

REVIEW ARTICLE

Low Carbon Transitions beyond the exceptional

Grin, J., Rotmans, J. and Schot, J. in collaboration with F Geels and D Loorbach (2010) *Transitions to Sustainable Development. New Directions in the Study of Long Term Transformative Change*. London: Routledge, pp. 205.

Bulkeley, H., Castán Broto, V., Hodson, M. and Marvin, S. (eds) (2010) *Cities and Low Carbon Transitions*. London: Routledge, pp. 397.

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Introduction

The term 'transition' - often prefixed 'socio-technical' - used in relation to a move to a more sustainable or low carbon society has become a unifying theme for scholars, activists and politicians in recent years. Like sustainable development in the 1990s and 2000s, the idea of transition is fast becoming a floating signifier, a term used in a variety of ways by different actors and groups of actors.

Prominent among recent work in this field is that of John Grin, Jan Rotmans and Johan Schot, who with colleagues Frank Geels and Derk Loorbach have worked to develop a comprehensive theory of transitions, espousing their Multi-Level Perspective (MLP) in doing so. Their book, *Transitions to Sustainable Development* (TSD, 2010) is an attempt to draw together strands of their work to set out this approach in detail. As such it provides a useful opportunity for an investigation of the theoretical underpinnings of socio-technical transitions. A contemporaneous book, *Cities and Low Carbon Transitions* (CLCT; Bulkeley *et al.*, eds., 2010) uses the concept to look more closely at the geography and policy of transitions through an examination of the role of cities in a move to a low carbon economy. These two books are reviewed here as a means of exploring how conceptions of transition are developing and being used to explore ways of achieving low carbon economies.

In particular, this paper is dedicated to opening-up an aspect of low carbon transitions that, it is argued, has been underplayed or under-examined in literature to date. This is the unevenness of transitions within current political regimes. This relates to both the spatial variability of the ways in which 'niche' activities develop and also variability of the impacts of transitions on different populations, for instance socially and economically vulnerable people and places.

The paper begins with a brief outline of the different ways in which the term transition has come to be used in relation to sustainable development in recent years, before moving on to discuss the transitions literature in more depth through a review of the two books cited above.

Floating Signification

At least four primary uses of the term 'transition' have become popular, which link to one another to varying degrees. These relate to the theory, conception, policy and politics of transitions respectively. First, the theory of transitions has come to prominence through integration of science and technology studies, evolutionary economics and sociology in the guise of the Multi-level Perspective. This is discussed in more depth below through a review of Grin *et al.*'s *Transitions to Sustainable Development*.

Second, the notion of transition is increasingly being used as a less theoretically bound concept for societal shifts towards sustainable or low carbon economies. In this context transitions are conceptualised within a broad 'socio-technical systems' or network understanding of society, although they tend to use this as a springboard for looking at other sets of issues rather than as a means to concentrate on the idea of transition *per se*. This use of the term forms the second focus of this paper and of the book *Cities and Low Carbon Transitions*.

Third, references to 'transitions' are making appearances in policy. Indeed much of the original work carried out by Grin *et al.* involved working on policy experiments in the Netherlands through the Dutch Knowledge Network on System Innovation and Transition. Elsewhere, however, the term has been used without any real link to its theoretical grounding. In 2009 the UK government published the *UK Low Carbon Transition Plan* (DECC, 2009), which bore few hallmarks of transitions theory or linked concepts.

Finally, the term is being used in social movements as a signifier for a move to a radically different means of organising society. The Transition Towns movement uses the idea of transition as a powerful symbol for the idea of positive change; a move to a more convivial, localised economy premised on a need to drastically reduce oil dependence. Although not explicit, there are links between this use of the term and theoretical usages. For instance, the defining principles of transition initiatives as set out in the *Transitions Handbook* (Hopkins, 2008) mirror those of Grin *et al.*'s principles of strategic niche management (TSD: 82).

This paper focuses on the first two forms of transition, but the latter two are important to note. Various commenters have critiqued the Multi-level Perspective (in particular) as being 'apolitical', or lacking in its conceptualisation of power and governance. Yet at the same time it should be noted that transition theory - albeit abstracted and watered-down - is already political in a very real sense: it is being used to direct policy and social movements.

The Multi-Level Perspective

In their preface Grin *et al.* state that *Transitions to Sustainable Development* 'emerged out of the ambition to develop a new, inspiring perspective on sustainable development' (Grin *et al.*, 2010: xvii). They aim to take the concept of transition as studied over the last few decades across different disciplines and develop a coherent theory that could cross disciplines in relevance and appeal. This is centred on an explicitly normative goal of transforming societal systems towards sustainable modes of development. Indeed, the purpose of developing a theory of transitions is largely in order to better understand 'how may we influence transitions into a desired direction, i.e. sustainable development?' (*ibid.*: 5). This is explored in three sections, which each take a different perspective on transitions. The first section (Geels and Schot) focuses on 'The

Dynamics of Transitions', offering a socio-technical perspective to understanding the way in which transitions take place. Part II of the book (Rotmans and Loorbach), 'Towards a Better Understanding of Transitions and Their Governance: A Systemic and Reflexive Approach' explores the idea of Transition Management as a means for developing policy approaches to achieving transitions. Part III (Grin) looks at 'Understanding Transitions from a Governance Perspective', with a focus on governing institutions' role within civil society and, by extension, within transitions.

For this reader, Part I of the volume offers the most by way of conceptual insight. Here, the fundamental components of the MLP are set out, and various transition 'pathways' are explored. Multiple heuristics are utilised to set out: how systems are layered; different typologies of transitions; how different societal 'fields' interact in transitions; and the lifecycle of transitions. Taking an avowedly historical approach, the reader is led through a series of examples of how technological transitions have occurred in practice, many of which centre around the last great period of transition, the industrial revolution.

At the heart of the MLP is a conception of objects of analysis as being multi-layered, consisting of landscapes, regimes and niches. Transitions involve each of these layers, but are stimulated through innovation at the niche layer of activity, which over time may come to challenge and replace existing regime-level practices. Thus the approach is concerned with ways of stimulating and fostering such innovations through Strategic Niche Management (SNM): in essence a means of assisting evolution to take its 'natural course' while being guided by explicitly normative aims.

Part II then deploys these principles in exploring methods for governing transitions more broadly through the concept of Transition Management. This approach focuses, essentially, on fostering deliberative governance through a network or 'arena' of 'front-runners' made up of a range of different civic actors. This arena works to develop a shared understanding of the problem and from there develop a transition 'vision', embracing 'a basket of transition images' (*ibid.*: 158) that work as a 'guide for formulating programmes and policies and for setting short-term and long-term objectives' (*ibid.*: 158). This is then opened up again in Part III through a more explorative and theoretical consideration of the role of and relationship between different actors in the governing process. This focuses on how regime level institutions can be reformed and restructured, including a quite clear acknowledgement of the roles of different forms of relational power in shaping or resisting such changes.

The Transition Management perspective is perhaps the most controversial and problematic set of principles put forward in this book. On the one hand, all this prescription is quite helpful and in many ways refreshing: a normative approach that seeks explicitly to engage with practical solutions for policy-making. On the other, the focus on Transition Management seems to fall into many of the failings that critics have levelled at the MLP. For instance, the TM approach has been the main focus for the various critiques of the MLP as clumsy in its handling of power and the complexities of governance (*cf.* Shove and Walker, 2007; Smith *et al.*, 2005). The analysis is limited to quite overtly managerial and specific recommendations for developing a transition management approach - for instance, a transition arena should involve 'around 15-20 front-runners' (*ibid.*: 157) - but does not really go beyond how 'policy experiments' might be set up to test out different theories of change and encourage niche innovations. While Part I pulls together a quite innovative approach to conceptualising complexity and systemic change, this seems a bit lost in Part II.

The theory of transitions set out in Part I and also again in Part III are much clearer in their limitations, open in approach, and - crucially - allow for the power and politics involved in transitions to be developed. But, despite aiming to provide a theory that

crosses different fields of practice, in reality it focuses largely on technological change. This prevents the book, and its theory, being developed in a more convincing manner. The 'socio-' in socio-technical lacks consideration across the piece. For instance, the idea of strategic niche management (Geels in Part I) is focused solely on technological innovation, with an implicit onus on the state-market nexus to deliver this. Yet this could be something equally formulated towards social movements as a means for testing and promoting more sustainable social practices; equally 'bottom-up' transitions led from outwith the (capitalist) state-market are left unconsidered. With this in mind, North (2011) argues that transitions theorists should make use of social movement theories to help direct their thoughts in this direction.

There is something more here, though. The MLP is shot through with the notion of evolution, and a central focus on promoting 'winners'; creating the conditions for new innovations in experimental test-beds; and using elite groups to formulate new visions. This is rooted within the central premise of an evolutionary economics approach to setting off transitions. What is disappointing is the lack of concern for what happens away from the test-bed sites, what happens to those outside policy processes, and those people, organisations and groups deemed as 'lagging' or unresponsive to change. In other words, what is the role of unexceptional places in transitions? And what becomes of those that do not effect transitions, but rather are affected by them? This lacuna is also perhaps surprising given the most popular usage of the term transition in the 1990s and early 2000s concerned the 'transition economies' of Eastern Europe, which very clearly show the scope for transitions to breed inequalities of people, place and policy. With this in mind, the review now turns to a book explicitly focused on the geography of transitions: *Cities and Low Carbon Transitions*.

Cities and Low Carbon Transitions

Cities and Low Carbon Transitions centres on an aim 'to examine the emergence of low carbon transitions and explore their politics and possibilities in the urban arena' (Bulkeley *et al.*, Chapter 1). The book is an edited collection, split into two parts: conceptual frameworks for understanding transitions (Part 1) and transitions in practice (Part 2), each focused on furthering understanding of how cities might (e.g. Späth and Rohrer, Chapter 7) or might not (e.g. Geels, Chapter 2) contribute to a shift to a low-carbon society. The MLP theory of transitions forms a loose conceptual sheath for these discussions, with some chapters being more explicit than others in this regard.

The stated aim of uncovering power geometries and geographies clearly acknowledges previous critiques of the MLP. As noted, to date the literature on socio-technical transitions has lacked this dimension: in Bulkeley, Broto and Maassen's words, 'the dynamics of urban infrastructure and the challenges emerging from conflicts over the political economy of the city have not been fully explored' (Chapter 3: 29). To some extent Grin *et al.* (see also Geels, 2010) recognise this in TSD, and call for others to bring forward contributions from the domains of social and cultural geography as well as political science, but are rather reticent on the potential of political-economic geographies. It may be argued that it is precisely these approaches that might help to shed greater light on the way that regimes seek to maintain their hegemonic status, and also on the potential for variability and inequality when transitions do take place (cf. Marx, 1867).

The collection is not always entirely satisfying in filling this void, with such themes bubbling along quietly - and sometimes only implicitly - under the surface of a number of contributions. More commonly, cities - or parts of cities - are explored as exceptions,

experimental spaces or 'living laboratories' (Evans and Karvonen, Chapter 9). Yet variability and inequality do remain recurring themes, particularly in the theoretical chapters. These issues erupt to the surface in some stand-out contributions that push forward thinking on the question of variable transitions. Particularly thought-provoking chapters in this regard are While (Chapter 4) on the carbon calculus in transitions, and Coutard and Rutherford (Chapter 8) on the rise of post-networked cities in Europe.

Transitions and inequalities of people, place and policy

From these two contributions we might begin to better consider inequalities across the three themes of this journal: people, place and policy. While (Chapter 4) writes directly of a political-economy of low-carbon transitions in theorising the spatio-political impacts of urban governments coming under increasing pressure to account for and reduce their carbon emissions. In particular, While highlights the difficult choices that must be made by urban governments as they consider carbon reduction within the context of a range of economic, social and political pressures, as well as their position within national and international regimes. This might include the need to compete (with the creation of winners and losers) for inward investment; to deal with inequitable target-setting regimes; and also to understand and ameliorate the impacts of changing energy prices on vulnerable populations.

As While infers, the economic restructuring implied in transition visions will have particular spatial impacts. In the UK, for instance, towns and cities still recovering from the impacts of previous rounds of restructuring will be faced with a whole set of new challenges as their high-carbon industrial legacies come under increasing pressure as carbon emissions become increasingly costly; and supplying low carbon infrastructures will become increasingly important as carbon also becomes a point of competition for inward investment between places. On top of this lies an important point, also raised by Hodson and Marvin (Chapter 5) regarding the capability of different urban governments and allied actors to act on low carbon transitions: 'what happens in cities that do not have the resources and capacities to mobilise that world cities have?' (Hodson and Marvin: 68). This is summed up by While (49-50):

The era of carbon control raises questions about the capacities of cities to make low carbon transitions ... including levels of carbon dependence (in the economy, infrastructure, land-use patterns, etc.), the cost of low carbon retrofitting and restructuring, the degree of political and public support for low carbon measures, and, not least, the competing costs of climate change adaptation ... In short, low carbon transitions present variable challenges and opportunities for localities, and cities and regions have differential capacities and resources to make a low carbon transition.

This point could be extended by considering how emerging transition pathways are also impacting on social inequity. Vulnerable people are already beginning to feel the impacts of rising oil prices as increasing numbers become classified as fuel poor and government carbon reduction policies such as the Green Deal have the potential to exacerbate these problems as much as to ameliorate them (Goodall, 2012). Having doubled in the last ten years, fuel prices in the UK are expected to double again in the next decade (Gouldson et al., 2011), significantly increasing the potential for such problems.

These issues of social inequality are drawn out from a different angle by Coutard and Rutherford (CLCT, Chapter 8). In a stimulating and thought-provoking analysis of community energy systems, the authors begin to open up some of the issues of

insiders and outsiders within new post-networked energy regimes, asking important questions regarding the idea of 'utopian resilience': that is, different ways in which communities may seek to remove themselves from collective, centralised energy provision. Noting that the default setting of much literature on this phenomenon praises the potential for decentralised energy systems to deliver social, economic and environmental goals, the authors instead argue that:

...post-networked city transitions potentially involve a recombination of the socio-spatial solidarities upon which most networked cities were constructed ... [This] may well be at odds with traditional social cohesion goals of network service provision (Coutard and Rutherford, 2010: 119).

For instance if communities increasingly opt out of large scale collective provision, this provision will become less well financed, leading to declining quality and reliability and leaving those reliant on such provision with an inferior service: a potential 'tragedy of the infrastructure commons' (*ibid.*:122), with the provision of 'service niches for a minority at the (economic, social, environmental) expense of the majority' (*ibid.*: 122).

Finally, in their conclusion to the book, Bulkeley *et al.* draw from this and other contributions a theme regarding the narrowness of the interest groups involved, something that we might argue is inherent in Rotmans and Loorbach's prescriptions for Transition Management (TSD Part II). This also alludes to issues regarding the control, ownership and selective deployment of knowledge, something less clearly explored in either of the books discussed here. Bulkeley *et al.* note that creating more inclusive forms of transition is dependent not merely on shaping existing regimes through a process of (technological) ecological modernisation, and hint that a more radical realignment of power and wealth may be necessary. While not necessarily raising a fundamental question about the theory of transition – Grin *et al.* (2010) do leave open a range of different forms that transitions might take – it does raise questions about the normative dimension of their approach. In particular, is the kind of change required in order to achieve a sustainable low carbon economy is in keeping with the technology-led managerial and incremental approaches proposed in the latter sections of their book?

Conclusion

Both of these texts are rich, dense works; each excellent in their own right. This review has only brushed along the surface of much of what they have to say. But it has also aimed to bring to light some particular issues of relevance to those concerned with social, economic and environmental inequalities, themes that seem to chime with this journal's *raison d'être* regarding 'the situations and experiences of people and places struggling to negotiate a satisfactory accommodation with the various opportunities, constraints and risks within contemporary society'.

In this regard, the transition to a low-carbon economy is shown to be one that can only be considered as problematic, with existing trajectories and experiments already generating new forms of carbon-based inequalities. As While (CLCT, Chapter 4) points out, a low carbon transition

... certainly opens up opportunities for experimentation with what might be regarded as being 'alternative' urban strategies ... But carbon control also brings with it the possibility of new forms of carbon inequality as urban low carbon transitions are determined by the economic bottom line of carbon competitiveness. (While, 2010: 51)

In other words the terms 'low carbon' and 'sustainable development' do not share an intrinsic link. Despite the contribution made within the two books reviewed here, more emphasis is needed on empirically and conceptually exploring the potential for inequalities of people, place and policy in transitions. On the other side of this, there is also need for a better understanding of how urban communities that will not necessarily have the resources to become 'exceptional' places can become resilient to the pressures placed upon them by low carbon transitions.

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