2 Literature Review

2.1 Introduction

Developing effective responses to climate change requires both an understanding of the governance complexities associated with climate change and a theoretical approach to develop solutions that take account of these complexities.

In the first instance, I employ the framing of climate change as a super wicked problem to identify and explore complexities for both governors and the governed. This includes understanding the implications of each of the super wicked factors (that there is a limited time to respond, that the problem is caused by those seeking solutions, that governments have been weak in their responses and that future benefits associated with taking action are discounted) (Levin et al. 2007), for the focus of this thesis: Australian local government community engagement to influence household-based emissions.

I consider the suitability and applicability of practice theory (Shove et al. 2012; Spurling et al. 2013; Schatzki 2015; Strengers and Maller 2014) to help inform strategies and responses by local governments that meet the super wicked solutions criteria of policies and interventions needing to be 'sticky', able to embed within a target audience and spread quickly to new audiences. I also identify the need for a structured process to develop solutions that will drive large-scale transitions. For this, I consider the usefulness of transition management (Frantzeskaki et al. 2012; Loorbach 2010), including examination of the sometimes contentious relationship between practice and transition theories (Shove and Walker 2010) and recent efforts to bridge this divide (Hargreaves et al. 2013; Geels et al. 2015). I draw on the *systems of practice* framing to understand changes within practices (both as entities and as performances), within the relationships between individual practices and between different groupings of related practices (bundles and complexes) and at the broader systemic level (Watson 2012).

2.2 Climate Change as a Super Wicked Problem and the Implications for Local Governments

Climate change meets the characteristics of a wicked problem: its definition is contested, there are no definitive solutions, there is no history of solution development to draw upon, no opportunity for trial and error and each proposed solution may have unintended consequences (Head 2014; Incropera 2015). Every wicked problem may be a symptom of another wicked problem, such that addressing causes related to one has consequences elsewhere (Rittel and Webber 1973). However, climate change also possesses its own unique characteristics that add to its complexity, identified in Levin et al.'s (2007) framing of climate change as a *super wicked problem* with four additional wicked factors.

The first is that *there is a limited time in which to respond* as the longer humanity delays in developing appropriate solutions, the bigger and more complex the problem becomes due to feedback loops which exacerbate existing causes of climate change, as well as their impacts (Levin et al. 2007). The second is that *the problem is caused by those seeking the solution*. This complicates a standard wicked problem complexity factor of competing viewpoints as to the solution, by extending this concept to whether there is a need to develop a solution at all. The third factor is that *there is weak or non-existent central authority*, a problem at all levels of government from the global, where there is no authoritative structure able to impose a solution, to the national, where governments may be required to act against their traditional interests and the immediate interests of their populace. Finally, *future benefits from solving the problem are discounted* as satisfying current needs and desires for levels of comfort, as expressed through particular forms of living, are viewed as more desirable than sacrificing for the long-term interest of future beings (Levin et al. 2007).

The super wicked factors speak to the complexity in developing effective responses both for individual policymakers as well as for the audiences they seek to influence, in this case individuals and households (Gifford 2011; Lorenzoni et al. 2007). These include defining an appropriate scale of response if there is limited time to act, how weak central authority that is unable or unwilling to impose scientifically-responsible solutions can be changed or overcome, how policymakers can step outside their spheres of operations and reflect on their role in seeking effective solutions and how communities can be galvanised to action if the benefits from taking action are unlikely to accrue to them here and now (Lorenzoni et al. 2007; Randalls 2010).

For Australian local governments, the super wicked complexity factors are integral to how they seek to govern climate change. In particular, as the lowest tier of government in a federal system, local government is subject to the super wicked factor of weak or non-existent authority, expressed through its relationship with higher tiers of government. This results in an environment of limited regulatory power framed by state legislation and dependence upon higher tiers of government for resources, whether to enact policy or implement programs (Aulich 2009; Australian Government 2013). In the absence of strong regulatory powers, Australian local governments are more reliant on convincing individuals of the need to reduce their own emissions and empowering them with the resources and the capacity to do so. This takes place primarily through community engagement interventions based upon behaviour change theories that foreground the role of individuals as independent actors making informed choices (Fritze et al. 2009; Moloney et al. 2010; Tilbury 2004; UrbanTrans 2008).

That climate change is caused by those who are also seeking a solution not only presents a problem for local governments relying on behaviour change-based forms of community engagement (as is explored in greater depth in Chapter 4), but also highlights the limitations of policymakers and practitioners to reflect upon their own role and professional practices. These include internal structures that can enhance or limit a local government's ability to respond to climate change, the

narrow perspective of influential disciplines (such as financial management and planning) and existing cultural habits that shape decision-making (Zeppel 2011; Rickards et al. 2014; Binder and Boldero 2012).

That there is a limited time to respond infuses a sense of urgency to local government responses to reduce household-based greenhouse gas emissions. This commonly takes the form of emissions reduction targets tied to strategies to attain those targets, that emerged from early climate change response processes, notably the Cities for Climate Protection program (Lindseth 2004). In addition to the science of climate change, these targets are also influenced by internal factors, such as a desire to be seen to be a leader within the sector resulting in ambitious targets to drive concerted action on climate change (Coffs Harbour City Council 2002; City of Moreland 2007), as well as external influences, such as changes in Federal and state government policy (City of Moonee Valley 2010; City of Port Phillip 2011). The recent emergence of the climate emergency movement with its calls on local government to reduce emissions faster than a business-as-usual trajectory, is the latest such external influence (Chou 2020).

Long term emissions reductions targets and their allied strategies are also subject to the fourth complexity factor of super wicked problems: that future benefits from taking action now are discounted. Local governments have sought to overcome this through emphasising a response to climate that aligns with Levin's (2012) call for a *collective rationality* "that begins, and ends, with addressing the problem of climate change as identified by scientists" (Levin et al. 2012, p. 129). As is explored further in Chapters 4 and 5, this has met with limited success by contrast to interventions that provide more immediate benefit for individuals such as the ability to reduce household utility bills through energy efficient infrastructure and the installation of renewable energy.

In summary, climate change as a super wicked problem requires theoretical approaches that will take account of identified weaknesses in current practice, including:

- a lack of consideration by policymakers and practitioners about how their own governance practices relate to the household practices they are seeking to change (Binder and Boldero 2012);
- the limited power and governance space afforded to local government (Dowling et al. 2013);
- the limitations of behaviour change-based community engagement with its reliance on the role of the individual as a rational decision-maker (Moloney and Strengers 2014); and
- conflict between a desired collective rationality as the basis for a response to climate change and the individual motivations used to drive change (Romsdahl et al. 2018).

In developing effective solutions to climate change as a super wicked problem Levin et al. (2012) focus on the creation of forward-looking, path-dependent policy in which the future desires of policymakers are locked-in and resistant to short-term pressures, and which contain an internal logic triggering further such path-dependent policies. They recognise the influence of our propensity to

delay action in favour of immediate benefits flowing from inaction. To overcome this, they posit the need for a solutions development framework, which includes inter-related processes: lock-in, self-reinforcement, increasing benefits from the policy change over time and providing positive feedback (Levin et al. 2012).

Lock-in refers to the logic inherent in a policy that makes reversion to a former policy unlikely. Self-reinforcement recognises that despite this logic, there still may be a desire on the part of policymakers to revert to earlier policy. To overcome this, good policy should be designed in such a way that reversion becomes increasingly costly over time, reinforcing the logic of the new policy. At the same time, the benefits of the new policy should also be seen to increase over time (adding to its reinforcement). Finally, the policy should receive positive feedback from new audiences as the effect of the policy spreads.

To achieve these path-dependencies, Levin et al. (2012) suggest three diagnostic questions to be applied to policy responding to climate change:

1. What can be done to create stickiness making reversibility immediately difficult?
2. What can be done to entrench support over time?
3. What can be done to expand the population that supports the policy?

The stickiness of a policy refers to logic within the policy that gives it immediate durability, in that it is unlikely to be reversed because reversion carries costs that outweigh the benefits of such a decision (Levin et al. 2012). Within local government, the use of regulation (such as land use planning, environmentally sustainable design requirements for new buildings and local traffic management in the form of speed limits and parking capacity) contributes to the stickiness of a policy as is it usually the result of extensive development and consultation, and so difficult to reverse (Hillebrand 2010; Pucher et al. 2011; Low 2007; Chen et al. 2018).

Local governments may also achieve stickiness of outcomes within target households through interventions that encourage the uptake of new technologies and infrastructure. This has an advantage over interventions that require sustained changes in behaviour on the part of individuals. Shifts to more energy efficient or renewable energy technology are likely to be locked-in due to the investment required unless the new technology fails or is found to be incompatible with existing lifestyles. Technological changes also create an additional form of lock-in in the form of immediate and ongoing emissions reductions, although local governments must pay heed to potential rebound effects, in which the take-up of an energy efficient technology is offset by individuals increasing their overall energy use (Greening et al. 2000).

Meeting the requirements of the second diagnostic question, embedding support for a new policy with a target population over time, requires a policy or program that is self-reinforcing in that support for the policy deepens amongst the target population (Levin et al. 2012). This requires a thorough

understanding of the impact of the intervention upon the household practices the local government is seeking to influence. It also requires reflection on the relationship between governance practices and household practices to ensure that the former design appropriate policies and programs to change the latter and that there are no unintended consequences of governance that stymie interventions.

Finally, climate change responsive policy must meet the demands of the third diagnostic question by possessing the capacity to spread quickly beyond its original target population within which it has become entrenched (Levin et al. 2012). This requires the ability to either deliver at scale immediately or scale-up quickly. Consequently, local government needs to consider its role in achieving rapid spread of the policy outcome, whether it is as the primary agent driving change or as a supporter of broader social and technological change.

The super wicked problem concept is not designed to be an all-encompassing governance framework. Rather, it seeks to identify complexity that must be taken into account and suggests solutions criteria with which to assess potential policies and interventions Levin et al. (2012) state that their "goal is to initiate, rather than conclude, a problem focused effort to develop new research questions for scholars and guiding strategies useful for practitioners seeking to ameliorate super wicked problems" (Levin et al. 2012, p. 139). In this spirit, I seek a theoretical approach that recognises and has the potential to respond to the complexities highlighted in the super wicked framing.
The efficacy of such an approach can be tested against the super wicked solutions criteria of stickiness, ability to embed and capacity to spread quickly. It requires the ability to reflect upon how climate change responses are developed and implemented within government and their relationship to external actors (such as households) and what they do. It must also be able to zoom in on the minutiae of what governments and households do as well as place them in broader socio-technical frameworks, allowing a view of changes both close and far (Nicolini 2012). Finally, the lack of a definitive end point at which the climate can be made safe requires a realignment of socio-technical systems to continually seek ways to reduce and manage emissions in a manner that is adaptable to changing climate projections and impacts (Levin et al. 2012). In summary, my theoretical approach to developing super wicked solutions should have the ability to account for the complexity and dynamics in both governments and households at both the specific and the systemic level. To achieve this, I turn first to practice theory.

2.3 Practice Theory

Practice theory meets these requirements by offering a nuanced understanding of everyday activities undertaken by individuals, households, businesses, organisations and governments (Watson 2012). Drawing on Giddens (1984), practice theory rejects the notion that the actions of individuals are solely guided by the structures within which they exist or that those actions are shaped solely through

human agency. Instead, it transcends the structure/agency dualism creating a more dynamic view of practices as entities contributing to their own reproduction within society, simultaneously shaping and being shaped by the social context (Shove et al. 2012).

By contrast to the behaviour change theories that underpin typical local government climate change community engagement programs and that focus on the choices and motivations of individuals, practice theory positions the individual as a performer of practices (Røpke 2009). Constituent elements, such as the technologies and materials required, the regulations under which the practice is performed, the temporal restrictions flowing from the rhythms of everyday life and the abilities of the individual, are of equal value in influencing how practices are performed (Spurling et al. 2013).

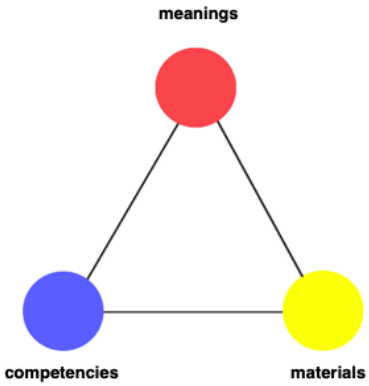
As a unit of analysis, the defined concept of a practice reflects the diversity of thought within theories of practice, focusing on elements, relationships between elements and positioning within broader socio-technical frameworks (Schatzki et al. 2001). Reckwitz (2002) sought to summarise key features through the construction of an 'ideal type' of a practice:

> "A practice is thus a routinized way in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood." (Reckwitz 2002, p. 250)

Here, I employ Shove et al.'s (2012) model of the primary elements of competencies, materials and meanings that constitute a practice as it has been used extensively in analysing the household-based practices that are the target of local government climate change community engagement programs. It also aligns with Reckwitz's (2002) definition. The *competencies* required to perform a practice corresponds with how 'bodies are moved' and things are 'handled', the *materials* required with 'objects' and 'subjects' and *meanings* with how 'things are described and the world is understood' (Shove et al. 2012; Reckwitz 2002). Shove et al. (2012) recognise that their construction compresses additional complexity afforded by other approaches (Schatzki et al. 2001), but argue that doing so allows for focus not just on the individual elements that constitute a practice but also how they relate to one another and how these relationships can change over time.

In this framing, individuals are performers of the practice that is comprised of the meanings attributed to the practice, the competencies required to successfully enact the practice and materials that may be used in or supportive of the conduct of the practice (Spurling et al. 2013), as set out in Figure 2.1:

Figure 2.1: Elements of Social Practices (Shove et al. 2012)



Strengers (2009) provides a more specific framework in which Shove et al.'s (2012) element of meanings is effectively split between components of rules and recommendations and common social understandings. This division usefully draws a distinction between official regulations, such as water restrictions imposed upon households, and social understandings, such as taking shorter showers, which can be viewed as corresponding to social norms, although Strengers rejects this terminology due to its "association with social totalitarianism" (Strengers 2009, p. 43). In this thesis, I adhere to Shove et al.'s (2012) model but heed the complexities associated with rules and meanings.

Because practices are 'alive' they exist both as a commonly defined understanding (e.g. cooking, cycling, walking, lighting etc.) as well as in a multitude of variations, reflecting how they are enacted. This tension between the static unit of analysis and how it lives is addressed through Schatzki's (1997) framing of *practice-as-entity* and *practice-as-performance*. A practice-as-entity exists across time and space as a concept that can be understood in terms of its component elements and its relationships to other practices; it exists even when the practice itself is not being actively carried out (Schatzki 2016). For example, the practice of driving a car requires materials (e.g. vehicle, roads, signage, and fuel supply infrastructure), competencies (e.g. the ability to drive, navigate and follow rules) and meanings (e.g. personal freedom, convenience, time management and safety) that together can be regarded as an understood entity called 'driving' (Watson 2012).

By contrast, practice-as-performance is where the multiple variations of a practice that are possible are on display, providing a richer picture of what is going on within a specific practice and how it changes. Returning to the example of driving, a change in a key material, such as a shift from internal combustion engines to electric engines (Marsden et al. 2014; Dong et al. 2014), may have minimal effect on the performance of the practice from the point of view of an individual driver. However, such a change has major ramifications for other driving materials, such as fuel supply infrastructures (e.g. fewer petrol stations and oil refineries, increased electric vehicle charging infrastructure and renewable energy production) (Dong et al. 2014). The competencies do not alter significantly and while there may be some changes in meanings (e.g. greater emphasis on understandings of 'clean' or

‘environmentally friendly’) the practice is still recognisable as what we would understand as ‘driving’ (Liao et al. 2017; Plötz et al. 2014).

By contrast, other elemental changes can substantially re-configure existing meanings and competencies. For example, should self-driving vehicles emerge at scale, individuals may no longer need competencies of knowing how to drive or to navigate (beyond entering a destination) and the ability to follow rules shifts from being the responsibility of the human to the car (Greenblatt 2016; Stilgoe 2018). Such a radical reconfiguration of the relationship between the elements raises the question whether, in this particular example, a completely new practice (perhaps, ‘passengering’) has evolved. Thus, practice-as-entity can encompass a broad range of different elements and relationships between elements in its multiple performances and can also change to the point it may no longer be recognised as a particular practice and instead becomes a new practice.

2.3.1 Household Practices

Considering the household as a site within which everyday practices take place, allows an analysis of energy consumption practices within the home and how they are shaped and influenced by the elements that comprise them constituted by meanings, competencies and materials. Household practices relevant to climate change can be broadly divided into those that contribute to and those that mitigate against the production of greenhouse gases.

In the first instance, this includes practices performed by individuals, such as cooling, heating, cooking and travelling that have been extensively examined by practice theory (Spurling et al. 2013; Watson 2012; Walker 2014; Gram-Hanssen 2010). Individuals do not perform these practices to consume energy or produce greenhouse gas emissions; rather, they do so to be comfortable, to eat and to travel to work or for leisure (Hager and Morawicki 2013; Guerra Santin 2011; Innocenti et al. 2013). Energy consumption and the associated production of greenhouse gas emissions are an outcome of, rather than a reason for, their performance.

Household practices that purposively contribute to and mitigate against the production of greenhouse gas emissions include both routinised practices as well as more occasional and reflective practices in which the individual is more actively engaged in understanding and thinking about the actions they are undertaking (Reckwitz 2002; Hargreaves et al. 2013; Schatzki et al. 2001). In routinised practices, mitigation of emissions becomes a meaning within existing practices, such as the role of recycling within food consumption and disposal practices or the use of rooftop solar in heating and cooling practices (Derksen and Gartrell 1993). In occasional mitigation practices, the practice is consciously undertaken by the individual to reduce their environmental impact, such as the purchase of carbon off-sets, donating to an environmental organisation or taking part in political activism (Shove and Spurling 2013).

2.3.2 Local Government Climate Governance Practices

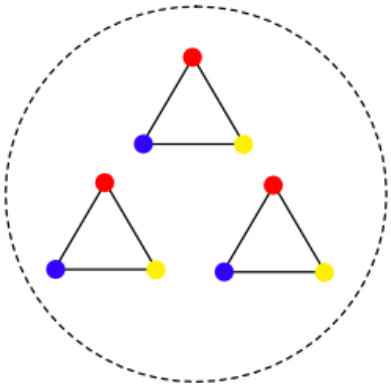
While practice theory has been critical of the behaviour change theories that underpin much of community engagement delivered by governments to reduce household-based greenhouse gas emissions (Shove 2010), it has been less successful in being considered by governments as a viable alternative approach to develop policies and programs responding to climate change. Adoption of practice theory has primarily been limited to some experimental collaboration between universities and government in the United Kingdom (Hoolohan et al. 2018; Spurling et al. 2013); by comparison, behavioural theories (notably libertarian paternalism or "nudge") have been far more widely integrated into government policies and practices throughout the world (John et al. 2009; Halpern 2015). In this section, I argue that this is partly due to an under-examination on the part of practice theorists to the governance practices that seek to influence how everyday household practices are performed (Macrorie et al. 2015; Schatzki 2011; Keller et al. 2016).

Keller et al. (2016) note a "glaring omission" in the study of governance practices and identify two reasons why such a study is important: the first is that these professional practices do take place and so are worthy of examination in their own right; the second is a recognition that in their performance they can often act as a barrier to transition to more sustainable settings. As is explored in Chapter 4, this is true of Australian local governments where climate governance practices can be constrained by other governance practices, such as risk management. Macrorie et al. (2015) support this contention noting in their study of housing policy policymakers and practitioners that "despite the growing interest in how to intervene in practices, the practices of these would-be governors - potentially capable of intervening at the level of practice-as-entities - have received scant attention" (Macrorie et al. 2015, p. 99).

Australian local governments perform a bundle of climate governance practices, including regulation, infrastructure provision, service delivery, advocacy and community engagement, to influence the form of the aforementioned household practices. For example, the practice of cycling to work can be supported through regulation (e.g. restricting available parking at or near workplaces through planning provisions), infrastructure provision (e.g. building separate cycling paths), service delivery (e.g. providing change and showering facilities at council run sporting centres), advocacy (e.g. calling on higher tiers of government to provide more funding for infrastructure) and community engagement (e.g. running promotional campaigns, such as ride to work days). These outward-facing climate governance practices (outward, in that they seek to directly engage external actors) interact with one another and also with other internal governance practices (e.g. management and operational procedures) at the same time as they engage with household practices.

Throughout this thesis, I pay particular attention to these interactions, exploring the relationships between different practices and between different groupings of practices. This allows a richer exploration of how practices work, their influence on one another and how they come together and fall apart. Practices can group together in both loose and tight formations. Loose configurations of practices are brought together in *bundles* by being physically, thematically or temporally co-located (Shove et al. 2012). For example, within households, bundles may include separate practices that are dependent on the same materials (e.g. water for cooking, washing and laundry). These practices influence one another though not necessarily in a coordinated fashion, as set out in Figure 2.2, where the dotted lines denote weak relationships than alternative forms of practice groupings:

Figure 2.2: Bundle of Practices (adapted from Shove et al. 2012)

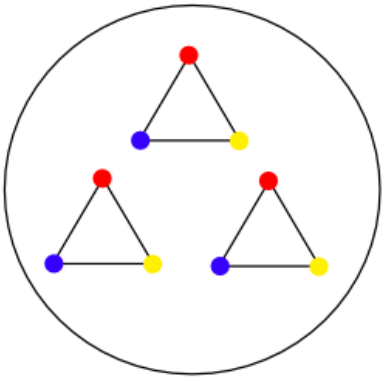


It should not be assumed that practices are always bundled together in a mutually beneficial way. Indeed, in the case of climate governance and local government governance, some practices may be gathered together in a loose bundle or even a bundle of bundles, including those that actively seek to negate the performance of others. In some instances, the successful delivery of one set of practices blocks the performance of another, such as risk management policies discouraging local governments from moving beyond what might be considered 'traditional' policy spaces, such as waste management and local roads, to address larger issues, such as climate change (Bulkeley 2000). These practices and bundles are best viewed as jostling together in a contested manner. Local government practitioners seeking to advance a particular agenda (e.g. a zero emissions society), need to be aware of the influence of constraining practices or bundles that may exist in other parts of council (Binder and Boldero 2012; Rickards et al. 2014). Knowledge of these influences will allow practitioners to, if necessary, re-shape relationships so constraining governance bundles are altered to better support positive climate governance practices.

Just as household practices can be grouped in a bundle, so too can climate governance practices, due to their co-location within local government, with their degree of integration with one another

dependent upon how they are managed. In more lightly coordinated bundles, each practice may be performed quite separately although they are likely to share common aims of reducing greenhouse gas emissions. In well-coordinated local government responses, the individual practice bundles can be so closely interwoven that they can be defined as a *complex* of practices, in which each practice is co-dependent upon another for its successful performance as set out in Figure 2.3, in which the solid surrounding line denotes stronger bonds between the different practices:

Figure 2.3: Complex of Practices (adapted from Shove et al. 2012)



Complexes of practices are well understood with regard to everyday household practices (for example, eating an evening meal depends upon related practices of growing or buying food and food preparation) (Oberascher et al. 2011). Local government climate governance practices can be performed in a manner that replicates such co-dependency. This is particularly true of practices that are temporally or legally dependent upon one another. For example, building a house or an extension to an existing building requires the performance of a set of planning practices that must take place within a local government in a certain order before approval is granted (Carter 1990). Other practices exist as looser or tighter bundles (e.g. sustainable transport infrastructure provision flowing from prior community engagement that identifies a need for such infrastructure) depending upon their coordination and performance by different councils (Bagnati and Meiklejohn 2013; Merom et al. 2006). Whether practices are arranged in bundles or complexes, they are subject to continual change in how they are grouped, breaking apart and forming new bundles and complexes as circumstances change (Blue 2019).

An additional factor to consider in examining relationships between different local government practices is that not all climate governance practices can be considered equal within local governments. Regulation, infrastructure provision and service delivery are compulsory practices in that local governments are obligated by legislation to perform them, though the nature of performance may vary significantly between different councils (Thomas 2010). By comparison,

advocacy and community engagement are practices that local governments choose to undertake and, as such, can be more easily disregarded or dropped.

In practice, there is a correlation between local governments seeking to play a more ambitious role in responding to climate change, and the performance of these voluntary practices (Pillora 2011; Beyond Zero Emissions et al. 2018). Advocacy to other stakeholders is a recognition that the powers of local government are limited and that those powers are best exercised with the support of others if ambitious climate change responses are to be enacted (Ireland and Clausen 2019). Community engagement can play a number of different roles in responding to climate change, including linking to advocacy by acting as a voice for communities served by local governments and as a form of intervention to encourage changes in household practices (Tilbury et al. 2005).

2.4 Practices and Large Systems – Practice Theory and Socio-Technical Transitions

In addition to a close study of specific practices and their relationships, there is also a need to address large social phenomena and settings in which these practices are situated (Schatzki 2016). Practice theory has been critiqued for its focus on individual practices and their immediate relationships, as well as a lack of engagement with theories arguably better suited to examining larger socio-technical systems, in particular transition theory (Geels 2011). Some practice theorists are uncomfortable with transition theory's focus on the agency of actors guiding sustainability transitions when those actors have themselves contributed to the creation of existing systems, as well as an underplaying of the role of the human element, political values and the role of countervailing forces in transitions (Shove and Walker 2007). In addition, they argue that transition theory overlooks the everyday practices that can drive broad changes across society and which are not generated by transition management or have a strong technological focus (McMeekin and Southerton 2012; Shove and Walker 2007). In response, transition theorists argue that the management of sustainability transitions is less deterministic than portrayed by its critics. In particular, transition management is positioned as being less about strong-handed guidance of socio-technical changes and more a series of experiments that offer opportunities for reflective governance of an uncertain process (Rotmans and Kemp 2008).

Despite these historic antagonisms there have been attempts to bridge the divide between the two theories with proponents developing approaches that consider the value practice and transition theory can bring to an examination of both the large (e.g. socio-technical systems) and the small (e.g. specific practices) that contribute to the production of greenhouse gas emissions (Shove 2011, 2010; Geels 2011). The value of a combination of the broader systemic perspective offered by transition theory and an analysis focused on units of everyday practice offered by practice theory allows for a nuanced examination of the multiple processes and solutions to climate change as a super wicked

problem. Hargreaves et. al. (2013) argue that both theories are valuable and rather than position one over another, they apply both to an analysis of sustainability initiatives offering distinct and useful insights.

Watson's notion of *systems of practice* (2012) is one such bridging approach that frames these transitions within socio-technical systems taking place as a result of changes in practice:

> "The concept of systems of practice aims to capture, simultaneously, how far practices are embedded in systemic relations constituted first by relations with other practices; and second also through the systemic elements – including infrastructures, technologies, rules, norms and meanings – which those practices constitute and sustain." (Watson 2012, p. 493).

This advances Geels et al.'s (2015) argument that both theories are required to drive a shift in consumption and production by thinking about everyday practices as well as the socio-technical systems in which they are performed. Watson (2012) argues that socio-technical systems can be better thought of as systems of practice, meeting a need to place practices within specific frameworks. As an example, Watson constructs a system of practice: *velomobility* (2012).
The basic unit of analysis is the practice of cycling comprising the three elements of materials (e.g. bicycle, types of clothing, accessories such as lights and helmets, roads and cycle lanes), competencies (e.g. the ability to ride and navigate) and meanings (e.g. fitness benefits, convenience and environmental concern). The performance of cycling as a practice varies between individuals and different bundles of practices take place temporally and geographically around cycling. For example, commuter cycling can be bundled in time with at-home preparation activities as well as work practices. By contrast, leisure cycling may have fewer temporal relations with other practices as it is theoretically more flexible as to when it can be performed. Sitting slightly removed from these directly connected bundles are governance practices, including transport policy and regulations, that directly influence how those bundles and individual practices are performed. Together, these bundles of practices can be viewed in the whole as a system of practice called *velomobility*. This system sits alongside and in some cases in opposition to other systems of practice, including those based on other modes (e.g. automobility, shared mobility, walking, public transport and transport substitution), even though these systems may share some of the same elements (e.g. roads and signage).

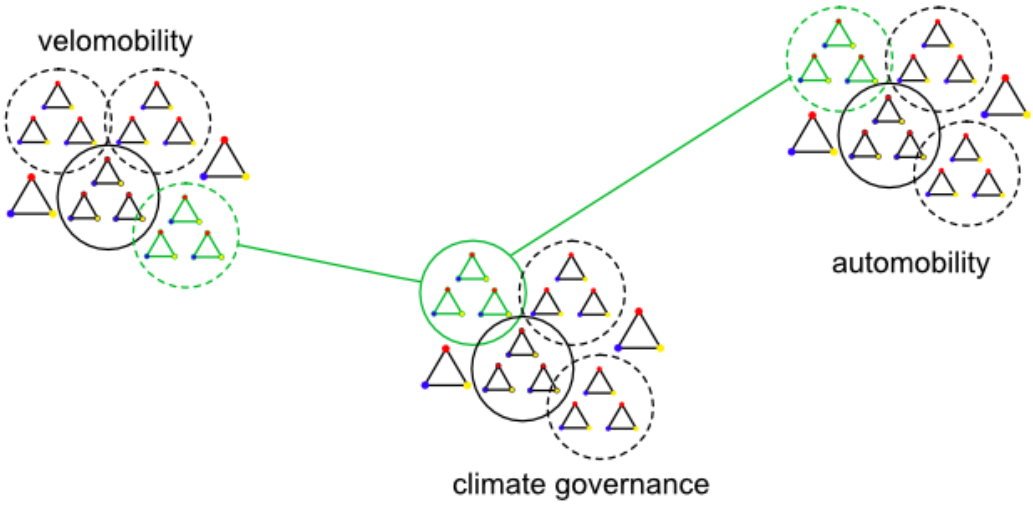
This formulation notes that systems of practices are influenced by both large-scale pressures (equivalent to the landscape level in transition theory's multi-level perspective) and specific experimental pressures (equivalent to the niche level in the multi-level perspective) (Kemp et al. 1998). Large-scale or landscape factors include broad social and economic trends and philosophies, negotiations between different national governments and, in the case of climate change, the science

of contributions to the production of greenhouse gas emissions and the resulting impacts of climate change) (Wesely et al. 2013). While systems of practice are performed at this level (e.g. climate diplomacy, climate science), they are not the focus of this thesis beyond their influence on the systems of practice with which households directly engage.

Experiments (e.g. new technologies such as rooftop solar and electric bicycles) are imagined and nurtured within existing systems of practice (Geels 2010; McMeekin and Southerton 2012). These are characterised by core elements of success including the articulation of a vision that the experiment is seeking to achieve and the creation of networks that will help drive the change (Smith et al. 2005). Changes occur incrementally as competing systems of practice jostle for resources and attention. While these may result in broad transitions over time, existing pathways, themselves a reflection of previous transitions, can create a lock-in for existing practices (Rauschmayer et al. 2015).

A system of practice, such as *velomobility*, is partly composed of bundles of governance practices, such as regulation, incentives and infrastructure provision. In this thesis I examine specific climate governance practices and how they interact with the other practices in relevant systems. In some circumstances, governance practices can be performed across competing systems. For example, a system of climate governance may produce policies (e.g. preferential access to road space) that are supportive of low emissions forms of transport, such as cycling, which then influence the nature of *velomobility* in a positive manner. At the same time, such policy changes may weaken other systems (e.g. *automobility*), as set out in Figure 2.4, in which the green lines denote relationships between the different bundles of practices:

Figure 2.4: Relationships between Systems of Practices (adapted from Watson 2012)



While Watson's (2012) formulation of systems of practice highlights the advantages of integrating practice thinking within transitions, it does not set out how that can be achieved. Altering governance practices to achieve a desired outcome, such as large-scale emissions reduction in energy systems, requires a more guided or structured approach with specific triggers for policymakers and practitioners to plan, gather support, implement interventions and reflect upon their impact without being prescriptive about the specific elements of this process (Frantzeskaki et al. 2012). While recognising the dangers highlighted by practice theorists about the challenges and assumptions associated with governance interventions in changing practices (Shove and Walker 2010), I draw upon transition management as approach to help inform local governments seeking to create and support climate change responsive transitions in systems of practice (Geels 2011; Jan Rotmans and Kemp 2008).

2.5 Transitions in Systems of Practice

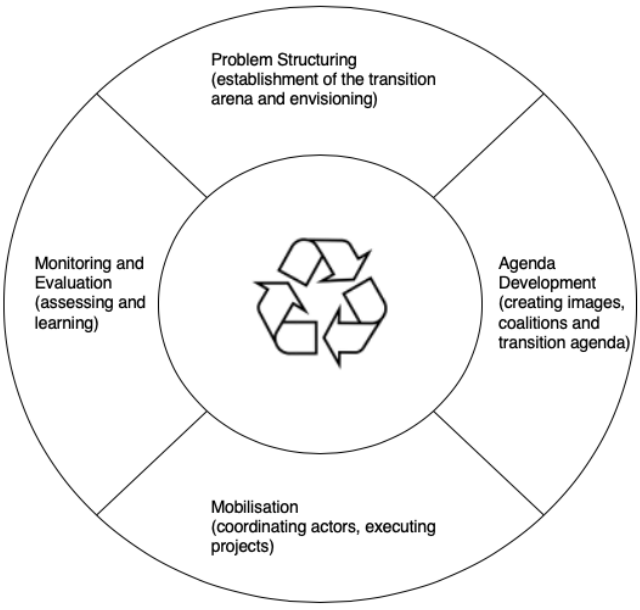
Transition management is the specific process employed to create transitions emerging from experiments to achieve desirable outcomes, such as a low carbon society (Kemp and Loorbach 2006). For policymakers, transition management encourages the use of scenarios to deal with uncertainty, policy experimentation, the creation of and adherence to a long-term vision while influencing short term policies and programs, and an emphasis on working across multiple arenas drawing in relevant collaborative actors (Loorbach and Rotmans 2010). The process has been applied and studied across a range of sectors, most extensively in the Netherlands, including regional governance, health care and transitioning the Dutch energy system towards low-carbon forms of generation (Loorbach and Rotmans 2010; Kemp et al. 2007). Transition management has been critiqued for emphasising

technological change over broader social change, reinforcing rather than challenging existing neoliberal market structures, being captured by large industry actors within existing regimes and for seeking inputs from a relatively narrow cohort of potential stakeholders (Kern and Howlett 2009; Shove and Walker 2007). Transition theorists note these critiques but argue this is less the fault of the process and more of how and where it has been applied. They contend that transition management is simply a method to analyse the state of current regimes, identify and deliver potential transitions with no predetermined outcomes as to the nature of that transition (Rotmans and Kemp 2008).

Transitions towards sustainability are characterised by three factors that set them apart from historical transitions (Geels, 2011). The first is that sustainability transitions work towards a specific environmental goal; by contrast, historical transitions have tended to emerge rather than be directed towards an expected outcome. The second is that because sustainability is a collective good, it offers no obvious benefits for users, although this is not necessarily the case with all sustainable practices, such as the financial benefits gained from rooftop solar (Meiklejohn et al. 2018). The third factor is that the systems in which sustainability transformations are required, tend to be dominated by large private companies. In some transitions, these large firms may play dual roles; initially, opposing emergent transitions but later co-opting them to drive change at a broad scale (Geels, 2011). Crucially, transition management does not seek to produce a set of 'right' answers but instead guides decision-makers by drawing attention to relevant issues (Kemp and Loorbach 2006)

Transition management is based upon a policy development and implementation cycle delivered over four primary stages: problem structuring, agenda development, mobilisation and project work, and monitoring and evaluation (Loorbach 2010), as set out in Figure 2.5:

Figure 2.5: Transition management cycle (reproduced from Loorbach 2007)



The first stage, *problem structuring*, establishes a transition arena in which relevant actors come together to identify a problem and establish a vision of what the transition will achieve (Frantzeskaki et al. 2012; Scholz et al. 2009). Transition management is notable for agreement amongst those developing the transition arena that collaboration and cooperation is required. Australian local governments have experience of such approaches through formal and informal networks of councils, including some directly addressing climate change, as well as with external agencies, such as health organisations (Henderson 2018; Lewis et al. 2008; Moloney and Horne 2018). Local governments also have experience in developing visions of what they want their climate change strategies to achieve (City of Moreland 2014; City of Sydney 2013). However, these visions, while drawing on the input of other actors through consultation are 'owned' by the local government and not part of a broader view of transition in which other actors play an equal role.

In the second stage, *agenda development*, relevant actors come together to form new coalitions, create images of what their transition will achieve and work to a common plan (Rotmans et al. 2001). This is then mobilised through the *development and delivery* of projects designed to drive the desired transition (Kemp and Loorbach 2006). Finally, the transition is *evaluated* as to its effectiveness, both in terms of the outcomes and the process required to achieve them (Loorbach and Rotmans 2010).

It is possible to incorporate Watson's (2012) systems of practice approach within the transition management framework, as the former does not seek to replace the latter but rather to add flesh to its bones in alignment with Geels' (2015) view of the necessity of examining both individual practices and the systems in which they exist. For Australian local governments this may require shifts in how they have performed certain practices (e.g. strategic plan development, stakeholder management) or the creation of new practices flowing from the conscious engagement in transition management in response to climate change. They must be prepared for new forms of management, develop attractive visions for individuals and relevant stakeholders and be prepared to work with, and perhaps oppose, actors seeking to maintain current regimes (Loorbach 2007). This also requires consideration of the everyday practices within households that they are seeking to influence as part of this transition and their relationship to climate governance practices.

Local governments must also recognise that households are positioned in different (and constantly shifting) relationships with other stakeholders that can constrain their ability to respond as local governments may wish, or that may open new opportunities for different forms of engagement. Community engagement practitioners must decide whether community engagement is the right tool, whether by itself or in combination with other climate governance practices. Finally, local governments will need to consider what new systems will be formed to create a successful transition and, if achieved, how they can be protected from falling apart or from challenges from less desirable practices.

In summary, local governments need to clearly understand the governance space within which they are operating and how it can be transformed to achieve a more effective climate change response. This includes:

- recognising how the complexity factors of climate change as a super wicked problem constrain the efficacy of current climate governance activities, particularly community engagement (Levin et al. 2007);
- employing solutions criteria developed to solve super wicked problems, including developing policies and interventions that are immediately popular, embed themselves quickly and have the capacity to spread rapidly (Levin et al. 2012);
- understanding the elements of each of the climate governance practices they perform, how they have been shaped, how they influence one another and, ultimately, how they engage with the everyday household practices that contribute to the production of greenhouse gas emissions (Meiklejohn et al. 2021);
- considering how individual practices and the relationships between them can be reconfigured to overcome identified weaknesses (Spurling et al. 2013);
- charting how bundles and complexes of practices come together and fall apart and constitute a system of practices in which climate governance plays a part (Watson 2012);
- identifying external influences upon climate governance practices, whether through changes in practices performed by households or new pressures upon climate governance practices (Meiklejohn et al. 2018; Davidson et al. 2020); and
- developing a structured process, such as transition management (Wesely et al. 2013), in which influences upon climate governance practices can be incorporated into a positive reconfiguration of a broader system of practices.