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Working Paper

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CSERGE Working Paper EDM, No. 10-08

Provided in Cooperation with:

The Centre for Social and Economic Research on the Global Environment (CSERGE), University of East Anglia

Suggested Citation: Seyfang, Gill; Haxeltine, Alex (2010) : Growing grassroots innovations: Exploring the role of community-based social movements for sustainable energy transitions, CSERGE Working Paper EDM, No. 10-08, University of East Anglia, The Centre for Social and Economic Research on the Global Environment (CSERGE), Norwich

This Version is available at:

<https://hdl.handle.net/10419/48802>

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**Growing grassroots innovations: Exploring the
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by

Gill Seyfang and Alex Haxeltine

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GROWING GRASSROOTS INNOVATIONS: EXPLORING THE ROLE OF COMMUNITY-BASED SOCIAL MOVEMENTS FOR SUSTAINABLE ENERGY TRANSITIONS

Gill Seyfang¹ and Alex Haxeltine²

ABSTRACT

The challenges of sustainable development (and climate change and peak oil in particular) demand system-wide transformations in socio-technical systems of provision. An academic literature around co-evolutionary innovation for sustainability has recently emerged to attempt to understand the dynamics and directions of such socio-technical transformations and social change, which are termed 'sustainability transitions'. This literature has previously focused on market-based technological innovations. Here we apply it to a new context of social movements and social innovation, and examine the role of civil society-based social movements in a transition to a low-carbon sustainable economy in the UK. We present new empirical research from a study of the UK's Transition Movement (a 'grassroots innovation') and assess its attempts to grow and diffuse beyond the niche. Applying strategic niche management theory to this civil society context delivers theoretically-informed practical recommendations for this social movement to diffuse beyond its niche: to foster deeper engagement with resourceful regime actors; to manage expectations more realistically by delivering tangible opportunities for action and participation; and to embrace a community-based, action-oriented model of social learning (in preference to a cognitive theory of behaviour change). Furthermore, our study indicates areas where theory can be refined to better explain the experience of grassroots innovations and social movements, namely through a fuller appreciation of internal niche processes, and integration with theories of social movements and social practices.

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1 INTRODUCTION

A growing body of ecological economics and related research claims that system-wide transformations are required to address the challenges posed by climate change and the move to a low-carbon economy (Jackson, 2009; WSSD, 2002; Foxon et al, 2009; UKERC, 2009). In particular, the difficulty of overcoming path-dependency and lock-in to unsustainable development trajectories is highlighted, with a growing focus on managing or triggering system-wide transitions (Kallis and Norgaard, 2010; Sartorius, 2006; Tukker and Butter, 2007). A second issue which is also attracting growing interest and mainstream support is the idea of the immanence of 'peak oil' (the moment when rates of oil production start to decline), and its transformative implications for fossil fuel-based societal infrastructures and systems (Heinberg, 2004; Sorrell et al, 2009; IEA, 2008). Given these twin concerns with the need to decarbonise socio-technical systems, and claims that radical system transformations are required, it is useful to investigate the potential routes that such transformations might take, the possible roles of different groups of actors within them.

An academic literature around co-evolutionary innovation for sustainability has recently emerged to attempt to understand the dynamics and directions of such socio-technical transformations and social change, which are termed 'sustainability transitions'. This literature has to date mirrored the policy focus on climate change (rather than peak oil), and has tended to emphasise the technological aspects of socio-technical transitions, at the expense of social innovation, movements and actors (see for example Kemp et al, 2007; Smith et al, 2005; Geels, 2005b). Seyfang and Smith's (2007) extension of this theory to community-led 'grassroots innovations' is a notable exception, albeit one which has hitherto not been empirically tested in depth. Their model of green socio-technical innovative niches provides a conceptual frame for analysing the creation, development and diffusion of civil society-based transitions.

At the same time, the term 'transition' has also been popularised as a signifier of this sort of system-wide change within society – such as with the UK government's recent 'Low Carbon Transition Plan' (HM Government, 2009), and the New Economics Foundation's 'Great Transition' (Spratt et al, 2009). Another example of this 'transition' popularisation, which we examine in depth here, is the Transition Movement (Hopkins, 2008). This is a new and rapidly-growing civil society movement which aims to address the twin challenges of climate change and peak oil, through local community-based action. Transition Towns, Villages and Cities are springing up around the UK and internationally, and aim to galvanise local action towards reducing dependency on fossil fuels through community engagement processes and initiatives. However, the scope and potential of this new Movement has not previously been researched.

This paper aims to address both these knowledge deficits. It examines the role and potential of the Transition Movement to achieve systemic transformation (in the context of sustainability, climate change and peak oil), by asking whether there are elements of this social movement that fit with the concept of 'transitions' as presented in the academic literature (in particular, grassroots innovations). To achieve this aim, we present the findings of new empirical research into the Transition Movement, comprising a survey of UK Transition Initiatives, and a membership survey and qualitative data from participant observation of one Transition Town. Elsewhere, we analyse the Transition Movement's understanding and application of principles of resilient, sustainable consumption (Haxeltine and Seyfang, 2010). Here, we turn our attention to the question of achieving such a goal, and the processes and mechanisms of change implied. Where our earlier work investigated the

implications of a horizontally-distributed process of localisation, here we examine vertical relationships between macro, meso and micro-levels in society, and the governance challenges associated with each. And while our previous paper discussed the desired goals of this social movement, here we analyse its theory of change and the means of achieving it.

The paper proceeds as follows: we first review current thinking on sustainability transitions within the academic literature, and identify the place of social movements and social innovation within the socio-technical models currently in use. Next, we introduce the Transition Movement, and describe its origins, characteristics and development. We describe the initiative as a social movement and use the 'grassroots innovations' model as a bridge between theories of social change and transitions. We then proceed to analyse the Transition Movement in terms of the transitions literature, both as a strategic 'green niche' operating at the grassroots, and also as an agent of change (a catalyst of transition).

Our analysis and discussion extends existing knowledge about socio-technical transitions by drawing on social movement theories and applying these to our empirical study of the Transition Movement, to understand its operation as a grassroots innovation in a socio-technical niche. We conclude by considering the implications of our study for the sustainability transitions literature, for practitioners within social movements aiming to instigate transitions, and for policymakers hoping to harness the energy and innovative capacity of communities for the energy transition challenges ahead.

2 THEORETICAL CONTEXT: THE SUSTAINABILITY TRANSITIONS LITERATURE

There is currently a growing interest in socio-technical transitions in the context of debates about how modern industrial societies can achieve a sustainable development. Understanding transitions is especially important when dominant 'solutions' (and the socio-technical systems that deliver these) are locked-in and contribute to unsustainable development (see Sanne, 2002) and when novel solutions might offer more sustainable alternatives, or when we face persistent problems that cannot be solved using only the currently dominant solutions: "change within the regime tends to be incremental and path-dependent... 'revolutionary' change originates in 'niches'" (Smith et al, 2010).

In the context of debates about sustainability, we are interested in understanding the processes and patterns of competition among established and novel solutions to questions of production and consumption. We are interested in how novel and radical solutions emerge (as socio-technical 'niches') and become sufficiently powerful to challenge and, ultimately, overthrow a dominant solution (the prevailing 'regime' of production and consumption including the associated practices and set of actors) resulting in a transition. Other patterns of transition are also potentially important, including those involving a radical overhaul of the structure and practices of a dominant regime which maintains the power of the dominant actors but nevertheless provides for a new 'solution' to take over with radically different features and performance.

In recent years a literature on sustainability transitions has emerged which posits a Multi-Level Perspective to capture the dialectical relationships between micro-level actors and macro-level structures (Rip and Kemp, 1998; Rotmans et al, 2001; Smith et al, 2005; Geels, 2005b; Loorbach 2007; Smith et al, 2010; Geels, 2010). This is associated with a number of large-scale research projects in the Netherlands in particular (see for example Lorbach and Rotmans, 2010, Nill and Kemp, 2009). The work builds on concepts that have emerged from the study of socio-technical transitions. It offers both a set of conceptual tools and nascent management tools for understanding and governing transitions towards the normative (but rarely defined) goal of sustainable development. Here, we hope to utilise these theories, and extend them to incorporate social movements as agents of change – a perspective which has previously been neglected, but which is now gaining increasing attention (Seyfang and Smith, 2007; Seyfang et al, 2010; Avelino and Kunze, 2009)

The transitions literature develops the notion of socio-technical niches as protected spaces where new social and technical practices can develop. It juxtaposes the niche against a dominant socio-technical regime and has surveyed many empirical examples in an attempt to understand the dynamics of how niches can grow and eventually oust a dominant regime (Geels, 2005a, 2005b; Geels and Schot, 2007). Niches are conceived as comprised of many different, concrete projects on the ground, which between them can develop best practice, institutionalize and consolidate learning, network effectively with other societal actors, and stand above and apart from individual projects, as a carrier of ideas and practices (Kemp et al, 1998; Geels and Raven, 2006).

This literature generally deals with niches of technological innovations, developing within commercial market contexts. Extending this concept into the social economy, Seyfang and Smith (2007) propose a model of 'grassroots innovations' to describe "innovative networks of activists and organisations that lead bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved. In contrast to the greening of mainstream business, grassroots initiatives tend to operate in civil society arenas and involve committed activists who experiment with social innovations as well as using greener technologies and techniques" (Seyfang and Smith, 2007: 585). Examples include furniture-recycling schemes, co-housing, local food projects, local currencies, and so on (Church and Elster, 2002). Seeing these activities as innovative allows us to consider the scope for diffusing their innovations into mainstream society, and learn from existing knowledge about strategic niche management. The grassroots innovations model therefore frames social movements as agents of change within socio-technical systems, and there are three ways in which successful niches can influence the regime. They can replicate, bringing about aggregative changes through many small initiatives; they can grow in scale and attract more participants and actors; and they can translate their ideas into mainstream settings.

The benefits of grassroots innovations for sustainable development derive principally from their creation of a space for the development of new ideas and practices, for experimenting with new systems of provision, and for enabling people to express their 'alternative' green and socially progressive values, and from the tangible achievement of environmental and social sustainability improvements, albeit on a small scale (Seyfang and Smith, 2007). Conversely, the main challenges faced by grassroots innovations are related to the struggle to maintain a viable sustainable socio-technical space within a wider unsustainable regime. This translates into issues around securing funding, which in turn affects possibilities for institutionalisation and consolidating learning, managing organisational change, making effective links and networks with other societal actors, and diffusing oppositional ideas into wider society (Seyfang, 2009; Smith, 2006, 2007).

Kemp et al (1998) identify three key processes for successful niche-growth and emergence: managing expectations; building social networks, and learning. Expectation management concerns how niches present themselves to external audiences, and whether they live up to the promises they make about performance and effectiveness. To best support niche emergence, expectations should be widely shared, specific, realistic and achievable. Networking activities are claimed to best support niches when they embrace many different stakeholders, and those stakeholders can call on resources from their organisations to bear on supporting the niche's emergence. Learning processes are held to be most effective when they contribute not only to everyday knowledge and expertise, but also to 'second-order learning' wherein people question the assumptions and constraints of mainstream systems altogether (ibid).

However, these social movement-based grassroots innovations have characteristics, benefits and challenges which are distinct from those normally considered in the niche-management literature, with implications for practice and diffusion (Georg, 1999; Hess, 2007). For instance, the third route for diffusing niche ideas and practices – translation - is

problematic when niches are formed in opposition to the regime (as is the case with grassroots innovations as they are effectively social movements), due to the fundamental clash of values, ideas and practices. Consequently, additional pathways are required: this gap can be closed by either the niche adapting to become more accessible to mainstream audiences, or by the regime accommodating niche ideas, perhaps through regulation, or by the intervention of an mediating actor (Smith, 2007; Seyfang, 2009).

This work emphasises the social element of the socio-technical transition, and opens up new avenues for investigating how civil society can contribute to society-wide sustainable energy transitions (see also NESTA, 2009). Furthermore, we are interested in social innovations (reconfigurations of social organisation, institutions, meaning and value), as much as technological ones, and so we draw on a nascent body of work investigating this phenomenon (for instance Mulgan, 2006). Here we apply these models and theories to the case of the Transition Movement, a community-led social movement which aims to restructure socio-technical infrastructures so as to catalyse and prepare for a way of life which is not dependent upon fossil fuels.

3 INTRODUCING THE TRANSITION MOVEMENT: CHARACTER AND OBJECTIVES

3.1 Methodology

This paper reports new findings about the UK Transition Movement, drawing on four distinct sources of evidence. The first of these is documentary evidence about the Movement from its component Initiatives and Networks, literature and online documents. Second, we present findings from the first survey of UK Transition Initiatives. It was a short survey which used open- and closed-ended questions to collect basic information about the origins, development, character and activities of the UK's Transition Initiatives. The online survey was conducted during February 2009, with email invitations sent to coordinators of all 94 Transition initiatives in the UK. Two follow-up reminders were sent, and a total of 74 responses were attained (an outstanding response rate of 79%). Third, to complement this survey of Initiatives, a second survey was conducted with the members of one Transition Town, to find out more about who participates, and why. This membership survey of Transition Norwich was carried out during February 2009. An invitation to participate in the online survey was sent to the 200-strong email list held by Transition Norwich's core group. Although not technically 'members' or even necessarily 'involved' with the initiative, these people had all indicated their interest at some point during the preceding few months, and receive emails about local actions and meetings - and some live further afield in Norfolk and may be engaged with other local Transition initiatives as well. This elicited 59 responses (27%), which is a reasonable response rate for surveys of this type. The survey collected both quantitative and qualitative data about the participants, their motivations and interests, their history of involvement in community or environmental groups, and how they perceived the Transition Movement in relation to other such initiatives. Finally, we incorporate direct experiential evidence of the internal dynamics and processes of the Movement, from participant observation in Transition Norwich, of which one of us is a core group member.

3.2 The Transition Movement's Objectives and Character

The Transition Movement aims to mobilise community action and foster public empowerment and engagement around climate change, with the objective of preparing for a transition to a low-carbon economy (www.transitiontowns.org). The Transition Town idea was developed in Kinsale, Eire, in 2005 by Rob Hopkins, a permaculture teacher. Hopkins was concerned about the implications of 'Peak Oil', the point at which the rate of growth of oil production begins to decline. His students developed an 'Energy Descent Action Plan' which set out practical steps that might be taken by Kinsale to prepare for a post-cheap-oil future. This plan proposed transitions to more sustainable socio-technical systems and infrastructures. From this seed, a network of grassroots Transition initiatives has been growing rapidly in the UK

and internationally, and has evolved to address the twin challenges of climate change (the need to reduce carbon emissions), and Peak Oil.

The range of issues addressed by Transition initiatives is wide-ranging, covering economic, social, environmental and personal systems. Transition Initiatives are involved with a wide range of locally-based activities, for example establishing locally-owned renewable energy companies, promoting locally-grown food, teaching gardening and cooking skills, encouraging energy conservation, exemplifying low-carbon living, and building supportive communities around these activities (Hopkins, 2008). In many ways, this movement represents a rebadging and revitalising of previous community-based campaigns and activities around local environmental action, quality of life and social inclusion (see for example Hess, 2009; Douthwaite, 1996). In this manner, the Transition Movement can be seen as a New Social Movement, which capitalises on the need for a sense of belonging and purpose, identity and solidarity, which many people feel when faced with the enormity of current environmental and social problems (Seyfang et al, 2010).

Our national survey of Transition Initiatives asked groups around the UK to describe their greatest achievements to date, and beyond the fact of establishing and maintaining a group (which 52% reported) and building links with other local groups and government (reported by 47%), there was a distinctive bias to the activities the groups had been undertaking. While 69% described their awareness-raising and community engagement activities, the most popular substantive area of action was around food and gardening (40% were undertaking activities in this area, such as promoting local food, community-supported agriculture, organising allotments, garden-sharing and support, and community gardens). The next most commonly-cited areas were waste, with 12% of groups having some practical activity (often around reusable shopping bags), and energy, such as promoting conservation measures (11%).

Who sets up these groups? The UK survey reveals that the vast majority of local groups (89%) are set up by individual citizens coming together to form a Transition Initiative. Only 19% have one or more pre-existing groups involved in setting up the group, and none were started by local councils. This finding substantiates the Movement's claims to be a citizens' movement, generating energy and action from the grassroots.

Who joins these groups? A majority of the Transition Norwich members who responded to the survey were female (58%), and half (50%) were aged between 45 and 64 - a significant over-representation of this age group compared with the general population, which has only 31% in this age range (comparison figures from the Office for National Statistics (2009) Social Trends 39: 2009 Edition). There were very few participants over 65 (only 3%, compared with 20% of the population). The sample were extremely well-educated: 46% held a degree or equivalent, and another 37% had attained a postgraduate qualification, totalling 83% holding at least a degree. While the categories are not wholly compatible, this compares with just 15% of the general population in the Eastern region (comparison data from the 2002 Labour Force Survey, Office for National Statistics). On the other hand, none at all had no formal qualifications (while 14% of the population fall into this category). The overall economic activity rates Transition Norwich members of working age were not very much more than the overall population (82% compared with 78%), but the composition was strikingly different: members were disproportionately likely to be part-time employed (24%) or self-employed (26%) compared with the general population (16% and 8% respectively), and considerably less likely to be full-time employed (27%, compared with 50% of the population).

However, these high levels of education and employment did not automatically translate into higher incomes. The income distribution of the Transition Norwich members is shown in Figure 5, with over a quarter (27%) having a gross weekly household income of less than £249 (£12,999/year), and 11% were from households with an income of under £100 a week.

Only 16% had a household income of over £750 a week (£39,000 a year). The sample demographics can therefore be described as being disproportionately from lower income groups, but higher-education and employment groups than the average. To this extent, the members display the typical characteristics of 'post-materialists' who eschew high-status jobs and consumption in favour of personal fulfilment and (in particular environmental) activism – the typical demographic profile of social movement activists seeking identity, community and fulfilment through participation (Bate et al. 2005). However, about a third of the members of this Transition Initiative (32%) reported that this was the first time they had been involved in a local environmental group, so the movement appears to be successful at attracting and engaging community participation beyond those that are already involved.

How and why do these people join? Over half (54%) the respondents to our Transition Norwich survey heard about the group via word of mouth from friends, colleagues and through other groups they were involved with. Their motivations were: tackling climate change (reported by 67%), building local self-reliance (66%), preparing for 'peak oil' (57%), and community-building (50%). These priorities combine the overall objectives of the Transition Movement (peak oil and climate change) with more locally-focused motivations about economic resilience and social cohesion.

The prefigurative nature of many Transition projects, and the alternative green values expressed therein indicate that Transition initiatives can be seen as experimental green projects within a niche movement. Transition initiatives are formed as alternative value spaces to mainstream socio-technical systems, and so their ability to act symbiotically for incremental improvements is limited (however, as Smith (2006) shows, elements of their practices can be adopted by regime actors, as has been seen with the growth of organic food). The multiple local projects (experiments), feed into, and are in turn supported by Transition Network Ltd, a formally-constituted body which supports and coordinates activities among local groups and between countries. The Network also 'accredits' local groups that meet its requirements, to become 'official' Transition Initiatives. In addition to the formal Network, numerous publications, films, websites, conferences and other events serve to populate this niche level, as the carrier of innovative practices (Hopkins and Lipman, 2009). The Transition Movement is therefore a very good example of a grassroots innovation and a strategic green niche, and we analyse its niche diffusion processes in more detail in a subsequent section.

4 SUSTAINABILITY TRANSITIONS AND THE TRANSITION MOVEMENT

4.1: The Framing Of Transitions In The Transition Movement

The Transition movement does not explicitly define its use of the word 'transition', even omitting it from the list of definitions given in a recent report on the Network (Hopkins and Lipman, 2009: 6). Inferring its meaning from the frequent usage in the literature, it is seen as a passing-through from one state to another, eg '... the monumental transition necessitated by the passing of the Age of Cheap Oil' (Hopkins, 2008: 50). The transition is from the current oil-dependent industry and lifestyle of consumer economies, to a future 'end of suburbia' scenario where oil is increasingly scarce and expensive, and much that we take for granted about our lifestyles is lost: "The Age of Cheap Oil is rapidly coming upon us, and life will radically change, whether we want it to or not... I am not afraid of a world with less consumerism, less 'stuff' and no economic growth" (ibid: 15). This 'Age of Cheap Oil' refers to the period from 1859 to the present day (Hopkins, 2008: 17).

Clearly, for the Transition movement, the transition is being instigated by the twin drivers of climate change and peak oil¹: “climate change says we should change, whereas peak oil says we will be forced to change. Both categorically state that fossil fuels have no role to play in our future, and the sooner we can stop using them the better.” (Hopkins, 2008:37). Mapping this discourse onto the Multi-Level Perspective, we can see that the term ‘transition’ is therefore used to describe an external, inevitable process of landscape-level change in society, but one which the movement aims to respond to pro-actively, in order to shape its contours and outcome. In other words, the impetus for the transition comes from external forces (oil-dependent industrialisation, finite fossil fuels, and climate change) inexorably playing themselves out at the landscape level, and forcing through shifts at all levels of society. There is an assumption that the nature of this landscape pressure is sudden and ‘avalanche change’, rather than moderate and protracted, and consequently the regime will not be able to adapt, co-opting innovative solutions to transform or reconfigure itself, but will rather disintegrate and lose faith (Geels and Schot, 2007).

Transition literature describes a breakdown of current socio-technical systems (typified by the ‘end of suburbia’ catastrophe scenario propagated in a 2004 movie of the same name - see ‘www.endofsuburbia.com’), which is portrayed as being reasonably immanent and sudden. Hopkins (2008:46-7) draws on a range of sources including Heinberg (2004), Holmgren, D. (2005), FEASTA (2006), Gallopin (2002) and Curry et al (2005) to describe several possible “scenarios from beyond the peak” from this crumbling of the regime, depending on whether civilisation adapts, collapses or evolves to the landscape pressures. These include business-as-usual techno-fixes, xenophobic protectionism of western economies, military control of oil resources and global conflicts, tribalism and enforced localisation, enlightened government-led energy transitions, and visionary earth stewardship. Faced with a range of possible outcome scenarios from this crisis, the Transition Movement aims to build an innovative niche of resilient sustainability where new infrastructures and ideas can be developed, to be ready to compete with the regime as it dies away, and so to avoid the (socially, ecologically and economically) less-desirable scenarios.

The Transition movement, as here evidenced, does not intend to trigger a transition, but instead is responding to those landscape pressures at a micro level, and seeking to grow a niche of new infrastructure and practices which can replace the incumbent regime when that regime fails to function. The agency in this model is located at several levels, and is concerned with managing this transition. Certainly national and international governments are recognised as having important roles to play, but the focus of the Transition Movement is on community-level action, because they argue that without the engagement, energy and collective action of communities working together, ultimately political processes will fail to catalyse the changes needed. Interestingly, the existing regime is not broadly engaged with (other than to suggest making links with local and national government, and identifying the need for national and international action). Furthermore, there is a determined a-political stance among the movement, which aims to penetrate ‘under the radar’ of existing political conflicts, presenting an apparently consensual view of the reality of the transitions to occur, and the good sense of their proposed response (Hopkins, 2008). This avoidance of political analysis is at the heart of Trapese’s (2008) critique of the movement. They argue that responding to peak oil and climate change without addressing the root causes of those problems (ie capitalist consumerist economies) is naive and doomed to incorporation. So, rather than contesting or contending with the regime, the movement seems to assume the existing regime will wither away (North, 2009) and leave an agency vacuum, into which

¹ It is notable that the Transition movement benefited from a surge in interest and growth during the period of high oil prices during 2008, confirming that a key driver for the movement is landscape change in oil prices.

Transition initiatives can move, offering a more positive future scenario than the societal collapse or authoritarian green state that might otherwise emerge.

4.2: The Transition Movement As A Socio-Technical Niche I: Diffusion

We have argued that the Transition Movement can be conceived of as a grassroots innovation, a socio-technical niche comprising many constituent projects (individual Transition towns, cities, villages etc) where new social infrastructure and institutions, value sets and priorities, are practiced. In these next two sections 4.2 and 4.3, we critically analyse the Transition Movement's impacts, its niche-developmental processes, and the challenges it faces. We do this by applying the niche-management theoretical frameworks outlined above, to this new empirical case. First, how successful has the Movement been at diffusing its innovative ideas and practices, through the three routes (replication, scaling and translation) outlined above?

4.2.1 Replication

First, the Transition movement has to date been very successful at replicating its model of community-led initiatives (Hopkins, 2008). The first UK Transition Town was Totnes, formed in autumn 2006, and by February 2009 (when the national survey was conducted) there were 94 Transition Initiatives in the UK and a further 40 around the world, principally in Australia, New Zealand and the USA. At the time of writing (January 2010) there were 156 UK Transition Initiatives listed on the Network's website, and a further 109 from the rest of the world. (ibid). The UK national survey found that the most common type of initiative is one which covers a small town and its rural surroundings (29%), echoing the movement's roots in small market towns in the south-west countryside. A further 23% cover a small town, and 28% cover a large town or city - although working on this scale is not unproblematic, and consequently several city-wide groups have made the decision to subdivide into smaller geographical groups covering neighbourhoods or districts, with a central coordinating hub - 9% of the survey respondents were from groups which covered a part of a town or city. The remaining 12% of initiatives cover a variety of other types of geographical area, from villages, islands, rural areas, forests and so on.

4.2.2 Scaling Up

However, this impressive geographical spread does not indicate the or extent of participation at each location – therefore we must ask about the scale of these groups. To what extent are these groups able to scale up their activities (the second route for innovation diffusion)? Evidence from the UK survey indicates that while new Transition Initiatives attract a lot of local attention and interest, they soon settle down to a core group of active members, who struggle to recruit more members. Over three quarters of the national survey respondents (76%) reported that issues around growing the movement were a major challenge. For instance, several groups mentioned the need to extend “outside the ‘green-belt’” and one mentioned “getting our message out to the ‘unconverted’”. Our original public awareness raising events were well-attended, but are now not so. We feel as though we must take our message out to other community groups”. This indicates that scaling up (or rather, expanding the movement beyond the committed environmentalist core) is a problem for these groups.

4.2.3 Translation

The translation route for diffusion is difficult to ascertain at this early stage in the Movement's lifetime. Of course, as niche practices diffuse into wider society, they always evolve and change, losing some of the aspects that originally made them innovative and appealing to early pioneers, and gaining other characteristics that make them appealing and accessible to wider audiences (Smith, 2006; Hess, 2007). It is noteworthy that some of the key messages of the Transition Movement – about reskilling, localizing food production, and thrift – are increasingly promoted by mainstream actors, and have been reinforced by rising fuel prices and economic recession. For instance the UK's National Trust is turning stately home gardens into allotments (National Trust, 2010); the UK government is promoting a

renaissance of skills for growing and cooking healthy food (HM Government, 2010), and a growth in opportunities for “contemporary craft workshops with a stylish, social twist – perfect for embracing the ‘make do and mend’ ethic in a fashionable way!” (www.makelounge.com). While the Transition Movement could not necessarily claim credit for these cultural shifts, it could certainly capitalize on such mainstream trends by echoing the successful marketing associated with them, to reach wider audiences.

4.2.4 Challenges and limitations

The Transition Movement certainly appears to be successfully replicating itself, although struggling with scaling up, and only beginning to think about translation. These achievements are tempered by a number of significant challenges and limitations of the Movement. The survey of UK Initiative coordinators found that the biggest barriers preventing the Movement being more successful, were: difficulty growing the movement and attracting wider interest (reported by 76% of respondents), limited resources of time and money (58%), group governance issues such as maintaining momentum, managing group dynamics, developing the group (reported by 53%), and the need to effectively build links with other actors (17%). With these challenges in mind, attention turns in the next section to the processes of niche formation, to examine how the Movement addresses the key processes required for successful niche development, as predicted by strategic niche management theory.

4.3: The Transition Movement As A Socio-Technical Niche II: Niche Processes

If we adopt the socio-technical niche model of the Transition movement as a grassroots innovation, we can now map Transition movement activities onto the strategic niche management literature, to assess how this practical experience relates to theory. What can this literature say about how Transition initiatives might flourish and increase their impact? To recall our previous discussion, strategic niche management theories suggest that successful niche development and growth depends on how they manage expectations or visions, their networks, and their learning processes. To what extent does the Transition movement attend to these factors?

4.3.1 Expectations

Strategic niche management theory claims that niche development is best supported if expectations about what the niche can deliver are widely shared, specific, realistic and achievable. We can discern both internal and external expectation-management strategies at work with the Transition Movement. Cultivating expectations – or visions – is a key element of the internal Transition process for these initiatives. Hopkins writes “The tool of visioning offers a powerful new approach for environmental campaigners. We have become so accustomed of campaigning against things we have lost sight of where it is we want to go” (Hopkins, 2008:98). Visioning is intended to psychologically predispose participants to making effective changes, and simultaneously tackling feelings of helplessness in the face of uncertain futures. Scenario-planning and back-casting techniques encourage citizens to imagine positive futures and strategise how to achieve them, collectively, to create shared values and buy-in for action plans for the present. “Transition Initiatives are based on a dedication to the creation of tangible, clearly expressed and practical visions of the community in question beyond its present-day dependence on fossil fuels... The generation of new stories and myths are central to this visioning work” (Hopkins and Lipman, 2009:7). These internal visions therefore appear to be widely shared and specific, and are certainly accredited with giving the movement a positive, optimistic approach which is missing from some other environmental social movements, as reported by 29% of the respondents to the Transition Norwich survey. For instance, one commented “Its primary means of motivation is offering a positive vision that inspires people to join in, rather than inviting people to join in with demonising and scapegoating a group or institution. ‘What are we for?’ is a much richer and empowering position than ‘who are we against?’” However, given that the struggle is in

working out how achieve them, they are not necessarily realistic or achievable expectations, and this disparity between long-term goals and short-term actions can be a source of disappointment for activists who have taken the approach of concentrating on awareness-raising to grow the movement first, with practical action to follow. Some (13% of the national survey respondents) reported the challenge of avoiding turning into 'talking shops', and suffering "death by meeting": "we want the whole town to be involved, yet the need to get going and 'do' something is also pressing so we don't want to turn into a talking shop".

Expectations are important, externally, too. The Transition Network serves as an accreditation organisation ensuring that 'official' Transition initiatives have met certain criteria before using the name Transition (Hopkins and Lipman, 2009). This is intended to ensure that when groups emerge as Transition initiatives, representing the international 'brand', they have thought through some of the issues around establishing as a group, and have put in place some of the steps considered essential (by the movement's founders) to forming a successful group (Brangwyn and Hopkins, 2008). This aims to protect the reputation of movement by avoiding badly-planned initiatives: a clear example of expectation-management, to ensure that dysfunctional and failing groups do not tarnish the Transition movement's image and disappoint external audiences. Efforts at marketing and brand management (see for example Transition Network (2009) on brand identity and usage) are salutary, as they address issues with other environmental social movements where haphazard organisation and poor communication tools leads to a generally inaccessible and unappealing message. However, this structure raises issues of relationships between projects and the niche: here they are tied in to a hierarchical relationship and contract, which some find restricting and overly-controlling from the centre (Smith, 2009). This external expectation-management aims to ensure that they are widely shared and specific, but again the extent to which Transition Initiatives deliver on their promises – in terms of generating realistic and achievable expectations among the public, potentially interested participants, other partners, is debatable – and this has negative consequences for the movement, as the survey revealed. Here it seems that the public events (which typically address climate change and peak oil, through films and discussions) have saturated a local market, and so the group hopes to grow by repeating the process with new audiences - but one real problem is that once-interested people are drifting away (perhaps because of a lack of tangible, realistic plans for action or solutions – see the point about these movies below) rather than keep returning to hear the same 'doom and gloom' messages.

4.3.2 Networks

Networking is a core activity of the Transition movement, and is undoubtedly key to its rapid growth to date. The Transition Network was established in 2006 to "inspire, encourage, support, enable networking, [and] train" the growing movement of local projects (Hopkins and Lipman, 2009:15). It is the 'global field' carrier of niche ideas and practices which builds on, and in turn informs and supports, the development of individual projects on the ground (Geels and Raven, 2006). The niche level is where codification and institutionalisation takes place, and the Transition Network is a very good example of this, as it serves to facilitate sharing expertise and experience between local groups, consolidating learning through online resources, standardises 'transition thinking' through compulsory training for initiative organisers, providing speakers for events, offering consistent messages through media relations, and disseminating information through publications and consultancy (Hopkins and Lipman, 2009).

However, this networking is internal to the niche itself, supporting its own development, and local projects find support and partners where they can, and seek working relationships with other local organisations on an ad-hoc basis. Strategic niche management theory suggests that successful niches are well-networked with a range of different stakeholders, who can draw on resources to support the niche. How effectively has the movement done this to date? A guiding principle for Transitioning communities is to 'build a bridge to local

government', and the national survey reveals that the vast majority (83%) of the UK's Transition initiatives have begun this process (and one or two had gained representation on Local Strategic Partnerships), but links to other regime actors are not so common: three quarters (74%) have made links with other voluntary organisations, and although fewer groups are working with businesses (59%), charities (45%) and social enterprises (39%), these are still important partners for a significant number of initiatives, indicating that overall the movement is active in forging links with a wide range of other community actors. Only a fifth (23%) are working with political parties, and less than one in ten (8%) have engaged with national government. This partnership profile may be due to the movement's newness, but it may also relate to the previously-noted deliberate neglect of regime actors. In either case, the relative lack of well-resourced partners, and an institutional lack of a networking effort around the Transition niche at the national level, hampers the niche's emergence.

4.3.3 Learning

Finally, processes of learning are considered key to the Transition movement, both internally and externally; theory suggests that to aid niche development and diffusion, learning needs to be both first- and second-order (ie it concerns not only adaptation within existing frames of reference and systems, but a higher-level understanding of – and questioning – those systems themselves). Given that the Transition Movement addresses system-transformation, it is perhaps unsurprising that second-order learning is a key component of its activities – it needs to encourage members to question the current systems and frames of reference, in order to radically shift patterns of thinking and action towards creating new systems (rather than reforming current ones).

Internally, the Network offers codified learning through Transition Training, which is required for at least two core group members for groups to be accredited as 'official'. This training covers practical matters such as how to set up and facilitate a steering group, run participative workshops and so on, and ideological issues such as the Movement's perspective on climate change, resilience and oil depletion, and its theories of social change. It specifically aims to consolidate and share, through institutionalised channels, both lessons and best practice from previous initiatives (first-order learning), and a unified construction of the issues at hand through coordinated and managed frame-disruption (second-order learning - for example the training covers "understanding of the myths we live by, and how to change them" (Transition Network, 2010)). This internal learning is very useful for creating shared visions, understandings and frames of reference amongst the Movement – for creating a coalition among disparate groups of activists. But it suffers from several weaknesses too, which are compounded by the replication of a monolithic set of training and associated materials – for example if the scientific data used to illustrate climate change and oil depletion problems is not rigorously checked, the credibility of the entire movement is open to question (and trainees are not well-placed to respond to criticisms), and the uniformity of problem- and solution-framing excludes alternative views about how society might develop, respond and adapt to the challenges it faces – perhaps these are necessary steps for a social movement to build a strong cohesive group, but these issues would seem to prevent a full exploration of the issues at hand.

Externally, learning is also built-in to the process of becoming a Transition initiative, and is the second of '12 Steps of Transition' which are recommended as being "key elements of [the group's] journey" (Brangwyn and Hopkins, 2008:24). When new projects are initiated, the first activity usually undertaken is a phase of 'awareness-raising', through public talks and film shows of movies such as 'An Inconvenient Truth', 'The End of Suburbia' and 'The Power Of Community' which deal with climate change, the impacts of peak oil and community responses to post-oil situations. The survey confirms this: the most commonly-reported activity was awareness-raising (95% of respondents), ranking even above the 91% of groups that had set up a steering group. So a core assumption about the Movement is that this

public awareness-raising (learning) is a prerequisite for action and movement growth. How effective is this strategy?

These films have the effect of shaking people's faith in the current socio-technical systems on which our lifestyles depend, disrupting commonly-held assumptions, and so prompting a fundamental reassessment of beliefs, and the emergence of new cognitive frames – this second-order learning constitutes a 'trigger' event in terms of social movement recruitment (Bate et al, 2005). The Transition Initiatives Primer describes a number of films considered suitable for catalysing these processes, and it is notable that they nearly all have high 'doom ratings' and low 'solutions ratings', and that some are considered difficult to watch (ie very pessimistic) even for committed Transitioners (Brangwyn and Hopkins, 2008:42-8). Consequently, we have to question the impact that screenings of film shows like these have on prompting cognitive shifts among members of the public, given that they are considered at times unpalatable even for die-hard environmentalists. The experience of several groups, reported in the survey, is that the audiences for these screenings are principally 'insider' activists, rather than 'newcomer' members of the public, and that numbers dwindle over a season of screenings and discussions. We conclude that while these awareness-raising activities may be effective at announcing the new Transition initiative to already-interested people in the locality, and attracting potential participants (therefore serving the needs of internal project-formation), they would appear to be ineffective at engaging with the public in general (external learning).

In conclusion, our findings reveal that the Transition Movement is (consciously or otherwise) attending to aspects of the key elements of successful niche-formation (as identified in the strategic niche management literature), and as a result, has seen the rapid initial spread and of its niche ideas and practices. It appears to be addressing some of the principal challenges faced by grassroots innovations, from the outset, with specific measures in place to try and overcome these limitations: taking networking and institutionalisation seriously, consolidating learning processes, thinking carefully about extending their appeal beyond the niche, and so on. However, there are significant weaknesses in the niche processes, as seen from a strategic niche management perspective, and the next section discusses how these might be addressed, to thereby improve the effectiveness of the movement.

5 DISCUSSION: STRATEGIC NICHE MANAGEMENT FOR THE TRANSITION MOVEMENT

The preceding analysis has demonstrated that the Transition movement can be seen as a grassroots innovation, and the Network has worked to form an effective niche, growing the movement quickly through the replication of experiments. If the movement aims to exist for its own sake, then as a simple niche it is succeeding. But as its objectives include catalysing or preparing for a coming regime shift, then attention must be paid to how that influence might occur. Drawing on the preceding analysis of its critical niche-processes, we present some preliminary recommendations for action, and identify areas where strategic niche management theory would indicate niches need to concentrate their efforts, in order to influence wider societal systems. We stress that the suitability of these recommendations for this social movement is not taken for granted: it may be that this theory cannot adequately capture the rich, value-led character of grassroots innovations as social movements, and its prescriptions are not appropriate; this is an empirical question for further research.

5.1 Foster Realistic And Achievable Expectations.

Managing expectations among the wider public is a vital part of niche management, but there is more to consider than branding and logos. It would be valuable to consider how Transition initiatives can publically convey messages and visions about what the initiative can deliver to the public in terms of practical opportunities for action. In addition, the majority of people will

not want to be involved as an organiser, so the movement must communicate what it offers to a wider, less-committed public, who may nevertheless become engaged through tangible projects which offer immediate benefits over the business-as-usual option. Our analysis found a lack of realistic and achievable expectations both among members (internally) and in relation to the wider public (externally), which hampers movement development and growth.

To address this problem, the Movement could strategically concentrate on developing and promoting short-term steps (both internal and external) towards the long-term shared visions of system-change which they generate so successfully. This might take the form of clear, recognisable progress and actions, which would appeal to potentially interested members of the public, and which deliver a sense of purpose and achievement (rather than overwhelm in the face of a huge task). There are indications that a minority of groups are developing this approach themselves. Of the 13% of groups who were concerned about too much talk and not enough action, one group explained that for them, the theoretical aspects of meetings was an actual barrier to public involvement, and that “we’ve had to work at things from the other end, getting interest in gardening, cutting bills, saving money and having fun, and then moving towards organics/climate change/peak oil awareness”. This approach was echoed by another who said “we have decided not to focus on awareness raising any more, rather we will attempt to get some projects up and running and let the word percolate out and gather support as we go”. In this way, they appear to be offering realistic and achievable goals for potential participants, and so hoping to engage participation more effectively. In addition, if marketing efforts focus on this type of practical, local action-solutions, rather than the enormity of the system-transformation required, then community engagement is much more likely to spread beyond committed environmentalists – and the Movement will generate a reputation for being something that delivers results. Finally, this type of strategy might be more successful at retaining the interest of those who initially come to meetings, and then drift away because the group is stuck in an ‘awareness-raising’ phase and not attending to the needs of those who want to move on to action.

5.2 Network Widely Outside The Movement, With Resourceful Stakeholders

Although the Transition Movement is well-networked within its niche, its external-facing networking is ad-hoc and patchy, which limits the resources the Movement and local Initiatives can draw upon to support their development and niche-emergence. Wider networking efforts outside the niche could be formalised and invested in, to build bridges with actors in mainstream systems, eg bus companies, developers, supermarkets. These links would spread the Transition message, reach to a wider audience, and potentially enrol resources to support activities. But this is not unproblematic for a socio-technical niche that has emerged in response to an unsustainable regime, and which needs a protected space to grow. If the assumption is that these actors and their regimes can be neglected (because they will lose power and eventually disappear, as oil prices rise and climate change forces deep cuts in greenhouse gas emissions), this could be seen as politically naïve: capitalist systems are well-practised at adapting to crises (Trapese, 2008). Alternatively, it may be found that the value-clash between the niche socio-technical system and the regime precludes the mutual exchange of ideas, but a niche that intends to grow and influence wider systems cannot risk stagnating in a small group of like-minded activists; it must communicate effectively with wider audiences.

There are some recent examples of the Transition Network engaging successfully with regime actors at the national level: notably, Ed Miliband (Secretary of State for Energy and Climate Change) participated in the 2009 Transition Network conference as a ‘keynote listener’, and claimed that the UK’s Low Carbon Transition Plan was inspired by and named after the Transition Movement, showing that government were leading the way, and that the Movement was the vanguard of the popular desire for change (Hopkins, 2009). Other examples of high-level partnerships and inroads to national and local government are also

given on this website, including Transition Town Totnes being chosen as one of the UK Department for Energy and Climate Change's 10 'Low Carbon Communities' (www.transitionculture.org/2009/12/21/); Transition Movement presentations to a top-level government meeting between DECC and the Energy Institute on future oil supply (www.transitionculture.org/2010/03/24/); specific Transition Training for Local Authorities (www.transitionculture.org/2010/03/31/) and insights about cross-sector partnerships (www.transitionculture.org/2010/02/02/).

These are positive and outreaching steps for the Movement to take, but they are unlikely to suffice. Complementary networking strategies might include partnering with – and piggy backing on – parallel movements and campaigns, cultural trends and social shifts in mainstream culture such as those mentioned in 4.2 above. For instance making links with the National Trust, and with local crafting and gardening clubs etc, might pay dividends in terms of wider participation and improved marketing, rather than trying to develop standalone initiatives.

5.3 Adopt Social And Experiential Learning Strategies

Transition initiatives aim to offer practical activities in numerous areas, such as food-growing, learning skills, etc, which are all valuable opportunities for social learning. Currently the movement promotes educational information-giving events (which largely fail to attract audiences beyond a core of already-committed activists) as a prerequisite for behaviour change – employing a deficit model of behaviour change. This debate raises issues familiar from questions of behaviour change and sustainable consumption: is changing minds necessary in order to change behaviour? or can new behaviours be prompted for practical and pragmatic reasons, with changed values following?

Research on behaviour change for sustainable consumption largely rejects these simplistic linear cognitive models in favour of more sophisticated approaches which consider social and psychological aspects of decision-making which are familiar to marketers (meeting non-tangible needs such as identity, self-expression, belonging, aspiration, recognition, etc), and sociological/infrastructural influences on behavioural choices (such as the configuration of systems of provision: availability, accessibility, convenience, habit and routine, inconspicuous consumption) (Shove, 2004; Ropke, 1999; Jackson, 2007). This research indicates that widespread public engagement will more likely be achieved through the doing of community-based activities which offer immediate benefits (cost-savings, pleasure, sociability, sense of achievement, community, self-expression). Education about peak oil, climate change and so on then may happen as a result of immersion into pleasurable and beneficial community activities, but is not a prerequisite for lifestyle-change. If this method of experiential learning were prioritised above the 'educational' film show or talk, it might be possible to attract a wider range of participants, while simultaneously meeting expectations to deliver change. Indeed, our national survey found that (as mentioned above) some questioned the wisdom of promoting educational films and intellectual discussions first to galvanise activity, and felt that public engagement would be better achieved by offering tangible action and practical projects to become involved with, and let the education seep through as a secondary effect.

This approach can be seen within the pioneering 'Transition Circles', 'Carbon Conversations' and 'Transition Together' initiatives within Transition Norwich and Totnes respectively. These adopt a 'social learning' strategy, whereby small affinity groups meet regularly and support each other through the process of making carbon-reducing lifestyle changes. Tapping into needs for group membership, belonging, identity, self-expression, lifestyle-creation and reciprocal exchange, these groups specifically employ 'social marketing' methodologies to instigate and maintain behaviour change. In the Transition Circles approach, being trialled in Norwich, participants have met regularly at each others homes to share a common meal and discuss actions to reduce personal carbon emissions. As the groups grow in size and

becomes too large for an average sitting room they divide and form new groups at an ever more local level. The result seems to be the emergence of very local, even street level, groups that are sharing experiences and ideas for reducing personal carbon emissions, but also for discussing and debating the broader issues of changing lifestyles and values in the context of transition. This provides in effect a carbon-peer group that becomes part of the social community that participants exist within and that can eventually facilitate proactive behaviour change at the community level.

Overcoming the structural obstacles to behaviour change requires a different sort of activity altogether – one outside the scope of individuals to control. Rather, the creation of alternative systems of provision – a key long-term aim of the Transition Movement – could be seen as a pre-requisite for engaging wider portions of the public effectively. In this view, the public need not be spurred by interest in Transition or the environment, but merely by the pragmatic aim of utilising new systems of provision if they offer a superior product or service. Their participation may then bring about changes in thinking, values and behaviour as a result of the shaping influences of this infrastructure. Such changes have been seen with small local food systems, whereby instrumental motivations for consumption of local organic food translated into greater environmental awareness and ecological citizenship (Seyfang, 2006). This lesson therefore points to a need for new infrastructures to be created as a priority, and means to engage people – rather than the other way round.

6 CONCLUSIONS

The challenges of sustainable development (and climate change and peak oil in particular) demand system-wide transformations in socio-technical systems of provision. In this paper we have examined the role of civil society-based social movements in a transition to a low-carbon sustainable economy in the UK, using the sustainable innovation and transitions literature. We have examined the UK's Transition Movement's scope and potential as a grassroots innovation, and assessed its attempts to grow and diffuse beyond the niche. Drawing on our application of strategic niche management theory to this civil society context, our theoretically-informed practical recommendations for this social movement to diffuse beyond its niche are: to foster deeper engagement with resourceful regime actors; to manage expectations more realistically by delivering tangible opportunities for action and participation; and to embrace a community-based, action-oriented model of social learning (in preference to a cognitive theory of behaviour change).

Reflecting on the lessons this empirical investigation might contribute to the development of sustainable transitions theory, we can identify three key areas where refinements to sustainable transitions theory would help it to extend more successfully to the experience of grassroots innovations - social movement innovations within communities. The first relates to processes of internal niche-formation and management: the Transition Movement's experience to date has illustrated that the work involved in establishing the niche itself appears to demand attention to the same three key factors that Kemp et al (1998) claim are essential for niche-emergence and regime-influence. Managing expectations, building networks, and learning processes are all deliberately addressed within the movement niche (thereby overcoming some of the common obstacles faced by grassroots innovations), and appear to have contributed to its successful establishment. In other words, they are important internal factors, as well as external ones, for grassroots innovations. However, the evidence from this study suggests that internal niche formation processes are perhaps more easily achieved than external-facing niche-diffusion processes, and thus a balance of priorities and goals must be aimed for.

Secondly, grassroots innovations are social movements, and this matters. Such niches are often countercultural and self-consciously formed in response to unsustainable regimes; hence the scope for easy translation of ideas and practices between niche and regime is

reduced (see Smith, 2006 for a review of this process within organic food). Furthermore, niche actors engaged in oppositional social movements might genuinely wish to grow their movements, but not at the cost of 'selling out' and incorporation into mainstream contexts. The agency and diffusion potential of these niches is therefore quite different to that of the technological innovations commonly described in the literature: theory must be extended and adapted to fit these new niche conditions and activities. Our empirical research with the Transition Movement suggests that questions of identity, belonging, purpose and community – key elements of social movements - are critical issues for the success or failure of these movements to recruit and retain participants (see also Seyfang et al, 2010; Bate et al, 2005). Therefore, moving above and beyond technical and cognitive questions of information provision and behaviour-change, efforts to diffuse social movement niches must attend to these social-psychological aspects of the movement as they seek to grow and spread into wider publics, strategising about how group identity is formed and maintained, group cohesion is fostered and built, and how a sense of group purpose is critical to ongoing participation and niche consolidation. However, such strong internal identity-formation and community-building might equally be an inhibiting factor to wider groups of participants who do not wish to adopt the identities offered by participation. Consequently, an additional critical factor for niche-diffusion of grassroots innovations is to carefully negotiate this element of group identity and community-building.

Thirdly, this study has shown very clearly that the socio-technical innovation we see within grassroots innovations is strongly social innovation rather than technological, with particular characteristics and challenges, and the transitions literature needs extending to successfully incorporate this source of radical niche innovation. Specifically, within the Transition Movement, much of the innovation was around developing new social practices within supportive social contexts, such as reconceptualising mobility to exclude flying, or redefining thermal comfort within the home. Practices such as these are deeply embedded in conceptions of normality and everyday life; the Transition Movement brings these inconspicuous practices to light and sets about recreating them according to different logics, but with an growing awareness that such endeavours are best tackled collectively, to create niches of 'new normalities', for instance. There is great scope for emerging practice theories of consumption to inform our understanding of how grassroots innovations function, develop and grow, and what precisely is happening within niches of social practices – not least how and why new social practices 'catch on' and old practices die out (see also Ropke, 2010; Seyfang et al, 2010; Shove and Walker, 2010).

In conclusion, the sustainable transitions literature has offered useful insights into how grassroots innovations can work strategically to grow and diffuse their ideas into wider society, with practical recommendations for action. However, studying this civil society-based social movement has revealed areas where the theory is at present somewhat impoverished. Our aim is to contribute to the development of this theory by indicating some key areas for further research and development, which will be crucial if we are to successfully understand and harness the energies of civil society within a system-wide transition to a low-carbon economy.

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