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Inside out

Individuals' sustainability engagement in energy system transition

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ABSTRACT

Sustainability transitions research has been criticised for being mostly on the system level. To the extent individuals have been recognised, they have been acting in so called niche initiatives, as entrepreneurs, grassroot innovators or users. However, not much attention has been paid to individuals connected to established organisations, here called insiders. Through case studies in three different settings, this thesis shows that insiders, who actively and independently choose to engage in sustainability initiatives, can be key enablers of an energy system transition. Engaged insiders, contextualise the value of a sustainability initiative through adding to a new narrative and attracting others to join the narrative.

Three contexts in which insiders can choose to engage are introduced and explained: outreach engagement, entrepreneurial engagement and job engagement. Assisted by theories from social psychology, it is also explained why sustainability engagement sometimes does not occur when expected.

The main contribution of this thesis is that individuals can choose to engage in a sustainability transition in different contexts in and beyond their organisational home grounds. These individuals are important to see and appreciate if we want to better understand how sustainability transitions are achieved.

Key words: Energy system transitions; Individuals; Sustainability engagement

LIST OF KEY TERMS

Sustainability engagement
Self-chosen action into sustainability transitions because of personal sustainability beliefs. Such value- and belief-driven bottom-up (i.e., self-chosen) action is occasionally also denoted as entrepreneurial, not then to be confused with being entrepreneurial in a specific context (see 'entrepreneurial engagement' below).

Sustainability beliefs
Personal beliefs specifically about nature and societal benefits. Personal sustainability beliefs function as a moral compass for sustainability and influence how a person thinks and acts. Personal sustainability beliefs are relatively stable over time and, if permanently salient, part of a person's identity.

Activation
Personal beliefs can be activated by contextual cues and are, when activated, likely to influence the way a person choose to engage.

Insider
An individual associated to an established structure that can be part of a regime and a sociotechnical system to be transitioned.

Institutional work
Influencing the development of soft norms through changing narratives, and eventually affecting hard norms, for example, regulations and policies.

Job engagement
Personal choice to engage, because of activated personal sustainability beliefs, within his or her organisational home grounds.

Outreach engagement
Engagement in temporary settings outside the home organisation, in order to share knowledge and gain new insights around a sustainability transition.

Entrepreneurial engagement
Individuals engaging part- or full-time in a sustainability initiative over time and with little association with any established organisational home ground. Start-up entrepreneurs running sustainable ventures are naturally entrepreneurially engaged. However, also insiders can have entrepreneurial engagement around initiatives that can be run as a project (and not as a new venture).

LIST OF APPENDED PAPERS

This thesis is based on the work contained in the following appended papers:

I.   Rex, E., Fernqvist, N., & Ryding, S. O. (2020). Recommendation and context: the missing links for increased life cycle impact in large industries. *The International Journal of Life Cycle Assessment*, *25*(2), 240-251.

This paper was drafted and written together with Emma Rex at RISE. I was actively participating as a second author during the entire writing process, from synopsis, via script to the review process. Together with Sven-Olof Ryding at IVL, I also took an active part in the empirical work by contributing to the interview guide, participating at the majority of the interviews, transcribing and analysing the data.

II.   Fernqvist, N., & Lundqvist, M. Entrepreneurial sustainability engagement of insiders initiating energy system transition.

This paper was drafted and written together with Mats Lundqvist. Both are first authors. I had the main responsibility for data collection. A first version of this paper was presented and discussed at the 36th EGOS Colloquium, Sub-theme 57: Sustainability Transitions: Bridging Systems and Organizational Perspectives to Tackle Grand Challenges on July the 3rd, 2020. The paper has since been developed and published in a Special Issue on "The human side of sustainable innovation" in the journal *Sustainability*.

III.   Fernqvist, N., & Lundqvist, M. Introducing human engagement into sustainability transitions: The case of RiverCity Gothenburg.

This paper was drafted and written together with Mats Lundqvist. Both are first authors. I had the main responsibility for data collection. An early version of the paper was presented at the 7th International Sustainability Transition conference in Wuppertal in 2016. A fully re-written version was submitted in 2019 to the *Journal or Cleaner Production*. The paper was rejected but with an encouragement to revise and resubmit. A third substantially re-written version was made by the two authors and submitted to *Technology Forecasting and Social change* in June 2020 and in January 2021 received a revise and resubmit decision. The June 2020 version is included in this thesis.

ACKNOWLEDGEMENTS

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1. INTRODUCTION

This thesis investigates how and why energy system transitions occur through individuals, acting into sustainability transitions in and beyond their organisational home grounds. Revised sustainability transition research has primarily observed individuals when acting in so called niche initiatives, being entrepreneurs, grassroot innovators or users. However, not much attention has been paid to individuals connected to established organisations, here called insiders, or to individuals acting across different contexts, such as in temporary settings or outside work. Primarily this is because individuals, and insiders specifically, are assumed to display in-group behaviour, i.e., not to stand out (Geels & Schot, 2007).

In sustainability transitions literature, societal challenges are frequently addressed and central aims are to conceptualise and explain how radical changes in socio-technical systems occur in ways that also fulfil societal functions (Köhler et al., 2019). Much of the sustainability transitions literature addresses unsustainable consumption and production patterns in socio-technical systems, such as in cities, in the transportation and in the energy sector. Most studies in the field have their unit of analysis on 'meso'-level of socio-technical systems (Geels, 2004; Köhler et al., 2019; Markard, Raven, & Truffer, 2012). And beyond the literature on niche-innovation, individuals' actions, engagement or beliefs, which arguably are critical for any transition and change to occur, are rarely at the centre of sustainability studies (Upham, Bögel, & Dütschke, 2019).

Through case studies in three different settings, this thesis investigates how and why individuals engage, or not, in sustainability transitions. This thesis basically shows that individuals with sustainability engagement are key enablers of sustainability transitions, in different contexts, in and beyond their organisational home grounds. Through activated personal sustainability beliefs, individuals choose to engage in and identify with sustainability initiatives. Engaged individuals then contextualise the value of sustainability initiatives through narratives (Bruyat & Julien, 2001; Garud, Gehman, & Giuliani, 2014) and thereby do institutional work (Lawrence, Suddaby, & Leca, 2009).

1.1. Initiatives for sustainability transitions

In sustainability transitions research it is often recognised that initiatives to try out new solutions are important for creating networks, reducing uncertainty of new technologies and applications, open up for new social spaces and politics for governing towards the future (Bergek, Jacobsson, Carlsson, Lindmark, & Rickne, 2008; Castán Broto & Bulkeley, 2013; Farla, Markard, Raven, & Coenen, 2012; Geels, 2005; Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007; Hellsmark, Frishammar, Söderholm, & Ylinenpää, 2016; Kemp, Schot, & Hoogma, 1998; Seyfang & Smith, 2007). Sustainability initiatives for testing out new solutions are typically found in all socio-technical systems under transition (Hildén, Jordan, & Huitema, 2017; Sengers, Wieczorek, & Raven, 2019). When attracting attention, sustainability initiatives have the potential to influence and change institutions (Fuenfschilling & Truffer, 2016; Lawrence & Suddaby, 2006; Lawrence et al., 2009). It has been shown that such initiatives are crucial for the development of the wider socio-technical system (Bergek, Berggren,

Magnusson, & Hobday, 2013; Berggren, Magnusson, & Sushandoyo, 2015; Smink, Hekkert, & Negro, 2015; Steen & Weaver, 2017; Turnheim & Sovacool, 2020).

In the sustainability transitions literature, more radical innovation is commonly associated to entrepreneurial firms, newcomers, 'protected experiments' (Hekkert et al., 2007; Kemp et al., 1998), 'grassroot innovation' or users (Seyfang & Smith, 2007). Some studies also place individuals and their transformative capacity, as 'system builders' (Hellsmark & Jacobsson, 2009; Klein Woolthuis, 2010), 'entrepreneurs' (Alkemade, Negro, Thompson, & Hekkert, 2011; Hekkert et al., 2007; Hojckova, Ahlborg, Morrison, & Sandén, 2020) or 'visionary experts with diverse backgrounds, who can 'think outside the box' (Loorbach & Rotmans, 2010; Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013), at the centre of the analysis. Occasionally, these individuals are being described as driven by personal sustainability beliefs, e.g., by Hellsmark and Jacobsson (2009) but descriptions of insiders in sustainability transitions are still missing.

The link between sustainability initiatives, the individuals engaging into them and institutional transitional effects are not well understood in the sustainability transitions literature (Köhler et al., 2019; Upham et al., 2019). Little is also known about when and why individuals choose to engage in sustainability initiatives in and beyond their organisational home grounds. The purposive action of individuals creating, maintaining and disrupting institutions (Lawrence & Suddaby, 2006; Lawrence et al., 2009), no matter of context, is thus a white spot in the sustainability transitions literature.

1.2. Purpose and research questions

The purpose of this thesis is to increase the understanding of individuals choosing to engage in sustainability transitions, especially in energy transitions, in and beyond their organisational home grounds. Fulfilling this purpose should answer questions of why individuals' sustainability engagement might occur, with what effects and in what contexts.

This thesis has the following research questions:

1. How can an individual's sustainability engagement be activated?
2. How does sustainability engagement appear in different contexts?
3. What are key transition effects from sustainability engagement?

1.3. Outline of the thesis

The rest of this thesis is structured as follows: Next section present an overview of how established perspectives on sustainability and entrepreneurship acknowledge individuals acting in sustainability transitions, in and beyond their organisational home grounds. In Section 3, the study design, case selection and data collection methods are outlined. The section ends with a reflection on research quality. Section 4 summarises the appended papers. Section 5 discuss the findings of the appended papers and Section 6 concludes the main contributions of this thesis and makes suggestions for further research.

2. FRAME OF REFERENCE

I will in this section first depict the chosen perspective of this thesis. I will then review established perspectives on sustainability transitions and entrepreneurship and highlight if and how they acknowledge components in my perspective (see Table 1). I close the section by introducing the analytical framework I have used in this thesis for understanding insiders who engage in sustainability transitions.

2.1. Six perspectives on insides in sustainability transitions

While there is an increasing attention on the role of established organisations in the sustainability transitions literature (e.g., Berggren et al., 2015; Heiskanen, Apajalahti, Matschoss, & Lovio, 2018; Smink et al., 2015; Turnheim & Sovacool, 2020) much less attention has been paid to the individuals working for these organisations, i.e., who I here call 'insiders'.

Being an insider involves an internalised organisational role, in the meaning that the work-life role is part of an individual's identity and, for example, included in how a person introduces him- or herself to others. Insiders have professional networks and different types of resources connected to the organisational role. Insiders can also identify with other roles, outside work. For example, a person can have an employment at an established organisation and at the same time be a part-time entrepreneur, politician or activist.

In Table 1, I present an overview of how components of insiders engaging in sustainability transitions, and what lies behind it, can be traced to six established perspectives within sustainability transitions and entrepreneurship. Three questions are posed to each perspective: (1) are insiders, i.e., engaged individuals employed by established organisations within a sociotechnical regime, embraced in the perspective?; (2) does the perspective include individuals who choose to engage in entrepreneurial ways?; and (3) does the perspective recognise that individuals can be driven by personal sustainability beliefs?

I then indicate to what extent the three components are captured in established sustainability transitions and entrepreneurship perspectives. Insiders' engagement in sustainability transitions, turns out as a novel, yet traceable, perspective on sustainability transitions, both in relation to established sustainability transitions perspectives and established entrepreneurship perspectives.

Table 1: Overview of where different components of insiders engaging in sustainability transitions, and what lies behind it, can be traced within the sustainability transitions and the entrepreneurship literature.

Perspective	(1) Embraces insiders – i.e. engaged individuals with employments within the socio-technical regime?	(2) Recognises individually chosen entrepreneurial actions?	(3) Includes personalised sustainability beliefs?
Multi-level perspective	No	Yes, but only in niches	Yes, but only in niches.
Technological innovation system	No	Yes, partly in entrepreneurial experimentation	No (with some exceptions)
Transition management	Yes	Not individually chosen, but linked to roles in processes	Not personalised, but ascribed to roles in process
Mainstream Entrepreneurship	No	Yes	No
Corporate entrepreneurship/ Intrapreneurship	Yes	Yes	No
Social entrepreneurship	No	Yes	Yes
This thesis' perspective	Yes	Yes	Yes

2.1.1. Multi-level perspective

The multi-level perspective is one of the main established perspectives within sustainability transitions research (Köhler et al., 2019). Research associated to the multi-level perspective can be characterised by combining technical and social elements to explain the transition from one socio-technical system to another (Geels, 2002; Rip & Kemp, 1998). The multi-level perspective analyses transitions on three levels, the niche, on the socio-technical regime and the landscape level (Geels, 2002; Geels & Schot, 2007) and it is a productive framework for analysing and explaining historical transitions (Markard et al., 2012). In short, the dynamics between the three levels ultimately renders into an unfrozen state of the socio-technical regime, which is a 'window of opportunity' for innovations to become part of the new re-frozen regime.

On the regime level, governments and large corporations have been considered situated in structures and practices, characterised by dominant rules, institutions and technologies that are self-reinforcing (Geels, 2010). Governments and large corporations are thus considered to be locked in existing trajectories due to, for example, life styles, technical systems, investments, infrastructures, regulations and standards (Tushman & Anderson, 1986; Unruh, 2000). Established organisations are thus mainly able to breed incremental innovations and make smooth changes that ease pressures to reconfigure (Geels et al., 2016; Penna & Geels, 2012). On this level there is no recognition of personal choice and individuals' engagement.

In the multi-level perspective, initiatives for sustainability transitions are rather commonly associated as 'niche activities' (Geels, 2002; Geels & Kemp, 2007; Rip & Kemp, 1998), carried out and developed by dedicated start-ups, grassroots and lead users (Avelino & Wittmayer, 2016; Geels & Schot, 2007; Kemp et al., 1998; Seyfang & Smith, 2007). Hence,

individuals who choose to engage in entrepreneurial ways because of sustainability beliefs, are acknowledged in the multi-level perspective, but only at the niche level and not as insiders.

However, while it is common that descriptions of regime-level change are built on data from face-to-face interviews with 'firm representatives', this perspective normally assumes that these individuals act rationally, according to role expectations and along the lines of their employers (Geels, 2004, 2010). In other words, individuals, holding organisational roles, are assumed to account for firm actions. Consequentially, descriptions of engaged insiders are uncommon in the multi-level perspective literature.

2.1.2. Technological innovation system

Another established perspective originating from the science and technology field but applied on sustainability transitions, is the technological innovation system perspective. This perspective can be characterised as analytical tools for studying system dynamics in the emergence of novel technologies (Bergek et al., 2008; Hekkert et al., 2007). By analysing functions of an innovation system, technological innovation system approaches identify system weaknesses and barriers for the development and emergence of technologies. Technological innovation system analyses have been used on a number of sustainability-oriented innovations and has guided policy design to support the development of different technologies.

Work within this line of research highlights the importance of entrepreneurial experimentation (Bergek et al., 2008; Hekkert et al., 2007) and primarily places the firm as a key actor in the analysis. However, scholars have also placed individuals and their transformative capacities as 'system builders' (Hellsmark & Jacobsson, 2009) or 'entrepreneurs' (Alkemade et al., 2011; Hekkert et al., 2007; Hojckova et al., 2020) at the centre of the analysis. Some of these engaged individuals have also been described as driven by sustainability beliefs, (e.g., in Hellsmark & Jacobsson, 2009). Hence, individuals with entrepreneurial sustainability engagement can be found within technical innovation system analysis. However, this is rare and other contexts for indvidals to engage in sustainability initiatives, than as entrepreneurs, are not recognised.

2.1.3. Transition management

The transition management perspective can be characterised as an approach suggesting that transitions can be governed and shaped by policymakers (Loorbach, 2010; Rotmans, Kemp, & Van Asselt, 2001). The core of transition management is about organising interaction between stakeholders, at both niche and regime level, to enable experimentation and interactive learning among individuals (Grin, Rotmans, Schot, Geels, & Loorbach, 2010; Loorbach, Frantzeskaki, & Lijnis Huffenreuter, 2015). This is done through 'transition arenas', which are temporary spaces for change-oriented stakeholders to interact with regime actors to search for alternatives and develop ideas and activities (Loorbach, 2010; Loorbach & Rotmans, 2010; Nevens et al., 2013; Rotmans & Loorbach, 2009; Wittmayer & Loorbach, 2016). These alternative ideas and activities will then challenge the regime in ways that transform society (Grin et al., 2010; Loorbach, 2010). Transition management has been applied in different contexts and has recently gained increased attention in the context of urban development (Frantzeskaki, Hölscher, Wittmayer, Avelino, & Bach, 2018).

In transition arenas, so called 'frontrunners' (i.e., firms or individuals, experts, networkers, opinion leaders or engaged individuals from different stakeholders) are brought together to develop shared understandings of complex transitions and break down long-term visions of sustainability into concrete actions for pathway explorations and developments (Loorbach, 2010; Wittmayer, Avelino, van Steenbergen, & Loorbach, 2017; Wittmayer & Loorbach, 2016). For example, individuals who are experts in city development are mixed with individuals from industry and citizens in participative arenas (Frantzeskaki, Broto, Coenen, & Loorbach, 2017; Nevens et al., 2013; Wolfram & Frantzeskaki, 2016).

Frontrunners are considered to be engaged visionary individuals with diverse backgrounds, who can 'think outside the box' and engage others to involve in transformative alternatives (Loorbach & Rotmans, 2010; Nevens et al., 2013). Often, frontrunners are brought forward as 'champions' (Howell & Higgins, 1990) who are driven by intrinsic motivation and commitment (e.g., to a specific project), rather than to formal employment responsibilities. However, frontrunners are primarily brought forward from a leadership perspective and it is unclear to what extent they are driven by personal sustainability beliefs.

Transition management is a perspective that embraces the importance of individuals from different contexts of the sustainability transition. Still, the perspective can be criticised for focusing too heavily on organising interaction between stakeholders, while too little is known about *why* these individuals engage. Little attention is given to how to encourage and support individuals to engage over time and cross contexts beyond the temporary transition arena.

2.1.4. Mainstream entrepreneurship

Entrepreneurship can be defined as the discovery, evaluation and exploitation of opportunities to create future goods and services (Shane & Venkataraman, 2000). In combination with the assumption that sustainability initiatives are important functions to try out new technologies and applications (Bergek et al., 2008; Castán Broto & Bulkeley, 2013; Farla et al., 2012; Geels, 2005; Hekkert et al., 2007; Hellsmark et al., 2016; Kemp et al., 1998; Seyfang & Smith, 2007), it is reasonable to explore the connections between entrepreneurship and initiatives for sustainability transitions.

In line with a Schumpeterian view, the mainstream entrepreneurship is often associated with 'creative novelty' which is materialised through venture creation, risk taking and/or increased revenue (Backhaus & Schumpeter, 2003). As such, the notion of entrepreneurship is strongly associated to actions aimed at different markets or economic outcomes (Welter, Baker, Audretsch, & Gartner, 2017). There is a prevailing relationship between entrepreneurship and the formation of new ventures and market opportunities (e.g., Backhaus & Schumpeter, 2003; Baron, 2007; Bruyat & Julien, 2001; Nicholls, 2010; Shane & Venkataraman, 2000). The development of sustainability initiatives can thus only partly be understood through the lens of entrepreneurship.

Acting entrepreneurially have, by some entrepreneurship scholars, been conceptualised as persons possessing certain traits that set them apart from others; such as the ability to discover and exploit opportunities (Backhaus & Schumpeter, 2003; Shane & Venkataraman, 2000). Others have followed the Austrian school of thoughts, originating from Kirzner's work, focusing on entrepreneurs as persons able to discover and create opportunities that lie beyond

the reach of most people, (e.g., Ardichvili, Cardozo, Ray, & S., 2003; Bruyat & Julien, 2001). Sometimes, it is also argued, that being entrepreneurial can only be achieved by persons that see opportunities by deviating from the norm (Garud, Hardy, & Maguire, 2007) and have the capability to gain legitimacy for the unconventional in a specific context (Lounsbury & Glynn, 2001). Neither way, mainstream entrepreneurship highlights the importance of individuals, who choose to engage in entrepreneurial ways.

The prevailing venture creation oriented definition of entrepreneurship hampers the exploration of the connection between entrepreneurship and the bigger picture of social change (Welter et al., 2017). Other drivers than formation of new ventures and market opportunities, such as societal value contributions, are being missed out in mainstream entrepreneurship. Likewise, the entrepreneurial form of engagement among individuals who stays in an employment (i.e., not self-employed) is a missing part of mainstream entrepreneurship perspectives. However, both these dimensions are to be found in sub-streams within entrepreneurship.

2.1.5. Corporate entrepreneurship/intrapreneurship

Corporate entrepreneurship (Burgelman, 1983) and intrapreneurship (Pinchot III, 1985) pioneered entrepreneurial engagement among individuals with an organisational belonging. The literature on corporate entrepreneurship and intrapreneurship has since developed into different concepts, such as internal corporate entrepreneurship, corporate venturing and strategic renewal, to mention a few (see Sharma & Chrisman, 2007).

In this stream of entrepreneurship literature, corporate entrepreneurs and intrapreneurs are often associated to individuals, or champions, with leadership characteristics and the ability to create new business opportunities and strategic organisational renewal (Corbett, Covin, O'Connor, & Tucci, 2013; Lang & Baltes, 2019). They are "dreamers who do" and take hands-on responsibility for creating innovation of any kind within an organisation (Pinchot III, 1985, p. ix). The prevailing assumption, that entrepreneurial employees are found among managers, experts or strategist, is however being challenged (Hemingway, 2005, 2013). Some entrepreneurship scholars also argue that entrepreneurship is rather a matter of learnable skills and thus something that potentially can found among all employees (Lackeus, Lundqvist, Middleton, & Inden, 2020).

In the literature of corporate entrepreneurship and intrapreneurship, individuals with entrepreneurial engagement can, at least in the more recent literature, be found at all levels in an organisation. However, connections to personal sustainability beliefs do not occur.

2.1.6. Social entrepreneurship

A stream of entrepreneurship literature that focus on why individuals choose to engage entrepreneurially for social value creation, is the social entrepreneurship perspective. Social entrepreneurship emerged as concept in the 1980s around individuals who found opportunities in turning social needs into business. Since then, social entrepreneurship has emerged into a concept which is generally understood as measure for initiating activities, or any type of organisation, with a purpose of social value creation (Mair & Martí, 2006), not dominated by direct financial benefits for the entrepreneurs (Gawell, Johannisson, & Lundqvist, 2009;

Klapper, Upham, & Blundel, 2020; Lindgren & Packendorff, 2006; Mair & Martí, 2006; Thompson, 2002).

Social entrepreneurship is not clearly defined, but it is commonly considered involving initiatives such as engaging people outside the labour market; small scale locally and organically food production; and enterprises grounded in developing a local rural context (Gawell et al., 2009). Personal motivation is a part of the social entrepreneurship literature and it is acknowledged that personal beliefs, specifically about nature and the society, are characteristic in motivating social entrepreneurs to create social or environmental benefits over economic values (Conger, 2012; Klapper et al., 2020; Leadbeater, 1997; Lindgren & Packendorff, 2006). However, social entrepreneurship is not merely an expression of altruism. It is rather a workmanship focusing on social value, while economic value creation is seen as a necessary condition to ensure financial viability. As such, the motives for social entrepreneurship can also include less altruistic reasons, such as personal fulfilments (Mair & Martí, 2006).

A recent line of thought in the social entrepreneurship literature, connects social entrepreneurship to societal change (Gawell et al., 2009; Hjorth & Bjerke, 2006; Lundqvist & Williams Middleton, 2010; Steyaert & Hjorth, 2006; Steyaert & Katz, 2004), for example by feelings of belonging to a society (Lindgren & Packendorff, 2006). This line of thought expands (social) entrepreneurship into a force potentially shaping and changing society (Hjorth & Bjerke, 2006) and is thus a large contrast to the prevailing relationship between entrepreneurship and the formation of new ventures and market opportunities (c.f., Backhaus & Schumpeter, 2003; Baron, 2007; Bruyat & Julien, 2001; Nicholls, 2010; Shane & Venkataraman, 2000).

In sum, social entrepreneurship shows that individuals' feelings, ethical motives and perceived moral responsibilities can work as catalysers for social transformation (e.g., Conger, 2012; Leadbeater, 1997; Lindgren & Packendorff, 2006). It is thus a perspective in which individuals engaging in entrepreneurial ways and who are driven by personal sustainability beliefs, are brought to the forefront of shaping and changing society. In general, however, insiders are absent the social entrepreneurship perspective.

Notably, a more recent 'social intrapreneurship' perspective is emerging. This perspective has large overlaps with corporate entrepreneurship and social entrepreneurship literature (Kistruck & Beamish, 2010). Social intrapreneurship perspective originates from the need to gain better understanding of the role of embeddedness in social entrepreneurship (Mair & Martí, 2006). There is no single definition of social intrapreneurship but existing definitions capture the idea of a corporate employee who is able to reimagine the potential for their employers and who develops a product, service, and/or solution that links business growth to social value creation (Belinfanti, 2015; Elkington, 2009; Hemingway, 2013). Social intrapreneurship may thus contribute to widen the overarching perspectives to also embrace insiders' engagement in sustainability transitions.

2.2. Analytical framework: Insiders engaging in sustainability transitions

In the previous section, I reviewed how individuals who engage in sustainability transitions are understood in more established perspectives on sustainability transitions and entrepreneurship. Along the purpose of this thesis, I have deliberately chosen to focus this review on insiders, as less attention has been paid to the individuals working for established organisations within the scope of sustainability transitions. As indicated in the overview in Table 1, all the reviewed perspectives capture some but never all components of the chosen perspective. Below, I thus introduce the analytical framework I have used for understanding individuals who choose to engage in sustainability transitions, especially in energy transitions, in and beyond their organisational home grounds.

2.2.1. Acting entrepreneurial

A common component in many of the established perspectives is that if individuals choose to engage, they do this in an 'entrepreneurial' way. Engaging in entrepreneurial ways is characterised by passion, emotional energy, drive and spirit that is resistant over time (Cardon, Wincent, Singh, & Drnovsek, 2009). 'Entrepreneurial' can be understood along the lines of thoughts in which entrepreneurship is viewed as an individually chosen course of actions to achieve personal intentions (Packard, 2017; Sarasvathy, 2001; Welter et al., 2017). 'Entrepreneurial' can thus also include a chosen course of every-day actions toward subjective ends (Welter et al., 2017). Such subjective ends may include the society, culture or ecology, and sometimes even with minor or no emphasis on profitability (Bjerke, 2007).

Most of the reviewed perspectives that recognise individually chosen entrepreneurial actions, do this on a 'niche level' and for realising opportunities. Typically these perspectives show that individually chosen entrepreneurial actions are carried out and developed by dedicated individuals in start-ups, or as grassroots and lead users (Avelino & Wittmayer, 2016; Bergek et al., 2008; Geels & Schot, 2007; Hekkert et al., 2007; Kemp et al., 1998). Only the corporate entrepreneurship/intrapreneurship perspective recognises individually chosen entrepreneurial actions within more established structures, but I will return to this perspective in section 2.2.3. below.

2.2.2. Personal sustainability beliefs

A component of the perspective in this thesis, is about individuals' engagement in sustainability initiatives being anchored in personal sustainability beliefs. Permanently salient personal sustainability beliefs can be thought of as part of an individual's identity. They are stable over time and work as the moral compass, which is a sense of personal responsibility or duty for sustainability (Schwartz, 2012; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Choosing to engage in sustainability transitions can thus be part of a person's identity (Schwartz, 2012; Stets & Burke, 2000). If personal sustainability beliefs are not as salient, they may need a contextual cue to become activated (Gifford & Nilsson, 2014). When personal beliefs are activated they become more likely to influence how we act (Lindenberg & Steg, 2007; Verplanken & Holland, 2002).

Personal beliefs, whether they are part of an identity or activated by contextual cues, guide engagement through uncertain events towards imagined futures. Two of the six reviewed perspectives recognise that individuals can be driven by personal sustainability beliefs when

choosing to engage in sustainability transitions: the multi-level perspective and the social entrepreneurship perspective. Both these perspectives show that individuals can choose to engage in entrepreneurial ways because of sustainability beliefs. Specifically, personal beliefs about nature and the society are acknowledged to motivate individuals to create social or environmental benefits over economic values (Avelino & Wittmayer, 2016; Conger, 2012; Geels, 2011; Geels & Schot, 2007; Kemp et al., 1998; Klapper et al., 2020; Leadbeater, 1997; Lindgren & Packendorff, 2006). However, this is only acknowledged at the niche level.

This brings me to the last component in this review, whether or not insiders, i.e., individuals employed by established organisations, are embraced in the perspective. This may seem like a yes or no question. However, my answer rather points at different contexts in which insiders can engage in sustainability transitions.

2.2.3. Focus on insiders

Two of the reviewed perspectives embrace individuals within established structures: the transition management perspective and the corporate entrepreneurship/intrapreneurship perspective. Starting with the transition management perspective, it is a more hands-on perspective for conducting and governing transitions. It is the perspective within the sustainability transitions literature that cares most about the 'how' question. In transition management, sustainability transitions are facilitated through temporary transition arenas, which are participatory processes of visioning, learning and experimenting (Loorbach, 2010; Wittmayer et al., 2017; Wittmayer & Loorbach, 2016). In these processes, groups of individuals, such as citizens or end-users are linked with different stakeholders, such as entrepreneurs and representatives, i.e., insiders, from incumbents and regime actors. Frontrunners, or visionary experts, lead the visionary work and engage others to involve (Loorbach & Rotmans, 2010; Nevens et al., 2013). Thus, the transition management perspective singles out insiders as important participants for a successful transition arena.

The aim of the transition arena is to develop options of viable solutions that will start snowballing down a particular pathway, growing in size and speed, until a fully socio-technical system transition takes place (Foxon, Hammond, & Pearson, 2008).

The temporary arenas reside what could be labelled outreach engagement. Such engagement is when one interacts with others outside of the organisation to share knowledge and gain new insights. It implies discovering new territory and gaining knowledge in interaction with others. For insiders, outreach engagement can produce results both in situations beyond one's home base (a form of corporate social responsibility) or as new external insights brought back into the home organisation. Typically outreach engagement is related to active participation and co-creation via workshops and networking (Ollila & Yström, 2020). However, temporal settings have the challenge of keeping individuals engaged over time and across contexts from the temporary transition arena.

The corporate entrepreneurship/intrapreneurship perspective is the only perspective recognising individuals engaging in the contexts of their home organisation. This is more of a 'classic' entrepreneurship perspective focusing on transforming opportunities into a profitable business. However, recent developments, sometimes labelled social intrapreneurship, connect well with my chosen perspective in that entrepreneurship is seen as a skill, potentially found

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among all employees and not only resulting in new market offerings (Hemingway, 2005, 2013; Lackeus et al., 2020).

An entrepreneurial individual, who also is an insider, can thus engage in entrepreneurial ways in, but also beyond, any organisational role. Driven by personal sustainability beliefs, this can activate engagement in initiatives focusing primarily on sustainability benefits while potential business values can be secondary. The entrepreneurial form of engagement thus occurs in a context different from the temporary arena displaying outreach engagement. Entrepreneurial engagement can be seen as more persistent over time and thereby more similar to job engagement, albeit in two different contexts.

2.2.4. *Summing up and my analytical framework*

Insiders' engagement in sustainability transitions, turns out as a novel, yet traceable, perspective on sustainability transitions, both in relation to established sustainability transitions perspectives and established entrepreneurship perspectives. No single perspective allows studying individuals choosing to engage in sustainability transitions, in and beyond their organisational home grounds. The new perspective will now be the basis for method choices and empirical investigation.

3. METHODOLOGY

This section starts with an introduction of the overall study design for this thesis. Next follows a description of case selection and an overview of data collection methods applied in the three studies behind each appended paper. Detailed descriptions about methods of data collection and analysis are found in each of the appended papers. The section ends with a reflection on research quality.

3.1. Overall study design

The purpose of this thesis is to increase the understanding of individuals choosing to engage in sustainability transitions, in and beyond their organisational home grounds. For this, I started reviewing how established perspectives on sustainability and entrepreneurship handles individuals connected to sustainability initiatives in and beyond their organisational home grounds. It turned out that what I call insiders' engagement in sustainability transitions is a novel, yet traceable, way of approaching the processes underpinning sustainability transitions, both in relation to established sustainability transitions perspectives and established entrepreneurship perspectives.

To further fulfil the purpose I have conducted empirical studies related to three research questions in this thesis: 1) How can an individual's sustainability engagement be activated?; 2) How does sustainability engagement appear in different contexts?; 3) What are key transition effects from sustainability engagement? Overall, I have utilised a case study research approach in three separate studies (Eisenhardt, 1989; Flyvbjerg, 2001, 2006), resulting in the three appended research papers.

3.1.1. Case study research

Case study research is a strategy for understanding the dynamics present within a specific setting (Eisenhardt, 1989). Typically, different methods of data collections are combined, such as interviews, observations, questionaries and desktop research, including both qualitative and quantitative data (Maxwell, 2012). Case study research has thus the potential to come very close to real-life situations and test views directly in relation to phenomena as they unfold in practice (Flyvbjerg, 2006, p. 19).

In the three studies corresponding to the appended papers (see Table 2), I have investigated how and why individuals engaged, or not engaged, in early-stage energy transitions. This research process brought me close to individuals and their personal reasoning. In the appended papers, personal stories are stitched together by me into combined narratives about the emerging of specific sustainability initiatives (Garud et al., 2014). This process provided me with close and nuanced expressions of how and why different individuals chose to engage.

3.1.2. Case selection

The data collection has been based on cases relatable to Swedish energy system transition. Each case is presented in Table 2, together with the research approach, data collection methods and methods of analysis used in each paper (Table 2).

In case study research, the selection of cases is an important part of the process. Random sampling of cases in the Swedish energy transitions was not considered the most appropriate strategy for clarifying the deeper causes behind how and why insiders chose to act, or not to act. I therefore applied a critical case selection strategy (Flyvbjerg, 2001). The purpose with critical cases is to achieve information by logical deduction of the type "if this is (not) valid for this case, then it applies to all (no) cases" (Flyvbjerg, 2001, p. 79).

Locating critical cases requires experiences and no universal set of selection rules are available. In the appended papers, two different criteria were applied when selecting cases: (1) where insiders played a key role in realising a sustainability initiative which they had not been part of initiating, such as in the case of implementing LCA information (Paper I) and in the co-creative process (Paper III); and (2) where insiders played a key role in realising a sustainability initiative which they had been part of starting and forming (Paper II).

3.2. Data collection methods

The three studies were conducted through a mix of methods, each set of methods adopted to case specific circumstances (Maxwell, 2012). However, the main sets of data relating to individuals' engagement were collected by face-to-face semi-structured interviews in (or in relation to) specific sustainability initiatives.

Semi-structured interviews are characterised by open-ended questions allowing the interviewee to interpret questions and give extensive answers and make 'think-aloud' contributions (Kvale, Brinkmann, & Torhell, 2009). Some of the questions were prepared in advance, while others were formulated in the moment. The semi-structured interview is a qualitative approach rooted in the 'intersubjective' dimensions of individuals' knowledge (Cunliffe, 2011). Using this technique allowed me to build a combined narrative (Garud et al., 2014) of the initiatives under study and find out how and why individuals chose to act, or not to act, in relation to specific sustainability transitions.

To identify individuals who had been involved, or who was expected to be involved, in the initiative under study, I applied snowball sampling (Kvale et al., 2009). This was a process in which I recruited respondents based on previous interviewees information about who else has played an 'important role', or 'was expected to act', in the formation and/or the operation of the specific initiative. In this way, the sample group of each specific case grew like a rolling snowball. However, a saturation effect was reached after some time, when no new names appeared in relation to the specific initiative.

Snowballing comes with limitations. For example, people who may have done an important contribution but who have been relatively anonymous are easily missed out. And persons with a large social network may appear as more important that what they actually were. Among the benefits with snowball sampling is, however, that it is possible to find persons who are left out of the 'public' version of a case, such as persons who have made substantial

contributions to a process without being formally allocated; or the different rationales employees throughout an organisation use to frame day-to-day decisions.

In Table 2, each paper's research approach, data collection methods and method of analysis are presented. In sum, Paper I applied a problem-driven abductive methodological approach (Dubois & Gadde, 2002), iterating theory and empirical findings to discover new concepts (Gioia et al., 2013). Semi-structured interviews were used for data collection. Collected data was analysed by qualitative thematic methods (Braun & Clarke, 2006).

The second and the third study (Paper II and Paper III) were conducted using a mix of methods case study approach (Flyvbjerg, 2001). Data collection in Paper II included semi-structured interviews and various types of reports and websites. Results were analysed by interpretive case analysis, focusing on the phenomenon (Kvale et al., 2009; Packard, 2017). In Paper III, data collection included participatory observations; semi-structured interviews; surveys and various types of reports and websites. In addition, a follow up study was made in order to uncover long term participant data. In the third paper, a framework was developed and used for data analysis.

Table 2: Summary of cases, their research approach and data collection.

Paper	Case descriptions	Research approach	Data collection method	Method of analysis
P. I	Four cases from tree companies using life cycle information. Individuals was identified along the line of life-cycle information flow within large firms (energy firm included). Individuals were expected to change their behaviours and include life-cycle information in decision making and daily work (e.g., for increasing sales of renewable energy).	Grounded theory-driven abductive approach (Dubois & Gadde, 2002), iterating theory and empirical findings to discover new concepts (Gioia et al., 2013). Snowball sampling.	Following flows of life cycle information from the environmental department through other departments of an organisation. Interviews with 27 responders, written documentation.	From the flows of information, rich empirical descriptions of barriers and enablers for acting or not acting on life cycle information data was analysed by thematic analysis (Braun & Clarke, 2006)
P. II	Two Swedish energy system experiments focusing on societal and environmental benefits by lowering energy use and enabling decentralisation and self-sufficiency. At the same time, these initiatives challenged the core businesses of the involved energy firms.	Mix of methods (Flyvbjerg, 2001, 2006) and snowball sampling of key individuals.	23 semi-structured interviews, desktop research of websites, policy documents, funding applications and various types of reports and academic literature	Interpretive case analysis focusing on the phenomenon (Kvale et al., 2009; Packard, 2017).
P. III	A sustainability transition governed process for co-created ideas and concepts, (including smart urban energy system solutions). Although long-tern learning effects where shown.	Mix of methods (Flyvbjerg, 2001).	Participatory observation of workshops (21h), 22 semi-structured interviews; surveys (n= 129) and desktop research of policy documents, project funding application and various types of reports and websites. A follow up round of five interviews were made three years after the first interviews.	Application of introduced engagement framework.

3.3. Research quality

This thesis is based on three papers with critical case selection. Conducted by an adopted way of gathering information (Flyvbjerg, 2001; Maxwell, 2012). The three studies, together, offer me with a rich and nuanced understanding of individuals choosing to engage in sustainability transitions, in and beyond their organisational home grounds.

It can be argued that studies made on critical case selection provide limited possibilities of comparison. However, the counter argument is that 'if it is valid in these cases, it is valid for all (or many) cases' (Flyvbjerg, 2001). The selection of cases in the appended papers thus constitute a possibility to increase the understanding and making generalisations about insiders who choose to engage in sustainability transitions.

When working with the cases in the appended papers, it became clear to me that energy is embedded in the society and not an easy system to define. The possibilities to generalise and transfer my results to other contexts are thus supported by fact that the cases I have studied could as well be associated to other socio-technical systems. For example, the case in Paper III and the first case described in Paper II, could be seen as city development cases. The cases in Paper I and Paper II could be seen as sustainable business development; Paper III and case number two in Paper II, could also be interpreted as cases of civic engagement in sustainability initiatives. So, the question is then, are my cases valid?

In qualitative research, no scholar can be fully objective. A good qualitative research process is thus the result of an iterative process between understanding others and self-interpretation, in a so called 'double hermeneutic'. It is an important part of the process to create awareness of one's own biases. For this reason, I have recorded my data, transcribed it and continuously discussed my data analysis and its relation to the phenomenon with colleagues and my supervisor. Nonetheless, I can by no means say that this has been an easy process. Carving out a trans-disciplinary field, balancing the role of structural constrains on insiders' abilities to act, with the importance of their personal values and beliefs, has been a very challenging task.

In sum, this seemingly sprawling collection of cases and the way they have been researched can be seen as weak grounds for fulfilling the purpose of this thesis. However, they can also be seen as building trustworthiness in providing the diversity of ways in which individuals can choose to engage in sustainability transitions, in and beyond their organisational home grounds. Potentially also in other socio-technical contexts. However, it is for future research to further verify this.

4. SUMMARY OF APPENDED PAPERS

This section provides a summary of the three research papers included in this thesis. The papers approach different aspects of insider's sustainability engagement, and lack thereof, in early-stage energy transitions initiatives, in the Swedish energy system. For each paper, purpose and main results are presented. The papers' contributions to my research questions are outlined and discussed in the following section. It is important to note that case stories can neither be briefly recounted nor summarised in a few main results. The case story is in itself a finding.

4.1. Paper I: Recommendation and context: the missing links for increased life cycle impact in large industries

This paper takes an open and explorative approach to investigating the impact, or lack of impact, of life cycle information on insiders' behaviours throughout large production companies. Based on cases where life cycle information has been provided, this paper analyses how life cycle information has been interpreted and acted upon, outside the firm's environmental department. One of the companies in the study had implemented life-cycle information to increase sales of electricity from renewable sources.

4.1.1. Main results

The results in this study show that employees outside environmental departments perceive a number of barriers and enablers for using life cycle information in their decisions and daily work. In this study, barriers and enablers are grouped into four concepts: *information*; *recommendation*; *social context*; and *familiarity*. Connected to the *information* concept are structural barriers, such as gaps between what life cycle information is available and what life cycle information is needed. The concept of *recommendation* includes needs of guidance as to what actions to take from the provided information and how to handle trade-offs between different objectives, such as conflicts between ecological and financial goals. In relation to the concept of *social context*, software structures, reward systems, trade-offs and personal beliefs about the profession, are important barriers or enablers for using life cycle information in decision making. The fourth concept, *familiarity*, include personal heuristics based on previous experiences and preferences. *Familiarity* is a strong personal bias for including or not including provided information.

The case findings were analysed by using social psychological 'goal framing theory' (Lindenberg & Steg, 2007) and it was found that although life cycle information was perceived as very important to consider, decisions at hand were rather formed by (short term) personal goals, often resulting in not taking life cycle information into account. Furthermore, it was found in the paper that it was easier to consider life cycle information in decision-processes, or daily work, if the information was adjusted to *context* and if *recommendations* about what decision to take and what to do was provided by the environmental department.

Assisted by theories from social psychology, the paper suggests that the impact of life cycle information could increase if normative arguments about environmental visions, strategies and overarching goals are aligned with enablers focusing on satisfying personal goals, such as meeting a deadline, reducing uncertainty and reaching thresholds for bonuses.

4.2. Paper II: Entrepreneurial sustainability engagement of insiders initiating energy system transition.

The purpose of this paper is to qualify an entrepreneurial insider sustainability engagement perspective that can help us better appreciate how transitions, such as in energy systems, emerge. The study takes stock of two Swedish energy system initiatives. One of the initiatives is focusing on turning a village into a self-sufficient micro grid. The second initiative is about balancing a city district's energy systems (electricity, heating and cooling) by introducing a local energy market. Through a case study approach, actions and personal drivers among the persons involved in the ideation and set-up of these initiatives are investigated.

4.2.1. Main results

The results in this study show that energy system initiatives can be started by a handful of insiders who choose to act entrepreneurially beyond role expectations. In two cases, it is showed that insiders moving in and out of their organisational roles create narratives about future energy systems that are meshed together along with concrete developments. Insiders can choose to engage in sustainability transition narratives because of different personal beliefs related to environmental, technological and/or social issues, without being expected to do so in their professional roles.

By moving in and out of their organisational roles, individuals utilised their resources and networks as insiders while acting together as an entrepreneurial team even though there was no lead entrepreneur, no managers or no incorporated venture in play. With overlapping purposes and a sense of interdependence as regards different skills and resources, these individuals, employed by established energy companies, engaged because of societal and environmental benefits, while at the same time challenging their employers' current business models. Hence, engaging into sustainability transitions, even in heavily regulated and difficult to change energy systems, does not necessarily have to be the results of any top-down decision or mandate.

The perspective proposed in this paper avoids established structural, market-oriented and economic understandings of transition, and, in line with recent sustainability and institutional entrepreneurship research, focuses on institutional change. It does so by applying an inclusive and narrative-based view on how institutional change occur through entrepreneurial teams of insiders who are driven by overlapping purposes, openness and complementary expertise, and not requiring lead entrepreneurs, economic motives or incorporated ventures. As such, insiders belonging to a sociotechnical system in need of transition, can be key players initiating such transitions.

The theoretical and practical implications from this paper are that the importance of entrepreneurially engaged insiders needs to be acknowledged and that their narratives contribute to how soft institutions are formed. Public project funding played a vital role in the investigated cases and corporations having sustainability policies should recognise the long-term importance of allowing entrepreneurial insider behaviours, as displayed in the current cases.

4.3. Paper III: Introducing human engagement into sustainability transitions: The case of RiverCity Gothenburg

This paper explores the outcome of a transition arena in an urban sustainability development process. The arena was an initiative to address urban challenges, including smart energy systems solutions. In the paper, three contexts for engagement are introduced to explain individual-level actions in initiatives for sustainability transitions. The framework is applied on a case study of a co-creative arena and its impact on the urban development process.

4.3.1. Main results

Sustainability transitions perspectives are saturated with expectations that change should happen through individuals' engagement, whether through roles, such as participants, frontrunners, grassroots, experts or entrepreneurs, or in spaces that will affect change, such as entrepreneurial experimentation, arenas, labs or strategic niches. This paper criticises sustainability transitions perspectives for being ungrounded about these expectations and to also disguise critical micro-level insights into meso-level descriptions. Individuals' engagement is needed for sustainability transitions, but it cannot be taken for granted. This critique is made constructive through introducing a framework of three contexts for engagement and illustrating it on a large sustainability transition case, the RiverCity in Gothenburg.

Drawing on literature from social psychology and entrepreneurship, three contexts of engagement are suggested: 1) job engagement, 2) outreach engagement and 3) entrepreneurial engagement. For each type of engagement, actions and outcomes are depicted (see Table 3). The types of engagement explain why persons are engaging (or not engaging) in a sustainability transition.

In short, with job engagement, insiders act with motivation for implementing management-initiated sustainability initiatives. This means that insiders with job engagement commit to actions in-between old and new practices, while internalising new sustainability actions. As job engagement is coupled with the individual's expectation of his or her organisational role, actions can be framed by self-enhancing goals. This may lead to actions that are in the line with new sustainability initiatives, or actions that are along the lines of old practices.

Whereas insiders' job engagement occurs around actions that are asked for by the employer, outreach engagement implies discovering new territory and gaining knowledge in interaction with others. Outreach engagement can produce results both outwards (towards situations beyond one's home base) and inwards - offering new external insights into the home organisation. Typically, outreach engagement is related to active participation and co-creation via workshops and networking.

With entrepreneurial engagement, individuals act with long-term part- or full-time commitment to co-creating sustainable solutions, together with others. Entrepreneurial engagement thus differs from outreach engagement in that individuals are more committed over time, some even as venture entrepreneurs.

Table 3: Framework for individuals' engagement in sustainability transitions.

Type of sustainability engagement	Typical actions and outcomes	Excuses for non-engagement
Job engagement: Fulfilling (new top-down) job expectations around sustainability	Implementation Application	*Other organisational goals:* what gets measured gets done; no discontinuation of pre-existing job expectations; difficulties in implementing new actions in old structures; dissonance with organisational role expectations.
Outreach engagement: Participation in outside-job sustainability activities	Inspiration Networking Co-creativity	*Social and structural hinders:* no ownership of implementation; social dissonance with colleagues due to workplace culture and social norms (i.e., 'I do what others do').
Entrepreneurial engagement: Long-term part- or full-time commitment to co-creating sustainable solutions (with or without mandate from employer)	Persistence Demonstration Implementation	*Legitimacy concerns:* liability of newness; deal with multiple identities; difficulties in mobilising resources

5. DISCUSSION

The purpose of this thesis is to increase the understanding of individuals who choose to engage in sustainability transitions, in and beyond their organisational home grounds. In this work, I have chosen to pay extra attention to engaged individuals who belong to structures. I call these individuals insiders. They work for established organisations and they have so far been a white spot in relation to sustainability transitions, basically assumed to just act in accordance with their organisations' role expectation.

Sustainability transitions are carried out, in practice, by individuals. When individuals choose to engage because of personal sustainability beliefs, they can do this across contexts. The individual's choice to engage in sustainability transitions is thus nothing that is coupled to a specific role, it is rather the result of strong or activated personal sustainability beliefs.

The main contribution of this thesis is to introduce a new perspective in which individuals who choose to engage in sustainability transitions in and beyond their organisational home grounds can be recognised and appreciated. Three research questions have guided my work and I will now discuss each research question subsequently.

5.1. RQ1: How can an individual's sustainability engagement be activated?

Engaging into sustainability transitions is a personal choice, at least in more democratic societies. In the reviewed perspectives on sustainability transitions and entrepreneurship, only the multi-level perspective and the social entrepreneurship perspective recognise that individuals can choose to engage in sustainability transitions because of personal sustainability beliefs.

Choosing to engage in sustainability transitions comes from personal sustainability beliefs. Personal sustainability beliefs are stable over time and function as a moral compass for sustainability (Schwartz, 2012; Stern et al., 1999). Personal sustainability beliefs are, if permanently salient, part of a person's identity (Schwartz, 2012; Stets & Burke, 2000). If not permanently salient, personal sustainability beliefs can be activated by contextual cues and are, when activated, likely to influence the way a person chooses to act (Gifford & Nilsson, 2014; Lindenberg & Steg, 2007; Verplanken & Holland, 2002).

Self-chosen engagement in sustainability transitions, no matter if, when and what that person identifies him or herself as, is thus anchored in personal sustainability beliefs. After all, one and the same person can be an employee, an entrepreneur, a politician, a citizen, and a parent. If sustainability is important for this person, it will influence this person in all situations.

In this thesis it is showed that activated personal beliefs about nature and the society motivate individuals to engage in creating social or environmental benefits over economic values, also in other contexts than the niche. This is beyond what has previously been suggested by scholars in the multi-level perspective and the social entrepreneurship perspective (e.g., Avelino & Wittmayer, 2016; Conger, 2012; Geels, 2011; Geels & Schot, 2007; Kemp et al., 1998; Klapper et al., 2020; Leadbeater, 1997; Lindgren & Packendorff, 2006). Activated sustainability beliefs among insiders lead to less outstanding and yet important types of sustainability engagement related to, for example, how one cares about sustainability issues within a job or at workshops.

The appended papers have different findings, relating to why individuals choose to, or not choose to engage in sustainability transitions. Starting with the most 'extreme' form of sustainability beliefs, the two cases presented in Paper II show individuals who have internalised their sustainability engagement to become part of their identity. In self-organised entrepreneurial teams, like-minded persons with different belongings engaged during working hours and sometimes also during the weekends to realise a joint vision about a sustainable energy system.

The findings in Paper II thus show that individuals who are insiders and who have sustainability as part of their identity, chose to engage in entrepreneurial ways in sustainability transitions across contexts, inside and outside of their professional roles as insiders.

However, everyone does not identify as a sustainability activist or social entrepreneur with strong and continuous sustainability engagement in every situation. Most of us are in fact rather inconsistent when it comes to sustainability behaviours (Gifford, 2011; Gifford & Nilsson, 2014). We can for example both recycle and take the car to the gym.

Having sustainability as part of one's identity is thus not typical. But many of us, at least in Sweden, have sustainability beliefs that, when activated, have an effect on us in different situations. However, spill-over effects of activated sustainability beliefs, from one context to another, are not something one can only assume (Gifford, 2014; Steg & Vlek, 2009). Participating in, for example, a transition arena, may engage individuals in this particular situation to co-create alternative ideas and activities (Loorbach, 2010; Loorbach & Rotmans, 2010; Nevens et al., 2013; Rotmans & Loorbach, 2009; Wittmayer & Loorbach, 2016). However, the findings, specifically in Paper III, show that such engagement will not last once an arena participant leaves the temporary setting and enters back to his or her ordinary work.

The case in Paper III demonstrates a transition arena approach, in which individuals from change-oriented stakeholder were interacting with individuals employed by established 'regime actors', to jointly develop ideas, activities and alternatives for a number of city specific sustainability challenges (Loorbach, 2010; Loorbach & Rotmans, 2010; Nevens et al., 2013; Rotmans & Loorbach, 2009; Wittmayer & Loorbach, 2016). The workshop initiative was, according to the participants, a highly appreciated and very successful initiative. However, despite substantial voluntarily time investments by all participants (a minimum of 21 hours per person), the initiative did not result in long term engagements and the spill over effects of activated sustainability beliefs among the participants were rare beyond the arena.

In Paper I and Paper III it is shown that when sustainability beliefs are not activated, individuals will find reasons for not engaging into sustainability transitions but rather keep acting as business as usual. This will perhaps not obstruct sustainability transitions, but for sure delay them. The results in Paper I show that whether life cycle information is taken into account by individuals throughout an organisation or not, is related to how the information is framed in relation to personal goals. If personal sustainability beliefs are not activated, individuals tend to downplay the importance of life cycle information in favour of taking decisions according to business-as-usual. These results in Paper I indicate that the impact of life cycle information is depended on an interplay between structural, social and personal dimensions. Similar results are also found in Paper III, with the difference that some individuals use excuses to justify not engaging in sustainability transitions.

5.2. RQ2: How does sustainability engagement appear in different contexts?

Individuals' engagement in sustainability transitions is a chosen course of actions, based on personal sustainability beliefs. Of the reviewed established perspectives on sustainability transitions and entrepreneurship, most of them consider individuals' engagement in sustainability transitions as niche actions. Dedicated individuals primarily appear in start-ups, as grassroots and as lead users.

In this thesis I have paid special attention to individuals working within established structures as these have been a white spot in relation to sustainability transitions and basically been assumed to just act in accordance with their organisations' role expectation. Only two out of the six reviewed perspectives embrace insiders: the transition management perspective and the corporate entrepreneurship/intrapreneurship perspective. The transition management perspective embraces insiders when engaging in sustainability transition in temporary settings. The latter as an entrepreneurial form of engagement among insiders, however only as a self-chosen commitment in transforming an opportunity into a profitable reality.

In the empirical work of Paper III, three different contexts are developed in which insiders can choose to engage in sustainability transitions. These are the temporary contexts, called outreach engagement; the entrepreneurial engagement; and the daily job context, called job engagement.

The temporary and the entrepreneurial contexts of insiders' engagement are found in the two perspectives in which insiders are embraced. However, the empirical findings in the appended papers add to the established understanding of insiders who engage in temporal and entrepreneurial contexts. The appended papers also add a third context, the job engagement, in which insiders can choose to engage in sustainability transitions within their daily work. This is a novel context which none of the established perspectives cares about. The contributions of this thesis to each of these contexts are described below.

5.2.1. Outreach engagement

Insiders' engagement in temporary setting is brought forward by the transition management perspective. According to this perspective, insiders play an important part in successful co-creation of sustainable alternatives. In temporary arenas, interaction between stakeholders, at both niche and regime level, is organised to enable envisioning, experimentation and interactive learning among the participants (Grin et al., 2010; Loorbach, 2010; Loorbach et al., 2015; Wittmayer et al., 2017; Wittmayer & Loorbach, 2016).

In Paper III, the temporary engagement is called outreach engagement. Such engagement is when insiders interact with others outside of the organisation to share knowledge and to gain new insights. As described in Paper III, outreach engagement is related to active participation and co-creation via workshops and networking. It implies discovering new territory and gaining knowledge in interaction with others. For insiders, outreach engagement can produce results both in situations beyond one's home base (a form of corporate social responsibility) or as new external insights brought back into the home organisation.

Outreach engagement initiatives can appear attractive for having insiders to become engaged in sustainability transitions. This is very much what the transition management perspective assumes. However, this thesis shows that temporary settings do not easily lead to spill over effects between different contexts, with any long-lasting sustainability engagement

as a result. In Paper III, insiders who participated in a temporary transition arena and appreciating doing so, did not show much engagement three years after the arena.

However, well-arranged temporary settings of co-creation can, as shown by the results in Paper III, both be appreciated by participants and be successful in developing alternative ideas and activities.

5.2.2. Entrepreneurial engagement

Insiders who engage in entrepreneurial ways are acknowledged by the entrepreneurship/intrapreneurship perspective. However, this perspective only acknowledge entrepreneurial insiders as a self-chosen long-time commitment in transforming an opportunity into a profitable reality (Burgelman, 1983; Corbett et al., 2013; Lang & Baltes, 2019; Pinchot III, 1985).

In paper II it is shown that insiders can also choose to engage in entrepreneurial ways in sustainability transitions, for realising a personal vision about a sustainable future society, placing firm and personal benefits as secondary drivers. By utilising professional networks and different types of resources associated to organisational roles, insiders can fill a space within their organisations' sustainability strategies, labelling their engagement as 'strategic future work', for instance. Their engagement can thus become long-term allowing effectuation beyond any job expectation.

This novel finding shows that insiders with sustainability beliefs do not only engage entrepreneurially to turning an opportunity of satisfying sustainability needs into business. They also engage entrepreneurially to realising sustainable futures even if this challenges the core businesses of their employers and come with no personal profits.

5.2.3. Job engagement

A third context for insiders to engage in sustainability transitions is within their organisational home grounds. Such engagement is traceable in the appended papers but cannot be found within the reviewed established sustainability transitions and entrepreneurship perspectives. In Paper III, we call this novel context of individuals' engagement in sustainability transitions for 'job engagement'.

In job engagement, employees choose to engage in sustainability transitions within their organisational home grounds. This can, for instance, mean engaging in implementing the organisation's sustainability goals or its social missions. Job engagement can also mean to engage in and encourage colleagues in-between old and new practices, even though this sometimes mean acting on more challenging normative goals and not simply choosing the path the with least resistance. Being job engaged is not about being a champion or arrange project on the side of the ordinary job. It is rather a form of engagement in sustainability transitions in which sustainability beliefs are part of the individuals' identity, framing all actions within the job. In Paper I, for example, personal beliefs about the profession and sustainability were shown to be important for deciding to include life cycle information in work decisions, even though this increased uncertainties.

5.3. RQ3: What are key transition effects from sustainability engagement?

When discussing this third research question, I focus on the energy system and the initiatives studied in Paper II. However, it should be noted that some long-term transition effects are also found among city planners in Paper III, indicating a more open mindset years after they attended the temporary arena.

The two cases in Paper II belong to a small set of sustainability initiatives exploring the potentials in decentralisation in the energy system. Both initiatives address energy system issues at a grid level, which in an electricity grid context is known as 'before the meter' from a distribution system operator's point of view. In contrast to many other initiatives that are focusing on testing specific technologies, these two initiatives are radically challenging incumbent business models for selling and delivering energy. For example, a local market will give energy customers larger abilities to manoeuvre their use of energy in more dynamic ways which will have an impact on the districts' distribution system operators' business model. And a localised energy grid will disconnect small islands of self-sufficient energy grids, eventually leaving the distribution system operator without any costumers buying energy.

At the time of the study, both initiatives in Paper II were well-developed, able to demonstrate up and running decentralised systems functionalities. Technologies had been installed on the grid (i.e., before the meter) and IT-solutions for gathering and processing information had been developed.

During the development of these initiatives, engaged individuals continually narrated their intentions and their work, successively building trust and consensus among other individuals within and outside their organisation. These narratives were thus gradually spreading and attracting attention way beyond their home organisation. Successively each initiative emerged as a platform at which individuals with overlapping purposes and intentions could explore and even join these narratives about future decentralised energy systems.

In large numbers of study visits, local and national politicians, people form the industry, academic scholars and journalist came to experience the future and develop their own imagination about future energy systems. As a result, when an increasing number of individuals got personal experiences of these future decentralised energy systems, these initiatives were increasingly being referred to as 'demonstrators of tomorrows' energy system'. By such personal experiences, decision makers and others can choose to retell these narratives and even decide to personally engage in future energy systems. The cases in Paper II are thus examples of hands-on institutional work which influences the development of soft norms and eventually affecting, for example, regulations and policies (Lawrence & Suddaby, 2006; Lawrence et al., 2009) which contributes to sustainability transitions (Fuenfschilling & Truffer, 2016).

6. CONCLUSIONS AND FURTHER RESEARCH

The purpose of this thesis is to increase the understanding of individuals choosing to engage in sustainability transitions, in and beyond their organisational home grounds. The main contribution of this thesis is to introduce a new perspective in which individuals who choose to engage in sustainability transitions in and beyond their organisational home grounds can be recognised and appreciated. These individuals are important to see and value if we want to better understand how sustainability transitions are achieved.

6.1. Conclusions and contributions

Three research questions have guided my work and I will now conclude on each question subsequently.

6.1.1. How can an individual's sustainability engagement be activated?

It is shown in this thesis that individuals will only choose to engage in sustainability transitions if their personal sustainability beliefs are activated. If personal sustainability beliefs are not activated; individuals will have lots of excuses for not engaging into sustainability transitions.

These findings have implications for sustainability transitions scholars and practitioners, not only in their policy recommendations or when imposing the use of environmental information throughout an organisation, but also when arranging temporary arenas to develop joint visions and sustainable alternatives. First, too much trust cannot be put in organisational sustainability strategies or top-down decisions without first ensuring that there are individuals with activated personal sustainability beliefs. Secondly, just because participants are engaged in developing joint visions and alternative ideas and concepts in a temporary setting, their engagement does not automatically translate into other contexts, such as when being back at work. When personal engagement moves between contexts, it arguably has an even larger effect on sustainability transitions, such as when a city planner translates his or her outreach engagement into job engagement and starts making decisions in the city development process that are beyond mere economic requirements.

Thus, sustainability transitions scholars and practitioners need to start considering ways of activating individuals' engagement in sustainability transitions. Probably by simply start asking the question 'How would you like to engage?'.

6.1.2. How does sustainability engagement appear in different contexts?

With regards to my second research question, I have chosen to pay extra attention to individuals who are active within structures. I call these individuals insiders. I have shown that insiders can choose to engage in sustainability transitions because of personal sustainability beliefs. They can do this in three different contexts: job-, outreach- and entrepreneurial engagement.

The outreach- and the entrepreneurial engagement contexts can be depicted from established perspectives in sustainability transition and entrepreneurship research. The third context, the job engagement, in which insiders choose to engage in sustainability transitions within their daily work, is a novel context and a white spot in the reviewed sustainability transitions and entrepreneurship perspectives.

A main finding in this thesis is that personal sustainability beliefs need to be activated in different contexts as engagement will only occasionally follow from one context into another. While insiders can move between these three contexts, their sustainability engagement is not easily transferred from one context into another. This more granular view of insiders and the contexts in which they engage, primarily contributes to the perspectives already embracing insiders, i.e., the transition management and the corporate entrepreneurship/intrapreneurship perspectives. The implications for these perspectives are foremost the recognition of insiders as individuals who can move in and out different contexts and thus potentially bring their sustainability engagement far beyond being 'only' entrepreneurs or representatives of professional roles in temporary arenas. Secondly, and this goes for all the reviewed perspectives, when it comes to recognising individuals specifically choosing to act in entrepreneurial ways, the perspective developed in this thesis contributes by providing a more nuanced understanding of who can choose to engage in entrepreneurial ways in sustainability transitions and why. Basically, established perspectives would be enriched with more accounts of individuals displaying personal sustainability engagement, regardless of where they might have their home ground.

6.1.3. What are key transition effects from sustainability engagement?

In this third research question, I have focused on energy system. It is shown in this thesis that when engaged individuals narrate their intentions and their work around future energy systems, they successively build trust and consensus among other individuals within and outside their home organisation. When decision makers and others gain personal experiences of these narratives, they start to retell them and even decide to personally engage in realising these visions of future energy systems.

The understanding of individuals' purposive actions, in and beyond their organisational home grounds, developed in this thesis, thus contributes to the ability to capture and understand how soft institutional work occur. Basically, individuals choosing to engage in sustainability transitions have more impact on sustainability transitions than previously acknowledged, especially if these individuals are insiders acting within and beyond their home grounds.

6.2. Suggestions for further research

It is shown in this thesis that individuals will only choose to engage in sustainability transitions if their personal sustainability beliefs are activated. Finding out ways of activating individuals in and across different contexts ought to be at the core of understanding and encouraging sustainability transitions. Thus, future sustainability transitions research, specifically focusing on governing transitions, could explore the potentials in asking the question 'How would you like to engage?'.

Furthermore, insiders' job engagement in sustainability transitions is within structures. Job engagement is thus constricted with other contextual rules than what is found in both outreach engagement and entrepreneurial engagement. The outreach context is typically a protected space for free-thinking and creativity. The entrepreneurial context, on the other hand, has its own characteristics, with much space for manoeuvring but a lot of uncertainties. The result in this thesis show that it is extra challenging for insiders to transfer engagement from

outreach engagement into job engagement. It appears more challenging to bring engagement from less restricted contexts to more restricted contexts, than the other way around. This is an issue that has not been sufficiently addressed in sustainability transitions research and that needs further enlightens.

Established sustainability transitions perspectives do not include or appreciate many accounts of individual engagement. Yet, most studies are based on interviews. From this thesis, there is reason to believe that many interviews contain activated sustainability beliefs and narratives around future more sustainable solutions. I therefore encourage sustainability transitions researchers to display such narratives when doing case studies. They would add ideas around how sustainability transitions could occur and also appreciate sustainability engagement in a variety of contexts. In short, such narratives would open up for the important engagement of individuals, without necessarily hampering descriptions of how socio-technical systems have been working.

Finally, the current study is primarily set in a Swedish context, focusing mostly on the energy sector. Future research needs to compare different national and sectoral contexts to investigate the generality of the perspective introduced in this thesis.

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