Conceptualisations of incumbent firms in sustainability transitions: Insights from organisation theory and a systematic literature review

Thomas Magnusson¹,² | Viktor Werner¹

¹Department of Management and Engineering, Linköping University, Linköping, Sweden
²School of Business, Innovation and Sustainability, Halmstad University, Halmstad, Sweden

Abstract

Following the tradition of using opposing concepts as a basis for organisational analysis, this article advances a theory-based understanding of incumbent firms in sustainability transitions. Building on seminal transition studies, we propose innovating/defending and collaborating/competing as two useful spectra to describe organisational behaviours in transitions. Presenting the automotive industry as an explanatory case, we show results from a systematic literature review that reveal motives for diverging behaviours. Combining the spectra into a $2 \times 2$ matrix, we then introduce four conceptualisations to explain the observed motives and behaviours. The conceptualisations are associated with different streams of organisation theory: dynamic capabilities and the resource-based view, resource-dependence theory, neo-institutional theory and theories on organisational learning and path dependence. Referring to organisational ambidexterity, value configurations and political arenas, we conclude that transitions research can reach a more multifaceted understanding by challenging the prevailing notion of the firm as a coherent actor.

KEYWORDS

automotive industry, environmental innovation, incumbent, organisational behaviour, sustainability transition, systematic literature review

1 | INTRODUCTION

Transformations to more sustainable modes of production and consumption will depend on fundamental changes throughout society. Transition studies are a growing field that investigates such changes. Most studies in this field have been located at a meso level, describing socio-technical system reconfigurations that break with established structures and practices (Geels et al., 2015; Köhler et al., 2019; Markard et al., 2012). However, an increasing body of research is turning its attention to organisation-level studies, analysing the role of incumbent firms in transitions. Because such firms control many vital resources (Figenbaum, 2017), interorganisational relationships (Christensen, 2011) and ties to policymakers and other power brokers (Lee et al., 2011), their engagement is critical for sustainability transitions to unfold.

Empirical studies in various industries suggest that incumbent firms have responded to sustainability challenges by developing new technologies and businesses. For instance, Steen and Weaver (2017) and Mäkitie (2020) show how oil and gas firms have engaged in wind power; Ottosson and Magnusson (2013) show how pulp and paper producers have become net suppliers of renewable energy; Stalmokaitė and Hassler (2020) show how shipping firms have implemented decarbonisation strategies, and Apajalahti et al. (2017) show how power producers and grid operators have started...
businesses in solar photovoltaics and electric vehicle charging. However, these studies also suggest that heterogeneous capabilities result in a variety of industry responses and that new businesses often complement rather than substitute existing ones. Yet other studies point to a substantial reluctance and resistance to change (Hess, 2014; Wells & Nieuwenhuis, 2012). Hence, empirical studies provide a fragmented picture of incumbents’ transition-oriented behaviours or the lack of such. The engagement of incumbents in sustainability transitions is by no means simple and straightforward.

The diverging scholarly descriptions present challenges to researchers who wish to understand the role of incumbents in sustainability transitions. Seeking a richer understanding, van Mossel et al. (2018) argue that transition studies would benefit from a deeper engagement with organisation theory. Such an engagement could provide helpful explanations and strengthen the validity of findings from research on entrepreneurial and corporate contributions to sustainability transitions. However, emanating from meso- rather than organisation-level research, transition studies currently lack a systematic account of organisation theory. This article will address that research gap.

In contrast to transition studies, organisation-level analyses are prevalent in corporate sustainability research, a field that has evolved largely in parallel with transition studies. Here, research emphasises business models (Schaltegger et al., 2012, 2016; Stubbs & Cocklin, 2008), arguing that firms develop such models to facilitate organisational change (Randles & Laasch, 2016), reconfigure their supply chains (Norris et al., 2021), manage stakeholders in value-creating activities (Freudereich et al., 2020) and transform the markets they operate in (Roome & Louche, 2016; Schaltegger et al., 2016; Upward & Jones, 2016). This resonates with an emerging interest in transition studies in how firms engage with other actors in market-shaping processes (Ottosson et al., 2020; Valor et al., 2021; Werner et al., 2022). Such processes are essential elements in transformative and mission-oriented innovation policies, devised to address major societal and environmental challenges (Mazzucato, 2016; Schot & Steinmueller, 2018; Weber & Rohracher, 2012).

By introducing a framework that explains organisational behaviours in sustainability transitions, this article aims to advance an understanding of incumbent firms that is embedded in both transition studies and organisation theory. The article is based on a systematic review of academic publications on environmental innovation and sustainability transitions in the automotive industry, which functions as an explanatory case. We chose to study incumbent automotive manufacturers for three reasons. Firstly, due to political pressures and social concerns over the negative externalities of conventional vehicles, sustainability has long been a pressing topic in the automotive industry. Secondly, well-known company names make the identification of incumbents relatively straightforward, even if authors do not always refer to them as such. Thirdly, transport is the second most studied sector in transition studies (Markard et al., 2012) and incumbent automotive manufacturers frequently feature in these studies. The plenitude of academic accounts makes it possible to cover various theoretical approaches and research designs, ensuring a broad conceptual understanding. Based on the argument that sustainability transitions will rely on transformative processes beyond organisational boundaries, we omit articles that focus solely on internal production processes and/or automation. Most of the articles in the review investigate incumbents’ efforts to develop and commercialise new product technologies. However, the sample also includes articles that examine the reorientation and restructuring of business processes.

2 | TWO SPECTRA TO DESCRIBE INCUMBENT BEHAVIOURS

In their quest to understand organisational behaviours, management scholars often use frameworks with opposing concepts and perspectives. The mechanistic and organic management systems proposed by Burns and Stalker (1961) are a well-known and widely cited example, as are March’s (1991) explorative and exploitative processes for organisational learning. The intention with these frameworks is not to suggest that organisations are easily divided into categories, but to offer conceptual spectra, which make it possible to highlight contrasting processes, structures and practices. In management practice, the contrasts are not necessarily mutually exclusive. Rather, the frameworks suggest that a prime task for managers is to make sense of the organisational environment and strike a suitable balance between the polar extremes that the spectra describe.

To distinguish business firms from individual persons, sector-level associations, interorganisational networks and policymakers, transition scholars refer to them as ‘organisational actors’ (Avelino & Wittmayer, 2016; Farla et al., 2012). This concept is used to describe a broad range of firms, from small start-ups to major multinationals. Outlined by Geels (2002), the multi-level perspective is a key founding framework in transition studies. Elaborating on this perspective, Geels and Schot (2007) present a typology of transition pathways, in which they describe incumbent firms as organisational actors that collectively defend established socio-technical structures. Hence, incumbents’ behaviours are restricted to incremental advancements and reactive responses. This corresponds to Hockerts and Wüstenhagen’s (2010) conceptualisation of incumbent firms as ‘Greening Goliaths’ and new entrants as ‘Emerging Davids’. However, later amendments to the typology highlight the instance of ‘endogenous enactment’ (Geels et al., 2016). Geels and his colleagues developed this concept based on strategic management literature (Geels, 2014), as well as their own and others’ empirical research in a broad range of industries (Bergek et al., 2013; Berggren et al., 2015; Penna & Geels, 2015; Smink et al., 2015). Endogenous enactment means that managers have discretion on how to interpret the organisational environment and it suggests that there may be a variety of incumbent behaviours. Firstly, by suggesting that incumbents can be innovative, it breaks with the dichotomised view of incumbents as defenders of existing structures and new entrants as innovators (Geels et al., 2016). In consequence, incumbents may display different behaviours along an innovating/defending spectrum. Secondly, endogenous enactment allows for both collective and individual
action (Geels, 2020). This implies that managers can balance competitive and collaborative behaviours into different forms of engagement with other actors along a competing/collaborating spectrum. Altogether, this allows for a more dynamic positioning of incumbents in transition studies, making space for more sophisticated organisational analyses.

In our literature review, we will use innovating/defending and collaborating/competing as two conceptual spectra to categorise academic articles on environmental innovation and sustainability transitions in the automotive industry. As outlined above, we derived these two spectra from seminal transitions research. However, they have equivalents in social psychology. In his well-cited theory on intrinsic values and sources of motivation, Schwartz (1994) presented openness to change versus conservation and self-enhancement versus self-transcendence as useful spectra to explain human behaviour. Translated to incumbent firm behaviours in sustainability transitions, this means that combinations of external pressures and intrinsic values can motivate firms to innovate (Hockerts & Wüstenhagen, 2010; Loorbach & Wijsman, 2013; Schaltegger & Wagner, 2011). However, these innovative behaviours are restricted by cognitive frames, business practices and institutionalised rules that encourage conservative and defensive behaviours (Fuenfschilling & Truffer, 2014; Kiltkou et al., 2015; Unruh, 2000). In a corresponding manner, firms compete to enhance their own business prospects (Brown et al., 2010), while at the same time transcending organisational boundaries and seeking collaboration to attain complementary resources (Sushandoyo & Magnusson, 2012) and gain power and legitimacy (Penna & Geels, 2012; Smith & Raven, 2012).

3 | METHODS

3.1 | Research design

As noted in the introduction, our research builds on the observation that there are inconsistencies in academic discussions on the role of incumbent firms in sustainability transitions. In their elaboration of structured methods for systematic literature reviews, Tranfield et al. (2003) argue that such reviews can establish suitable foundations for conceptual discussions in fragmented and divergent research communities. This corresponds with our purpose. We focus on theory adaptation (Jaakkola, 2020), using organisation theory to advance an understanding of incumbent firms in transition studies. In our literature review, we adopted the process suggested by Tranfield et al. (2003), including the main elements of planning followed by literature search and selection, data extraction, quality control and synthesis.

3.2 | Planning the review

In planning the review, we conducted meetings in a group of three researchers to evaluate our goals, formulate a review protocol and set up a list of search terms. The agreed search terms were ‘automotive’ OR ‘vehicle’ OR ‘car’ OR ‘bus’ OR ‘truck’ OR ‘automobile’ AND ‘sustainability transition’ OR ‘socio-technical transition’ OR ‘socio-technical transition’ OR ‘regime theory’ OR ‘strategic niche management’ OR ‘technological innovation system’ OR ‘multi-level perspective’ OR ‘transition management’ OR ‘sustainable innovation’ OR ‘eco-innovation’ OR ‘environmental innovation’. The intention was to reflect both the selected empirical field (automotive) and the academic research field (transition studies). The terms were selected to cover all the founding frameworks in transition studies (Köhler et al., 2019), but also to capture articles that do not explicitly use these frameworks. To ensure an even quality in terms of academic integrity and rigor, the search was limited to scientific journal publications. The search was initially set to include articles accepted before January 2019. This was later extended until January 2020, based on reviewers’ feedback. No precise starting point was set, but the oldest article included dates from 1994.

3.3 | Literature search and selection

To identify relevant academic publications, we used the list of predefined search terms on the generic databases Web of Science and Scopus. The literature search identified articles that had these terms in their title, abstract or keywords. Articles were included when the abstracts suggested coverage of incumbent automotive firms and their sustainability activities. This first keyword-based search identified 81 articles. We browsed all identified articles and deselected those not relevant for the purpose of our analysis, based on three criteria: articles that did not discuss any incumbent, that were purely technical without any discussion of social aspects, or focused solely on production processes with no discussion on products, market offerings or business strategies. As a result, we removed 42 articles.

As a complement, we also conducted manual searches in academic journals that commonly publish articles on sustainability transitions: Energy Policy, Technological Forecasting and Social Change, Technology Analysis and Strategic Management, Research Policy, Environmental Innovation and Societal Transitions and Journal of Cleaner Production, as well as the International Journal of Automotive Technology and Management, which specialises in the automotive industry. This led us to consider an additional 106 articles, of which 54 were deselected.

Following the decision to extend the timeframe by 1 year (see Section 3.2), we included an additional 23 articles. This selection resulted from a search on Scopus and Web of Science, with 12 articles plus 33 from manual search. In the end, the sample consisted of 114 articles. The ambition was not to achieve exhaustive coverage of all relevant published articles but to generate a sufficiently broad and representative sample.

1 According to an overview of transition studies presented by Markard et al. (2012), these journals are those that publish most articles in this emerging field of research.
3.4 | Data extraction, quality control and synthesis

Prior to reading all articles in detail, we set up a labelling procedure to categorise them. This functioned as the foundation for data extraction based on the innovating/defending and collaborating/competing spectra. The spectra were applied by two members of the research team to generate a systematic overview of the sample. The aim was to identify which articles contained descriptions of innovating, defending, collaborating and competing behaviours. Hence, the descriptions of incumbent behaviour that we refer to are based on the evidence and empirical findings reported in the articles. A coding routine with labels for categorisation along the spectra enabled extraction of relevant data for the synthesis.

After individual reading and labelling, two researchers compared and harmonised the labels they had used to ensure intercoder reliability. To strengthen reliability, unclear incidences were passed on to a third member of the research team, after which we reached a consensus. This led to the distribution pattern of 39 articles under the ‘innovating’ label, 42 under ‘defending’, 27 under ‘collaborating’ and 44 under ‘competing’. Setting such formalised abstraction routines can boost the quality of literature reviews by making them more systematic (Tranfield et al., 2003). Still, several articles in our sample were impossible to categorise, as they entailed descriptions of opposing behaviours, comparing different firms and/or differences over time. Regardless of these inaccuracies, the two spectra were still useful. Other articles were difficult to position as they did not discuss the themes of innovating/defending or competing/collaborating. We labelled these ‘no clear orientation’ (33 for the innovating/defending spectrum and 43 for competing/collaborating). Table S1 displays the complete categorisation.

We used the NVivo12 software package to code all instances where articles offered descriptions or discussed incumbent firms and their activities associated with one of the four labels. In contrast to the labelling according to the two spectra, this process was purely inductive and aimed at generating insights into the way authors described incumbent automotive firms. We assigned a code in all the cases where incumbents’ behaviours were discussed in detail. The codes enabled us to document the specific practices or activities associated with innovating, defending, collaborating and competing behaviours presented in each article. In a second step, we harmonised all codes assigned to all individual articles to ensure consistency under each label. In this way, we could produce a detailed synthesis of the way incumbents’ behaviours were represented in the sample. Table S2 shows the full overview of the final codes and provides an example for each one.

In contrast to the inductive coding process, the subsequent framework construction followed an abductive process (Dubois & Gadde, 2002). Here, we emphasised the articles that could be categorised along both spectra, so we could position them in a $2 \times 2$ matrix with the spectra as its two dimensions. By scrutinising the references, analyses and conclusions in these articles, we searched for possible interpretations of the four stances in the matrix. We iterated this search with our own pre-understanding of organisation theory as an academic field, including its various subfields. As indicated by the cited references to organisation theory literature, we used influential research contributions and broadly accepted concepts to define the subfields and conceptualisations. Through this procedure, we could build a solid basis for the construction of a valid framework.

4 | ACCOUNTS OF INCUMBENT AUTOMOTIVE MANUFACTURERS IN TRANSITION STUDIES

4.1 | The innovating/defending spectrum

In transition studies, the driving forces behind the innovation-oriented behaviours of incumbent firms are often described along two different lines of argumentation. On the one hand, to achieve a competitive edge, incumbents embrace environmental innovation (Hall & Kerr, 2003; Lee et al., 2011, 2006; Magnusson & Berggren, 2001). Authors following this line of argumentation regularly focus on internal decision-making processes. For instance, innovation-oriented behaviours are explained by dedicated managerial staff who push specific environmental innovations forward (Berggren et al., 2015; Budde et al., 2015, 2012; Krätzig et al., 2019; Lee et al., 2006; Sushandoyo & Magnusson, 2014). Furthermore, when innovation is understood as a necessity to maintain an existing market position or even capture additional market share, environmental innovations gain internal support (Budde et al., 2015; Köhler et al., 2013). Innovation to gain competitive advantage can entail new partnerships (Ciulli & Kolk, 2019) or intensifying relationships with existing partners across the supply chain (Olafunji et al., 2019).

On the other hand, external factors are described as essential driving forces for innovative behaviours. Regular topics include what makes environments conducive for innovation and how new ideas transcend organisational boundaries. In these articles, environmental innovation is presented as a reaction to policy frameworks (Åhman, 2006; Barbieri, 2016; Bergek & Berggren, 2014; Berkeley et al., 2017; Cohen, 2006; Hall & Kerr, 2003; Köhler et al., 2013; Lee et al., 2011), social pressures and expectations (Budde et al., 2015) or a combination of the two (Berkeley et al., 2017; De Stefano et al., 2016; Dijkstra et al., 2013; Kanger et al., 2019; Laparcerie et al., 2011; Potter & Graham, 2019; Sarasin, 2014). Some scholars even claim that governments can actively steer or prescribe certain innovations (Åhman, 2006; Budde et al., 2012; Herman & Xiang, 2019; Lee et al., 2006).

In stark contrast to studies that present incumbents’ behaviours as innovative, many scholars describe incumbents as defensive and conservative. Our literature sample suggests at least three dominant behaviour patterns. First, articles argue that incumbent manufacturers primarily promote their existing technology, and only deviate if offered strong government incentives (Carolan, 2010; Fritz et al., 2019; Penna & Geels, 2012; Skeet, 2017). Moreover, articles describe instances where incumbents have actively lobbied for softer policy frameworks, or even disobeyed legal requirements.
(Dijk et al., 2016; Geels, 2014; Hoffmann et al., 2017; Wells & Nieuwenhuis, 2012).

Secondly, incumbent behaviour is discussed in terms of manufacturers’ lack of interest in supporting a far-reaching transition and discontinuation of the status quo (Bakker & Budde, 2012; Carolan, 2010). The incumbent manufacturers seem to underinvest in alternative technologies (Nilsson & Nykvist, 2016; Wesseling et al., 2014), and novelties are most likely brought into the market by sub-system suppliers or new entrants (Dijk et al., 2016; Nilsson & Nykvist, 2016; Noel et al., 2019; Penna & Geels, 2012; Sovacool & Axsen, 2018). These defensive behaviour patterns imply that incumbents actively delay transition and block new technology (Choi, 2018; van der Vooren et al., 2013). Some studies even suggest that incumbents only embrace alternative technologies to broaden their existing portfolio (Van Bree et al., 2010). For instance, the aim of automotive manufacturers is described as making electric vehicles fit the existing industry as closely as possible (Dupont et al., 2019; Nieuwenhuis, 2018).

Thirdly, researchers argue that incumbents are discouraged from moving into new technology by lock-ins, high uncertainty and lack of consumer interest (Ardito et al., 2019; Bakker & Budde, 2012; Berggren & Magnusson, 2012; Penna & Geels, 2012; Van Bree et al., 2010; Whitmarsh & Köhler, 2010). Defensive behaviour is presented as part of a waiting game, where the incumbents will only move in the face of considerable external pressures. Their hesitance seems to be rooted in the perceived high risk of investing in new technology (Bakker & Budde, 2012; Clarke & Piterou, 2019; Penna & Geels, 2012; Wells & Nieuwenhuis, 2012).

Several articles could not be assigned to either end of the innovating/defending spectrum, since they either presented both sides within their empirical discussions or offered no strong verdict. However, a closer look reveals the relevance of temporal considerations. For example, Sovacool et al. (2019) show that technology strategies remain highly flexible across time. They describe how an incumbent firm can begin to move into a new technological trajectory and market a product based on an entirely new architecture, only to abandon it a few years later. More recent studies, in particular, stress that during the timespan of 2005–2010, automotive incumbents became more committed to electrification (Dijk et al., 2013; Figenbaum, 2017; Köhler et al., 2013). Hence, the literature review suggests that there is a certain temporal dynamic to consider when analysing incumbent behaviours.

Contemplating the entire set of articles discussed in this section, another observation is striking. We found that studies taking an internal perspective more often regard incumbents as innovative entities, while external perspectives were more often connected to defensive behaviours. Taking stock of the scholarly discussion on innovativeness and defensiveness, we see that both views coexist in the literature sample; sometimes one article describes an incumbent firm as highly innovative, while another article describes the defensive behaviours of the same firm. This illustrates the differences in scholarly understandings of what qualifies as innovative behaviours that may contribute to a broader transition. This contrast relates to the temporal context, where certain behaviours may be considered innovative at one point in time only to be considered defensive at a later stage, and it also relates to differences in study focus and level of analysis. Assessments differ between firm, industry and system-level studies and they also differ depending on the period of study. While researchers tend to agree that sustainability transitions are long-term and depend on innovation at all levels of society, they must still select analytically levels and timeframes for their empirical studies.

4.2 The collaborating/competing spectrum

Firms compete on markets. Still, incumbent firms can be expected to share some values, as they have been part of a common industry for a long time. Such shared values should allow for collaborative efforts. In our article sample, accounts of the motivation for collaboration can be divided into three groups. Firstly, incumbents can collaborate to develop innovative technologies. Alochet and Midler (2019) point out that intensified collaboration is necessary for mass-market diffusion of new technologies; Söderholm et al. (2019) argue that policymakers should encourage incumbents to collaborate and Wesseling et al. (2015) show how strategic partnerships allow incumbents to profit from the technological advancements of other firms that are first movers. One explanation advanced for collaborative behaviour is governmental R&D programmes (Schot et al., 1994). Furthermore, incumbents use collaboration to cut development costs (Laperche et al., 2011). Often, these collaborative development processes are based on hierarchical relationships within industrial groups (Sarasini, 2014, Nunes et al., 2016).

Secondly, incumbents work with external partners to facilitate the diffusion of environmental innovations (Vergragt, 2004). The reasons for such collaboration can vary. For instance, the shift towards alternative fuel sources makes automotive incumbents more open to joint efforts, especially when infrastructure changes are necessary (Hall & Kerr, 2003; Budde et al., 2012; Köhler et al., 2013; Geels, 2018). Incumbents also utilise collaboration to mitigate uncertainties (Harborne et al., 2007; Malhotra et al., 2019) or streamline their operations (Ciulli & Kolk, 2019). Some argue that incumbents only work with external partners when their partners’ knowledge is relevant for the defence of the incumbents’ own market position (Geels, 2014; Spåth et al., 2016).

Thirdly, incumbents jointly lobby for favourable legislation (Borghei & Magnusson, 2016a; Roberts & Geels, 2019; Schot et al., 1994), to gain protection against foreign competition (Taminiau, 1996) or to ease regulatory pressures for swift and costly transitions (Skeete, 2017; Wesseling et al., 2015). In some cases, incumbents bond with regional or national policymakers to influence higher-level governance (Spåth et al., 2016; Wesseling et al., 2015). Geels (2014) argues that manufacturers’ industry associations are not just a way for them to effectively lobby for policy, but also include a self-imposed mechanism for compliance with industry norms. Hence, collaboration may be associated with either innovative or defensive behaviours. The same goes for competition.
To investigate the potential leitmotif of incumbents’ competitive behaviour, we turn to articles that discuss the connotations of competition as either a stumbling block or a building block for transitions. The latter connotation describes how managers at incumbent firms can commit to environmental innovation when they see a competitive advantage (Lin et al., 2019; Magnusson & Berggren, 2001) or an opportunity to maximise profits (Kim & Lee, 2019). Potentially, such positive expectations are encouraged by certain policy measures (Avadikyan & Llerena, 2010; Figenbaum, 2017; Oltra & Saint Jean, 2009b; Ahman, 2006). Policy incentives can influence consumer preferences and encourage automotive incumbents to innovate and change their business models (Lang & Mohnen, 2019). Furthermore, public procurement and state-funded demonstrations can potentially spark competition around environmental innovations. Continuous (technological) competition appears essential in this line of argumentation (Berggren et al., 2015; Kanger et al., 2019). For example, competition between incumbent automotive manufacturers has been essential to the rapid diffusion of electric vehicles in Norway (Figenbaum, 2017).

By contrast, in the former connotation, competitive forces will hinder transition processes, as incumbent manufacturers may face difficulties in making an environmental innovation competitive. New products based on technological innovations can conflict with existing consumer preferences (Carrillo-Hermosilla et al., 2010), and the positive expectations that initially motivated environmental innovation can be disappointed by a lack of sales. Moreover, the availability of various alternative technologies leads to a situation where the alternative that offers the most complementarity with the existing dominant design will be preferred (Oltra & Saint Jean, 2009b), rather than those with most environmental benefit. Thus, a dynamic pattern emerges as incumbents actively promote environmental innovation, only to revert to a more incremental approach when faced with competitive pressures (Sovacool et al., 2019).

Studies differ in the agency assigned to the individual firm. On the one hand, incumbents’ collaborative behaviour is described as strongly determined by their membership of an industry-wide collective, and little reflection is offered on the motives within individual incumbent firms (cf. Geels, 2014). Common expectations shared among incumbents are assumed to guide individual behaviours and keep them aligned (Köhler et al., 2013). On the other hand, authors who quantify the output of collaboration and aim to understand individual firm strategies (cf. Bohnsack et al., 2020; Sarasini, 2014; Wesseling et al., 2015) emphasise incumbents’ independence, presenting them as highly motivated to engage in environmental innovation to compete on the market and attract human resources (Skeete, 2019).

Some articles offer no clear verdict, or present incumbents as seeking collaboration in some instances while staying on competitive terms in others. For example, Wesseling et al. (2014) describe how incumbents form broad coalitions against stringent regulatory mandates, while at the same time trying to maintain or influence the implementation of the same mandate to gain competitive advantages. This indicates that they carefully weigh up collaboration against competition and show great flexibility in their individual approaches to both. This mainly holds true when researchers assume that incumbents possess the agency to select their behaviour rather freely. According to Tsai (2002), firms that are competitors on the product market can simultaneously collaborate by sharing knowledge to reach common goals. However, the knowledge acquired through this so-called ‘coopetition strategy’ can still be utilised ‘to outperform the partner’ (p. 180). Accepting this presumption, individual manufacturers should be capable of collaborating in specific R&D initiatives, while still competing as distinctive brands on the market (Aaldering et al., 2019).

Within our literature sample, there is a distinction between articles that use the founding frameworks of transition studies and those that use other frameworks. The founding frameworks are built around the theoretical constructs of regimes, niches, innovation systems and transition arenas (Köhler et al., 2019). Since these constructs describe the gathering of actors with shared agendas, they primarily support analyses of collaborative behaviours. Researchers who have studied competitive behaviours have had to search outside these frameworks to find useful concepts and theories—usually in management research. While the distinction is clear for articles published until around 2017, it becomes fuzzier later, as articles that rely on transition frameworks increasingly acknowledge competitive behaviours too. A possible reason for this is that the more recent studies have adopted the ideas associated with endogenous enactment (Geels et al., 2016). As elaborated in Section 2, this concept allows a more dynamic positioning of incumbent firms, and thus makes it possible to analyse more diverse organisational behaviours.

## 5 Conceptualisations of Incumbents

### 5.1 A two-dimensional framework

The previous section suggested that transition studies of incumbent firms are influenced by researchers’ choices of analytic levels, timeframes and frameworks. For this reason, a conscious theoretical positioning is critical. To advance a framework that can assist such a positioning, we combine the innovating/defending and collaborating/competing spectra into a 2 × 2 matrix comprising four different stances. The stances are related to different subfields of organisation theory, thus describing different theory-based conceptualisations of incumbent firms (Figure 1).

Besides highlighting and explaining different organisational behaviours, the four conceptualisations reflect different views of organisational boundaries and their determinants (cf. Santos & Eisenhardt, 2005). Firstly, the combination of innovating and competing behaviours results in a conceptualisation of the incumbent firm as a *Capable Compound*, drawing on the resource-based view (Barney, 1991) and the concept of dynamic capabilities (Teece et al., 1997). Accordingly, the capabilities of the firm will determine its boundaries. As capabilities are (more or less) dynamic, organisational boundaries...
will change as firms strive to adapt to their environments. Secondly, the combination of innovating and collaborating behaviours results in a conceptualisation of the incumbent firm as a Networked Change Agent, drawing on resource-dependence theories (Pfeffer & Salancik, 2003) and the concept of organisational communities (Wade, 1995). These theories suggest that firms engage in communities to seek synergies, influence and power. Hence, boundaries are determined by dependencies and complementarities in inter-organisational networks. Thirdly, the combination of defending and collaborating behaviours results in a conceptualisation of the incumbent firm as an Institutional Constituent, building on neo-institutional theories (Meyer & Rowan, 1977) and the concept of organisational fields (DiMaggio & Powell, 1983). According to these theories, organisations maintain their legitimacy by abiding by shared institutionalised rules. Consequently, boundaries are determined by rules that are accepted and anchored in organisational fields. Lastly, the combination of defending and competing behaviours results in a conceptualisation of the incumbent firm as a Path-dependent Specialist, based on organisational learning theories (Levinthal & March, 1993; Levitt & March, 1988) and the concept of self-reinforcement (Sydow et al., 2009). This suggests that the boundaries of an organisation are determined by the cognitive frames of its members. These frames describe the legacy of the organisation; they are products of long-term learning processes and are maintained by self-reinforcing mechanisms. As we shall see in the following sections, each of the four conceptualisations tends to favour certain research designs.

5.2 Innovating and competing: The incumbent as a capable compound

According to the resource-based view, the assets of individual firms are instrumental to understanding their competitive strategies. Assuming that resources are idiosyncratic and unevenly distributed among firms in an industry, scholars who adopt this view consider firms as compounds of resources (Barney, 1991). If a firm is capable of deploying these resources in value-creating activities, it will gain a competitive advantage. While the resource-based view incorporates many tangible and intangible resources and capabilities, transition scholars have often focused on technological capabilities when analysing automotive incumbents’ innovative efforts. Several industry-level studies have used patents as a proxy to compare automotive manufacturers’ capabilities in various fields of technology (Bakker, 2010; De Stefano et al., 2016; Faria & Andersen, 2017b; Lee et al., 2011; Oltra & Saint Jean, 2009b; Wesseling et al., 2014), while others have presented data on prototypes and production models, arguing that the public display of products is a more valid indicator of capabilities (Borghesi & Magnusson, 2016b; Sierzchula et al., 2012a, 2012b). Yet others have combined different sources of data in comparative analyses of capabilities and strategic behaviours (Bohnack et al., 2015; Magnuson & Berggren, 2011; Wesseling et al., 2015).

Furthering the resource-based view, Teece and Pisano (1994) introduced the concept of dynamic capabilities to explain how firms compete in changing business environments. Under such circumstances, firms’ competitiveness will depend on adaptive processes (Eisenhardt & Tabrizi, 1995). These processes make it possible to sense and seize opportunities, and combine resources in new ways (Teece, 2007). Studies of adaptive processes rely on micro-level research designs. Examples include Magnusson and Berggren’s (2001) case study of Toyota’s development of the Prius hybrid, Kastensson’s (2014) comparative analysis of initiatives to develop innovative lightweight concepts at Saab Automobile and Volvo Cars and Morel et al.’s (2016) study of eco-innovation programmes at Renault. Other studies have shown how incumbent manufacturers have engaged with external partners to attain complementary resources for innovative R&D and how they have benefitted from field experiences, involving users in their commercialisation efforts (Sarasini, 2014; Skeete, 2019; Sushandoyo & Magnusson, 2014). This points to the problem of analysing incumbent firms and their innovation projects as isolated entities. The conceptualisation of the incumbent firm as a capable compound helps to highlight innovative practices within incumbents, but it is less helpful in understanding their role in multi-actor processes.

5.3 Innovating and collaborating: The incumbent as a networked change agent

Resource-dependence theories highlight relationships between organisations and their environments, arguing that ‘to understand the behaviour of an organisation you must understand the context of that behaviour—that is, the ecology of the organisation’ (Pfeffer & Salancik, 2003, p. 1). According to resource-dependence theories, firms use strategies such as interorganisational networking and political action to reduce external dependencies, while striving to increase their own influence (Hillman et al., 2009). Several system-level
transition studies have shown how incumbent automotive manufacturers have engaged in networks to develop alternative vehicle technologies. They include Hall and Kerr’s (2003) analysis of innovation dynamics in the development of fuel cell technology, Köhler et al.’s (2013) analysis of the innovation system for low-carbon cars in Europe and Berkeley et al.’s (2017) analysis of transitions towards battery electric vehicles. Other researchers have presented historical analyses of incumbents’ political strategies—both innovative and defensive—showing how these strategies evolve over time (Augenstein, 2015; Penna & Geels, 2015; Wesseling et al., 2014).

Research on the organisational determinants of technological change suggests that discontinuous technological changes will open up a space for interpretations and value judgements among the stakeholders involved (Tushman, 1992). To succeed under such circumstances, firms must take part in industry-wide processes to influence the decisions of others. For this reason, they collaborate in communities, promoting the development and adoption of certain technologies and configurations (Wade, 1995). Transition scholars’ early studies of electric car demonstrations constituted an important building block for the formulation of the strategic niche management framework, which highlights the importance of initiatives involving a variety of stakeholders (Kemp et al., 1998; Schot et al., 1994; Truffer et al., 2002). Using the strategic niche management framework, and the related concepts of niche accumulation, niche aggregation and global niches, later studies have shown how incumbent automotive manufacturers have jointly promoted industry-wide charging standards for electric vehicles (Bakker et al., 2015; Borghel & Magnusson, 2018). Case studies have moreover shown how automotive incumbents have joined forces with others to raise expectations and attract support for electric and fuel cell technologies (Bakker et al., 2014; Bakker & Budde, 2012; Budde et al., 2012), and retrospective studies show how incumbents acting as first movers have profoundly influenced subsequent industry transformations towards electric cars (Bohnsack et al., 2020). These findings suggest that incumbent firms can take leading roles in emerging communities with the aim of driving transformative processes. Still, to understand transitions, we must also acknowledge the significance of continuity (Wells & Nieuwenhuis, 2012). The conceptualisation of the incumbent firm as a networked change agent can tend towards cherry-picking—focusing on incumbents’ innovative endeavours but neglecting the conservative forces that come with incumbency.

5.4 Defending and collaboratively: The incumbent as an institutional constituent

Neo-institutional theories propose that wider social processes determine organisational behaviours; to maintain its legitimacy in a society, the organisation must comply with certain institutionalised rules (Meyer & Rowan, 1977). According to DiMaggio and Powell (1983), isomorphic processes lead to conformism in ‘organisational fields’, defined as ‘those organisations that, in the aggregate, constitute a recognised area of institutional life’ (p. 225). An organisational field consists of various kinds of actors such as manufacturers, suppliers, regulatory agencies, users and consumers. In his elaboration of the multi-level framework, Geels (2004) used this concept to define socio-technical regimes as semi-coherent sets of rules. Referring to long-term isomorphic processes, transition studies have shown how regulatory rules on vehicle emissions have coevolved with incumbent manufacturers’ incremental advancements (Borghel & Magnusson, 2016a; Skeete, 2017), and several transition studies have explained automotive incumbents’ defensive behaviours by referring to them as ‘regime actors’ (Augenstein, 2015; Geels, 2014; Hoffmann et al., 2017; Nykvist & Nilsson, 2015; Steinhilber et al., 2013).

Studies of industrial organisation and innovation have shown how incumbent firms engage in value networks with the mainstream customers who represent their core business (Christensen & Rosenbloom, 1995). Participants in these networks share rules on how to define product performance. Locked into value networks, incumbents find it difficult to manage innovations that introduce new performance attributes and enter via market niches. Through mixed-methods studies, transition scholars have observed the coevolution of product introductions and customer demands in the development and commercialisation of cleaner vehicles (Dijk & Kemp, 2010; Dijk & Yarime, 2010). Furthering these observations and combining theories of value networks with the socio-technical regime concept, Dijk et al. (2016) claim that the strong bonds between automotive incumbents’ business practices and established consumer preferences constrain the incumbents’ innovative efforts in electric cars. Thus, they argue that new entrants are more likely to drive transitions towards electromobility.

The conceptualisation of the incumbent firm as an institutional constituent offers explanations for conservatism and conformism among incumbents. However, transition scholars have noted that this ascribes little agency to individual firms, potentially implying that industries are homogenous entities (Stirling, 2011). Arguing that this is not always the case, Turnheim and Sovacool (2020) have pointed to the need to pluralise incumbencies in transition studies. This calls for research that opens the black box of the firm and looks inside its organisation.

5.5 Defending and competing: The incumbent as a path-dependent specialist

Theories on organisational learning suggest that learning within an organisation is a cumulative process, and that a continuous accumulation of lessons learned will result in cognitive frames or maps that guide future development paths (Levitt & March, 1988). Thus, by translating experiences into organisational routines, industrial firms gradually become more skilful and specialised. While such specialisation will enhance their competitiveness, successful firms find it increasingly difficult to recognise negative feedback signals, search for distant solutions or consider the long-term implications of their
actions. As a result, they become trapped by their own success; self-reinforcing mechanisms eventually lead to lock-ins (Levinthal & March, 1993; Sydow et al., 2009). Following this line of argument, Whitmarsh and Köhler (2010) contend that organisational skills and routines have restricted incumbent automotive manufacturers’ engagements in environmental innovation. Correspondingly, Wells and Nieuwenhuis (2012) argue that the capacity of automotive incumbents to continuously improve their existing technologies and business practices partly explains their reluctance to change. A patent analysis by Song and Aaldering (2019) and a case study of new mobility concepts by Lang and Mohnen (2019) support these arguments.

The failure of leading firms in the wake of technology shifts is a recurring theme in innovation studies (Chandy & Tellis, 2000; Leonard-Barton, 1992; Tushman & Anderson, 1986). According to Henderson and Clark (1990), the configuration of core concepts and components in an architecture becomes settled once an industry converges into a dominant design. Information flows, communication patterns and problem-solving practices tend to mirror this architecture. Thus, products, organisations, supply chains and production systems co-evolve into interdependent structures. This makes it difficult for incumbent firms to introduce innovations that challenge established system configurations. Sovacool et al.’s (2017) study illustrates this tendency, showing how the innovative start-up Better Place was captured by incumbent manufacturers who made the proposed electromobility concept less innovative. Sydow et al. (2009) argue that such path dependency is caused not only by long-term learning effects, but also by shared preferences, intra-organisational synergies and coordination effects due to routinised behaviours.

Management scholars have proposed structural ambidexterity as an organisational strategy to overcome path dependency, arguing that separating innovative ventures from established business practices allows firms to simultaneously exploit existing areas of expertise and explore new ideas (Tushman & O'Reilly III, 1996). Comparative case studies of the development of electric and hybrid cars suggest that such separation can enable learning processes that break with established routines (Aggeri et al., 2009). However, Sovacool et al.’s (2019) analysis of electric car developments points to the risk of a high degree of separation, showing how innovative ventures must align with corporate strategies and business environments to succeed. Likewise, Berggren et al.’s (2015) longitudinal studies show how incumbents have integrated lessons learned in niche initiatives with regime-level skills and routines, and thus facilitated a more widespread diffusion of new technologies. The argumentation draws on the concept of creative accumulation (Bergek et al., 2013) and suggests that firms need certain skills if they are to act as system integrators in socio-technical reconfiguration processes (cf. Hobday et al., 2005). Concluding the outline of the framework, the conceptualisation of the incumbent firm as a path-dependent specialist points to the cumulative nature of organisations. It offers process-oriented explanations for organisational inertia, and proposes strategies to overcome it.

6 | DISCUSSION

Our literature review demonstrates a significant variety in the understanding of incumbent firm behaviours and motives, showing how different scholars have made different assumptions, presented different findings and offered different interpretations. Hence, we were able to allocate articles from the sample to all four stances in our 2 × 2 matrix. This illustrates the possibility to view incumbent firms from multiple perspectives. The four conceptualisations outlined in the matrix suggest that organisation theory is useful to highlight this diversity. The fact that the two matrix dimensions are anchored in seminal transition studies, and the four conceptualisations are based on broadly accepted concepts from organisation theory, strengthens the validity of the framework, suggesting that it can assist choices in terms of theory and research design. However, it is important to note that the framework does not suggest that firms and their behaviours can be categorised unambiguously; on the contrary, it encourages reflexivity. As noted by Morgan (1986, p. 321), ‘any realistic approach to organizational analysis must start from the premise that organizations can be many things at one and the same time’. By presenting complementary theory-based conceptualisations, the framework underscores such a premise.

Despite the variety of understandings in our literature sample, there is a certain consistency in the descriptions of incumbent firms. Referring to prominent frameworks, concepts and ideas from transition studies, most of the articles refer to incumbent firms as actors.2 The actor concept makes it possible to distinguish the individual firm from other organisations. This is necessary for comparisons of firm strategies, as well as for meso-level analyses that investigate roles and interactions in networks, communities and organisational fields. In transition studies, the actor concept has provoked fruitful discussions about agency and power (e.g. Avelino & Wittmayer, 2016; Bögel et al., 2019; Shove & Walker, 2007), and such discussions are also recurrent in our literature sample.

Notwithstanding its merits, the actor concept has certain limitations, as it tends to portray the firm as a coherent unit with bounded resources and a distinct identity (Meyer, 2010). Going back to our explanatory case—the automotive industry—such assumptions are disputable. Mergers, acquisitions, divestments, cross-ownerships and alliances are prevalent in automotive (Sarasini, 2014). A major international manufacturer may possess several distinct brands, each positioned in different market segments. Still, the incumbent’s products and production system will be based on platforms and modularisation to facilitate extensive sharing of resources (Christensen, 2011; Papachristos, 2017). Consider the case of the green operations strategy of a luxury manufacturer, investigated by Nunes et al. (2016). A key enabler of this strategy was a change of ownership, as a large manufacturer with an existing portfolio of brands acquired the luxury manufacturer. The new owner offered resources to facilitate the strategic change, but still had to keep the luxury manufacturer’s operations separated—if the luxury manufacturer had got too close to the

2Seventy-five articles out of the sample of 114 referred to firms as actors.
lower-range brands, it would have lost the distinct identity that constituted the core of its business. Organisational boundaries are multidimensional and dynamic (Santos & Eisenhardt, 2005). An incumbent firm may be less clear-cut than the actor concept implies.

Literature on corporate sustainability presents a more multifaceted understanding of organisational boundaries. By emphasising business models, this literature shows how organisational boundaries evolve through complex interactions between the firm and its environment, involving multiple stakeholders (Freudenreich et al., 2020; Norris et al., 2021). Research on sustainable business models revolves around fundamental questions about value. According to Roome and Louche (2016), the firm creates and captures value through interaction, but it may also destroy value, for example, by over-exploiting natural resources. Upward and Jones (2016) describe a fundamental contrast between traditional profit-oriented business models and sustainable ones. Traditional business models are based on monetary assessments of success and prioritising economic performance; they assume that profit is the main prerequisite for the firm’s survival and prosperity. Accordingly, such models suggest that value propositions that are attractive for customers, combined with effective and efficient processes for value creation and capture, are central means to generate economic benefits. By contrast, sustainable business models aspire to integrate economic, social and environmental performance, acknowledging that success can be assessed in many ways, not just financially. This implies that firms that aim for sustainable business models will have to consider a broader set of values and interests, asking critical questions about strategic priorities, ethical principles and the legitimacy of different stakeholders (Freudenreich et al., 2020). Consequently, decisions on sustainable business models must address potential conflicts between benefit value and moral value, and between collective and individual goals (Bolis et al., 2021).

Research on corporate sustainability has focused on the organisation level, investigating relationships between the focal firm and its environment. By contrast, transition studies are rooted in a meso-level research tradition, investigating socio-technical system transformations (Geels et al., 2015; Köhler et al., 2019; Markard et al., 2012). However, in the quest for a richer understanding of incumbent firms in transformative processes, transition scholars have turned to organisation-level research and, correspondingly, corporate sustainability research has related business-model developments to system transformations, drawing on evolutionary economics (Schaltegger et al., 2016). Hence, there are imminent possibilities for a fruitful cross-fertilisation between these two research fields (Aagaard et al., 2021).

Transition scholars have presented elaborate frameworks to describe how innovative technologies and alternative socio-technical configurations can attract support in contested processes involving multiple organisations (Geels, 2014; Geels & Schot, 2007; Smith et al., 2005; Smith & Raven, 2012). Several articles in our sample refer to these frameworks to present detailed analyses of how incumbents have engaged in power struggles to gain support for their agendas (e.g. Bakker et al., 2015; Penna & Geels, 2015; Spåth et al., 2016). However, contestation and power struggles within incumbents have rarely been analysed in transition studies (see Sushandoyo & Magnusson, 2014, and Sovacool et al., 2019, for two exceptions). To carry out such analyses and find synergies with research on corporate sustainability, it will be necessary to go beyond the description of the firm as a coherent unit. A promising route is to extend the use of the ambidexterity concept (see Section 5.5) and conduct detailed analyses of innovation-induced tensions and paradoxes in organisations (Andriopoulos & Lewis, 2008; Smith & Lewis, 2011). Another option is to search for alternatives beyond our $2 \times 2$ matrix, such as conceptualising the firm as a value configuration, building on ethnoscience research. According to Gregory (1983), this research challenges the notion of shared organisational values, and points to contrasting viewpoints as a prominent feature of large firms. Basing the analysis on a cultural relativist posture, ethnoscience research is useful to highlight the variety of values that a firm can host. Another alternative is to conceptualise the firm as a political arena, highlighting the power games that take place inside organisations. Mintzberg (1985) argues that although corporate politics are often associated with organisational dysfunction and inefficiency, such politics are sometimes necessary to spark fundamental change. Organisation theory is rich in concepts and perspectives that can elucidate complementary, contrasting and even conflicting behaviours of and within firms (Brunsson, 1993; Burns & Stalker, 1961; Halgin et al., 2018; O’Reilly & Tushman, 2013; Smith & Lewis, 2011).

### 7 | CONCLUSIONS

Merging seminal transitions research with organisation theory, this article has advanced a theory-based understanding of incumbent firms in transition studies, outlining a framework with relevance for both policy and management practice. Recent policy discourses describe intentions to address societal and environmental challenges through transformative innovation policies (Schot & Steinmueller, 2018). A central feature of such policies is the engagement of business firms in missions to solve sustainability problems (Mazzucato, 2016; Mazzucato et al., 2020). Hence, policy design will depend on policymakers understanding organisational motives—and our framework can help them do so. Moreover, industrial managers who aspire to engage in sustainability transitions must consider their own agency in relation to broader system transformations. Our framework can guide such considerations.

Presenting a nuanced perspective on the multiple roles that incumbents can take, our analysis shows how transition studies can be enriched by organisation theory, points to potential synergies between transition studies and corporate sustainability research and supports a conscious theoretical positioning of research on incumbents in transitions. Such a positioning can enable more robust methodological choices, make analyses clearer and aid analytic generalisation of empirical findings. Offering complementary lenses with a variety of explanations, the analysis challenges researchers to question their own presumptions and critically examine the ontologies that different research designs rest upon. Consequently, we argue
that to learn more about incumbents in sustainability transitions, we must challenge the description of the firm as a coherent actor. To do this, we must acknowledge that endogenous enactment can occur not only in organisational fields, but also within firms. This calls for conceptualisations that highlight internal diversity; it may be that the spark for organisational metamorphosis towards sustainability arises from variety rather than uniformity. Future research should acknowledge this as an option and such research must build on designs that elucidate tensions and paradoxes.

ACKNOWLEDGEMENTS
The research was funded by the Swedish Energy Agency under grant number P46351-1. We are extremely thankful to Alexander Flaig for his support in the initial surveying and categorisation of the literature sample. The manuscript has benefitted greatly from constructive comments provided by Hans Andersson, Ksenia Onufrey and two anonymous reviewers. We are also thankful for the fruitful exchange with the guest editors. An earlier version of the article was presented at the conference IST 2020.

REFERENCES


SUPPORTING INFORMATION
Additional supporting information may be found in the online version of the article at the publisher’s website.