
Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions

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Abstract. The challenges of sustainable development (and climate change and peak oil, in particular) demand system-wide transformations in sociotechnical systems of provision. An academic literature around coevolutionary innovation for sustainability has recently emerged as an attempt to understand the dynamics and directions of such sociotechnical transformations, which are termed ‘sustainability transitions’. This literature has previously focused on market-based technological innovations. Here we apply it to a new context of civil-society-based social innovation and examine the role of community-based initiatives 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 Towns movement (a ‘grassroots innovation’) and assess its attempts to grow and influence wider societal sociotechnical systems. By applying strategic niche management theory to this civil society context, we deliver theoretically informed practical recommendations for this 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 change (in preference to a cognitive theory of behaviour change). Furthermore, our study indicates areas where theory can be refined to better explain the growth and broader impacts of grassroots innovations—namely, through a fuller appreciation of the importance of internal niche processes, by understanding the important role of identity and group formation, and by resolving how social practices change in grassroots innovations.

Keywords: sustainability transitions, grassroots innovations, community energy, civil society, social innovation, niches

1 Introduction

A growing body of research claims that system-wide transformations are required to address the challenges posed by climate change and the move to a low-carbon economy (Foxon et al, 2009; Jackson, 2009; UKERC, 2009; WSSD, 2002). 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 notion of ‘peak oil’ (the point beyond which oil production rates decline) and its transformative implications for fossil-fuel-based societal infrastructures (Heinberg, 2004; IEA, 2008; Sorrell et al, 2009). Given these twin concerns, and claims that radical system-wide transformations are required, it is pertinent to investigate potential trajectories and the possible roles of different actors.

An academic literature around coevolutionary systems innovation for sustainability has recently emerged as an attempt to understand the governance, dynamics, and directions of

such sociotechnical transformations and social change, which are termed ‘sustainability transitions’ (Grin et al, 2010). This transitions literature convincingly shows how historic sociotechnical regime transformations developed through an accumulation of projects in ‘niche’ spaces which were forgiving towards radical alternatives; this literature explores the nature and characteristics of successful transformative niches, where new radical innovations are tested and developed. Such ‘protective’ spaces tolerate poor returns, accept uncertainty over the ‘best’ form and function, and provide supportive networks for experimentation and advocacy (Schot and Geels, 2008). A particular branch of the transitions literature (of direct relevance to this paper) has developed around the concept of strategic niche management (SNM) as a practical approach to governing sociotechnical niches with the aim of promoting desired systemic outcomes (Kemp et al, 1998). The transitions literature has to date mirrored the policy focus on climate change (rather than peak oil), and has tended to emphasise the *technological* aspects of sociotechnical transitions, at the expense of *social* innovation, movements, and actors (see, for example, Geels, 2005a; Kemp et al, 2007; Smith et al, 2005).

Seyfang and Smith’s (2007) concept of community-led ‘grassroots innovations’ emphasises predominantly *social* innovations developed at the community level and outlines how SNM theory could be applied in this new context. Their resulting model of ‘green’ (proenvironmental) sociotechnical niche innovations provides a conceptual framework suitable for analysing the role of civil society in the emergence and governance of sustainability transitions.

At the same time, the term ‘transition’ has also been popularised as a signifier of system-wide change within society—for example, 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 popularisation of the term transition is the Transition Towns (TT) movement (Hopkins, 2008). This new and rapidly growing civil society movement 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, aiming to galvanise local actions towards reducing dependency on fossil fuels. The TT movement has not previously been researched from a specifically *innovation* and *transition* perspective.

The twin aims of this paper are: first, to explore how the TT movement can contribute to processes of systemic change (in the context of sustainability, climate change, and peak oil) by employing a theory of systems innovation to analyse the TT movement (as a *grassroots innovation* that explicitly aims to bring about system transformation); second, to reflect on the adequacy of current transitions theory for understanding empirical phenomena such as the TT movement, exploring how insights from empirical analysis might inform theory on how civil society initiatives might contribute to sustainability transitions. To this end we present new empirical evidence about this underresearched phenomenon.

We recognise that other theoretical framings may offer complementary insights into this phenomenon [and in related work we review the utility of theories of social movement theories and social practice theory in this context: see Seyfang et al (2011) and Hargreaves et al (2011)]. However, here our focus is specifically on an *innovation* lens in anticipation that theories of sustainable innovations might tell us something about how the TT movement can grow and diffuse ideas into wider society.

The paper proceeds as follows: in section 2 we briefly review current thinking on sustainability transitions and outline how existing models are being adapted to civil society contexts to develop theories of ‘grassroots innovations’; with this in mind we review current knowledge about the TT movement. In section 3 we present our methodology, and in section 4 we present new empirical findings about the TT movement (from a national survey of

groups, a single-group membership survey and participant observation), describing its origins, characteristics, and development. In section 5 we apply an SNM framing to analyse the TT movement as a grassroots innovation. In section 6 we discuss implications of the analysis for practitioners within the TT movement. Finally, in section 7 we conclude by considering implications for the development of theory about the role of civil society in governing transitions to sustainability.

2 Theoretical context

2.1 The sustainability transitions literature and strategic niche management

There is a growing interest in the governance of sociotechnical transitions in the context of debates about how modern industrial societies can attempt to shift towards more sustainable development (Grin et al, 2010). Understanding transitions is especially important when dominant ‘solutions’ (and the sociotechnical systems that deliver these) are locked in and contribute to unsustainable development (Guy, 2006; Sanne, 2002) and when novel experiments might offer more sustainable alternatives or when we face persistent problems that cannot be solved using only the currently dominant approaches: “change within the regime tends to be incremental and path-dependent ... ‘revolutionary’ change originates in ‘niches’” (Smith et al, 2010, page 440).

In recent years a literature on sustainability transitions has emerged which posits a multilevel perspective (MLP) to capture the dialectical relationships between microlevel actors and macrolevel structures (Geels, 2005a; 2010; Loorbach, 2007; Rip and Kemp, 1998; Rotmans et al, 2001; Smith et al, 2005; 2010). This is associated with several large-scale research projects in the Netherlands, in particular (see, for example, Loorbach and Rotmans, 2010; Nill and Kemp, 2009), and builds on concepts that have emerged from the study of sociotechnical transitions. It offers a set of both conceptual tools and nascent management tools for understanding and governing transitions towards the normative (but rarely defined) goal of sustainable development (Shove and Walker, 2010). Here, we are particularly interested in the project of extending this theory to better incorporate civil society as potential agents of change in transition processes—a perspective which has previously been neglected in the systems innovation field, but which is now gaining increasing attention (Avelino and Kunze, 2009; Hargreaves et al, 2011; Hess, 2007; Lovell, 2007; Lovell et al, 2009; Seyfang and Smith, 2007; Seyfang et al, 2010). To this end we are interested both in the role of civil society as an agent of change and in its ability to form niche spaces where new ideas and practices can be developed.

The transitions literature develops the notion of sociotechnical niches as protected spaces where new sociotechnical practices can develop. It juxtaposes the niche against a dominant sociotechnical regime and has surveyed many empirical examples in an attempt to understand the dynamics of how niches might grow and eventually oust a dominant regime (Geels, 2005a; 2005b; Geels and Schot, 2007). In addition to the niche and regime, a background sociotechnical landscape is defined which forms an exogenous environment representing longer-term influences on niche and regime actors (macroeconomic trends, deep cultural patterns, macropolitical developments) (Geels and Schot, 2007).

Niches are variously defined in the literature, but we find the most constructive use of the term here is as follows: a protected space where suboptimally performing experiments can develop away from regime selection pressures. Niches comprise intermediary organisations and actors, which serve as ‘global carriers’ of best practice, standards, institutionalised learning, and other intermediating resources such as networking and lobbying, which are informed by, and in turn inform, concrete local projects (experiments) (Geels and Raven, 2006; Kemp et al, 1998; Schot and Geels, 2008).

The governance of niches is the focus of the SNM branch of this theory, which is of greatest interest to this paper. In the SNM literature 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, who can call on resources from their organisations to support the niche's growth. 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 regime systems (Kemp et al, 1998). Successful niches facilitate the diffusion of innovative sociotechnical practices and systems, and theory suggests three ways by which niches can influence the regime: by enabling *replication* of projects within the niche, bringing about aggregative changes through many small initiatives; by enabling constituent projects to *grow in scale* and attract more participants; and by facilitating *translation* of niche ideas into mainstream settings.

This literature generally deals with niches of technological innovations, developing within commercial markets. Extending this concept into civil society, 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” (page 585).

Examples include furniture-recycling schemes, cohousing, local food projects, and complementary currencies (Church and Elster, 2002). Viewing the TT movement as *innovative* in this way allows us to consider the scope for diffusing innovations into mainstream society and to learn from existing knowledge about SNM.

However, these 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), and we already know something about the ways in which grassroots innovations differ from technological, market-based niches. The benefits of grassroots innovations for sustainable development derive principally from their creating a space for: developing new ideas and practices; experimenting with new systems of provision; enabling people to express 'alternative' green and progressive values; and the tangible achievement of 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 sociotechnical 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 and Smith, 2007; see also Seyfang, 2009; Smith, 2006; 2007). The 'protected space' may be one of values and culture rather than market pressures (Raven et al, 2010; Witkamp et al, 2011), which makes translation of ideas more difficult due to the fundamental clash of values, ideas, and practices. Consequently, additional diffusion pathways may be required: this value chasm can be closed either by 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 a

mediating actor (Seyfang, 2009; Smith, 2006; 2007). Furthermore, civil society niches may not exhibit the consensual, streamlined progress that are attributed to technological niches in the literature (Hielscher et al, 2011; Lovell, 2007; Lovell et al, 2009). In this paper we view the TT movement as a grassroots innovation and apply the SNM framework in this novel context to analyse processes of niche growth and emergence.

2.2 Transitions and the Transition Towns movement

The TT movement does not explicitly define ‘transition’, even omitting it from the list of definitions given in a recent report on the network (Hopkins and Lipman, 2009, page 6). If we infer its meaning from the frequent usage in the TT literature, it is a passing through from one state to another—for example, “the monumental transition necessitated by the passing of the Age of Cheap Oil” (Hopkins, 2008, page 50), referring to the period from 1859 to the present day (page 17). The transition is from the current oil-dependent industry and lifestyle of consumer economies to a future where oil is increasingly scarce and expensive and much that we take for granted about our lifestyles is lost: “life will radically change, whether we want it to or not” (page 15).

Clearly, for TTs the transition is instigated by the twin drivers of climate change and peak oil:⁽¹⁾ “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” (page 37). Mapping this discourse onto the MLP, 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 proactively 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 a sudden ‘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 (Geels and Schot, 2007).

A literature associated with the TT movement describes a breakdown of current sociotechnical systems (typified by the ‘end of suburbia’ catastrophe scenario propagated in a 2004 movie of the same name—see <http://www.endofsuburbia.com>), which is portrayed as being reasonably immanent and sudden. Hopkins (2008, pages 46–47) draws on a range of sources including Heinberg (2004), FEASTA (2006), and Curry et al (2005) to describe several possible “scenarios from beyond the peak” after this regime shock, depending on whether civilisation adapts, collapses, or evolves in response to landscape pressures. These include business-as-usual technofixes, 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 outcomes from this crisis, TTs aim to build an innovative niche of resilient sustainability where new infrastructures and ideas can be developed, to compete with a crumbling regime and so to avoid the (socially, ecologically, and economically) less-desirable scenarios.

The TT movement, as here evidenced, does not intend to trigger a transition, but instead responds to landscape pressures at a microlevel and seeks to grow a niche of new infrastructure and practices to replace the incumbent regime when it fails to function. The *agency* in this model is located at several levels and is concerned with managing this transition.

⁽¹⁾ It is notable that the TT 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 energy prices.

Certainly, national and international governments are recognised as having important roles to play, but the focus of TTs is on community-level activity: 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 apolitical 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 the regime, the movement seems to assume the existing regime will wither away (North, 2011) and leave an agency vacuum into which TTs can move, offering a more positive future scenario than the societal collapse or authoritarian green state that might otherwise emerge.

In applying transitions theory, the precise delineation of niche and regime is an analytical task that depends on the research question as well as the empirical terrain. In general terms, a brief survey of local TT groups reveals how they are interacting with existing green niches in transport, energy, food, housing, etc. So the TT movement should be seen as engaging across multiple sociotechnical regimes. Ultimately, however, for many TT practitioners it is the current fossil-fuel-based society in its entirety that constitutes the incumbent regime. In this exploratory study, therefore, we maintain flexibility in our use of the term ‘regime’, recognising that practitioners in the TT movement are interacting across diverse sociotechnical regimes, while at the same time the movement is oriented around the notion of a ‘broad societal transition’ away from a regime of fossil fuel dependency.

Some TT practitioners might view a sociotechnical approach as having a deep-rooted basis in ecological modernisation, the governance of the environment through market instruments, and faith in technological progress. This latter is, clearly, anathema to many proponents of TTs, who promote instead a low-tech revolution in lifestyles, and reduced consumption, to manage environmental limits on human activity. Others may argue that imposing a sociotechnical innovation category onto TT practitioners is an unwelcome miscategorisation, and misses entirely the heart of the movement, which is concerned with psychological paradigm shifts as much as technological ones. We do accept the merit of such arguments, but argue that the formulation of grassroots innovations that we develop in this paper is compatible with a more in-depth treatment of both power relations and the role of psychological paradigm shifts and transformation.

3 Methodology

With this paper we report new findings about the UK TT movement, drawing on four distinct sources of evidence. The first is documentary evidence about the movement from its component TT initiatives and networks, literature, and online documents. Second, we present findings from the first survey of UK TTs. This short online survey asked open-ended and closed-ended questions to collect basic information about the origins, development, character, and activities of the UK’s TTs. E-mail invitations were sent to coordinators of all ninety-four UK TTs during February 2009. Two follow-up reminders were sent, achieving seventy-four responses (an outstanding response rate of 79%).

Third, to complement this survey of TT coordinators, a second online survey was conducted with a single TT (Transition Norwich) during February 2009, to find out who

participates and why. An invitation was sent to the 200-strong e-mail 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 months and receive e-mails about local actions and meetings. This elicited fifty-nine responses (27%), which is reasonable for surveys of this type; ethnographic observation indicates that the respondents are broadly representative of the sample population. The survey collected both quantitative and qualitative data about participants, their motivations and interests, their history of involvement in community or environmental groups, and how they perceived TTs in relation to other such initiatives. Fourth, we incorporate direct experiential evidence of the TT movement, from participant observation in Transition Norwich, where one of us was involved as a member.

Our unit of analysis is the TT movement; we are interested in how local groups develop, interact with other parts of the movement, and attempt to influence wider society. We examine the extent to which the sustainability transitions literature—in particular, grassroots innovations and SNM—is able to explain the empirical phenomena found in this study and whether it might offer useful insights into the challenges faced by the TT movement. We also reflect on the implications of the analysis for the development of theory that aims to better explain the role of civil society and grassroots innovations in the governance of transitions.

4 The Transition Towns movement

The TT 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 (<http://www.transitiontowns.org>). The TT 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 sociotechnical systems and infrastructures. From this seed a network of grassroots TTs has been growing rapidly in the UK and internationally, with almost 400 projects by late 2011.

The range of issues addressed by TTs is wide, covering economic, social, environmental, and personal systems. TTs are involved with many locally based activities—for example, establishing community-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 activities around local environmental action, quality of life, and social inclusion (see, for example, Douthwaite, 1996; Hess, 2009).

The multiple local TTs 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' TTs. The prefigurative nature of many transition projects, and the alternative green values expressed therein, indicate that transition initiatives do appear to be experimental green projects within a broader 'green niche' represented functionally by Transition Network Ltd. In addition to the formal network, numerous publications, films, websites, conferences, and other events serve to populate this niche level as a carrier of innovative practices (Hopkins and Lipman, 2009).

Our national survey of TTs asked group organisers 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 (47%), there was a distinctive bias to the activities the groups had been undertaking. While 69% described awareness raising and community engagement activities, the most popular substantive area of action was around food and gardening (40% were active in this area—for example, promoting local food, community-supported agriculture, organising allotments, garden sharing and support, and community gardens). The next most commonly cited areas were waste (12% of groups having some practical activity, often around reusable shopping bags) and energy (11%), such as promoting conservation measures.

Who sets up these groups? Our UK survey reveals that the vast majority of local groups (89%) are set up by individual citizens coming together to form a TT. Only 19% had preexisting groups involved in getting set up, and none were started by local councils. This finding substantiates TT claims to be a citizens' movement, generating energy and action from the grassroots.

Who joins these groups? Turning to our single-TT membership survey, a majority of the Transition Norwich members who responded to the survey were female (58%), and half (50%) were aged between 45 and 64—significantly overrepresenting this age group compared with the general population, which has only 31% in this age range (ONS, 2009). 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 (ONS, 2002). Conversely, none at all had no formal qualifications (compared with 14% of the population). The overall economic activity rates of Transition Norwich members of working age were slightly 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) (ONS, 2002). However, these high levels of education and employment did not automatically translate into higher incomes. The income distribution of Transition Norwich members reveals over a quarter (27%) having a gross weekly household income of less than £249 (£12 948 a 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 from higher education and employment groups than the average. To this extent, Transition Norwich members display the typical characteristics of 'postmaterialists' 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, for about a third of the members (32%) of this TT this was their first involvement in local environmental action, so the movement appears to be successfully 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 had heard about the group from friends, colleagues, and 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 TT movement (peak oil and climate change) with more locally focused motivations about economic resilience and social cohesion.

5 Applying strategic niche management theory to the Transition Towns movement

5.1 The Transition Towns movement as a sociotechnical niche I: diffusion

We have argued that the TT movement can be conceived of as a grassroots innovation, a sociotechnical *niche* comprising many constituent *projects* (individual TTs) where new social infrastructure and institutions, value sets, and priorities are practised in a value space which is distinct from mainstream society. In this section we critically analyse the TT movement's impacts, its niche developmental processes, and the challenges it faces. We do this by applying the SNM framework to this new empirical case. First we look at the movement's diffusion of innovative ideas and practices, through replication, scaling up, and translation.

5.1.1 Replication

The TT movement has to date been very successful at replicating its model of community-led initiatives (Hopkins, 2008). The first UK TT was Totnes, formed in autumn 2006, and by February 2009 (when the national survey was conducted) there were ninety-four TTs in the UK and a further forty internationally, principally in Australia, New Zealand, and the USA. At the time of writing (October 2011) there were 200 UK TTs listed on the network's website, and another 186 internationally. The UK national survey found the most common type of TT 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; several city-wide groups have subdivided into smaller geographical groups covering neighbourhoods or districts, with a central coordinating hub, comprising 9% of the survey respondents. The remaining 12% of initiatives cover a variety of geographical areas—for example, villages, islands, rural areas, and forests.

5.1.2 Scaling up

This impressive geographical spread does not indicate the extent of participation at each location—therefore, we must ask to what extent are these groups scaling up their activities (the second route for innovation diffusion)? Evidence from the UK survey indicates that while new TTs attract much local attention and interest, they soon settle down to a core group of activists, who struggle to recruit more members. Over three quarters of the national survey respondents (76%) reported that growing the movement was a major challenge: for example, several groups mentioned the need to extend “outside the ‘green-belt’”, and one stipulated “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 committed environmentalists) is a problem.

5.1.3 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 attractive and accessible to wider audiences (Hess, 2007; Smith, 2006). It is noteworthy that some of the key messages of the TT movement—about reskilling, localising 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 (2010) is turning stately home gardens into allotments; the UK government is promoting a renaissance of skills for growing and cooking healthy food (Defra, 2010), and there are more opportunities for “contemporary craft workshops with a stylish, social twist—perfect for embracing the ‘make do and mend’ ethic in a fashionable way!” (<http://www.makelounge.com>). While the TT movement could

not necessarily claim credit for these cultural shifts, it could certainly capitalise on such mainstream trends by echoing the successful marketing associated with them, in order to reach wider audiences.

5.1.4 *Challenges and limitations*

The TT 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. The UK TT coordinator survey reveals the biggest barriers faced were: difficulty growing the movement and attracting wider interest (reported by 76%), 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 build effective links with other actors (17%).

5.2 **The Transition Towns movement as a sociotechnical niche II: niche processes**

Continuing to view the TT movement as a grassroots innovation, we can next map TT activities onto the SNM framework, to assess what this theory can say about how TTs might flourish and increase their impact. SNM theory claims that successful niche development and growth depends on: the management of expectations and visions, networks, and learning processes. So we now ask—to what extent does the TT movement attend to these factors?

5.2.1 *Expectations*

SNM 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 TT movement. Cultivating expectations—or visions—is a key element of the internal process for TT initiatives. The Transition Network claims:

“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, page 7).

Visioning is intended to psychologically predispose participants to making effective changes and simultaneously tackle feelings of helplessness in the face of uncertain futures.

One respondent to the Transition Norwich survey 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 the struggle in working out how achieve these visions, 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) recognised this 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.”

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 ensures that when groups emerge as TTs, representing the international ‘brand’, they have thought through some of the issues around establishing a group and have taken 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 movement’s reputation by avoiding badly planned initiatives: a clear

example of expectation-management, to ensure that dysfunctional and failing groups do not tarnish the TT movement's image and disappoint external audiences. Efforts at marketing and brand management [see Transition Network (2009) on brand identity] are salutary, addressing issues with other environmental social movements where haphazard organisation and poor communication leads to inaccessible and unappealing messages. However, this structure raises power issues: TTs are tied in to a hierarchical relationship with the network, which some find restricting and overly controlling (Smith, 2009). This external expectation management aims to ensure expectations are widely shared and specific, but again the extent to which TTs deliver—in terms of generating realistic and achievable expectations among the public, potential participants, and other partners—is debatable, and this has negative consequences for the movement, as the survey revealed. Typically, public events (addressing climate change and peak oil, through films and discussions) soon saturate a local market, and groups hope to grow by repeating the process with new audiences—but one real problem is that interested people drift away (perhaps because of a lack of tangible, realistic plans for action or solutions) rather than keep returning to hear the same 'doom and gloom' messages.

5.2.2 *Networks*

Networking is a core activity of the TT 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, page 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 exemplifies this well, as it facilitates sharing expertise and experience between local groups, consolidates learning through online resources, standardises ‘transition thinking’ through compulsory training for TT organisers, provides speakers for events, offers consistent messages through media relations, and disseminates information through publications and consultancy (Hopkins and Lipman, 2009).

However, this networking is internal to the niche itself, supporting its own development; local projects seek supportive partnerships with other local organisations on an ad hoc basis. SNM theory suggests successful niches are well networked with a range of stakeholders, who 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 TTs have begun this process (one or two even gaining representation on Local Strategic Partnerships), but links to other regime actors are not so common: three quarters (74%) have links to 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 TTs, indicating that, overall, the movement is active in forging links with multiple community actors. Almost a quarter (23%) have links 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 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 networking effort around the transition niche at the national level, hampers the niche's emergence.

5.2.3 *Learning*

Finally, processes of learning are considered key to the TT movement, both internally and externally; SNM theory suggests that to aid niche development and diffusion, learning needs to be both first-order and second-order (ie, it concerns not only adaptation within existing

frames of reference and systems but also a higher-level understanding, and questioning, of those systems and framings). Given that the movement addresses system transformation, it is perhaps unsurprising that second-order learning is a key component of its activities—it encourages members to question 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 TT accreditation. This training covers practical matters (how to set up and facilitate a steering group, run participative workshops, and so on) and ideological issues (the TT 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, unpaginated)]. 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 a balance needs to be struck between creating a uniformity of problem and solution framing (that can thereby exclude alternative views about how society might develop) versus encouraging a full exploration of the issues at hand.

Externally, learning is also built in to the process of becoming a TT and is the second of ‘twelve steps of transition’ which are recommended as being “key elements of [the group’s] journey” (Brangwyn and Hopkins, 2008, page 24). New TT projects usually undertake a phase of awareness raising, through public talks and showing films 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 postoil 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 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 sociotechnical systems on which our lifestyles depend, disrupting commonly held assumptions, and prompting a fundamental reassessment of beliefs. As new cognitive frames emerge, this second-order learning constitutes a ‘trigger’ event in terms of social movement recruitment (Bate et al, 2005). The *Transition Initiatives Primer* (Brangwyn and Hopkins, 2008, pages 42–48) describes a number of films considered suitable for catalysing these processes, and nearly all have high ‘doom ratings’ and low ‘solutions ratings’; furthermore, some are considered difficult to watch (ie, very pessimistic) even for committed transitioners. Consequently, we have to question the impact that screening these films has on prompting cognitive shifts among 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 TT to already-interested local people, and thereby attracting potential participants (achieving internal project formation), they appear to be less effective at engaging with the wider public (external learning).

In conclusion, our findings reveal that the TT movement is attending to aspects of the key elements of successful niche formation (as identified in the SNM literature) and, as a result,

has seen a rapid initial spread 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 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 SNM perspective, and in the next section we discuss how these might be addressed, to thereby improve the effectiveness of the movement.

6 Discussion: strategic niche management for the Transition Towns movement

We have explored how the TT movement has worked to form an effective niche, growing very rapidly through the replication of experiments (as new TTs). If the movement aimed to exist merely for its own sake, then in these terms it could be said to be succeeding. However, as its objectives include contributing to a broad societal transition (away from fossil-fuel dependency), then attention must be paid to how that influence might occur. Drawing on the preceding analysis of its critical niche processes, we next present some preliminary insights as to how the effectiveness of the TT movement might be enhanced. This analysis cannot, of course, fully capture the rich, value-led character of the TT movement; rather, these recommendations are presented as a contribution to the creative ‘visioning’ of the movement and as a basis for empirical questions for further research.

6.1 Foster realistic and achievable expectations

Managing expectations among the wider public is a vital part of SNM, but there is more to consider than branding and logos. It would be valuable to consider how TTs publically convey messages and visions about what the initiative can *deliver* in terms of practical opportunities for action. In addition, the majority of participants will not want to be involved as organisers, so the movement must communicate what it offers a wider, less-committed public, who may nevertheless become engaged through tangible projects offering immediate benefits. 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 be clear, recognisable progress and actions, appealing to potentially interested members of the public and delivering a sense of purpose and achievement (rather than overwhelming in the face of a huge task). There are indications that some groups are developing this approach themselves. Of the 13% of groups who were concerned about too much talk and not enough action, one coordinator felt the theoretical content of meetings was a barrier to public involvement and said “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 reported “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, in order to engage participation more effectively. Additionally, if marketing efforts focus on this type of practical, local action, rather than on 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 delivering solution-oriented results. Finally, this strategy might be more successful at retaining the interest of those who initially come to meetings, but drift away because the group is stuck in an ‘awareness-raising’ phase and not attending to the needs of those who want to take action.

6.2 Network widely outside the movement, with resourceful stakeholders

Although the TT movement is well networked within its niche, its external-facing networking is ad hoc and patchy, which limits the resources the movement and local TTs can draw upon to support their development and niche emergence. Wider networking efforts outside the niche could be formalised and invested in, in order to build bridges with actors in mainstream systems—for example, bus companies, developers, supermarkets. These links would spread the transition message, reach a wider audience, and potentially enrol resources to support activities. But this is not unproblematic for a sociotechnical niche that emerged in response to an unsustainable regime and which needs a protected space to thrive. 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 naive: capitalist systems are well practised at adapting to crises (Trapese, 2008). Alternatively, the value clash between the niche sociotechnical system and the regime might preclude the mutual exchange of ideas, but a niche that intends to gain a wider influence 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 (then Secretary of State for Energy and Climate Change) was ‘keynote listener’ at the 2009 Transition Network conference. He claimed the UK’s *Low Carbon Transition Plan* (HM Government, 2009) was inspired by and named after the TT movement, showing that the government were leading the way and that TTs were the vanguard of popular desire for change (Hopkins, 2009). Other examples of high-level partnerships and inroads to national and local government include TT Totnes being chosen as one of the UK Department for Energy and Climate Change’s (DECC’s) ten ‘Low Carbon Communities’ (<http://www.transitionculture.org/2009/12/21/>); transition movement presentations to a top-level government meeting between the DECC and the Energy Institute on future oil supply (<http://www.transitionculture.org/2010/03/24/>); specific transition training for local authorities (<http://www.transitionculture.org/2010/03/31/>); and insights about cross-sector partnerships (<http://www.transitionculture.org/2010/02/02/>).

These are positive steps, but they are unlikely to suffice. Complementary networking strategies might include partnering with—and piggybacking on—parallel movements and campaigns, cultural trends, and shifts in mainstream culture. 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.

6.3 Adopt social and experiential learning strategies

Transition initiatives aim to offer practical activities in numerous areas—such as food growing and learning skills—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 action—employing a deficit model of behaviour change. But is changing minds necessary in order to change behaviour? Research on behaviour change for sustainable consumption largely rejects 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 nontangible needs such as identity, self-expression, belonging, aspiration, and recognition) and sociological and infrastructural influences on behaviour choices (such as the configuration of systems of provision: availability, accessibility, convenience, habit and routine, inconspicuous consumption) (Jackson, 2007; Røpke, 1999; Shove, 2004). This research indicates that widespread public engagement is more achievable 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 *may* occur as a result of immersion in enjoyable and instrumentally beneficial community activities, but is *not* a prerequisite for lifestyle change. If *experiential* learning were prioritised above the *cognitive* approach, TTs might attract a wider range of participants, while simultaneously meeting expectations to deliver change.

This approach is taken in the pioneering ‘Transition Circles’, ‘Carbon Conversations’, and ‘Transition Together’ initiatives within Transition Norwich and Transition Totnes. These adopt ‘social learning’ strategies, 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, community, self-expression, lifestyle creation, and reciprocal exchange, these groups specifically employ ‘social marketing’ methodologies to instigate and maintain behaviour change.

Overcoming the structural obstacles to lifestyle change requires a different sort of activity altogether—one outside the scope of individuals. Rather, the creation of alternative systems of provision (a key long-term aim of the TT movement) could be a prerequisite for engaging wider portions of the public effectively. From this perspective the public need not be motivated by interest in TTs or the environment, but merely by the pragmatic aim of engaging with new systems of provision that 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).

7 Conclusions

With this paper we respond to claims that the challenges of climate change and peak oil demand system-wide transformations in sociotechnical systems of provision, in turn implying unprecedented challenges for societal governance. We have analysed the potential of a novel civil society initiative, the TT movement, to contribute to a transition to a low-carbon sustainable economy in the UK. We have framed the TT movement as a grassroots innovation, a niche of sociotechnical innovation, and assessed its attempts to grow and diffuse beyond the niche. On the basis of an application of SNM theory in this novel civil society context our theoretically informed practical recommendations for enhancing regime influence are: to foster deeper engagement with resourceful regime actors; to manage expectations (of participants) more realistically by delivering tangible opportunities for action; and to embrace a community-based, action-oriented model of social learning (in preference to a cognitive theory of behaviour change).

In choosing to view the TT movement as a grassroots innovation, we have in this paper usefully focused on the *systems innovation* potentialities of the TT movement. However, in related work we also explore the utility of viewing the TT movement as a social movement (Seyfang et al, 2010). Smith (2012) has recently analysed the role of civil society in energy transitions, drawing upon both transition theory and social movement theory; thus a strategy for future research may be to draw both on theory about how social movements harness and mobilise resources to achieve their goals, while also within the same case study drawing on transition theory to illuminate niche–regime interactions.

Our discussion leads us to reflect critically on the adequacy of our framing of the TT movement as a grassroots innovation and niche and on the utility of applying SNM theory to a civil-society-based niche of sociotechnical innovation. We found that it does indeed make sense to view the TT movement as a grassroots innovation and that the fit turns out to be nuanced and multilayered because system innovation is in effect the *raison d’être* of

the TT movement, and so far it seems to be self-generating a strong culture of innovation. Adoption of a grassroots innovation and niche framing has usefully allowed us to analyse the TT movement as an agent of change within sociotechnical systems.

Reflecting on the lessons this empirical study might contribute to the development of theory, we identify three broad areas where refinements could aid understanding grassroots innovations such as the TT movement. Firstly, our analysis of the TT movement's experience to date illustrates that the work involved in establishing a more 'social' niche innovation does indeed demand attention to the same three key factors that Kemp et al (1998) claim are essential for technology-centered niches (namely, managing expectations, building networks, and learning processes). Each of these factors has been explicitly addressed in the design of the TT movement, and it would appear that this has allowed it to overcome some of the common obstacles faced by grassroots innovations and contributed to the rapid establishment of TTs across the UK. In terms of theory for grassroots innovations, this highlights the need to adequately resolve *internal* factors, as well as external ones. For Kemp et al (1998) successfully addressing these three factors is a prerequisite for niche emergence and regime influence. However, there could be a danger for the TT movement of focusing on internal niche-formation processes to the detriment of putting resources into external-facing niche diffusion, and thus it would be useful to evaluate the balance between internal and external priorities and goals.

Secondly, grassroots innovations such as the TT movement 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 and Lovell (2007) for ecohousing]. 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, leading to conflict among niche actors about how to proceed (Hielscher et al, 2011). The agency and diffusion potential of these niches is therefore quite different from those of the technological innovations commonly described in the transitions literature. Our empirical research, and personal engagement with the TT movement, suggests that questions of identity, belonging, purpose, and community are critical in recruiting and retaining participants (see also Bate et al, 2005; Seyfang et al, 2010). Therefore, moving above and beyond technical and cognitive questions of information provision and behaviour change, our 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 how group identity is formed and maintained, how group cohesion is fostered and built, and how a sense of collective 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 and to manage the competing voices comprising the niche (Hielscher et al, 2011; Lovell et al, 2009). In terms of theory for grassroots innovations, what is required, then, is an understanding of how identity, belonging, purpose, and sense of community underlie niche growth and the evolution of goals and priorities over time.

Thirdly, analysis of the TT movement has shown very clearly that, in common with most grassroots innovations, the sociotechnical innovation we see is strongly *social* innovation rather than technological. Such social innovations have similarities with technological innovations but also specific characteristics and challenges, and there is a need for theory that better describes the factors affecting the emergence and growth of social innovations.

Specifically, within TTs 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 movement brings these inconspicuous practices to light and sets about recreating them according to different logics, but with a 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 Hargreaves et al, 2011; Røpke, 2009; Seyfang et al, 2010; Shove and Walker, 2010).

In conclusion, we have shown that SNM theory can be usefully applied in a civil society context to a grassroots innovation (as a niche of social innovation), generating useful insights about how it can work strategically to grow and diffuse ideas into the wider society. The analysis also revealed areas where the theory could be further developed to better describe the richness and diversity of social innovations occurring in a civil society context. Developing such an improved theoretical toolkit for researching grassroots innovations is important if we are to adequately understand the contribution that civil society can make in a system-wide transition to a low-carbon economy.

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