Actors, agency, and institutional contexts: Transition intermediation for low-carbon mobility transition

Alexander Nordt *, Rob Raven, Shirin Malekpour, Darren Sharp

Monash University, Monash Sustainable Development Institute, Wellington Rd, Clayton, VIC 3800, Australia

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ABSTRACT

Transition intermediaries are recognized as key actors in sustainability transitions. While the structural embeddedness of intermediaries has been explored in innovation studies and economic geography literature, few transition studies have systematically examined how the agency of transition intermediaries is affected by institutional contexts. Without a deeper understanding of this interplay, the literature risks a naive perception of transition intermediaries as free agents. This study investigates transition intermediation in diverse institutional contexts using a typology of organizational fields that draws on institutional theory. Cases of local government commitments to fleet electrification and cycling infrastructure show that crises allow incumbent organizations to diverge from existing institutional arrangements and intermediate for systems change. Findings also indicate that the social position of transition intermediaries in a field can mute the enabling effect of crises on transition intermediation. Similarly, findings show that transition intermediaries can legitimize their visions for systems change by using collective action framing to draw attention to conflict between existing institutions to diverge from existing institutional arrangements. As such, this study provides new insight into conditions affecting the agency of transition intermediaries for low-carbon mobility transition.

1. Introduction

In transitions, intermediaries are seen as enablers of socio-technical systems change by coordinating cooperation between actors (Kanda et al., 2019). Empirical research on transition intermediation for low-carbon mobility at local government level is scarce. Local governments often face institutional and resource constraints and transition intermediaries can alleviate such constraints by orchestrating change processes and by facilitating access to new resources and networks of actors (Fischer and Newig, 2016, Ptak et al., 2023). Institutional theory has been applied in transition studies (Fuenfschilling and Truffer, 2016, Jolly and Raven, 2016). However, there is a lack of comparative case studies that scrutinize the agency of actors in transitions by drawing from diverse institutional contexts (Fuenfschilling, 2019). This study focuses on three cases of local government commitments to low-carbon mobility in Australia in which transition intermediaries sought to implement divergent institutional change but with different outcomes. Two cases focusing on cycling infrastructure show (relative) success in terms of diffusion of divergent change, while one case of vehicle fleet electrification demonstrates a lower level of diffusion.

The concept of innovation intermediaries from innovation systems literature has been bridged with transition studies (Kivimaa, 2014). This study focuses on systemic intermediaries with a transition agenda for change at a system level (Kant and Kanda, 2019, Kivimaa et al., 2019). While the structural embeddedness of intermediaries has been examined in innovation studies (Kant and Kanda, 2019, Selviaridis et al., 2023) and economic geography literature (Breul et al., 2019, Enright, 2013), transition studies have insufficiently identified enabling conditions for successful transition intermediation, in part due to the variance of transition processes across different contexts. Economic geography literature emphasizes the ‘territorial’ embeddedness of intermediaries and the impact of regional institutions on intermediary agency (Breul et al., 2019), while innovation studies highlight the structural embeddedness of innovation intermediaries in diverse technological contexts (Kant and Kanda, 2019, Selviaridis et al., 2023). Kant and Kanda (2019) examine the agency of innovation intermediaries through an analysis of both internal factors (including internal value creation) and contextual factors (including technological context). Kanda et al. (2020) build on this insight and outline relational levels at which intermediation occurs within a system including in-between institutions.

* Corresponding author.
E-mail address: alexander.nordt@monash.edu (A. Nordt).

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In this literature, institutions refer to both informal institutions (e.g., norms and values) and formal institutions (e.g., policy and regulation). This is a useful starting point for conceptualizing how transition intermediaries are structurally embedded. Although innovation studies consider the structural embeddedness of intermediaries in institutional contexts, the impact of such contexts on intermediary agency in sustainability transitions has not been systematically examined. To further develop our analysis of structural embeddedness of transition intermediaries, we also draw on organizational studies on institutional theory. In this literature, institutional entrepreneurs operate in an organizational field (or multiple fields), which refers to “a community of organizations that partakes of a common meaning system and whose participants interact more frequently and forcefully with one another than with actors outside of the field” (Scott, 2008), and gives rise to variable conditions for institutional change (DiMaggio and Powell, 1983; Baumgartinger-Seiringer et al., 2022). In this regard, we anticipate that literature on institutional entrepreneurship is suitable for further advancing conceptualizations of how and under which conditions the agency of transition intermediaries can be effective as transitions unfold (Hooogstraaten et al., 2020).

Hence, this study examines the agency of transition intermediaries as a driver of divergent institutional change for low-carbon mobility at the local government level, while acknowledging diverse field-level conditions. It does so by adapting an existing institutional entrepreneurship framework and typology of organizational fields to examine the influence of field-level conditions on the agency of transition intermediaries in a local government context. As such, the aim of this study is to determine how transition intermediaries are enabled and constrained when seeking to implement divergent institutional change at the local government level for the transition of socio-technical systems toward sustainability.

Section 2 reviews existing concepts from transition studies and institutional theory and provides a conceptual frame to guide the analysis. Section 3 outlines methodology including case selection and data. Section 4 analyzes empirical data to examine the agency of transition intermediaries at local government level for systems change. Section 5 discusses findings in relation to the conceptual frame and Section 6 concludes.

2. Conceptual background

2.1. Intermediaries in sustainability transitions

In sustainability transitions literature, socio-technical systems consist of actors (and networks of actors), institutional structures, and material infrastructures, which are interdependent and interact to provide services for society (Farla et al., 2012). Actors and agency are central to socio-technical systems change and influence the speed and direction of transitions (Farla et al., 2012, Loorbach et al., 2017). Transition intermediaries have been a focus in innovation studies and more recently assessed the structural embeddedness of transition intermediaries, and thus the literature presently provides limited insight on structural conditions that enable and constrain transition intermediation for socio-technical systems change (Kanda et al., 2020). This is problematic due to complex causality in transition processes that makes it difficult to clearly determine the specific impact of transition intermediaries without an acknowledgement and examination of embedded agency (Garud et al., 2007, Abdelnour et al., 2017).

Institutional entrepreneurship literature focuses on the role of agency in explaining institutional change, while also acknowledging that actors are embedded in their field of activity and subject to field-level conditions (Battilana et al., 2009). To this end, Section 2.2 outlines and justifies the use of institutional theory to potentially provide a useful conceptual frame for examining embedded agency and enabling and constraining conditions for transition intermediation for low-carbon mobility transition at local government level, an area that remains largely unexplored in transition research.

2.2. Institutional theory and transition intermediaries as institutional entrepreneurs

Institutional theory focuses on the pressures and constraints of the institutional environment as well as on institutional change agents such as institutional entrepreneurs. Institutions are defined as durable, repetitive, and enduring patterns of social practice that shape political, economic, and social interactions (Lawrence, 1999). Institutional entrepreneurs are change agents who initiate divergent changes that break the institutional status quo in a field of activity thereby allowing for changes to existing institutions or the creation of new institutions (Garud et al., 2007, DiMaggio, 1988). They can be organizations or groups of organizations, or individuals or groups of individuals (Battilana et al., 2009). Institutional entrepreneurship literature focuses on actor characteristics and strategies for implementing divergent institutional change, as well as on institutional embeddedness which acknowledges institutions as both enabling and constraining the agency of actors (Leca et al., 2008). While at its core, sustainability transitions literature also engages with the interplay between actors, agency, and structure, this literature has been criticized for a lack of conceptual repertoire to support substantial analysis of this interplay (Fuensfchilling and Truffer, 2016, Fuensfchilling, 2019), and hence it has started to rely more on institutional theory for this type of analysis. Yet important gaps remain with regard to fully integrating insight from institutional entrepreneurship literature into transition studies, and it has been argued that a more systematic examination of field-level conditions in this context may provide new insight on the relationship between agency and structure in transitions (Hooogstraaten et al., 2020). This aligns with the aim of this study to further conceptualize both the agency and structural embeddedness of transition intermediaries. This study examines divergent institutional change using Australian cases of local government commitments to fleet electrification and cycling infrastructure. It does so by focusing on the agency of transition intermediaries as institutional entrepreneurs by building on enabling conditions and strategies for institutional entrepreneurship (as outlined in Sections 2.2.1 to 2.2.3).

2.2.1. Field-level conditions

To understand the role of field-level conditions, it is useful to
consider the concept of organizational fields. An organizational field is typically constituted by an actor network with a set of actors, such as producers, consumers, research organizations, and regulatory bodies, that interact more frequently among themselves than with actors from outside the field (Baumgartinger-Seiringer et al., 2022, Scott, 2008). Actors within a field share a system of common meanings comprising regulation, norms, and cultural features that have been referred to as institutional logics and are seen as having a homogenizing effect on actors and practices in a field (Fuenschilling, 2019, Clemens and Cook, 1999, Thornton et al., 2012). Three categories of field-level conditions that influence institutional entrepreneurship are identified: the impact of jolts and crises, heterogeneity, and institutionalization. Jolts and crises refer to exogenous developments such as financial crises and can disrupt existing consensus in a field and enable the introduction of new ideas (Fligstein, 2001, Greenwood et al., 2002). Heterogeneity refers to the variance in characteristics of institutional arrangements in a field. High heterogeneity often leads to institutional contradictions and tension within a field and actors exposed to such contradictions are likely to diverge from existing institutional arrangements (Emirbayer and Mische, 1998, Sewell Jr, 1992). Variance and complexities in institutional arrangements are believed to result in field-level change since this offers a range of rationalities for actors to deviate from the status quo, enabling innovation in their fields (Fuenschilling, 2019). As such, in the context of transition studies, a high degree of heterogeneity in a field may result in irregularities that enable the more rapid diffusion of new innovation if accompanying norms and user practices are framed as an improvement to current institutional arrangements (Hoogstraten et al., 2020).

Another aspect to consider in relation to understanding the impact of field-level conditions on the agency of transition intermediaries, is the degree of institutionalization. Institutionalization affects the agency of actors in a field and higher degrees of institutionalization tend to lead to less possibilities for actors, such as transition intermediaries, seeking to enact change. Emerging fields generally have a lower degree of institutionalization than mature fields (Leca et al., 2008, Garud et al., 2002, Maguire et al., 2004). This is because in emerging fields, predominant characteristics such as regulation and norms still need to be negotiated and agreed upon. While in mature fields, institutional arrangements have developed over a longer period and tend to remain stable and reproduce themselves (Baumgartinger-Seiringer et al., 2022). Moreover, a lower degree of institutionalization typically results in a higher level of uncertainty, which can provide opportunities for institutional entrepreneurs to take strategic action (DiMaggio, 1988, Phillips et al., 2000). Whereas in highly institutionalized fields, regulation, norms, and cultural features can become institutionalized to the point that they are perceived to be outside the range of actors’ influence, and hence there are usually less opportunities for institutional entrepreneurship since deviation from existing institutional arrangements is more difficult for actors (DiMaggio, 1988, Phillips et al., 2000).

In transition studies, high institutionalization in an organizational field is understood similarly, but conceptualized as related to existing socio-technical configurations that lead to relatively stable and inflexible rules that make up socio-technical regimes (Fuenschilling, 2019). For example, incumbent industries are often strongly institutionalized by way of rules that support existing socio-technical configurations that support their activities and reinforce the status quo (Kivimaa and Kern, 2016). Geels (2004) has further proposed that different social groups are connected by institutionalized rules (analytically categorized as cognitive, normative, and regulatory rules) and mindsets in separate arenas (such as professional associations). These social groups are conceptualized as embedded in their own ‘regimes’ such as policy regimes with rules such as administrative procedures or market regimes with competition rules. Meta-coordination is provided through socio-technical regimes that further shapes field-level conditions across different actor groups operating in an organizational field (Geels, 2004).

In this context, socio-technical regimes have been described as being ‘splintered’ into different sub-regimes (van Welie et al., 2018) and, hence, Fuenschilling and Truffer (2016, 2014) have argued that existing socio-technical regimes should be viewed as semi-coherent, and that the stability of a regime and its institutionalization depend in part on the diffusion of norms and rules in the regime, and to what degree these are contested by different actors.

As such, this study argues that transition intermediaries operate in the context of many interacting actors that together make up organizational fields, and whose interactions are meta-coordinated through semi-coherent socio-technical regime structures, which are characterized by varying degrees of heterogeneity and institutionalization. In doing so, this study suggests that examining opportunities for institutional entrepreneurship stemming from field-level conditions is useful for analyzing enabling and constraining conditions for transition intermediation within particular socio-technical systems (Hoogstraten et al., 2020).

2.2.2. Actor characteristics

To further understand the structural embeddedness of transition intermediaries, it is important to look at actors’ social position. An actor’s social position affects their access to resources needed to engage in institutional entrepreneurship (Lawrence, 1999), as well as their perceived legitimacy in the field(s) in which they are embedded (Maguire et al., 2004). An actor’s social position also affects their perception of field conditions and the likelihood of attempts to implement divergent institutional change (Battilana et al., 2009). Low status actors at the periphery of a field are more likely to initiate divergent change as they often benefit less from existing institutional arrangements in a field (Garud et al., 2002, Shils, 1975). Although there are also examples of high status actors at the center of a field initiating divergent change (Greenwood et al., 2002), and field conditions are likely to mediate the impact of actors’ social status (Battilana, 2006). Actors may be disconnected in a field and intermediation may be required for divergent institutional change envisioned by peripheral actors to be accepted by central actors. Hence, when examining the agency and structural embeddedness of transition intermediaries, it is important to consider the social position of actors, including intermediaries, in a field.

Transition intermediaries may form partnerships and cooperate in an ecology of intermediaries (Kivimaa et al., 2019, Vihemäki et al., 2020, Soberon et al., 2022). This study focuses on systemic intermediaries that support a transition agenda at a system level (Kant and Kanda, 2019, Kivimaa et al., 2019) and highlights the concept of an ecology of intermediaries that may be necessary for a transition due to the complexity and multi-actor network orientation of transition processes often requiring the functions of multiple intermediaries (Kivimaa et al., 2019). Focusing on ecologies of intermediaries addresses criticism of institutional entrepreneurship literature for depicting a ‘hyper-muscular’ agent (Fuenschilling and Truffer, 2016) by considering the influence of multiple actors and social interactions through which institutional changes are made (Geels, 2022).

2.2.3. Strategies for implementing divergent institutional change

Two stages are identified for divergent institutional change implementation: creation of a vision and mobilization of allies behind the vision (Battilana et al., 2009). Institutional entrepreneurs can develop and articulate their visions using collective action framing to promote a particular understanding and action on a certain issue (Benford, 1997). Prognostic framing promotes proposed institutional changes as being better than existing arrangements, thereby legitimizing actors and potential allies in favor of changes (Battilana et al., 2009, Fligstein, 2001). In the context of transitions, previous literature has identified functions of intermediaries relevant for divergent change implementation. Transition intermediaries can develop and articulate new visions by using political narratives and the advocacy role of transition intermediaries can support visions for transition-oriented institutional change (Kivimaa, 2014, Bush et al., 2017).

In addition, transition intermediaries have been shown to aggregate
and convey knowledge and learning as well as views and opinions between actors and networks (Kivimaa, 2014, Kanda et al., 2020). In doing so, transition intermediaries can use knowledge synthesis to develop framing strategies that support their visions for divergent institutional change. As such, this study proposes an initial stage of knowledge synthesis for transition intermediation when implementing divergent institutional change for systems change (as shown in Fig. 1).

At the final stage for implementation of divergent institutional change, support from allies is required (Fligstein, 2001, Greenwood et al., 2002). Institutional entrepreneurs can mobilize allies behind their visions by deploying financial resources and resources related to social position, including formal authority and social capital (Battilana et al., 2009). Formal authority granted by formal positions increases the perceived legitimacy of institutional entrepreneurs and can help legitimate their visions for divergent change (Maguire et al., 2004). Social capital relates to actors’ informal network position which supports access to knowledge and political support (Battilana et al., 2009). Institutional entrepreneurs can engage in networking to leverage social capital and align political interests in favor of their visions (Maguire et al., 2004). In the context of transitions, studies have shown that transition intermediaries can create consensus for institutional change by networking and translating and aligning interests (Smith et al., 2016). In doing so, transition intermediaries can build legitimacy for a set of actors, their networks, and visions for divergent change (Kanda et al., 2020).

2.3. Conceptual frame

Fig. 1 proposes the enabling conditions for transition intermediation for systems change and stages for divergent institutional change implementation. To support a systematic cross-case analysis and to provide further nuance to organizational field conditions shown in Fig. 1, this study adapts a typology of field conditions in the context of transition intermediation. Battilana et al. (2009) suggest that the degree of heterogeneity and the degree of institutionalization might constitute a first step toward a typology of field-level conditions. Section 2.2.1 provides argumentation regarding opportunities for transition intermediation resulting from variable field-level conditions in the context of socio-technical regime and systems change. Building on this insight, we propose that the degree of institutionalization in an organizational field, alongside the degree of heterogeneity, are useful analytical categorizations to examine structural conditions for transition intermediation for systems change. In line with argumentation in Section 2.2.1, we propose the following ideal types of field-level conditions for transition intermediation to guide our case study analysis:

- **Highly institutionalized fragmented field.** Regulation, norms, and cultural features can become institutionalized to the point that they are perceived to be outside the range of transition intermediaries’ influence. High heterogeneity may result in irregularities that enable the more rapid diffusion of innovation if norms and user practices are framed by actors, including intermediaries, as an improvement to current institutional arrangements.
- **Less institutionalized fragmented field.** A lower degree of institutionalization typically results in a higher level of uncertainty in current institutional arrangements and can provide opportunities for transition intermediaries to take strategic action. High heterogeneity may result in irregularities that enable the more rapid diffusion of innovation if norms and user practices are framed by actors, including intermediaries, as an improvement to current institutional arrangements.
- **Highly institutionalized unified field.** Regulation, norms, and cultural features can become institutionalized to the point that they are perceived to be outside the range of transition intermediaries’ influence. Invariability and cohesion in institutional arrangements are believed to maintain the status quo since this often results in a lack of rationalities for actors, including intermediaries, to deviate from current institutional arrangements.
- **Less institutionalized unified field.** A lower degree of institutionalization typically results in a higher level of uncertainty in current institutional arrangements and can provide opportunities for transition intermediaries to take strategic action. Invariability and cohesion in institutional arrangements are believed to maintain the status quo since this often results in lack of rationalities for actors, including intermediaries, to deviate from current institutional arrangements.

In addition, as discussed in Section 2.2.1, we propose that jolts and crises alter field conditions and can disrupt existing consensus and act as a catalyst for transition intermediation across all ideal types of field conditions. Similarly, in line with argumentation in Section 2.2.2, transition intermediaries’ social position may enable or constrain divergent institutional change implementation across all ideal types of field conditions. This study applies the conceptual frame from Fig. 1 to Australian cases focusing on local government commitments to fleet electrification and cycling infrastructure. In doing so, this study examines how transition intermediaries are enabled and constrained when seeking to implement divergent institutional change for systems change.

![Diagram of the enabling conditions for transition intermediation for systems change. Adapted from Battilana et al. (2009).](image-url)
3. Methodology

3.1. Research design and case selection

Case study analyses can convey the complexity of cases and can be used to explore the contextual conditions of cases (Yin, 2009). This study used a comparative research design and is an embedded case study featuring multiple sub-units of analysis focusing on transition intermediary involvement in institutional processes for changes to local government commitments to vehicle fleet electrification and cycling infrastructure in Australia.

Australia has three levels of elected government namely federal, state (or territory), and local. Local government responsibilities include the provision of road infrastructure and town planning within their jurisdiction (Longo, 2011). However, local governments in Australia are a creation of the states, which places constraints on local government functions and autonomy as well as on the ability of the federal government to fund them (Megarry, 2011). The institutional constraints on local governments emphasizes the need for intermediation which can facilitate access to new resources and networks (Fischer and Newig, 2016).

The Australian cases for this study were selected based on the identification of transition intermediaries acting as institutional entrepreneurs for changes to local government commitments to vehicle fleet electrification and cycling infrastructure. The cases were chosen to maximize variance along units of analysis from the conceptual frame to obtain information on the impact of diverse circumstances on case process and outcome (Flyvbjerg, 2006) in order to test the applicability of concepts from institutional entrepreneurship across cases of transition intermediation for low-carbon mobility transition. The conceptual frame outlined in Section 2 was applied to the cases to examine enabling conditions for transition intermediation in the context of systems change. A benefit of this comparative research design is to allow the characteristics of three distinct cases (one focusing on the organizational field of light vehicle fleets and two focusing on the organizational field of cycling infrastructure) to provide a basis for theoretical reflections about contrasting findings. In Sections 4 and 5, this case strategy enables a test of the applicability of concepts across three cases and a comparison of findings from cases of cycling infrastructure in cities. As such, this approach is suitable to determine how transition intermediaries are enabled and constrained when seeking to implement divergent institutional change for low-carbon mobility transition by drawing from diverse institutional contexts at local government level.

3.2. Case background

3.2.1. Local government fleet electrification

In Australia, transport is the third largest source of greenhouse gas emissions (Australian Government, 2019) and road vehicles make up approximately 81% of transport emissions (Climateworks, 2020). The uptake of alternative fuel vehicles, in particular electric vehicles (EVs), combined with a renewable-powered electricity grid, can reduce emissions from passenger road transport. Government and business vehicle fleets account for 52% of annual new vehicle sales in Australia and contribute to the second-hand vehicle market at the end-of-vehicle lease (Electric Vehicle Council, 2019). As such, fleet procurement guidelines influence the composition of Australia’s total vehicle fleet. Recent programs undertaken by transition intermediaries have shown the feasibility of EVs for light vehicle fleets. This study examines the ‘Electric Vehicle Ready Local Government Fleets’ program by the Municipal Association of Victoria (MAV) (a peak body for local government), the Electric Vehicle Council (a membership-based national representative body), and Climateworks (a non-profit think tank), which worked with local governments in the state of Victoria to support the uptake of EVs (Climateworks, 2019).

3.2.2. Cycling infrastructure in cities

In Australia, most commuters travel by private vehicle and around 5% either cycle or walk (Australian Bureau of Statistics, Census of Population and Housing: Commuting to Work, 2018). Over 85% of Australians live in urban areas, which indicates that the scope for increasing the modal share of cycling is substantial (Australian Bureau of Statistics, Census of Population and Housing: Reflecting Australia, 2018). A modal shift away from private vehicles to active transport can reduce greenhouse gas emissions and ease traffic congestion, and can improve public health (Bueller and Pucher, 2021, Woodcock et al., 2009). Separated cycleways in urban areas have been shown to have the highest impact on the propensity to cycle by addressing safety concerns of commuters (We Ride Australia, 2021). In recent years, transition intermediation has begun to address these barriers through planning for cycling infrastructure in Australian cities. This study examines pop-up cycleway initiatives in both New South Wales and Victoria. In 2020, in response to the impacts of the COVID-19 pandemic on transport, Transport for NSW, a government agency in the state of New South Wales, and the Department of Transport in the state of Victoria intermediated between their respective local governments to support the delivery of pop-up cycleways (Department of Transport, 2022, Transport for NSW, 2022).

3.3. Data

The case study analysis included 26 semi-structured interviews (as shown in Table 1). The interviews were conducted between June and August in 2021 and June and July in 2022. Helicopter interviews were conducted with individuals identified as having a general overview of either fleet electrification or cycling infrastructure. Initial interview requests were sent to 12 individuals which resulted in 6 interviews, and a snowballing approach was used to find the remaining interviewees.

<table>
<thead>
<tr>
<th>Cases</th>
<th>Interviewee affiliations (numbers in round brackets refer to quotes in the results section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local government fleet electrification (in the state of Victoria)</td>
<td>Electric vehicle charging infrastructure company (1)</td>
</tr>
<tr>
<td></td>
<td>Electric vehicle charging infrastructure company (2)</td>
</tr>
<tr>
<td></td>
<td>Independent federal government agency (4)</td>
</tr>
<tr>
<td></td>
<td>Non-profit think tank (5)</td>
</tr>
<tr>
<td></td>
<td>Non-profit think tank (6)</td>
</tr>
<tr>
<td></td>
<td>University</td>
</tr>
<tr>
<td></td>
<td>Department of Infrastructure, Transport, Regional Development and Communications (Federal government)</td>
</tr>
<tr>
<td></td>
<td>Consultancy (7)</td>
</tr>
<tr>
<td></td>
<td>Department of Transport and Planning (State government) (8)</td>
</tr>
<tr>
<td></td>
<td>Independent advisory body (9)</td>
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<tr>
<td></td>
<td>NGO (10)</td>
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<td></td>
<td>Consultancy (11)</td>
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<tr>
<td></td>
<td>City council (Local government) (12)</td>
</tr>
<tr>
<td></td>
<td>Peak body for local governments (13)</td>
</tr>
<tr>
<td></td>
<td>City council (Local government) (14)</td>
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<tr>
<td></td>
<td>Consultancy (15)</td>
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<td>NGO</td>
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<td>Peak body of organizations</td>
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<td>University</td>
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<td>University</td>
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<tr>
<td></td>
<td>Independent advisory body</td>
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<tr>
<td></td>
<td>Department of Transport and Planning (State government)</td>
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A semi-structured interview guideline including open-ended questions was prepared to investigate enabling and constraining conditions for transition intermediation for the implementation of divergent institutional change. Table 2 contains a sample of interview questions that were tailored for each interviewee (follow-up questions were asked when necessary). Interviews were transcribed and coded using conceptual categories from the conceptual frame (as shown in Table 2). The authors had an in-depth discussion on themes that emerged from coding interview data to confirm the robustness of codes and subsequent data analysis. Thematic analysis was used to adapt and test existing concepts across three cases. An iterative process was used to construct the conceptual frame (outlined in Section 2.2.3) by drawing from institutional entrepreneurship literature and transition studies. A preliminary literature review of intermediaries in transition studies highlighted the role of intermediaries in aggregating and conveying knowledge between actors and networks (outlined in Section 2.2.3). Hence, we proposed an initial stage of knowledge synthesis to an existing conceptual frame from institutional entrepreneurship literature for transition intermediation when implementing divergent institutional change for systems change (shown in Fig. 1). Thematic analysis thus arose from a process of integrating insight on functions of transition intermediaries with a conceptual frame from institutional entrepreneurship literature, which was subsequently found to be applicable across empirical findings from three cases. The conceptual frame was satisfactory to examine empirical data. All predetermined conceptual categories were used for case study analysis. In addition, all empirical findings relevant to the agency and structural embeddedness of transition intermediaries could be categorized into predetermined conceptual categories. A possible explanation for this is that the conceptual frame covers both agency and structure and offers a range of units for case study analysis (Geels, 2022). Interview data was complemented with grey literature, including government documents, and secondary sources, such as newspaper articles, to identify enabling and constraining conditions for transition intermediation and divergent change implementation. Triangulation of data sources was useful to develop a more nuanced understanding of institutional changes observed in the cases.

4. Results

Table 3 presents an overview of results from the three cases (one focusing on fleet electrification and two focusing on cycling infrastructure). Results are outlined in detail in Sections 4.1 and 4.2.

4.1. Transition intermediation for local government fleet electrification

4.1.1. Enabling conditions for transition intermediation

Highly institutionalized fragmented field. There is a high degree of heterogeneity in the organizational field of light vehicle fleets due to the presence of alternative fuel vehicles such as electric vehicles (EVs), which offers rationalities for actors to deviate from the status quo. As noted by an interviewee: “Large manufacturers are introducing more and more EVs into Australia, many of them, which includes Volkswagen, Jaguar, Land Rover, Rolls Royce, Mercedes, Volvo, quite a few others, have got a stated objective that by 2030, they will be producing no more petrol and diesel vehicles…So fleet operators are kind of seeing the lay of the land manufacturers are transitioning to EVs” (1). As such, there is no single institutional regime for light vehicles fleets but rather a mixture of institutions. The resulting contradictions within the field provided opportunities for transition intermediaries to diverge from existing institutional arrangements. “As a fleet manager, you’re getting a directive now that we have to start transitioning our fleet to electric” (2).

There is also a high degree of institutionalization in the organizational field of light vehicle fleets with incumbent organizations including local governments primarily supporting the use of internal combustion engine (ICE) vehicles within their fleets. “To support fleet electrification, you need to do charging infrastructure and there is a cost associated with that… it’s always a question of who the cost sits with… does it sit under a fleet budget, or does it sit under a property budget or whatever it might be? So, there’s a bit of resistance there” (2). The high degree of institutionalization in the field of light vehicle fleets provided less opportunity for transition intermediaries to implement divergent institutional change since existing technology and institutional configurations that accommodate ICE vehicles were considered difficult to change. However, several interviewees mentioned climate change as a driver of fleet electrification and hence an opportunity for institutional entrepreneurship. “Their [local governments’] community expects them to have climate change policies, if they write down where all their emissions come from then vehicle emissions are usually really high on that list” (3).

Transition intermediaries’ social position. The Electric Vehicle Council is a national body representing the electric vehicle industry in Australia and provides guidance on electric mobility by intermediating between industry incumbents, government, academia, and community

Table 2

<table>
<thead>
<tr>
<th>Conceptual argumentation (from Section 2)</th>
<th>Main coding category</th>
<th>Interview questions</th>
<th>Examples of relevant interview data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediaries can use knowledge synthesis to develop framing strategies that support their visions (Kivimaa, 2014, Kanda et al., 2020)</td>
<td>Knowledge synthesis</td>
<td>What kind of evidence did your organization draw on?</td>
<td>Reference to research outputs and data sources such as reports and business cases</td>
</tr>
<tr>
<td>Intermediaries can develop and articulate new visions using political narratives (Kivimaa, 2014, Bush et al., 2017)</td>
<td>Creating a vision</td>
<td>How did your organization create a vision for change and what was the vision for change?</td>
<td>Reference to advocacy efforts and strategies from actors</td>
</tr>
<tr>
<td>Intermediaries can create consensus for institutional change by networking and translating and aligning interests (Kanda et al., 2020, Smith et al., 2016)</td>
<td>Mobilizing allies</td>
<td>Which organizations/individuals did your organization cooperate with and why?</td>
<td>Reference to collaboration during meetings and workshops</td>
</tr>
<tr>
<td>Actors’ social position affects their access to resources for engaging in institutional entrepreneurship and perceived legitimacy in a field (Lawrence, 1999, Leca et al., 2008, Maguire et al., 2004)</td>
<td>Social position</td>
<td>Which organizations/individuals do you consider most important in this area and why?</td>
<td>Reference to key actors and actor networks and partnerships in a field</td>
</tr>
<tr>
<td>High heterogeneity often leads to institutional contradictions in a field and actors exposed to such contradictions are likely to diverge from existing institutional arrangements (Fruenschieling, 2019, Hoogstraeten et al., 2020, Emirbayer and Mische, 1998, Sewell Jr, 1992)</td>
<td>Heterogeneity</td>
<td>Was there any resistance from organizations/individuals to change and why?</td>
<td>Reference to multiplicity and competing practices of actors in a field (or similarities and shared practices between actors)</td>
</tr>
<tr>
<td>A lower degree of institutionalization typically results in a higher level of uncertainty and can provide opportunities for institutional entrepreneurs to take strategic action (Baumgartinger-Seiringer et al., 2022, DiMaggio, 1988, Leca et al., 2008)</td>
<td>Institutionalization</td>
<td>Was there any resistance from organizations/individuals to change and why?</td>
<td>Reference to regulation and norms that structure activities of actors in a field (or a lack thereof)</td>
</tr>
<tr>
<td>Jolts and crises can disrupt existing consensus in a field and enable the introduction of new ideas (Fliqstein, 2001, Greenwood et al., 2002)</td>
<td>Jolts and crises</td>
<td>Why do you think organizations/individuals have made changes?</td>
<td>Reference to crises such as the COVID-19 pandemic</td>
</tr>
</tbody>
</table>
stakeholders. “It [The Electric Vehicle Council] really came about from the three of us sitting down and saying, what can we do to accelerate the uptake of electric vehicles?” (4). Similarly, the Municipal Association of Victoria (MAV) is the legislated peak body for local governments in Victoria and facilitates collaboration between local governments. An interviewee noted that: “Local government today is really reliant on collaboration because local governments tend to be starved of resources. They’re always having to do the same or more with less” (3). The social position of the Electric Vehicle Council and MAV enabled transition intermediation and facilitated collaboration between diverse actors including local governments for divergent institutional change.

4.1.2. Transition intermediation for divergent institutional change implementation

Knowledge synthesis. This study suggests that transition intermediaries use knowledge synthesis to develop framing strategies that support their visions for divergent institutional change. In the state of Victoria, the ‘Electric Vehicle Ready Local Government Fleets’ program by MAV, the Electric Vehicle Council, and Climateworks (a non-profit think tank) worked with local governments to support fleet electrification. An interviewee described how research for the program was conducted: “For the vast majority of the research and evidence gathering that we do, we find partners, whether they’re formal or informal partnerships to actually co-create and co-develop that evidence base” (5). Program activities included an initial workshop and survey, fleet data collection, manufacturer engagement, vehicle financing options, and final evaluation (Climateworks, 2019).

Creating a vision. Institutional entrepreneurs can develop and articulate their visions using collective action framing. Prognostic framing portrays visions for institutional change as better than existing arrangements and can legitimize actors and potential allies in favor of change. For fleet electrification, an ecology of intermediaries created a vision for electrifying local government fleets and made use of institutional contradictions in a heterogeneous field by using prognostic framing that focused on environmental externalities associated with ICE vehicles and existing government emissions reduction initiatives and targets. “Most of the emissions are in passenger vehicles, so let’s start there, let’s get that low hanging fruit” (6). In doing so, transition intermediaries legitimized their visions by drawing attention to conflict between existing institutions and by combining different already existing institutions to diverge from existing institutional arrangements: “We really want to see those climate outcomes, but also those industries are going to have to shift” (6).

Mobilizing allies. There are institutional constraints when mobilizing allies for fleet electrification due to high institutionalization in the field, notwithstanding the opportunities for institutional entrepreneurship provided by field heterogeneity. Transition intermediaries engaged in networking to leverage social capital and align interests in favor of other voices that are going to be putting pressure on our decision makers, making sure we are on them with the evidence so that they can also be creating a vision: Prognostic framing (Climateworks, 2019).

Table 3: Overview of results.

<table>
<thead>
<tr>
<th>Cases and intermediaries from the cases</th>
<th>Enabling conditions for transition intermediation</th>
<th>Transition intermediation for divergent institutional change implementation</th>
<th>Reason for (relative) success or failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case: Local government fleet electrification (in the state of Victoria)</td>
<td>Highly institutionalized fragmented field: The presence of electric vehicles in field of light vehicle fleets led to contradiction and provided opportunity to diverge from existing institutional arrangements</td>
<td>Knowledge synthesis: Tools and knowledge including vehicle financing options and fleet data collection</td>
<td>High institutionalization created conflict with existing institutional arrangements, affected mobilization of allies</td>
</tr>
<tr>
<td>Actors that intermediated between local governments: Municipal Association of Victoria (MAV), peak body for local governments</td>
<td>Jobs and crises: Climate change, considered urgent by some actors</td>
<td>Creating a vision: Prognostic framing</td>
<td>A small number of local governments engaged have started transitioning their fleets to electric vehicles, no exact data available</td>
</tr>
<tr>
<td>Electric Vehicle Council, membership-based national representative body</td>
<td>Transition intermediaries’ social position: Ecology of intermediaries (incl. MAV, Electric Vehicle Council, and Climateworks)</td>
<td>Mobilizing allies: Primarily networking to leverage social capital</td>
<td></td>
</tr>
<tr>
<td>Case: Cycling infrastructure (City of Sydney council, New South Wales)</td>
<td>Less institutionalized unified field: Uncertainty due to low institutionalization in the field of cycling infrastructure provided opportunity for strategic action</td>
<td>Knowledge synthesis: State and local government cycling strategies and business case</td>
<td>Social position enabled mobilization of allies</td>
</tr>
<tr>
<td>Actors that intermediated between local governments: Transport for NSW, state government agency</td>
<td>Jobs and crises: COVID-19 pandemic, disrupted existing consensus</td>
<td>Creating a vision: Prognostic framing</td>
<td>6 pop-up cycleways delivered in City of Sydney council area in approx. 3 months, comprising approx. 38% of separated cycleway network (Transport for NSW, 2022)</td>
</tr>
<tr>
<td>Case: Cycling infrastructure (City of Melbourne council, Victoria)</td>
<td>Less institutionalized unified field: Uncertainty due to low institutionalization in the field of cycling infrastructure provided opportunity for strategic action</td>
<td>Knowledge synthesis: State and local government cycling strategies</td>
<td>Social position constrained mobilization of allies</td>
</tr>
<tr>
<td>Actors that intermediated between local governments: Department of Transport, state government department</td>
<td>Jobs and crises: COVID-19 pandemic, disrupted existing consensus</td>
<td>Creating a vision: No coherent vision for change observed</td>
<td>Approx. 19 km of pop-up cycleways delivered in City of Melbourne council area in approx. 13 months (City of Melbourne, 2022)</td>
</tr>
<tr>
<td>Municipal Association of Victoria (MAV), peak body for local governments</td>
<td>Transition intermediaries’ social position: Intermmediation between local governments by Department of Transport, MAV, and VicHealth</td>
<td>Mobilizing allies: Financial resources and formal authority, a lack of social capital</td>
<td></td>
</tr>
<tr>
<td>VicHealth, statutory authority</td>
<td>Knowledge synthesis: State and local government cycling strategies</td>
<td>Social position enabled mobilization of allies</td>
<td></td>
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costs associated with EVs and there is a limited choice of EVs in the Australian market: “You are having to purchase vehicles that are more expensive than ICE at the moment, but you are also having to install chargers and software, and these things come at a cost. So, some councils kind of balk at that” (1). A high degree of institutionalization and incumbency in the field of light vehicle fleets in Australia underpinned the use of ICE vehicles. This made mobilization of allies for fleet electrification difficult due to administrative and cost concerns.

4.2. Transition intermediation for cycling infrastructure in cities

4.2.1. Enabling conditions for transition intermediation

Less institutionalized unified field. There is a low degree of institutionalization in the organizational field of cycling infrastructure and as a result there is often a lack of cycling infrastructure expertise in local governments. As observed by an interviewee: “I probably do more work for local councils than I do state governments and the change that’s needed there a lot of the time is just the mindset of the engineers. And it’s just getting out of years of planning for cars and the biggest barrier to cycling being that we’ve made it too easy to drive a car” (7). The implementation of pop-up cycleways in the states of New South Wales and Victoria can be seen as a response to uncertainty in a field with low institutionalization which provided an opportunity for transition intermediaries to take strategic action. “[There’s] a lack of skilled resources in the space of cycling planning and design... but I think that’s getting better and more people are being educated and things like pop-up bike lane programs give you an opportunity to upskill people” (7). The catalyst for institutional entrepreneurship was a crisis in the field during the COVID-19 pandemic in 2020 which disrupted existing consensus in the field and enabled the introduction of new ideas. State government entities in New South Wales and Victoria used the crisis as an opportunity to intermediate to deliver pop-up cycleways as an alternative to public transport during work-from-home mandates. “Through COVID, they could see the benefits of taking space away for the cars, to give to local residents for space making” (8).

There is limited heterogeneity in the organizational field of cycling infrastructure in terms of road infrastructure and available routes, which are mainly within the jurisdiction of local governments. This places institutional constraints on opportunities for transition intermediaries to influence divergent institutional change at local government level. While there is some heterogeneity in the field of active transport, which also includes walking, in practice local governments often provide cycling and walking infrastructure separately, including for safety reasons. For example, pop-up cycleways were introduced in New South Wales and Victoria exclusively for cyclists. As noted by an interviewee: “If a car is what makes a bike rider unsafe equally, a bike rider can make a pedestrian unsafe...It’s about the management of the transport network overall through the creation of choice” (9). Although organizations involved in active transport may not agree on all aspects of cycling and walking infrastructure, they do agree in principle that more safe cycling infrastructure is needed to create an integrated transport network. “While we don’t want to group walking and cycling on the same infrastructure, the provision of infrastructure that facilitates walking and cycling has significant safety benefits for both and protects car drivers” (10).

Transition intermediaries’ social position. The New South Wales parliament passed the ‘COVID-19 Legislation Amendment (Emergency Measures) Bill 2020’ allowing changes to the Planning Act based on health and safety that bypassed ordinary planning approval (Parliament of NSW, 2020). Subsequently, the Minister for Planning and Public Spaces authorized the ‘Environmental Planning and Assessment (COVID-19 Development Temporary Cycleways) Order 2020’, following a request from Transport for NSW (NSW Government, 2020). As a result, Transport for NSW established a delivery team for the pop-up cycleways project: “We went from having around six people on the team to getting over eighty-five people undertaking work within councils and within the state government to get these pop-up cycleways underway” (11). As such, the social position of Transport for NSW enabled transition intermediation between local governments in support of pop-up cycleways. As observed by an interviewee involved in pop-up cycleway implementation: “Having the alignment between state and local government is super helpful” (12).

In Victoria, the Department of Transport intermediated to support local governments in implementing pop-up cycleways, however leadership from the state government for active transport was inconsistent. “The big difference between what happened in New South Wales and what happened in Victoria is the senior leadership. You had a minister [in New South Wales] who wanted to make something happen” (13). The lack of leadership from the Victorian government for active transport compromised the social position of the Department of Transport and affected its perceived legitimacy in the field, which made transition intermediation between local governments for pop-up cycleway implementation difficult. Low status actors at the periphery of a field usually initiate divergent institutional change as they often benefit less from existing institutional arrangements. Both in New South Wales and Victoria, high status actors representing state government at the center of the field intermediated to initiate divergent change. Field conditions likely mediated the impact of transition intermediaries’ social status, particularly the COVID-19 pandemic which provided the catalyst for incumbents to diverge from existing institutional arrangements.

4.2.2. Transition intermediation for divergent institutional change implementation

Knowledge synthesis. In New South Wales, the City of Sydney council’s ‘Cycle Strategy 2007–2017’ proposed separated cycleways that preceded the ‘Inner Sydney Regional Bicycle Network’ which emphasized the difficulty of delivering an integrated transport network across multiple local government jurisdictions (City of Sydney, 2007, City of Sydney, 2010). In 2018, the ‘State Infrastructure Strategy’ released by Infrastructure NSW recommended that Transport for NSW develop a principal bicycle network in partnership with local governments (Infrastructure, 2018). Subsequently, in January 2020, Transport for NSW developed a ‘Greater Sydney Cycling and Micro Mobility’ business case which was assured by Infrastructure NSW: “The INSW [Infrastructure NSW] reviewers asked us...have you looked at doing lighter, quicker, cheaper? Because in the inner-city environment, it costs above 10 million per kilometer to deliver [road infrastructure]” (11). In Victoria, examples of knowledge synthesis included the state government’s ‘Walking and Cycling Strategy 2018–2028’, which contained strategic cycling corridors, and the City of Melbourne council’s ‘Transport Strategy 2030’ that identified cycling routes (City of Melbourne, 2018, Transport for Victoria, 2018). However, in practice local governments in New South Wales had a greater policy and evidence base for implementing cost effective pop-up cycleways during the COVID-19 pandemic.

Creating a vision. Transport for NSW created a vision for divergent institutional change by drawing on predefined policy solutions completed shortly before the COVID-19 pandemic and with support from pre-cycling political leadership at the City of Sydney council. As noted by an interviewee from the city council: “We already had those visions, documents, and those community strategic plans and all of the important goals and objectives” (14). Prognostic framing was used to promote the implementation of pop-up cycleways as an improvement from existing institutional arrangements, and to legitimize actors and potential allies in favor of proposed changes. “What are the community’s aspirations? They want to be happy. And governments want to be economically productive, and we don’t want to have high costs for delivering infrastructure and health. Cycling solves a bunch of these major challenges. You don’t have to invest as much in your infrastructure as for transport services like buses or trains. You’ve got health benefits for the population” (11). While the Department of Transport in Victoria approved the delivery of pop-up cycleways and intermediated between local governments by providing financial and coordination support, in practice there was limited capacity to support divergent change in part due to a lack of engagement in active transport from the Victorian government. “Active Transport Victoria is, I think, now three people within the Department of
Transport. We’ve got a minister who says supportive things, but there’s no policy direction to match” (13). This inconsistency made it difficult to formulate a coherent vision within the Department of Transport for divergent institutional change.

**Mobilizing allies.** Transport for NSW intermediated between local governments and leveraged its resources and social capital to provide financial and coordination support for pop-up cycleway implementation. An interviewee involved in this process noted that: “We doubled Sydney’s separated cycling network in nine months...That’s just completely unheard of and very painful politically in some ways, but the success is that we have increased cycling participation significantly...We’ve shown that if you have the organizational support at that state and local government level...then you really can achieve phenomenal change” (11). The formal authority granted to Transport for NSW following COVID-19 state government orders allowed it to bypass ordinary community consultation processes and pro-cycling political leadership at the City of Sydney council facilitated an unobstructed path to intermediate for the implementation of pop-up cycleways with minimal community and political conflict. **“What we saw in New South Wales with the pop-ups is that it was joint eventually between councils and the state government. There was strong collaboration. In some areas the state government took the lead...whereas with other projects such as Pitt Street north in the Sydney CBD, the council took control”** (15).

In Victoria, the Department of Transport and the City of Melbourne council adopted a more conventional approach for implementation of pop-up cycleways with community consultation. This resulted in negative feedback from the City of Melbourne council’s constituency including from businesses, particularly regarding removal of car parking, which affected the council’s political support and ability to mobilize allies for delivering pop-up cycleways. An interviewee commented on the City of Melbourne council’s pop-up cycleway delivery approach: “They’re still consulting and still having arguments and it’s just dragging on. So, it’s hard to call it pop-up at this stage. I think it’s a very traditional project development approach to what should have been an agile delivery project” (13). As noted by an interviewee involved in pop-up cycleway implementation in Victoria: “When you’re doing this kind of work, you’re going to have people who just oppose building a bike network because they don’t want change, because they’re invested in driving...they’re looking at it from a very individualistic perspective” (14). In 2020, in the absence of consistent state government leadership for active transport in Victoria and in response to the impact of the COVID-19 pandemic on transport, the Municipal Association of Victoria (MAV) and VicHealth, a statutory authority, formed a partnership to create a vision for divergent change and mobilized local governments by engagement through knowledge sharing to increase cycling and walking projects. In 2021, MAV and VicHealth formed a coalition with other transition intermediaries and developed a consensus statement to mobilize political support for envisioned improvements to cycling and walking infrastructure in Victoria (MAV et al., 2021).

5. Discussion

This study contributes to literature on transition intermediaries by systematically assessing the structural embeddedness of (ecologies of) intermediaries through acknowledgement and examination of their embedded agency by employing concepts from institutional entrepreneurship literature including field-level conditions and actors’ social position (Garud et al., 2007; Battilana et al., 2009). In doing so, this study provides new insight on structural conditions that enable and constrain transition intermediation to determine a more precise impact of intermediation on low-carbon mobility transition at local government level (Kanda et al., 2020).

Local government fleet electrification. Findings indicate that there is no single institutional regime for light vehicle fleets but rather a mixture of institutions and the resulting contradictions provided opportunities for transition intermediaries to legitimize proposals by drawing attention to conflict between existing institutions and combining different already existing institutions. This confirms the notion that socio-technical regimes should be viewed as semi-coherent (Fuenfschilling and Truffer, 2016, Fuenfschilling and Truffer, 2014) and that institutional heterogeneity within a regime allows for institutional entrepreneurial activities (Battilana et al., 2009). However, the high degree of institutionalization and incumbency in the field of light vehicle fleets underpinned the use of internal combustion engine (ICE) vehicles, which made mobilization of allies for local government fleet electrification problematic and thereby obstructed transition-oriented institutional change. As such, this study suggests that transition intermediation in highly institutionalized fragmented fields results in contradiction and tension which present opportunities for transition intermediaries, but also challenges stemming from path-dependency and inertia that must be addressed when intermediating for systems change.

In the context of actors’ social position, ecologies of intermediaries (Kivimaa et al., 2019, Vihemäki et al., 2020) can enable institutional entrepreneurship by connecting transition intermediaries at the periphery of a field with transition intermediaries and actors such as industry incumbents at the center (Battilana et al., 2009, Maguire et al., 2004). An ecology of intermediaries including the Municipal Association of Victoria (MAV), the Electric Vehicle Council, and Climateworks intermediated between local governments for divergent institutional change. However, findings suggest that in highly institutionalized fields, ecologies of intermediaries seeking to diverge from existing institutional arrangements will likely be contested and their success dependent on managing institutional conflict among actors with diverse interests. In this regard, systemic intermediaries can be identified to take on a coordinating role on behalf of an ecology to break down organizational silos and maintain a coalition of allies for divergent institutional change (Kanda et al., 2020, Kivimaa and Martiskainen, 2018, Soborén et al., 2022).

To create a shared vision for divergent change, institutional entrepreneurs are most effective using collective action framing strategies that are sensitive to discursive contexts in which they are embedded (Battilana et al., 2009, Fligstein, 2001). In the context of transition intermediation, this involves mobilizing heterogeneous actors for highly uncertain outcomes. Findings show that an ecology of intermediaries created a vision for local government vehicle fleet electrification and made use of institutional contradictions in a heterogeneous field by using prognostic framing that focused on environmental externalities associated with ICE vehicles. Opportunities for innovation and change in a socio-technical system are to some extent dependent on the availability and legitimacy of alternative institutional rationalities (Fuenfschilling, 2019). As such, a better understanding of collective action framing is required to mobilize allies for divergent change, especially when change promotes low-carbon mobility in a highly institutionalized field and challenges existing regime configurations of technologies and institutional structures for ICE vehicles (Geels, 2004, Bush et al., 2017). In this regard, the institutional work perspective is well suited to examine roles and interests of heterogeneous actors, including incumbents, involved in technological innovation and institutional change (Fuenfschilling and Truffer, 2016, Lawrence and Suddaby, 2006).

Cycling infrastructure in cities. Divergent institutional change was initiated in response to the COVID-19 pandemic and subsequent work-from-home mandates. Transport for NSW and the Department of Transport in Victoria intermediated to support their respective local governments for the implementation of pop-up cycleways as an alternative to public transport. As in the case of vehicle fleet electrification, prognostic framing was employed by transition intermediaries to create a vision for divergent institutional change. Uncertainty, due to low institutionalization in the field of cycling infrastructure, allowed intermediaries to promote the implementation of pop-up cycleways as an improvement from existing institutional arrangements for private vehicle owners, which favored high-cost road infrastructure without the public health benefit of an increase in cycling. Although the social
position of Transport for NSW and the Department of Transport in Victoria was similar, the former benefited from pro-cycling political incumbents at Transport for NSW and at state government ministerial level. Transition intermediation for pop-up cycleway delivery in Victoria was less successful in comparison due to the Department of Transport’s social position and conventional community consultation. As a result, the City of Melbourne council was less able to leverage social capital and withstand negative feedback on pop-up cycleways from its constituency including businesses which made mobilization of allies for divergent change problematic.

Low status actors at the periphery of a field usually initiate divergent change (Garud et al., 2002, Shils, 1975) while high status actors at the center benefit from existing institutional arrangements and are resistant to change (Greenwood et al., 2002). In transition studies, the notion of low status actors with peripheral positions relates to niche actors and networks instigating change (Smith and Raven, 2012), while incumbent organizations and networks are usually seen as opposing institutional change (Smink et al., 2015). More recent transition studies have called for more attention to potentially constructive roles of incumbents in transitions (Sovacool et al., 2020, Turnheim and Sovacool, 2020). For the implementation of pop-up cycleways in New South Wales and Victoria, high status actors representing state government at the center of the field intermediated between local governments to support divergent change. This finding is notable and suggests that exogenous conditions such as the COVID-19 pandemic may provide a catalyst for incumbents to diverge from existing institutional arrangements for socio-technical systems change. However, transition intermediaries must leverage their social position in a field to translate field-level change into micro-level institutional change, if not, the impact of exogenous conditions on transition intermediation for systems change will likely be limited in scope.

Taking a collaborative approach to systems change in a less institutionalized unified field, such as that of cycling infrastructure, may result in more conflict with the existing institutional arrangements of highly institutionalized fields. As observed in Victoria, community consultation for pop-up cycleways resulted in conflict with private vehicle owners, which represent most road users. Hence, cycling infrastructure lacks legitimacy as an alternative institutional rationality for road infrastructure and town planning, both of which are highly institutionalized at local government level and oriented toward private vehicle owners. As such, cycling infrastructure interferes with the institutional structures of an established socio-technical regime for private vehicle owners (Fuenfschilling, 2019, Geels, 2004, Bush et al., 2017). This highlights potential incompatibility between strategies for divergent institutional change implementation and contexts in which transition intermediaries are embedded, particularly in a local government context often requiring governance sensitivity (Fischer and Newig, 2016, Hodson and Marvin, 2009). As such, transition intermediation for divergent change implementation in a local government context and in less institutionalized unified fields may require bypassing certain key stakeholders, such as communities, to maintain a coalition of allies for systems change (Newig and Kvarda, 2012, Rimmert et al., 2020).

However, while a lack of community consultation regarding divergent institutional change may result in less conflict with existing institutional arrangements, it is foreseeable that community consultation is a requirement for local governments to manage grievances for long term institutionalization of divergent change. Similarly, while top-down state government leadership was imperative for the implementation of pop-up cycleways, particularly in New South Wales, in a multi-level governance context a strategy for systemic change must be in place, including at local government level, to implement and maintain divergent institutional change beyond the tenure of political incumbents (Marsden et al., 2014, Niemeier et al., 2012). In this regard, ecologies of intermediaries can cultivate and maintain coalitions of allies for divergent institutional change (Kivimaa et al., 2019, Vihma¨ki et al., 2020, Soberon et al., 2022). Future studies on the deliberate cultivation of such ecologies in the context of field-level conditions can examine the social construction of institutional settings including their creation and maintenance as well as their destruction over time as a transition unfolds (Fuenfschilling, 2019, Kivimaa et al., 2019, Soberon et al., 2022).

6. Conclusions

By drawing on enabling conditions for institutional entrepreneurship to adapt a typology of field-level conditions for transition intermediation, and by adding an initial stage of knowledge synthesis for divergent institutional change implementation, this study was able to systematically analyze how the agency of transition intermediaries for socio-technical systems change is affected by diverse institutional contexts. A cross-case analysis allowed for comparisons between field-level conditions and actor characteristics to scrutinize their applicability across different contextual dimensions and to examine how transition intermediaries are enabled and constrained when seeking to implement divergent institutional change at local government level for low-carbon mobility transition.

Findings indicate that jolts and crises allow incumbent organizations to diverge from existing institutional arrangements and intermediate to support low-carbon mobility transition. In addition, findings highlight the potentially constructive role of incumbents for translating field-level change into micro-level institutional change for influencing the directionality of transitions. However, findings also suggest that transition intermediaries’ social position in a field can mute the enabling effect of jolts and crises on transition intermediation. That is to say that crises are not enough on their own to enable transition intermediation for transition-oriented institutional change, intermediaries must also be in a position to leverage such crises to effect change. Moreover, findings show that highly institutionalized fragmented fields present opportunities related to heterogeneity that allow transition intermediaries to legitimize their visions for systems change by drawing attention to conflict between existing institutions and by combining existing institutions to diverge from current institutional arrangements. However, the high degree of institutionalization in such a field may create challenges for transition intermediation related to incumbency (including path-dependency and inertia) that obstruct divergent institutional change implementation. Similarly, in a less institutionalized unified field, transition intermediaries’ social position and the interaction with established socio-technical regimes may limit opportunities for intermediaries to influence transition-oriented institutional change. This study suggests that a better understanding of collective action framing is required when intermediating across ideal types of field-level conditions to portray visions for institutional change as better than existing institutional arrangements. This understanding could help address challenges related to social position and incumbency in institutional contexts in which transition intermediaries are embedded, and ultimately mobilize allies for change.

A typology of field-level conditions for transition intermediation was applied to Australian cases focusing on low-carbon mobility transition in a local government context. Research in other contexts is needed to determine its generalizability. We acknowledge that the typology outlines four ideal types of organizational fields. Hence, it is a simplification of reality and is not expected to reflect case study complexities in all instances. It has been employed to guide conceptual reflections about contrasting case study findings. We also acknowledge existing typologies and conceptual frameworks in transition studies that consider field-level conditions (van Welie et al., 2018, Madsen et al., 2022). Such conceptualizations could perhaps be harnessed in other comparative case studies to further scrutinize the impact of field-level conditions on the agency of transition intermediaries. Previous studies suggest that embeddedness in multiple fields may be an enabling condition for institutional entrepreneurship (Battilana et al., 2009, Durand and McGuire, 2005). For example, by allowing institutional entrepreneurs to exploit institutional contradictions and transfer divergent practices from
other fields (Emirbayer and Mische, 1998, Phillips et al., 2000). This study features transition intermediaries that supported divergent institutional change implementation in multiple cases (i.e., in multiple fields), although examining embeddedness in multiple fields is beyond the scope of this study. Future studies could examine whether transition intermediation is influenced by the degree of similarity between fields, and potential synergies between ecologies of intermediaries in multiple fields, and implications for systems change. Findings from this study reveal that transition intermediaries are not exempt from institutional pressures faced by other actors in transitions. In a local government context, transition intermediaries involved in low-carbon mobility should consider collective action framing strategies and partnerships to mobilize allies before opportunities for institutional change emerge. Practitioners, including managers of transition intermediaries, may then be able to leverage crises, such as the COVID-19 pandemic, that temporarily alleviate institutional constraints by drawing attention to failures in institutional practices, to implement new socio-technical visions for low-carbon mobility transition. As such, future research needs to examine how transition intermediaries can be temporarily exempt from institutional pressures to effectively influence institutional change in the context of transitions.

CRediT authorship contribution statement

Sharp Darren: Supervision, Writing – review & editing. Nordt Alexander: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Writing – original draft, Writing – review & editing. Raven Rob: Supervision, Writing – review & editing. Malekopur Shirin: Supervision, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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