EXPLORING THE CONTRIBUTION OF TRANSITIONS MANAGEMENT TO INFORM REGIONAL FUTURES

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ABSTRACT   Regions around the world are facing intersecting challenges associated with economic and industrial restructuring, demographic changes, urbanisation, and climate change. Regional development efforts have primarily focused on an economic agenda but, have struggled to fully integrate environmental and social concerns. Climate change requires an integrated approach to addressing multiple regional challenges. This paper illustrates how Transition Management (TM) can provide coherence and direction to the transformative efforts of regional actors. TM is an innovative governance framework for managing complex problems. Informed by theory and practice, it has achieved considerable policy success in Western Europe. Yet, TM has only begun to be explored in Australian contexts. Our paper considers what transitions theories can contribute to regional scholarship and practice in Australian regions experiencing major economic, social, and ecological restructuring.

KEY WORDS: Transition management, regional development, governance

1. INTRODUCTION

This paper explores the challenges associated with regional sustainability in circumstances of ecological change and economic restructuring. In addition, it examines the potential contribution of theories of sustainability transitions, and in particular transition management, to inform and improve regional development efforts. Despite the important work of regional development activities and processes, the on-ground results are often unclear and contested. For example, while the delineation of regions, establishment of regional development agencies, and development of regional development plans provide important means for promoting regional development, there is a recognised need to incorporate multiple understandings of regional futures through the inclusion of diverse stakeholders and knowledges. However, developing a shared vision for a region is challenging and contested where regional development goals can conflict with environmental sustainability or climate change goals for instance.

The literature on sustainability transitions, governance, and urban and regional transitions potentially offers insights which can positively inform the theory and practice of regional development and sustainable regional futures. For example, sustainability transitions literature focusses on long-term processes of change, which are the result of interacting economic, social, technological, institutional, and/or ecological developments (Markard *et al.*, 2012); governance literature highlights the politics and power inherent in processes of profound change (Grin *et al.*, 2010); and urban and regional transitions literature emphasises that responses and interventions need to be embedded in specific socio-political and spatial contexts (Coenen and Truffer, 2012; Hansen and Coenen, 2015; Wolfram, 2016). This literature, which is informing practice in regional contexts particularly in Europe, has attracted limited attention amongst regional development scholarship and practice in Australia. For example, transitions literature does not feature in the Regional Australia Institute's (2012) stocktake of 50 pieces of influential regional research.

The aim of this paper is therefore to consider what this literature and in particular transitions management may contribute to Australian regional development scholarship and practice. The first two sections of the paper introduce how regional development is organised in Australia and some of the challenges associated with the promotion of more integrated regional development. These sections highlight the interrelated challenges of governance, different forms of knowledge, and the magnitude of change. The following two sections outline the conceptual foundations of transition

theories and how insights from these could be applied to regional development. The spatial dimensions of transitions are then considered and specific areas where transitions management is suggested as a useful approach to inform the design and management of sustainable regional futures are highlighted. This is further explored by focusing on a specific region in Western Melbourne to illustrate its applicability and potential in an Australian context.

2. REGIONAL DEVELOPMENT IN AUSTRALIA

Under Australia's federal system of government, all three levels of government have some involvement in regional development. According to the OECD (2010) the Federal government's approach to regional development targets three areas: management of national macroeconomic settings to promote growth and economic development across all regions; ensuring mainstream national programs are appropriately targeted to meet the needs of particular sectors, with regional needs and priorities considered as part of programs; and, supporting local initiatives through a range of federal regional programmes. State governments have significant responsibilities for decisions concerning many areas that contribute to economic development including land use planning and development processes. These decisions are administered through their planning, business and investment, agriculture, mining, energy, and tourism portfolios. Local governments are involved by virtue of their role in local decision making, fostering collaborations, and investment attraction activities. According to the OECD (2010) state and local governments have the most significant role in regional development.

In relation to the dominant forms of knowledge in forming regional policy, McManus and Pritchard (2001, p. 254) highlight that much regional development debate in Australia "has remained wedded to economic terms" and consider the value of "triple bottom line approaches". In doing so, they state:

> *"We have concerns about this relationship to an economic metaphor, however, we also accept that the metaphor may be what is needed to build upon other approaches to integrating economic, social and ecological variables such as the discourse of sustainable development"* (McManus and Pritchard, 2001, p. 256).

Within this context, Victoria's current approach to regional development is broadly centred on a partnership between the Commonwealth, State, and Local government, under the auspices of Regional Development Australia (RDA). Under this approach a national network of RDA Committees has been established across Australia (including Victoria). Their role is to: support informed regional planning; consult and engage with the community on economic, social, and environmental issues, solutions and priorities; liaise with governments and local communities about government programs, services, grants, and initiatives for regional development; and, contribute to business growth plans and investment strategies, environmental solutions, and social inclusions strategies in their regions (Regional Development Australia, 2017). Wear (2012, p. 469) also showcases the contribution of regional management forums in Victoria, which have been established to "facilitate collaboration between Victorian Government departments and local governments in each of Victoria's regional development regions".

Those who have assessed progress in Australian regional development tend to emphasize the influence of neoliberalism, albeit in varying forms and to varying degrees. Beer *et al.* (2005, p. 49) argued that regional development agencies are both the *product* and *victim* of neoliberalism, in that regional development agencies "represent one way in which governments can be seen to be responding to regional pressure for assistance, but they can do so without incurring significant costs". Similarly, Tonts and Haslam-McKenzie (2005, p. 184) have argued that "new forms of government intervention and institution building have been embedded into contemporary neoliberal politics". While also highlighting the influence of neoliberalism in shaping regional development, O'Toole (2005) also recognises the presence of communitarian impulses in regional development initiatives, such as bottom-up participatory approaches to decision making.

Importantly, Pugalis and Keegan (2017, p. 68) also highlight a paradox, whereby regional development efforts can appear "preoccupied with providing the appearance of policy order; reflecting a bias towards structured processes and transactional relationships, which eschew societal complexities". This suggests that regional development efforts are likely to struggle in responding to situations of ecological change and economic and social restructuring.

3. THE CHALLENGE OF SUSTAINABLE REGIONAL FUTURES

Regional development is complex and contested in many ways. Firstly, there are multiple theories, models, and concepts informing debates about regional economic development with these reflecting different perspectives on what generates economic growth and social wellbeing (e.g. Hassink, 2005; Morgan, 2007; Pike *et al*., 2010; Stimson *et al*. 2011). Secondly, there is a recognition that the paradigms informing regional development are not fixed and static, but subject to change over time. Associated with a tangible change in the nature of economies, several authors have pointed to a shift in the paradigm informing regional development over recent decades. For example, Stimson *et al*. (2011) differentiate between old economies (industrial) and new economies (post-industrial), while Halkier (2012) distinguishes between the industrial paradigm and the knowledge economy paradigm. Thirdly, in contrast with these broadly 'modernising' paradigms for regional development, Bruckmeier and Tovey (2008) distinguish between conceptions of sustainable regional development before and after the breakthrough of the concept of sustainable development in debates about regional development. For Bruckmeier and Tovey (2008) "the understanding of sustainable regional development found in regional development practice is more diverse and pluralistic and less standardised than in the programmes that guide it" (p. 313), which they argue therefore "requires a more in-depth study of knowledge interaction and management" (p. 314). In some respects, this concern with knowledge is also associated with debates about evidence based policy (or at least evidence-informed policy) that serve to place greater emphasis on making the best use of available knowledge, notwithstanding the challenges that this involves, and questions concerning what constitutes relevant evidence (Marston and Watts, 2003; Head, 2008; 2010).

The implications of climate change and a shifting energy policy landscape is contributing to socio-economic restructuring in regions with fossil fuel reserves, such as the Latrobe Valley, Victoria. Economic restructuring is occurring as a consequence of decisions like the closure of Hazelwood power station and the increasing uptake of new energy technologies. Climate change is fundamentally disrupting current ways of thinking and acting with respect to regional development and regional futures. Put simply, climate change destabilises the very certainties underpinning the ways in which social and economic life is organised. As Bosomworth et al. (this volume) note "Climate change driven shifts in

species, ecosystems, water, and soil regimes will challenge our livelihoods, food and water security, and cultural connections to place".

Accordingly, there is much merit in Head's (2011, p. 224-5) view of regional development as involving "complex and wicked problems" and the view of Levin *et al.* (2009) of climate change as a 'super wicked problem' due to features such as the need for urgency in responding and the lack of a single authority capable of addressing the issue. Authors such as Kooiman (2008) and Chuenpadgee and Jentoft (2009) would argue that such characteristics foreground questions about the 'governability' of issues and the potential adequacy of current responses. This has significant implications for rethinking current modes of governance to enable the types of transformative change required to enable sustainable regional futures. The role and value of transitions theories in contributing to this urgent challenge is considered here.

4. SUSTAINABILITY TRANSITIONS AND GOVERNANCE

A 'transition' is understood as a process of structural, non-linear system change in dominant practices (routines, behaviour, action), structures (institutions, economy, infrastructure), and cultures (shared values, paradigms, worldviews) that takes place over a period of decades (Rotmans *et al.*, 2001; Grin *et al.*, 2010). The field of sustainability transitions is concerned with both studying and influencing "radical transformation towards a sustainable society" (Grin *et al.*, 2010, p. 1). Sustainability transitions have been conceptualised as long-term processes of change, and are the result of interacting economic, social, technological, institutional, and/or ecological developments (Markard *et al.*, 2012). They are the transformations by which innovations related to sustainability practices, policies, or technologies are adopted more broadly (Geels, 2002). These solutions should be both co-evolutionary, in that systems and sub-systems co-evolve and can support or deter a transition, and solutions should come from a place of co-design and learning (Grin *et al.* 2010), which is more explicit in transition management, and emerging theories incorporating governance, politics, and power.

The recognition of multi-scales, sectors, and levels of government involved in sustainability transitions has highlighted the complexity of governing transitions (Turnheim *et al.* 2015). Investigating approaches or models of governance in sustainability transitions research is important because it contributes to understanding the historical contextualization of transitions. It emphasises the embedded patterns, actions, and structures, and how changes within these domains are influenced by exogenous

trends. Lastly, governance research highlights the politics and power inherent in processes of profound change (Grin *et al*., 2010). While this is identified as important, it is clear that an explicit recognition of politics and power in transitioning requires further work in transitions research (Walker and Shove, 2007; Avelino and Rotmans, 2009; Meadowcroft, 2009; Lawhon and Murphy, 2012; Geels, 2014; Avelino and Whittmayer, 2015; Truffer *et al*., 2015).

Suggestions have been offered by a number of scholars for ways in which governance, power, and politics could be better incorporated into transitions research. These include: making the role of politics in transitions more explicit (Meadowcroft, 2011); acquiring a greater understanding of the dynamics of power within transitions through political ecology (Lawhon and Murphy, 2012); questioning where power resides and how is it performed, and whose voices remain unheard (Markard *et al*., 2012); learning from the field of political economy (Geels, 2014); focusing on agency and the role of agents in multi-level and multi-phase contexts (Olsson *et al*., 2014); applying placed-based political struggles from political geography (Murphy, 2015); and merging socio-technical with socio-political frameworks (Raven *et al*., 2016). Other authors have highlighted the need for new forms of governance, and the importance of reflexivity (Rotmans and Loorbach, 2008; Voβ and Bornermann, 2011). One governance approach that has particularly strong links to reflective governance is transition management (Rotmans and Loorbach, 2009; Frantzeskaki *et al*., 2012).

5. TRANSITION MANAGEMENT

Transition Management (TM) (Loorbach, 2007; Loorbach, 2010; Loorbach and Rotmans, 2010) has emerged as a useful way to manage complex problems through governance processes. Informed by practical experiences and applications (Loorbach and Rotmans, 2010), it has continued to be adapted and extended in an iterative and reflective manner (Avelino and Grin, 2016). Adaptations to TM include responding to critiques that it is too simplistic and does not account well for politics and changing social practices (Walker and Shove, 2007). In addition, there is the need for more analytical attention to the dynamic relationship between niches or experiments and incumbent systems (Smith, 2007). For Wittmayer and Loorbach (2016) TM "is based on: (1) bringing together frontrunners from policy, science, business, and society to develop shared understandings of complex transition challenges; (2) developing collective

transition visions and strategies; and (3) experimentally implementing strategic social innovations".

TM attempts to influence the speed and direction of transitions based on analysis, including developing experiments and 'transition arenas' as instruments to learn from and foster change. It provides a framework (see Figure 1), both for the analysis of, and the pursuit of transformative change. TM distinguishes between four 'types' or 'spheres' of transition activities: *strategic*, *tactical*, *operational* and *reflexive*. Activities in each sphere roughly target different aspects of the societal system in question, and have different systemic and temporal scopes. The strategic sphere features activities with a broad systemic scope, a time horizon that includes the entire transition (i.e. possibly as long as 30 years) and a focus on the culture of the system. The tactical sphere focusses on the structures and the institutions of the system and its various subsystems, the time horizon is the medium term of approximately 5 to 15 years. The operational sphere focusses on practices and concrete projects; the time horizon is therefore the short term of 0 to 5 years. The reflexive sphere involves embedding processes of monitoring, evaluation, and assessment to improve learning and decision making.
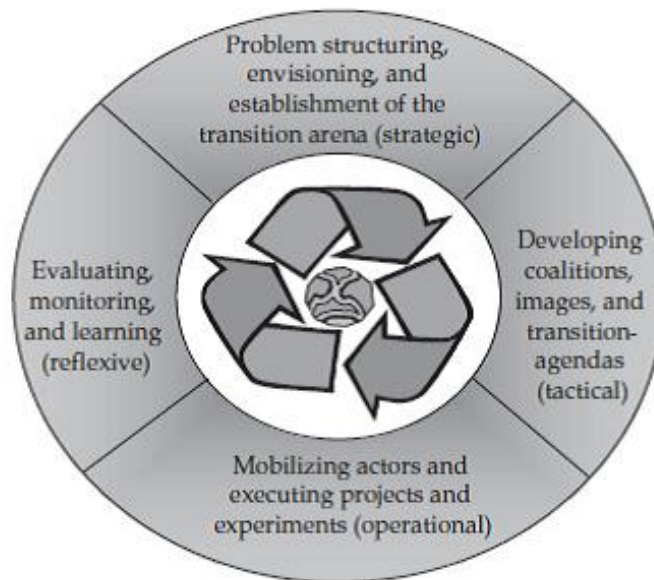
Figure 1. Transition Management Cycle. Source: (Loorbach, 2010).

The four spheres provide a useful heuristic device to analyse and describe transformative change activities. Advocates of TM seek to go beyond description, but rather aim to contribute to processes of transitioning to sustainability, and so this framework also provides a suite of 'systemic instruments' to link 'descriptive to prescriptive'. TM is a modular approach and in constant development and interaction with its applications. New systemic tools can be developed and added to the 'toolbox' and existing tools are adapted as circumstances require. A brief overview of some of the key systemic tools in each sphere as discussed in Loorbach (2010) is presented in Table 1.

Table 1. Key systemic tools of Transition Management.

Strategic	The strategic sphere focusses on problem structuring and envisioning, and the establishment of a transition *arena*: a small network of frontrunners with different backgrounds, within which various perceptions of a specific persistent problem and possible directions for solutions can be deliberately confronted with each other and subsequently integrated. These actors take the lead with the problem structuring and frame a high-level vision for the long-term future of the system. There is an emphasis on creative dissensus, as opposed to unambitious consensus. The arena is deliberately small (10-15 people) and connects to the networks of the arena participants. The arena is the spider in the web of the Transition Management activities.
Tactical	The tactical sphere is concerned with the transition agenda, the development of pathways that lead to several transition 'images', which are to be understood as different ways the vision could take shape. Methods like scenarios and back-casting fit in this sphere. Around pathways new coalitions can be formed that are concerned with translating them into strategic plans and intermediate objectives. Here also, there is emphasis on dissensus, or more generally on diversity. The different pathways may not be compatible and need not all come to full fruition.
Operational	The operational sphere focusses on experiments, projects, and other short-term actions. There is an important role for transition experiments, to which several methodological publications have been devoted (e.g. van den Bosch and Rotmans, 2008; van den Bosch, 2010). Experiments contribute to a 'societal challenge' and aim to bring the transition further along one of the pathways identified – this is one of the ways Transition Management connects long-term vision with short-term actions. Experiments can fail, but successful experiments may be deepened, broadened, and scaled up (e.g. van den Bosch and Rotmans 2008; van den Bosch, 2010).
Reflexive	The reflexive sphere focusses on monitoring. This entails both monitoring the transition as such, and the Transition Management process. This latter aspect therefore involves the monitoring of the arena process, the alliances formed, the experiments, and so on. Taanman (e.g. 2012; 2014) developed a framework for transitions and Transition Management monitoring.

Source: the Authors.

The governance of the activities is not sequential, but rather illustrates possible connections and components for the TM process. The framework "[assesses] how societal actors deal with complex societal issues at different levels but consequently also helps to develop and implement strategies to guide or influence these 'natural' governance processes" (Loorbach, 2010, p. 168). It can be applied to larger systems, as well as subsystems, and specific projects. In TM, change can come from different types of societal actors, not only top-down or bottom-up.

6. SPATIAL DIMENSIONS OF TRANSITIONS

Regional development clearly has spatial and scalar dimensions. However, there are many ways in which regions can be defined and characterized. Within regional development, a region can be understood to be a spatially independent or functional labour market (Scott, 2011). Although, with new digital technologies and divisions of labour, the spatial-economic dimension of regions become more problematic (Scott, 2011). In urban planning, regions correspond to administrative or jurisdictional boundaries. Other definitions may refer to geographic based boundaries, such as catchment management (Ewing, 2003), or cultural or historic boundaries that "can be also conceived as spaces for social and political mobilization" (Tomàs, 2015, p. 383). Finally, some approaches, such as bioregionalism, explicitly emphasize "the connectivity between people and places, but also confront moral, aesthetic or even spiritual concerns" (Moreno, 2015, p.43). Obviously, characterising regions in one way as opposed to another can have important implications for what kinds of responses are established and who might need to be involved in shaping strategic visions.

There have been calls from transitions researchers to account for geography more explicitly, as well as highlight the importance of regional scales (Hansen and Coenen, 2015; Truffer *et al.*, 2015). As these scales have the ability to act as strategic sites for the support and management of transitions (Truffer and Coenen, 2012). One approach to dealing with the spatial dimensions of transitions is evident in the work of Wittmayer and Loorbach (2016). Their approach outlines the characteristics of cities and regions that should be taken into account in the application of TM, namely: personal, institutional, geographic proximity, and multiscalar and multi-domain interaction. There is considerable interest within both regional development and TM scholarship and practice in addressing issues associated with establishing their boundaries of inquiry. There is potential for mutually beneficial engagement to occur in this work. Within this

context, Wittmayer and Loorbach's (2016) approach represents, an early, and accessible, contribution from the transitions scholarship, which may be of value to regional development scholarship and practice.

TM has successfully been applied to urban regions, and has the potential to provide a sense of direction, an impulse for local change, and collective empowerment for regional actors to give coherence and direction to transformative efforts (Roorda *et al.*, 2014). In Rotterdam, researchers applied a participatory action research method to work with two local communities (Carnisse and Finkenstein) using the transition arena approach to empower communities to live more sustainably (Wittmayer et al. 2014). Ferguson et al. (2013) developed a strategic program to enable the transition of Melbourne's conventional water system to a water sensitive system. Drawing on TM and adaptive management, the researchers developed transition scenarios through participatory workshops with local water practitioners. Montreuil, a Parisian suburb with a diverse population, was involved in a TM process as part of its Local Climate Plan (Krauz, 2016). The aim of the process was to go beyond top-down incentives towards behaviour change to include more bottom-up ideas of sustainability, while being cognisant of the multi-level context within which such action can be understood.

7. WHAT CAN TRANSITION MANAGEMENT CONTRIBUTE TO REGIONAL FUTURES?

The field of sustainability transitions is inherently interdisciplinary in nature. While the origins are traced back to three pillars: socio-technical, complex system analysis, and governance (Grin *et al.*, 2010), the field has expanded to include several other disciplines. The most relevant to regional futures are power and politics (Walker and Shove, 2007; Meadowcroft 2007; 2009; 2011; Avelino and Rotmans, 2009; 2011), geography (Coenen and Truffer, 2012; Hansen and Coenen, 2015), urban studies (Hodson and Marvin, 2009; 2010), and social-ecological systems (Smith and Stirling, 2010; Olsson *et al.*, 2014). In addition, within the larger interdisciplinary field of sustainability transitions, smaller, niche research groups have formed. For example, Wolfram and Frantzeskaki (2016) argue that the study of systemic change in cities [and we would argue regions] is a highly interdisciplinary scientific field. Arguably, regional futures would benefit from a more explicit interdisciplinary approach, such as is embraced in the field of sustainability transitions.

Sustainability transitions is concerned with both research and action related to persistent problems and pervasive change. Persistent problems are problems that reinvent themselves in the face of solutions, and are often a consequence of the way systems work. Many environmental and sustainability related issues are persistent problems. But, why are these problems so persistent? Because solutions are often created to try and patch the system, which either does not work, or makes things worse: put simply solutions may constitute little more than ad hoc, incremental responses to systemic challenges. In addition, the problems are not necessarily a malfunction of the system, but may be a consequence of the way the system works. Persistent problems share a number of characteristics with wicked problems (Rittel and Webber, 1973; Rotmans, 2005). One particularly relevant similarity is that the perspective on what the problem is can differ; one person's solution may make matters worse in the eyes of another. Therefore, the act of naming a persistent problem can be difficult, though identifying symptoms is often much easier.

Overcoming persistent problems requires changing the systems that produces them – in other words systemic transitions are required. But, how do we influence a transition? The answer is through pervasive change. Change is central within sustainability transitions theories and research. In sustainability transitions, change can take place either incrementally or radically. More radical transformations are associated with pervasive change. A type of pervasive change is what Schot (2016) calls 'deep transitions', where inter-related transitions in a relatively short period of time, affect the way society works at large. The second industrial revolution (roughly from 19th century to WWII) is an example of a deep transition, as well as sanitation and sewers (Rogers *et al.*, 2015), mobility and transport (Geels, 2002; 2005), and health care (van Raak, 2015; Van Raak and de Haan, 2017). Making systemic change and sustainability more central to its concerns would be beneficial to regional futures scholarship and practice.

8. APPLYING TRANSITION MANAGEMENT WITHIN AN AUSTRALIAN REGIONAL CONTEXT

In the following section, TM is applied to a regional case study in Australia: Western Melbourne. Melbourne's west is a diverse region, undergoing rapid growth and socio-economic transformations. The region is located immediately to the west of Melbourne's Central Business District, and extends from the inner city neighbourhoods through to the middle suburbs on to the urban-rural interface areas (with an area of over

4 700 square kilometres). Traditionally a manufacturing centre, the region is experiencing significant economic restructuring, while dealing with a rapidly growing population, urbanisation, and a changing climate. In 2012, the region produced 17.4 million tonnes of carbon dioxide equivalents of greenhouse gas (GHG) emissions, and it is projected to increase by 15 per cent by 2020 under a business as usual scenario (WAGA, 2015). As one of the fastest growing and culturally diverse regions in Victoria comprising 19 per cent of the state's population in 2015, it also has the highest unemployment rate in Melbourne at 7.3 per cent (RDA, 2017).

Of particular interest to regional futures is the development and implementation of the 'Low Carbon West Strategy' (WAGA, 2015): an attempt to navigate these global challenges through a range of collaborations and strategic initiatives. The strategy emerged through collaboration between eight local councils and other stakeholders comprising two leading local government alliances, the Western Alliance for Greenhouse Action (WAGA), Lead West (LW) a forum for enabling more sustainable regional economic development, and the Western Melbourne Regional Development Australia (RDA) Committee. This strategic collaboration seeks to mobilise a regional sustainability transition through an informal network governance process working at the intersection of economic development, urban development, and climate change. In this sense, the collaboration can be regarded as an emergent transition arena, as the alliance of actors shares important aspects with an 'intentional' arena (De Laurentis *et al*., 2017).

Prior to applying TM, we conducted a preliminary analysis of the Low Carbon West (LCW) Strategy and stakeholders drawing on a framework developed by Wolfram (2016) (Doyon *et al*., 2017). Wolfram's (2016) framework for accessing urban transformative capacity provides criteria to both assess particular regional contexts and to identify opportunities to enable capacity. From our earlier analysis using this framework we were able to identify some key issues and challenges facing the LCW context highlighting a lack of transformative capacity in areas related to 'core developmental processes' which is related to the "reorganization/pre-development phase in system transitions" and to the 'relational dimensions' such as working across agency, political administration levels, and geographical scales (Wolfram, 2016, p. 128-9). Here the interest is in considering some of these issues in terms of a regional transition and reflecting on how a TM approach could inform potential responses or options for LCW stakeholders (see Table 2) drawing heavily on Loorbach (2010) and Roorda *et al*. (2014).

Table 2. Potential for Transition Management to Inform Western Melbourne's Transition to a Low Carbon Economy.

LCW: Issues for improvement	A Transition Management Approach
LCW strategy represents an attempt to develop a 'low carbon' vision for Melbourne's West with twenty priority actions for implementation. Issue - LCW strategy is a first step towards establishing a reflexive system analysis.	*Strategic sphere:* Establishment of a transition arena where diverse and innovative stakeholders work on establishing a vision, a joint problem and system perspective. Arena members then disseminate this work into their networks.
LCW is a regional scale strategy implemented by local government alliances. Issue - How LCW is aligned and/or conflicts with other existing multi-scalar and multi-sectoral plans/scenarios.	*Tactical sphere:* Pathway and scenario development can aid in setting up a transition agenda (see Sondeijker *et al.* 2006 for more on transition scenarios) in which various scenarios and strategies can be connected and potentially interlinked.
LCW actions implicate a wide range of stakeholders and sectors which may be outside the sphere of influence of LCW stakeholders. Actions from the LCW strategy could be framed as experiments. Issue - Current implementation is limited and constrained by LCW stakeholder agency. The strategies and pathways are not clearly identified.	Operational *and tactical sphere:* Linking of long-term vision with short-term actions. Actions identified in strategy can be reframed as transitions experiments (as in the Dutch health care transition case, see e.g. Loorbach and Rotmans 2010). A suite of experiments can also be a starting point of the TM process, with the establishment of an arena following (ibid). See also previous point on pathway and scenario development.
Issue - Unclear what the capacity is to strengthen and integrate the different coalitions or agendas in the processes of innovation and experimentation.	*Tactical sphere:* Existing stakeholder network could be framed as a 'transition arena' involving the necessary coalition of actors required to implement strategy. See previous two points on this and its relation to pathways and scenarios.
Issue - Recognition and capacity to undertake reflexive monitoring by LCW stakeholders.	*Reflexive sphere:* This component correlates strongly with the activities of transition monitoring, assessments and evaluation. Taanman (2012, 2014) developed and applied a Transition Monitoring framework that may provide useful tools.
Necessary strategic capacities and agency of LCW stakeholders largely representing different municipalities and sectors and the extent to which the stakeholders have the necessary capacities and agency to implement the strategy. The LCW strategy and its steering committee include interactions between different political-administrative levels and geographic scales. Issue - Challenge in the implementation of the LCW strategy is enabling the capacity to work across different levels and scales.	*Strategic sphere:* The 'transition arena' process would be instrumental in addressing these issues of capacity and agency. A well-functioning arena should be able to attract an *effective* selection of stakeholders across sectors, levels, jurisdictions, etc. Such an arena would form strategic alliances with networks around specific transition experiments or entire pathways as well as connect to networks in the various organisations implicated in the transitions process.

Source the Authors

When applying a particular framework or process one needs to be mindful of the context from which it was developed and applied, as well as the context in question. TM was developed in the Netherlands, and has been applied throughout Western Europe, but has only begun to be explored in Australian contexts. For a TM process to be successful in a regional area like Western Melbourne or the La Trobe Valley, socio-political and spatial considerations need to be understood in relation to those in Western Europe. As the word 'region' takes on different meanings in the two contexts, a TM process would need to be aligned with Australian definitions of region and regional studies. Murphy (2015) has highlighted the importance of reflection and theoretical advancement as theories from transitions studies are used in different parts of the world, which provides an opportunity for Australian scholars to contribute to the field of sustainability transitions.

9. CONCLUSION

This paper seeks to contribute to an understanding of how transitions theories and methods can inform regional development theory and practice. As well as enriching the conceptual lens available for regional studies, this research provides useful insights into ways of framing regional transitioning processes including those regions experiencing significant socio-economic and socio-ecological restructuring. Analytically, the conceptual framework provided by transitions theories and TM in particular, provides a rich set of theoretically informed, yet practically useful, tools that can assist in understanding regional transitions and designing and implementing interventions to purposively transition regions.

Regional development is inherently a complex process and often highly contested in terms of the way economic, social, and environmental objectives are considered and framed. Underpinning these processes are potentially conflicting understandings of what ought to constitute development and growth in a particular context, what and whose needs ought to be prioritised, and the degree to which a range of objectives should be balanced or integrated. Effective models of regional governance are required to navigate these complexities while operating across a multi-governance context where tensions between national, state, regional, and local level goals and policy settings (as well as between different sectors and interests) need to be understood, mediated, and managed.

While transitions theories and approaches are not presented here as the answer to these problems, we contend that this body of theory, as applied in real world regional contexts, demonstrates significant potential for regional futures research in Australia. As a theoretical approach seeking to engage with processes of change and change management in complex systems, it offers both a strong theoretical and practical approach to reconsidering persistent problems and shaping innovative long-term solutions for Australian regions such as Western Melbourne or the La Trobe Valley. Further research around the application of transitions theories and practice in Australian regions is warranted to explore more deeply the implications for reimagining regional development processes and sustainable futures in areas undergoing significant economic, social, and ecological change. This research could also offer valuable insights for transitions researchers and practitioners interested in examining and understanding better the complex spatial and political dimensions of transitioning in different regions around the world.

REFERENCES

Avelino, F. and Grin, J. (2016). Beyond Deconstruction. a Reconstructive Perspective on Sustainability Transition Governance. *Environmental Innovation and Societal Transitions*, 22, pp. 15-25.

Avelino, F. and Rotmans, J. (2009). Power in Transition: An Interdisciplinary Framework to Study Power in Relation to Structural Change. *European Journal of Social Theory*, 12(4), pp. 543-569.

Avelino, F. and Rotmans, J. (2011). A Dynamic Conceptualization of Power for Sustainability Research. *Journal of Cleaner Production*, 19, pp. 796-804.

Avelino, F. and Wittmayer, J. M. (2015). Shifting Power Relations in Sustainability Transitions: A Multi-Actor Perspective. *Journal of Environmental Policy and Planning*, 17(5), pp. 1-23.

Beer, A., Clower, T., Haughtow, G. and Maude, A. (2005). Neoliberalism and the Institutions for Regional Development in Australia, *Geographical Research*, 43(1), pp. 49-58.

Bruckmeier, K. and Tovey, H. (2008). Knowledge in Sustainable Regional Development: From forms of Knowledge to Knowledge Processes. *Sociologia Ruralis*, 48(3), pp. 313-329.

Chuenpadgee, R. and Jentoft, S. (2009). Governability Assessment for Fisheries and Coastal Systems: a Reality Check. *Human Ecology*, 37, pp. 109-120.

Coenen, L. and Truffer, B. (2012). Places and Spaces of Sustainability Transitions: Geographical Contributions to an Emerging Research and Policy Field. *European Planning Studies*, 20(3), pp. 367-374.

De Laurentis, C., Eames, M. and Hunt, M. (2017). Retrofitting the Built Environment 'to Save' Energy: Arbed, the Emergence of a Distinctive Sustainability Transition Pathway in Wales. *Environment and Planning C: Politics and Space*, 35(7), pp. 1156-1175.

Doyon, A., de Haan, F. J., Moloney, S., Coffey, B. and Bosomworth, K. (2017). The Role of Actor Alliances in Regional Transformative Capacity. Paper presented at the International Sustainability Transitions 2017 Conference, 18-21 June, Gothenburg, Sweden.

Ewing, S. (2003). Catchment Management Arrangements. In S. Dovers and S. Wildriver (Eds) *Managing Australia's Environment*. Federation Press, Sydney, pp. 393-412.

Ferguson, B., Frantzeskaki, N. and Brown, R. (2013). A Strategic Program for Transitioning to a Water Sensitive City. *Landscape and Urban Planning*, 117, pp. 32-45.

Frantzeskaki, N., Loorbach, D. and Meadowcroft, J. (2012). Governing Societal Transitions to Sustainability. *International Journal of Sustainable Development*, 15(1/2), pp. 19-36.

Geels, F. W. (2002). Technological Transitions as Evolutionary Reconfiguration Processes: a Multi-Level Perspective and a Case-Study. *Research Policy*, 31(8-9), pp. 1257-1274.

Geels, F. W. (2005). The Dynamics of Transitions in Socio-technical Systems: A Multi-level Analysis of the Transition Pathway from Horse-drawn Carriages to Automobiles (1860–1930). *Technology Analysis & Strategic Management*, 17(4), pp. 445–476.

Geels, F. W. (2014). Regime Resistance Against Low-Carbon Transitions: Introducing Politics and Power into the Multi-Level Perspective. *Theory, Culture and Society*, 0(0), pp. 1-20.

Grin, J. Rotmans, J. and Schot, J. (2010). *Transitions to Sustainable Development: New Directions in the Study of Long Term Transformative Change*. Routledge, New York, USA.

Halkier, H. (2012). Knowledge Dynamics and Policies for Regional Development: Towards a New Governance Paradigm. *European Planning Studies*, 20(11), pp. 11767-1784.

Hansen, T. and Coenen, L. (2015). The Geography of Sustainability Transitions: Review, Synthesis and Reflections on an Emergent Research Field. *Environmental Innovation and Societal Transitions*, 17, pp. 92-109.

Hassink, R. (2005). How to Unlock Regional Economies from path Dependency? From Learning Region to Learning Cluster. *European Planning Studies*, 13(4), pp. 521-535.

Head, B. (2008). Three Lenses of Evidence Based Policy. *Australian Journal of Public Administration*, 67(1), pp. 1-11.

Head, B. (2010). Reconsidering Evidence Based Policy: Key Issues and Challenges. *Policy and Society*, 29, pp. 77-94.

Head, B. (2011). Governing for Sustainable Regions: Can Government Meet the Innovation Policy Challenge? *Regional Science Policy and Practice*, 3(3), pp. 219-230.

Hodson, M. and Marvin, S. (2009). Cities Mediating Technological Transitions: Understanding Visions, Intermediation and

Consequences. *Technology Analysis & Strategic Management*, 21(4), pp. 515-534.

Hodson, M. and Marvin, S. (2010). Can Cities Shape Socio-Technical Transitions and How Would we Know if they Were? *Research Policy*, 39, pp. 477-485.

Kooiman, J. (2008). Exploring the Concept of Governability. *Journal of Comparative Policy Analysis*. 10(2) pp.171-190.

Krauz, A. (2016). Transition Management in Montreuil: Towards Perspectives of Hybridisation Between 'Top-Down' and 'Bottom-Up' Transitions. In D. Loorbach, J. M. Wittmayer, H. Shiroyama, J. Fujino and S. Mizuguchi (Eds) *Governance of Urban Sustainability Transition: European and Asian Experiences*, Springer, London, UK.

Lawhon, M. and Murphy, J.T. (2012). Socio-Technical Regimes and Sustainability Transitions: Insights from Political Ecology. *Progress in Human Geography*, 36(3), pp. 354-378.

Levin, K., Cashore, B., Bernstein, S. and Auld, G. (2009). Playing it Forward: Path Dependency, Progressibve Incrementalism, and the "Super Wicked" Problem of Global Climate Change, *IOP Conference Series: Earth and Environmental Science*, 6 (Session 50). doi.org.10.1088/1755-1307/6/50/502002.

Loorbach, D. (2007). Transition Management: New Mode of Governance for Sustainable Development. Doctoral Thesis, Erasmus University, Rotterdam, Netherlands.

Loorbach, D. (2010). Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework. *Governance*, 23(1), pp. 161-183.

Loorbach, D. and Rotmans, J. (2010). The Practice of Transition Management: Examples and Lessons from Four Distinct Cases. *Futures*, 42,(3), pp. 237-246.

Loorbach, D., Wittmayer, J., Shiroyama, H., Fujino, J. and Mizuguchi, M. (2016). *Governance of Urban Sustainability Transitions: European and Asian Experiences*. Springer, Tokyo, Japan.

Markard, J., Raven, R. P. J. M. and Truffer, B. (2012). Sustainability Transitions: An Emerging Field of Research and its Prospects. *Research Policy*, 41(6), pp. 955-967.

Marston, G. and Watts, R. (2003). Tampering with the Evidence: A Critical Appraisal of Evidence-Based Policy-Making. *The drawing board: An Australian Review of Public Affairs*, 3(3), pp. 143-163.

McManus, P. and Pritchard, B. (2001). Regional Policy: Towards the Triple Bottom Line. *Australian Journal of Regional Studies*, 7(3), pp. 249-260.

Meadowcroft, J. (2007). Who is in Charge here? Governance for Sustainable Development in a Complex World. *Journal of Environmental Policy & Planning*, 9(3-4), pp. 299-314.

Meadowcroft, J. (2009). What About the Politics? Sustainable Development, Transition Management, and Long Term Energy Transitions. *Policy Sciences*, 42(4), pp. 323-340.

Meadowcroft, J. (2011). Engaging with the Politics of Sustainability Transitions. *Environmental Innovation and Societal Transitions*, 1(1), pp. 70-75

Morgan, K. (2007). The Learning Region: Institutions, Innovation and Regional Renewal. *Regional Studies*, 31(5), pp. 491-503.

Moreno, E., (2015). A Case for Bioregionalism in Place-Based Research. *Melbourne Journal of Politics*, 37, pp. 43-60.

Murphy, J. T. (2015). Human Geography and Socio-Technical Transition Studies: Promising Intersections. *Environmental Innovation and Societal Transitions*, 17, pp. 73-91.

Olsson, P., Galaz, V. and Boonstra, W. J. (2014). Sustainability Transformations: A Resilience Perspective. *Ecology and Society*, 19(4) DOI: http://dx.doi.org/10.5751/ES-06799-190401.

Organisation for Economic Co-operation and Development (OECD) (2010). *Regional development policies in OECD countries*. OECD Paris.

O'Toole, K. (2005). Local Government and Governance in Victoria: Challenges for Community Participation. In R. Eversole and J. Martin (Eds) *Participation and governance in regional development: perspectives from Australia.* Ashgate Publishing, Hampshire, pp. 279-292.

Pike, A., Rodriguez-Pose, A. and Tomaney, J. (2010). *Handbook of local and regional development*. Routledge, London, UK.

Pugalis, L., and Keegan, D. (2017). The Regional Economic Development Paradox: Attempting Policy Order in the Face of Social Complexity. *Australasian Journal of Regional Studies*, 23(1), pp. 68-95.

Raven, R., Kern, F., Verhees, B. and Smith, A. (2016). Niche Construction and Empowerment through Socio-Political Work. A Meta-Analysis of Six Low-Carbon Technology Cases. *Environmental Innovation and Societal Transitions*, 18(3), pp. 164-180.

Regional Australia Institute (2012). Stocktake of Regional Research: 50 Pieces of Influential Regional Research. Online version accessed 21 June 2017, www.regionalaustralia.org.au.

Regional Development Australia, (2017). *What we do*. Online version accessed 30 August 2017, www.rda.gov.au.

Rittel, H. W. J., Webber, M. M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences*, 4, pp. 155-169.

Rogers, B. C., Brown, R. R., de Haan, F. J. and Deletic, A., (2015). Analysis of Institutional Work on Innovation Trajectories in Water Infrastructure Systems of Melbourne, Australia. *Environmental Innovation and Societal Transitions*, 15, pp. 42-64.

Roorda, C., Wittmayer, J., Henneman, P., vab Steenbergen, F., Frantzeskaki, N. and Loorbach, D. (2014). *Transition Management in the Urban Context: Guidance Manual*. DRIFT, Erasmus University, Rotterdam, Netherlands.

Rotmans, J. (2005). Societal Innovation: between dream and reality lies complexity, Inaugural Addresses Research in Management Series. ERIM, Erasmus Research Institute of Management, Rotterdam.

Rotmans, J. and Loorbach, D. (2009). Complexity and Transition Management. *Journal of Industrial Ecology*, 13(2), pp. 184-196.

Rotmans, J., Kemp, R. and Van Asselt, M. (2001). More Evolution than Revolution: Transition Management in Public Policy. *Foresight*, 3(1), pp. 15-31.

Schot, J. (2016). Confronting the Second Deep Transition through the Historical Imagination (Da Vinci Medal Address). *Technology and Culture*, 57, pp. 445-456.

Scott, A. J. (2011). A World in Emergence: Notes Towards a Resynthesis of Urban-Economic Geography for the 21st Century. *Urban Geography*, 32(6), pp. 845-870.

Smith, A. (2007) Translating Sustainabilities between Green Niches and Socio-Technical Regimes. *Technology Analysis & Strategic Management*, 19(4), pp. 427-450.

Smith, A. and Stirling, A. (2010). The Politics of Social-ecological Resilience and Sustainable Sociotechnical Transitions. *Ecology and Society*, 15(1), pp. 11-24.

Sondeijker, S., Geurts, J., Rotmans, J. and Tukker, A. (2006). Imagining Sustainability: the Added Value of Transition Scenarios in Transition Management. *Foresight*, 8(5), pp. 15-30.

Stimson, R., Stough, R. and Nijkamp, P. (2011). Endogenous Regional Development. In R. Stimson, R. Stough, and P. Nijkamp (Eds) *Endogenous Regional Development: Perspectives, Measurement and Empirical Investigation*. Edward Elgar, Cheltenham, pp. 1-19.

Taanman, M. (2012). Working in the Science-Policy Interface: Transition Monitoring in the Dutch Energy Transition Program. In G. Verbong, D. Loorbach, J. Grin and J. Rotmans (Eds) Governing the Energy Transition: Reality, Illusion or Necessity, Routledge Studies in Sustainability Transitions, Routledge, New York, pp. 251–276.

Taanman, M. (2014). Looking for Transitions: Monitoring Approach for Sustainable Transition Programmes. PhD Thesis, DRIFT (Dutch Research Institute for Transitions), Faculty of Social Sciences, Erasmus University Rotterdam and Netherlands Organisation for Applied Scientific Research, TNO.

Tomàs, M. (2015). If Urban Regions are the Answer, What is the Question? Thought on the European Experience. *International Journal of Urban and Regional Research*, 39(2), pp. 382-389.

Tonts, M. and Haslam-Mckenzie, F. (2005). Neoliberalism and Changing Regional Policy in Australia. *International Planning Studies*, 10(3-4), pp. 183-200.

Truffer, B. and Coenen, L. (2012). Environmental Innovation and Sustainability Transitions in Regional Studies. *Regional Studies*, 46(1), pp. 1-21.

Truffer, B., Murphy, J.T. and Raven, R. P. J. M. (2015). The Geography of Sustainability Transitions: Contours of an Emerging Theme. *Environmental Innovation and Societal Transitions*, 17, pp. 63-72.

Turnheim, B., Berkhout, F., Geels, F. W., Hof, A., McMeekin, A., Nykvist, B. and van Vuuren, D. P. (2015). Evaluating Sustainability Transitions Pathways: Bridging Analytical Approaches to Address Governance Challenges. *Global Environmental Change*, 35, pp. 239-253.

van den Bosch, S. and Rotmans, J. (2008). Deepening, Broadening and Scaling up: A Framework for Steering Transition Experiments, Knowledge Centre for Sustainable System Innovations and Transitions (KCT), Rotterdam, Netherlands.

van den Bosch, S. J. M. (2010). Transition Experiments: Exploring Societal Changes towards Sustainability, Erasmus University Rotterdam.

van Raak, R. (2015). Transition Policies: Connecting System Dynamics, Governance and Instruments in an Application to Dutch Healthcare, Doctoral Thesis, Erasmus University Rotterdam.

van Raak, R. and de Haan, F. J. (2017). Key Features of Modern Health Systems: Nature and Historical Evolution. In J. Brosre, and J. Grin (Eds) *Toward Sustainable Transitions in Healthcare Systems*, Routledge.

Voβ, J. P. and Bornemann, B. (2011). The Politics of Reflexive Governance: Challenges for Designing Adaptive Management and Transition Management. *Ecology and Society*, 16(2).

WAGA (2015). Low Carbon West, A strategy for the transition to a low carbon economy in the WAGA Region. Online version accessed 12 February 2017,
http://waga.com.au/climate-change-action/low-carbon-west/.

Walker, G. and Shove, E., 2007. Ambivalence, Sustainability and the Governance of Sociotechnical Transitions. *Journal of Environmental Policy and Planning*, 9(3-4), pp. 213-225.

Wear, A. (2012). Collaborative Approaches to Regional Governance – Lessons from Victoria. *Australian Journal of Public Administration*, 71(4), pp. 469-474.

Wittmayer, J. and Loorbach, D. (2016). Governing Transitions in Cities: Fostering Alternative Ideas, Practices, and Social Relations Through Transition Management. In D. Loorbach, J. Wittmayer, H. Shiroyama, J. Fujino and M. Mizuguchi (Eds) *Governance of Urban Substantiality Transitions: European and Asian Experiences*. Springer, Tokyo, pp. 13-32.

Wittmayer, J. M., Schapke, N., van Steenbergen, F. and Oman, I. (2014). Making Sense of Sustainability Transitions Locally: How Action Research Contributes to Addressing Societal Challenges. *Critical Policy Studies*, 8(4), pp. 465-485.

Wolfram, M. (2016). Conceptualizing Urban Transformative Capacity: A Framework for Research and Policy. *Cities*, 51, pp. 121-30.

Wolfram, M. and Frantzeskaki, N. (2016). Cities and Systemic Change for Sustainability: Prevailing Epistemologies and an Emerging Research Agenda. *Sustainability*, 8, pp. 1-13.