit service with the target of retrofitting 600-1,000 homes per year, to deliver financial savings of £200 per household. Phase I targeted 1,200-1,500 homes within the four Kent boroughs of Swale, Tunbridge Wells, Thanet and Dover.

The set of three initiatives studied should not be seen as especially ground breaking. Indeed, apart from the innovation of combining water and energy retrofitting, they are in many respects typical of recent attempts to address household resource efficiency. However, it is this very typicality that makes them of interest. By looking at all three consecutive initiatives, which are supported by overlapping partners and personnel, the investigation has been able to demonstrate the processes of learning (or not) between initiatives, as well as highlighting challenges facing governance organisations responsible for improving domestic resource efficiency.

METHODOLOGY

This research originated as an in-depth empirical analysis of the strategic governance of the 'Savings at Home' initiative. The additional benefits of setting SaH in the context of the preceding and subsequent initiatives emerged later, and this is reflected in some asymmetries in the balance of data about the interventions. Informed by our understanding of cultural theory, our research questions addressed the objectives of the initiative, the discourses and rhetoric employed in the planning, promotion, implementation, and review of the retrofit, as well as how and why these positions and approaches were adopted. A comprehensive documentary and website analysis was undertaken, reviewing material from each resource governance organisation involved, incorporating a total of 39 documents, and web sites representing each resource governance organisation. This data was coupled with eight practitioner interviews (P1-8 below) undertaken during June 2010 with representatives from six of the seven partner organisations (representatives from SSE were not available for interview). Three 'shadowed' CEN home visits were undertaken on 27th May 2010 within the target area, in order to gain an in-depth understanding of the processes of householder engagement, home auditing, installation of 'easy measures' and referral for structural measures. In addition, in order to understand householder perceptions of the initiative, random sampling of households visited by CEN selected 60 to be handed an invitation to participate in the research at the time of the home visit, of whom 14 households were interviewed (nineteen individuals in total, H1-19) six weeks after receipt of the CEN home visit. Both householder and practitioner interviews took the form of in-depth, semi-structured discussions lasting approximately one hour. Discussions were anonymous and confidential. Informed consent was obtained for digital recording and transcription.

As understanding of the resource governance landscape emerged, the context of resource efficiency initiatives preceding and following SaH began to be seen as important. Supplementary data relating to the SoT and KRP initiatives was therefore gathered through documentary analysis (four additional documents), website reviews (six websites) and existing practitioner interviews. Analysis became focused on how different elements of initiative design developed longitudinally between the trio of initiatives.

The process of analysis began by deriving themes inductively 'bottom-up' from the amassed data, in a way that was not directly led by our theoretical approach. Our interpretation developed through three rounds of coding using NVivo together with successive revisions of this narrative, and the addition of the documents from SoT and KRP. Though the work was undertaken with cultural theory in mind, the detailed conceptual framework in Table 2 did not crystallise until analysis had been undertaken.

FINDINGS

Goals and mechanisms

Table 3 offers an overview of the key goals and mechanisms of each of the three resource efficiency initiatives. These are drawn largely from documentary sources and reflect the initiatives' organisers' initial intentions, rather than necessarily what was delivered.

Table 3: Goals and intended mechanisms of three resource efficiency initiatives

Initiative	Mechanisms	Key goals/estimated potential savings
A. Savings on Tap (SoT) (P7, KCC)	a) Information provision b) 'Easy' water-efficiency measures c) Plumbing service	a) Increased consumer water-efficiency awareness b) 10% reduction in domestic water-use
B. Savings at Home (SaH) (CEN, 2010a)	a) Tailored household resource efficiency advice b) 'Easy' water and energy efficiency measures c) Structural energy-efficiency measures	a) Demonstrate a cost-effective mechanism for delivering integrated energy and water savings b) Estimated potential savings: 25% CO_2 reductions and 10% water use reduction in 50% properties, and 60% CO_2 reductions in 5% properties
C. Kent Retrofit Programme (KRP) (CEN, 2011)	a) Home visits delivering tailored efficiency advice b) Whole-house energy efficiency audits and provision of easy measures b) Structural energy efficiency measures	a) Undertake a county-wide retrofit for existing hard to treat homes, in order to reduce carbon emissions, and provide economic opportunities to households b) Pilot marketing approach aimed at targeting different socio-economic groups c) 600-1000 homes per year to be retrofitted with intended savings of £200 per household d) Develop innovative finance mechanisms to adopt a whole-house deep retrofit approach

An initial analysis of the modes of governance based on Tables 2 and 3 suggests all three initiatives mixed elements of different modes, with a targeted marketing approach and advice service (individualist), fitting of easy measures (hierarchist), and one-to-one contact (potentially enabling empathic interaction associated with an egalitarian approach). Closer analysis of interviews and documents allow these understandings to be further unpacked.

SoT imposed water-efficient technologies upon householders and focused upon measuring the initiative's impact. Compared to SaH, relatively little emphasis was given to tailoring or targeting advice, or to understanding the home situation of the participant (this is evidenced in the results of the follow-up satisfaction survey, later described). The organisation of this initiative represent

uniform universal solutions and are largely in line with a heirarchist perspective. The follow-up measures, posted to participants after the completion of the retrofit, represent an exception to hierarchist assumptions. This pack included a leaflet detailing behaviour change opportunities, and a thank-you letter from KCC and enclosed tea-towel made links between saving water and the local Bewl reservoir, cared for by the Kent Wildlife Trust. This reference to known local environmental amenities and organisations shows elements of an egalitarian approach.

In contrast, the SaH initiative was intended to be "…more tuned up for behavioural impact and creating pro-environmental behaviour as a central aim" (P7, KCC). Comprehensive extended conversations were designed to provide "face-to-face advice in the home…[as] one of the best ways of unlocking behavioural savings" (P3, CEN). The programme organisers, particularly CEN, placed confidence in technical equipment designed to increase the visibility of resource usage through providing feedback on consumption levels. This was based upon perceptions that "the majority of people…don't know how much energy they are using and don't know what their water bills or energy rates are" (P2, CEN). The observed home visits showed this philosophy in practice, as the home visitors predominantly followed a prescribed protocol of questions leaving minimal space for residents to ask questions, however attempts were made to review resident utility bills, provide advice on how best to make savings, and residents were encouraged to make use of the free home energy monitor. In these respects the SaH mechanism demonstrates close links to an individualist approach.

An element of exception from the individualist approach would have arisen had the intended household referrals for larger structural measures been achieved. However, contrary to the initiatives' expectations, however, few of the visited households were suitable for such structural measures, as many residents had already capitalised upon available funding mechanisms. Moreover, initial communication difficulties and a lack of service level agreements (SLAs) between CEN and the organisation responsible for conducting the technical survey and installation of structural measures (SSE) led to a change in the referral process. Upon gaining Carbon Emissions Reduction Target (CERT) funding, CEN were able to contact funding schemes directly (such as Coldbusters, Warm Front) to prompt a home visit and subsequent installation. This change in the referral process meant that, even for the 229 households identified with potential for structural measures, works were only undertaken in 40 households (CEN, 2010a). Had the referral process been smoother it would have added an element of hierarchist activity to the mechanisms employed.

Resident interviewees participating in SaH demonstrate a variety of responses to this largely individualist initiative. Some appreciated being able to save money on utility bills through installation of resource efficient technology: 'we've always got to be persuaded and sometimes cash incentives act as a persuader' (H8). Value-added items, such as the energy monitor, also proved to be an awareness raising mechanism that was particularly appreciated; 'it makes you very much more aware of how much electricity you're using' (H7). Others expressed scepticism about this means of persuasion, for example, suggesting that management of water and energy services 'has got to be holistic...if you don't listen to the people and what they require it won't work' (H11), or as the responsibility of government, 'ultimately it's the Government's responsibility, the Government have to impose something [to reduce resource consumption]' (H7).

KRP's design specifies a one to two hour tailored home visit that 'must be flexible and adapted to suit the needs and understanding of the resident, as well as the property itself' (CEN, 2010b, p7). However, this contact is intended to achieve a multitude of tasks including 'addressing behavioural change, assessing eligibility for external funding, establishing needs with respect to other services, installing small measures, undertaking plumbing repairs where possible, and establishing technical requirements of larger measures' (CEN, 2010b, p12). The intention to achieve flexibility, and the very breadth of proposed agenda, demonstrates a potential for these visits to approach the negotiated and supportive aspirations of egalitarian initiatives. Whether these aspirations are realised will depend upon the training, support, assessment and delivery of those who are conducting the visits.

The analysis demonstrates a shift from relatively low-contact retrofitting towards interaction with residents that is in keeping with a more active framing of residents, welcomed by both individualist and egalitarian approaches. While SaH's emphasis on residents' behaviour change links it firmly to the individualist approach, KRP appears to following a broader agenda that has the potential to be a more supportive egalitarian role.

Identification and engagement of households

In SoT a combination of outreach methods were employed in order to engage the householders, including an invitation letter from KCC, follow-up door-knocking and introductions made by friends and neighbours. This led to uptake of 284 (from 500) households (P7, KCC). In recognition that only approximately 40% of households were metered, promotion of the initiative noted the potential for individual financial savings alongside the local environmental benefits of reducing water usage. For instance, the SoT advice leaflet suggested that "there are many ways we can all use less water and cut our bills at the same time" (Ashford's Future, 2008).

SaH recruited 451 households (17% of those in the targeted areas) through a combination of letter mailing, leaflet drops, marketing at a public event and door-knocking (CEN, 2010a). Marketing the SaH initiative occurred under the banner of the semi-private sector delivery body 'Ashford's Future'. Several participant interviews indicated that this choice was not successful; some did not recognise the organisation, others saw it as an inappropriate sponsor. For example, one interviewee commented, "Grant schemes for improvements need to be administered locally by companies that aren't run for profit" (H10). The initiative's marketing rhetoric adopted a financial savings discourse by inviting householders to find out they could "save water, save energy and save money" by taking up free SaH "expert visits" and measures (Ashford's Future, 2010). This financial call to action was based upon the assumption that "once [the householders] are aware that it's not going to cost them anything, they're actually going to save money, and they get some nice stuff, it's actually quite a powerful thing" (P1, CEN). As discussed in the preceding section, participant interviews do not completely support this assumption.

KRP uses an area-by-area strategic approach to focus upon hard to treat properties that have high levels of energy use. The intention is that eligible households are referred for delivery of free cavity and loft insulation as well as free simple energy and water efficiency measures. Experiences from the SaH pilot influenced design of this roll-out in terms of acknowledging the importance of

communications and public engagement: the business case states that "co-branding with a trusted brand such as the council is encouraged" to "develop trust and project legitimacy" (CEN 2010b). Phase I tested marketing approaches for a wide range of socio-economic groups, achieving between 8.8% and 11.2% uptake rate. A postcard with a tailored message was sent to potential participant households in each area to convey the potential for free measures to deliver financial savings and warmer homes.

All three initiatives used centrally collated information on the public to identify potential target households to whom the initiative could be marketed and the option of involvement offered, and in this respect they can all be associated with an individualist approach. In addition to written invitations, egalitarian elements were introduced through SaT's utilisation of word of mouth from friends and neighbours, and (to a lesser extent) SaH's use of door-to-door engagement and KRP's attention to trust in the branding of the initiative. In terms of how involvement was incentivised, SaH and KRP offer an individualist emphasis on the financial benefits of participation in a way that was not available to SoT, as the majority of recipients were not on a water meter.

Monitoring and lessons learnt

In relation to SoT, SEW undertook aggregate water demand monitoring for the Washford Farm area and neighbouring control area which continued until 2011. In practice, the monitoring process was full of 'noise', for example from emergency works and seasonal changes, and hence the impact of the initiative proved hard to isolate. Participating households were invited to provide feedback through means of a satisfaction survey at the conclusion of the initiative in 2009. The survey comprised short telephone interviews with 60 households (23% of those participating). This found that 85% of residents rated themselves as 'satisfied' or 'very satisfied'; moreover, whilst 82% of respondents commented that it had 'made them think about their water-use behaviour', 30% asserted that only minor or zero adjustments in behaviour had resulted (Facts International, 2009). A particular learning point for the resource governance organisations was that people were willing to be involved in the project even if they did not save money.

> 'One thing we learnt from SoT, which surprised the client group, was that households that were not metered were keen to take part in the project. So they were getting absolutely no financial benefit from it all.' (P6, AF).

In line with this recognition, a follow-up pack to the initiative providing feedback on the project was disseminated to participating households. As discussed above, the pack reiterated the importance of saving water and provided a number of behaviour change messages linked to the local aquatic environment.

SaH did not seek to monitor changes in energy and water consumption directly due to potential cost implications. Instead the savings were estimated from accepted industry standard savings attributable to each installed measure and/or behavioural changes associated with in-home advice. On this basis, SaH was estimated to generate a 2,440 lifetime CO_2 tonnes saving (37% from structural measures, 51% from simple measures and 12% from resource efficiency advice) (CEN, 2010a), equating to 10% or less CO_2 savings in 67% households, 10-25% CO_2 savings in 29% households, and

25% CO_2 savings in 4% households (CEN, 2010a). The water retrofit element of the project was estimated to have led to savings of 6.8m^3 water per property per year (CEN, 2010a). As such, the initiative's technological installations and advice largely led to the intended estimated resource savings. However, the programme organisers acknowledged that installed technological devices do not lead to guaranteed carbon or water savings, as people may choose to remove the devices, or use them in a different ways than anticipated (P7, KCC). Additionally, a project report by the authors of this paper disseminated to the SaH organisers, revealed (based upon professional and householder interview data) limitations of marketing SaH under the banner of Ashford's Future, and participants' mixed perceptions of the financial focus of the engagement process. Following the disbanding of Ashford's Future in March 2011, the intended roll out of SaH across Ashford stalled and fresh debates were raised about the level of new housing growth for the town.

Within KRP, a phased delivery approach will be taken, with the target of retrofitting 600-1,000 homes per year. Phase I of this programme, completed between October and December 2010, involved 603 home-visits across four Kent boroughs (representing just under 10% engagement across the four areas). To date, the initiative has installed a range of small energy and water saving measures, and through householder contributions and leveraging Carbon Emissions Reduction Target (CERT) funding, facilitated structural measures including loft and cavity wall insulation installation, replacement of boilers and installation of new central heating systems. In total, the advice and installations made as a result of the initiative are anticipated to save approximately 225 tonnes of CO_2 per year. In addition sign posting was made to wider local services such as fire safety checks, benefit entitlement checks and provision of advice on water meters. Following the home visit, 10% of participating households contributed to a telephone satisfaction survey. Of these, 80% of households suggested that they would recommend the service to a neighbour and 66% of households reported that they had 'changed their behaviour' in some way, for instance turning off unused lights, being 'more careful' with the use of electricity, gas and water, and optimising household heating controls. In addition to assessing estimated resource savings and monthly household utility bill expenditure, organisers of KRP also sought to understand whether participating households were warmer (18%) and whether householders' wellbeing and happiness (9%) had improved.

Practitioners commented that both SaH and KRP faced difficulty in accessing funding for integrated water and energy schemes scheme (P7, KCC and P6, AF). There are significant physical links between energy and water provision; for example, heating water accounts for 41% of water used in the average British home (Waterwise, 2011), while the process of heating water for domestic use (other than space heating) accounts for 89% of the carbon emissions attributable to water use and 5% of total UK emissions (EA and EST, 2009; ENDS, 2009). Nevertheless, separate UK funding for energy and water efficiency initiatives mean that these factors tend not to be promoted in combination (ENDS, 2011). Moreover, both SaH and KRP were in part designed to meet emissions reductions targets specified as a requirement to gain funding. In addition, KRP, and to a lesser extent SaH, referred to wider resource efficiency schemes and signposted wider social welfare initiatives, as a means to lever in additional funding and capitalise upon emissions savings.

The three initiatives provide a 'family' of activity on domestic resource efficiency with clear links made by organisers between the successive initiatives. There are several identifiable instances

where lessons learnt from one initiative influenced another: aggregate monitoring proved unrealistic in SoT and has not been attempted subsequently; SaH marketing challenges influenced the marketing process for KRP. Despite these explicit links, it is clear that monitoring and reporting processes do not always capture information or make acknowledgements that could inform subsequent initiatives. For example, aggregate water demand monitoring led to uncertainties as to the actual water savings brought about by SoT and, coupled with cost implications, this led to a change in estimating resource use savings on the basis of technical devices installed. Moreover, even where lessons were recognised, it did not always prove possible to translate them into action: despite the claimed learning from SoT about how domestic water users do not just respond the financial levers, the execution of SaH emphasised financial factors in recruiting participants and in the measures used.

It is notable that KRP exhibits significant egalitarian elements including its targeted approach, flexibility to respond to specific household challenges, and the involvement of Kent University in the design of the initiative to provide expertise upon engagement of different social-economic groups. However, it is also apparent that the initiative includes many elements corresponding more closely to individualist approaches including predominantly top down marketing (for instance, minimal emphasis was placed upon engagement through community group channels), the universalist nature of the problem prescription and the limited range of available 'solutions' available. From an egalitarian perspective we could note some additional issues that apply to each of the initiatives. Firstly, the lack of involvement of key actors, such as product manufacturers and housing developers, has implications upon their potential to influence resource consumption. Secondly, the extent of in-depth engagement from the utility providers might be questioned: is it really accurate that aggregate consumption needs to be addressed, or are pressing issues more localised to optimising infrastructure provision within specific districts, or encouraging load shifting to address peak seasonal and diurnal consumption levels? It can be argued that there is an asymmetry of knowledge as the initiatives do not appear to probe the utility companies' resource motivations and challenges as closely as it does the residents' domestic situation.

CONCLUSIONS

In this paper we have introduced an interpretive application of cultural theory as a means of exploring new forms of utility governance, and specifically, as a route to examine three consecutive resource efficiency initiatives in Kent, UK. Our central claim is that cultural theory's explicit attention to underlying values and assumptions aids understanding of historical and contemporary resource governance. Specifically, interpretive application of cultural theory can help to unpack whether initiatives focus upon environmental issues as individual or communal responsibilities, and whether interventions position the public as passive or active in addressing environmental resource challenges. By detailing modes of governance, we have suggested that cultural theory's solidarities provide a language through which to understand the historical processes of dislocation between the environmental costs of resource development and the experiences of a passively consuming public. We have also argued that cultural theory helps to position and understand contemporary critiques made of resource efficiency initiatives – as either operating outside the sphere of conscious

consumption (hierarchist initiatives), saddling consumers with the entire responsibility for action (individualist initiatives) or spanning both of these positions. Our suggestion that the negotiation associated with egalitarian initiatives has much to offer the contemporary complexities of managing resource governance links closely with the perspective of social practices theory. The argument is that through opening up opportunities for negotiation and discussion, significant changes in problem framings and solutions might be found.

The resource governance modes have also provided a useful means to trace the similarities and differences between resource efficiency initiatives – demonstrating elements of more hierarchist, individualist and egalitarian thinking in turn in our set of three interventions conducted in Kent, UK. Our analysis demonstrates how an interpretive application of cultural theory allows for resource efficiency initiatives, governance organisations or consumers to hold values and assumptions from one or more of these resource governance modes, and for the balance between modes to change over time.

The story of these three initiatives has illustrated processes of learning occurring between the initiatives and within and between resource governance organisations. It has also highlighted aspects of resource consumption that prove difficult to monitor as well as entrenched institutional perspectives and limited behaviour change in relation to water and energy consumption in the home. This emphasises the challenge of achieving resource efficiencies when the resource use itself is the focus of activity. In this respect, our findings suggest that egalitarian initiatives may be more effectively developed within a 'practice' approach. Theories of social practice contend that specific resource using practices and conventions (e.g. maintaining thermal comfort, showering, laundry, household entertainment) should be the focus of research and policy interventions as the repeated performance of these socially influenced domestic interactions leads to and dictates household resource consumption. Furthermore, our discussion has also shown how the prerequisites for accessing limited funding-streams frequently determine the shape of many mainstream resource management initiatives. Indeed, the segmentation of sectors (water/ energy), responsibilities (supplier/ consumer/ product manufacturer/ developer/ regulator) and funding that is associated with large-scale utility provision militates against the sort of boundary-breaking multi-way negotiation and experimentation that would be advocated from an egalitarian perspective.

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